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# BULLETIN

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**AN ANNOTATED CHECKLIST AND BIBLIOGRAPHY OF  
THE LAND AND FRESHWATER SNAILS OF MÉXICO AND  
CENTRAL AMERICA**

**Fred G. Thompson**

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Managing Editor of the Bulletin  
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University of Florida  
P.O. Box 117800  
Gainesville, FL 32611-7800 USA

FAX: 352-846-0287

Email: [bulletin@flmnh.ufl.edu](mailto:bulletin@flmnh.ufl.edu)

# AN ANNOTATED CHECKLIST AND BIBLIOGRAPHY OF THE LAND AND FRESHWATER SNAILS OF MÉXICO AND CENTRAL AMERICA

Fred G. Thompson<sup>1</sup>

## ABSTRACT

The checklist of the non-marine gastropod fauna summarizes the known species and subspecies that are recognized from México and Central America. It is an annotated list of 1800 terminal taxa presented in a hierarchical framework. These include 1502 native species plus 278 native subspecies, and 20 introduced species. The native species include 175 aquatic operculates, 84 aquatic pulmonates, 130 terrestrial operculates, and 1112 terrestrial pulmonates. In most cases in order to be as objective as possible the list uncritically records the most recent assignment of terminal taxa. In a few instances some changes are deemed necessary. For higher-level changes competing schemes are treated equally. In cases of terminals and higher taxa, readers are directed to the systematic works that discuss relevant taxonomy. It is anticipated that the annotated list will be a useful resource for everyone interested in non-marine gastropods and their nomenclature. In addition to clarifying some issues or points of confusion, this list should also provide an impetus for future work aimed at clarifying and resolving areas of taxonomic disagreement and/or uncertainty, and to make better known the non-marine molluscan fauna of México and Central America.

## RESUMEN

La lista de verificación de la fauna de gastrópodos no marinos, resume las especies y subespecies conocidas de México y Centroamérica. Esta es una lista anotada de 1800 taxa terminales presentes en el sistema jerárquico. Estas incluyen 1502 especies nativas, 278 subespecies nativas y 20 especies introducidas. Estas especies nativas incluyen 175 especies de operculados, 84 pulmonados acuáticos, 130 de operculados terrestres y 1112 de pulmonados terrestres. Para ser lo más objetivo posible, en la mayoría de los casos la lista registra acriticamente la más reciente asignación de los taxa terminales. En pocas ocasiones, algunos cambios se consideraron necesarios. Para cambios a un nivel jerárquico más alto, los esquemas contradictorios propuestos fueron tratados equitativamente. En los casos de taxa terminales y superiores, los lectores son dirigidos a los trabajos sistemáticos que discuten la taxonomía relevante. Se prevé que la lista anotada será un recurso útil para cualquier interesado en gastrópodos no marinos y su nomenclatura. Además de aclarar algunos asuntos o puntos de confusión, esta lista también es un impulso para trabajos futuros con el propósito de clarificar y resolver áreas de desacuerdo taxonómico y/o incertidumbre, así como para hacer más conocida la fauna de moluscos no marina de México y Centroamérica.

**Key Words:** Gastropoda; biogeography; México; Central America

<sup>1</sup>Florida Museum of Natural History, University of Florida, Gainesville, FL 32611-7800 USA <fgt@flmnh.ufl.edu>

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## INTRODUCTION

“An annotated checklist and bibliography of the land and freshwater snails of México and Central America” first appeared as an on-line publication (Thompson 2008; <[http://www.flmnh.ufl.edu/malacology/mexico-central\\_america\\_snail\\_checklist/](http://www.flmnh.ufl.edu/malacology/mexico-central_america_snail_checklist/)>). It was well received. I thank the many individuals who have offered corrections and comments that have made this a better contribution to neotropical biology. Since then many taxonomic changes and editions to the fauna require an updated revision.

The objective of this study is to list all species and subspecies of land and freshwater gastropods reported from México and Central America. The list includes 1502 native species plus an additional 238 native subspecies, and 20 introduced species. The list includes published distribution records within this area for all terminal taxa. In only a few instances are unpublished distribution records included. The following geographic terms are used. North America refers to the North American Continent, which extends south to the Polochic Valley in Guatemala. Central America refers to the countries of Panamá, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala, and Belize, including Caribbean and Pacific Islands belonging to these countries. Middle America refers to Central America and the West Indies. Records for New Providence Island, Colombia, are included because the faunal affinities of this island are with Central America, not Colombia.

The geographic area of this study is vast, and it contains many biomes, different geological structures, complex physiographic features and a myriad of ecological settings. Local surveys have been published for only a small portion of this area. It is not possible on the basis of published information to identify biotic hotspots, because the available biogeographic information does not allow for objective comparisons of one region with another. A tabulation of the faunal diversity for each Central American country and each Mexican state is provided in the appendix. A disproportionate large number of 293 species and subspecies have been

recorded from Veracruz State, México compared to other areas, but this is a reflection of the number of investigators who have worked there. Even their investigations were localized within smaller sub-regions of central Veracruz. The localized regional data are not comparable because of historical socio-political circumstances effecting access, available transportation, duration of field work, and the emphasis different investigators placed on certain taxa. The extensive limestone terrains of southern and western México promise to be as species diverse as central Veracruz, but their faunas are greatly under-reported.

The number of known land and freshwater gastropods from México and Central America is large. Nearly all of the known species are based on sound taxonomic studies and reviews dating back to Shuttleworth, Menke, and Pfeiffer. I estimate that the number of recorded taxa is about 35% of the actual fauna. The high number of estimated undescribed species is based on the fact that most of Panamá, much of Costa Rica, most of Nicaragua, nearly all of Honduras, most of Guatemala, nearly all of Belize, and 85% of México have not been explored, or have been poorly explored for mollusks, especially for small and minute species. I have collected extensively in these areas, and my field work yields results comparable with the reported faunas of better known regions. This estimate is based on fifty-five years of personal field experience in this area, and upon examination of the extensive specimens deposited in the Florida Museum of Natural History. Each new field trip yields spectacular finds of which up to 40–80% are additional new species. I suspect the estimate that only 35% of the actual Mexican-Central American fauna is known is conservative.

Systematic biology is made unnecessarily difficult by the tendency of authors to synonymize species or to resurrect them from synonymy without providing justification. In either case the responsibility is on authors to provide evidence supporting their actions. To do otherwise is poor science. Merely to state that a name is a synonym does not constitute a valid action. In accordance with ICZN Article 45.6.4, and for purposes of this

work, varieties and forms of species published prior to 1961 are accorded subspecific rank. No judgment is made concerning the validity of such subspecies. The classification of superfamilies, families, and subfamilies used here follows Bouchet and Rocroi (2005:240–270). That reference should be consulted in cases where the type genus, synonymy lists, and/or the publication of first appearance for family-rank names are not listed. Citations to first publication of generic, specific and subspecific names include the publication in which the name first appeared. In the cases of the major works by Fischer and Crosse (1970–1902), Strebel (1873–1882), Von Martens (1890–1901), Bequaert and Miller (1973), and Pérez and López (2002), only the date, page and figure citations are included because they are general works, and no other publications by these authors conflict with these citations.

#### MUSEUM ACRONYMS

Type specimens are cited only when this information is readily available in publication. The following acronyms refer to museum collections where cited specimens are housed: **ANSP**, Academy of Natural Sciences, Philadelphia, Pennsylvania; **BMNH**, The Natural History Museum, London, UK; **CAS**, California Academy of Sciences, San Francisco, California; **FMNH**, Field Museum of Natural History, Chicago, Illinois; **INBio**, Museo de Zoología, Universidad de Costa Rica, San José, Costa Rica; **MCZ**, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; **MHNN**, Muséum d'Histoire Naturelle Neuchâtel; **MNHN**, Muséum National d'Histoire Naturelle, Paris, France; **NMBE**, Natural History Museum, Bern; **RMNH**, Nationaal Natuurhistorisch Museum Naturalis, Leiden, the Netherlands; **SMF**, Natur-Museum Senckenberg, Frankfurt am Main, Germany; **UF**, Florida Museum of Natural History, Gainesville, Florida; **UMMZ**, Museum of Zoology, University of Michigan, Ann Arbor, Michigan; **USNM**, National Museum of Natural History, Washington, DC; **ZMA**, Zoölogisch Museum, Amsterdam, the Netherlands; **ZMB**, Museum für Naturkunde, Humboldt Universität, Berlin, Germany; and **ZMH**, Zoologisches Museum der Universität

Hamburg, Hamburg, Germany.

**Class GASTROPODA Cuvier 1795**  
**Subclass VETIGASTROPODA Salvini-Plawen 1989**  
**Superfamily HELICINOIDEA Férussac 1822**  
**Family CERESIDAE Thiele 1925**

Ceresinae Thiele 1925; Handbuck der Zoologie 5:78.

Ceresidae Thompson 1980; Malacologia 20:13.

Distribution.—México, Venezuela, Colombia, Ecuador, Peru, and Brazil.

Taxonomy.—Six genera are recognized. Three occur in the study area.

**Genus *Ceres* Gray 1856**

*Ceres* Gray 1856; Proc. Zool. Soc. Lond. 24:100.- Thompson 1980; Malacologia 20:17.

Type Species.—*Carocolla eolina* Ducluz 1834.

Distribution.—Eastern México in the states of Veracruz, San Luís Potosí and Tamaulipas.

Taxonomy.—Three species are recognized.

***Ceres eolina* (Duclos 1834)**

*Carocolla eolina* Duclos 1834; in Guérin's Mag. Zool.: pl. 30.

*Odontostoma eolina* (Duclos). Pfeiffer 1848; Monog. Helic. Viv. 1:11.

*Proserpina eolina* (Duclos). Pfeiffer 1853; Monogr. Helic. Viv. 3:290.

*Ceres eolina* (Duclos). Gray 1856; Proc. Zool. Soc. Lond. 24:102.- Fischer & Crosse 1892; Miss. Sci. Mex. II:382–383; pl. 54, figs. 2–2c (shell).- Thompson 1980; Malacologia 24:17.

*Proserpina (Ceres) eolina* (Duclos). Pfeiffer, 1856; Proc. Zool. Soc. Lond. 24: 324: pl. 35: figs. 23, 24 (shell).- Von Martens 1890; Biol. Cent. Amer.:44.- Von Martens 1901; Biol. Cent. Amer.:609.

Type Locality.—Cerro de Plumas [Cerro de Palmas]

Sierra de Matlahuicahuatl, Veracruz, México.

Distribution.—Known only from the type locality.

***Ceres nelsoni* Dall 1898**

*Ceres nelsoni* Dall 1898; Nautilus 12:27.- Fischer & Crosse 1900:668.- Dall 1902; Proc. U. S. Nat. Mus. 24:501; pl. 28, figs. 1, 3, 5, 8 (shell).- Solem 1954; Nautilus 64:7.- Thompson 1980; Malacologia 24:3–6, 17, fig. 3 (pallial organ), fig. 4 (body), figs. 5–10 (radula), figs. 12–14 (reproductive anatomy).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.

*Proserpina (Ceres) nelsoni* (Dall). Von Martens 1901; Biol. Cent. Amer.:609.

Type Locality.—Pilitla [Xilitla], San Luís Potosí, México. Holotype USNM 107823.

Distribution.—SAN LUÍS POTOSÍ: numerous localities in eastern part of state (Thompson 1980); Xilitla, (21°22'55" N, 98°59'44" W); 6 km SW of Xilitla, 830 m alt. (21°23'10" N, 99°03'56" W); Cueva El Salitre, 450 m alt. (21°22'55" N, 98°57'53" W); Las Pozas, Xilitla (21°23'39" N, 98°59'44" W, 540 m alt.); Las Pozas, 560 m alt. (21°23'39" N, 98°59'44" W);



arroyo at Las Pozas, 520 m alt. (21°24'08" N, 98°59'44" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: Aserradero del Paraiso, 15 km NNW of Chamal (Solem 1957); numerous localities in southern Tamaulipas (Correa-Sandoval & Rodriguez 2002).

### ***Ceres salleana* Gray 1856**

*Ceres salleana* Gray 1856; Proc. Zool. Soc. Lond. 24:100, 102.- Pfeiffer 1876; Monogr. Pneumo. Viv. 4:295.- Fischer & Crosse 1900:383; pl. 54, figs. 3–3d (shell).- Thompson 1980; Malacologia 24:6, 17.

*Proserpina (Ceres) salleana* (Gray). Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:322; pl. 35, figs. 21, 22 (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:332.- Von Martens 1890:45.- Von Martens 1901; Biol. Cent. Amer.:609.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Orizaba (Pilsbry 1891); Huatusco, Barranca de Dos Puentes; Cerro de Palma, Sierra de Matlaquihuahuatl, near Toxpan (Von Martens 1901).

### **Genus *Linidiella* Jousseaume 1889**

*Linidiella* Jousseaume 1889; Mem. Zool. Soc. France 2:256.- H. B. Baker 1923; Nautilus 36:84.- Thompson 1980; Malacologia 24:19.

*Chersodespoena* Sykes 1900; Proc. Malac. Soc. London, 4:136.

Type Species.—*Linidiella: Proserpina swifti* Bland 1863 (H. B. Baker 1923). *Chersodespoena: Despoena (Chersodespoena) cinnanomea* Sykes 1900 (monotypy).

Distribution.—Ecuador, Venezuela, eastern México.

Taxonomy.—Four species are recognized. Two occur in México.

### ***Linidiella citrina* Thompson 1987**

*Linidiella citrina* Thompson 1987; Arch. für Mollusk. 117:160–162; figs. 1, A–D (shell).

Type Locality.—2 km NE of Comolapa, Veracruz, México; 450 m alt. (96°52' W 18°42' N). Holotype UF 84367.

Distribution.—VERACRUZ: known only from the immediate vicinity of Comolapa.

### ***Linidiella sulfureous* Thompson 1967**

*Linidiella sulfureous* Thompson 1967; Proc. Biol. Soc. Wash. 80:61; figs. 1–3 (shell).- Thompson 1987; Arch. für Mollusk. 117:162; figs. 1, E–H (shell).

Type Locality.—8.2 mi. S of Solusuchiapa, Chiapas, México; 1600 ft. alt. Holotype UF 19025.

Distribution.—Known only from the type locality.

### **Genus *Proserpinella* Bland 1865**

*Proserpinella* Bland 1865:157.- Thompson 1980; Malacologia 24:23–24.

Type Species.—*Proserpinella berendti* Bland 1865 (monotypy).

Distribution.—Mexican states of Veracruz, Jalisco and Nayarit.

Taxonomy.—Three species are recognized.

### ***Proserpinella berendti* (Bland 1865)**

*Proserpinella berendti* Bland 1865; Ann. Lyceum Nat. Hist. New York 9:157; fig. 2 (shell).- Strebel 1873:11; pl. 4, fig. 5 (shell).- Fischer & Crosse 1901:377; pl. 54, figs. 1–1d (shell).- Thompson 1980; Malacologia 24:24.

*Proserpina (Proserpinella) berendti* (Bland). Von Martens 1890; Biol. Cent. Amer.:45.- Von Martens 1901; Biol. Cent. Amer.:609.

Type Locality.—Mirador, Veracruz, México.

Distribution.—Known only from the type locality.

### ***Proserpinella edentula* Naranjo-Garcia 1994**

*Proserpinella edentula* Naranjo-Garcia 1994; Arch. für Mollusk. 123:145–150; fig. 1 (shell), fig. 2 (radula), fig. 3 (female reproductive system).

Type Locality.—Municipio La Huerta, Estacion de Biología Chamela, km 59, Hwy. 200 (ca. 19°29' N, 104°58' W), Jalisco, México. Holotype Universidad Nacional Autonoma de México, Instituto de Biología 260.

Distribution.—Known only from the type locality.

### ***Proserpinella hanna* Dall 1926**

*Proserpinella hanna* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:486–487; pl. 36, figs. 6–8 (shell).- Thompson 1980; Malacologia 24:24.

Type Locality.—Isla María Madre, Islas Marías, Nayarit, México. Holotype CAS 2211.

Distribution.—Known only from the type locality.

### **Family HELICINIDAE Férussac 1822**

Distribution.—The Neotropical Realm, the Pacific Islands, Australia, Indian Ocean islands and southeast Asia.

Taxonomy.—Numerous genera and subgenera. There is little consensus on the status and validity of many of these. The family Helicinidae is poorly studied, and new investigations will require many changes. A study by Richling (2004) is a major step in addressing many taxonomic problems in Central America and México. Three subfamilies are recognized in the Neotropical region: Helicininae, Vianinae and Stoastominae. The subfamily Stoastominae is confined to the West Indies and coastal Venezuela.

### **Subfamily HELICININAE Férussac 1822**

Distribution.—New World, ranging from Argentina north to the southeastern United States and throughout the West Indies.

Taxonomy.—Four genera of Helicininae occur in México and Central America. Fifty-seven species and twelve subspecies are recognized in the area covered in this study. Careful studies of morphology, biogeography and ecology by H. B. Baker (1922, 1926, 1928) and Richling (2004) demonstrated that many forms that were previously considered subspecies or varieties are valid species. This summary relies heavily upon the work of Richling (2004).

### **Genus *Ceochasma* Thompson 1968**

*Ceochasma* Thompson 1968, Proc. Biol. Soc. Wash. 81:45.

*Helicina (Ceochasma)* (Thompson). Richling 2004; *Malacologia* 45:426, 427.

Type Species.—By monotypy *Ceochasma phrixina* Thompson 1968.

Distribution.—Colima, México.

Taxonomy.—The systematic position of this genus remains uncertain (Richling 2004). A single species is recognized.

### ***Ceochasma phrixina* Thompson 1968**

*Ceochasma phrixina* Thompson 1968; *Proc. Biol. Soc. Wash.* 81:46–52; figs. 1–6 (shell), figs. 7–9 (operculum), figs. 10–11 (reproductive anatomy).

Type Locality.—A collapsed limestone ridge 0.3 mile east of Tamala, Colima, México; 500 ft alt. [Tamala is a small village ca. 2 km NE and ca. 6 km E of Tacolapa]. Holotype UF 20138.

Distribution.—Known only from the type locality.

### **Genus *Helicina* Lamarck 1799**

*Helicina* Lamarck 1799:76.

Type Species.—*Helicina neritella* Lamarck 1799.

Distribution.—The West Indies, México, Central America and South America.

Taxonomy.—Nine subgenera are recognized in this study. *Helicina* s. s., *Oxyrhombus*, *Tristramia*, *Pseudolygyra*, *Cinctella*, *Oligyra*, “*Gemma*”, *Analcadia* and *Sericea*. The superfamily Helicinoidea is a nearly morphostatic group of organisms in which the soft anatomy shows little differentiation between and within genera. In this case shell characters prove useful for grouping species, even though in some instances the distinctions between subgenera approach being arbitrary. H. B. Baker (1922a, 1926, 1928), Thompson (1968, 1980, 1982) and Richling (2004) provided information concerning the classification of the neotropical fauna. Richling greatly advanced our knowledge of the Costa Rican fauna, and she proposed a classification that recognizes fewer subgenera. Integrating the rest of the México and Central American species into the classification that she proposed requires recognition of additional subgenera. This study largely follows the subgeneric classification proposed by H. B. Baker (1928).

### **Subgenus *Oligyra* Say 1818**

*Oligyra* Say 1818.

*Oligyra* Say 1819 (amended for *Oligyra*).

*Orbiculata* Wagner 1905; *Denksch. Kaiserli. Akad.*...

Type Species.—*Oligyra orbiculata* Say 1818 (type by monotypy).

Distribution.—Southeastern United States, México and Central America.

Taxonomy.—Three species and one subspecies occur within the study area.

### ***Helicina (Oligyra) orbiculata orbiculata* (Say 1818)**

*Oligyra orbiculata* Say 1818; *Jour. Acad. Nat. Sci. Phila.* pt. 2:283.

*Oligyra (Oligyra) orbiculata orbiculata* Say. H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:44; pl. 3, fig. 2; pl. 4, fig. 11 (radula).

*Helicina orbiculata* Wagner 1910; *in* Martini & Chemnitz, *Syst. Conch. Cab.*, *Helicinidae*:301; pl. 61, figs. 1–6 (shell).- Pilsbry 1948; *Land Moll. N. Amer.* II:1082–1084; figs. a-e (shell).

*Helicina (Oligyra) orbiculata orbiculata* Say. H. B. Baker 1926; *Proc. Acad. Nat. Sci. Phila.* 78:40; pl. 5, fig. 1 (reproductive anatomy).

*Helicina hanleyana* Pfeiffer 1849; *Proc. Zool. Soc. Lond.* (1848):122.- Pfeiffer 1852:38; pl. 9, figs. 7–8 (shell).

Type Locality.—Oyster shell hammocks near the mouth of the St. John’s River, Florida. Holotype ANSP 10573.

Distribution.—In the United States the species is widely distributed in Florida, Georgia, Alabama, Tennessee, Mississippi, Louisiana, Arkansas and Oklahoma. Numerous localities in southern TAMAULIPAS and eastern SAN LUÍS POTOSÍ (Correa-Sandoval et al. 1998; Correa-Sandoval & Rodriguez 2002).

### ***Helicina (Oligyra) orbiculata tropica* Pfeiffer 1852**

*Helicina tropica* Pfeiffer 1852; *Syst. Conchyl. Cab.*:37; pl. 4, figs. 9, 10 (shell).- Strenth & Littleton 2000; *Texas Jour. Sci.* 52: 25–32.

*Helicina orbiculata tropica* Pfeiffer. Pilsbry 1896:534.- Pilsbry 1948:1048–1049; figs. f-h (shell).

*Oligyra (Oligyra) orbiculata tropica* (Pfeiffer). H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:44.

*Helicina (Oligyra) orbiculata tropica* Pfeiffer. H. B. Baker 1926; *Proc. Acad. Nat. Sci. Phila.* 78:39–40; pl. 5, figs. 2–4.

Type Locality.—Not given.

Distribution.—COAHUILA (Pilsbry 1948). NUEVO LEON: Santiago (Correa-Sandoval 1993); Cerro de la Silla (Correa-Sandoval & Salazar 2005). TAMAULIPAS (Pilsbry 1948).

### ***Helicina (Oligyra) borealis* Von Martens 1890**

*Helicina borealis* Von Martens 1890; *Biol. Cent. Amer.*:40; pl. 1, fig. 15 (shell).- Fischer & Crosse 1893:435.- Von Martens 1901; *Biol. Cent. Amer.*:606.- Wagner 1910; *in* Martini & Chemnitz, *Syst. Conch. Cab.*, *Helicinidae*:300–301; pl. 60, figs. 1–3 (shell).

*Oligyra (Oligyra) borealis* (Von Martens). H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:44.

Type Locality.—Villa Lerdo, Durango, México.

Distribution.—Known only from the type locality.

### ***Helicina (Oligyra) cordillerae* Pfeiffer 1857**

*Helicina cordillerae* Pfeiffer 1857; *Proc. Zool. Soc. Lond.* (1886):323.- Reeve 1874; *Conch. Icon.*, *Helicina*: pl. 16, fig. 149 (shell).- Von Martens 1890; *Biol. Cent. Amer.*:32–33.- Fischer & Crosse 1893:412; pl. 57, figs. 1–1c, 2–2a (shell).- Von Martens 1901; *Biol. Cent. Amer.*:603.- Wagner 1910; *in* Martini & Chemnitz, *Syst. Conch. Cab.*, *Helicinidae*:300; pl. 59, figs. 21–25 (shell).

*Oligyra (Oligyra) cordillerae* (Pfeiffer). H. B. Baker. 1922; *Proc. Acad. Nat. Sci. Phila.* 74:44.

Type Locality.—Volcán Orizaba, Rancheria de Jacale, Veracruz, México; 3500 m alt. (Fischer & Crosse 1893).



Distribution.—Known only from the type locality.

### Subgenus *Oxyrhombus* Crosse & Fischer 1893

*Oxyrhombus* Crosse & Fischer 1893:401.

*Concentrica* Wagner 1905; Denksch. Kaiserli. Akad. ... :282.

*Punctisulcata* Wagner 1905; Denksch. Kaiserli. Akad. ... :294.

*Cinctella* Wagner 1910; in Martini Chemnitz, Syst. Conch. Cab., Helicinidae:298.

Type Species.—*Oxyrhombus*: *Helicina amoena* (selected by H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:84). *Concentrica*: *Helicina concentrica* Pfeiffer 1849 (type by tautonymy). *Punctisulcata*: *Helicina punctisulcata* Von Martens 1900 (type by tautonymy). *Cinctella*: *Helicina cinctella* Shuttleworth 1852 (type by tautonymy).

Distribution.—Tamaulipas and Guerrero, México south to Venezuela.

Taxonomy.—Eleven species are recognized within the study area. Additional species occur in northern South America.

### *Helicina (Oxyrhombus) amoena* Pfeiffer 1849

*Helicina amoena* Pfeiffer 1845:119.- Von Martens 1890; Biol. Cent. Amer.:28.- Fischer & Crosse 1893:401; pl. 55, figs. 3–3s, 4.- Von Martens 1901; Biol. Cent. Amer.:602.- Fluck 1906; Nautilus 20:1.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:295–296; pl. 59, figs. 10–12 (shell).- Bequaert 1957; Bull. Mus. Comp. Zool. 115:206.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):7.

*Helicina (Oxyrhombus) amoena* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48; pl. 3, fig. 8; pl. 4, fig. 15 (radula).

*Helicina purpureo-flava* Morelet 1849; Test. Noviss. I:19.

*Helicina amoena* var. *minor* Von Martens 1890; Biol. Cent. Amer.:28.

*Helicina amoena* var. *depressa* Von Martens 1890; Biol. Cent. Amer.:28.

Type Localities.—*Helicina amoena*: Honduras. *Helicina amoena* var. *minor*: Nicaragua. *Helicina amoena* var. *depressa*: Bugaba, west of David, Panamá. *Helicina purpureo-flava*: Petén, Guatemala.

Distribution.—PANAMÁ. NICARAGUA: near Rio Wounta (Rio Kukallaya), NW of Kukallaya (Fluck 1906). GUATEMALA, Dept. Alta Verapaz: Cobán (Von Martens 1890). Dept. Baja Verapaz: San Juan; Sabo, 2800 ft. alt.; Chacoj; Panzos; Telemán (Von Martens 1890). Dept. Petén: Tikal (Basch 1959). CAMPECHE: (Von Martens 1890). CHIAPAS: Laguna Ocotál, 950 m alt.; El Censo to Laguna Ocotál, 1000 m alt.; Ocosingo, 850 m alt.; El Real, 600 m alt.; Monte Libano, 600 m alt. (Bequaert 1957). VERACRUZ (Wagner 1910).

### *Helicina (Oxyrhombus) bocourti* Crosse & Fischer 1869

*Helicina bocourti* Crosse & Fischer 1869; Jour. de Conchyl. 17:251.

*Helicina dysoni bocourti* Crosse & Fischer. Fischer & Crosse 1893:437–438; pl. 56, fig. 10 (shell).

*Helicina dysoni* Pfeiffer. Simpson 1897; Nautilus 11:13–14.

*Oligyra (Analcadia) dysoni bocourti* Crosse & Fischer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:47.

*Helicina (Tristramia) bocourti* Crosse & Fischer. Rehder 1966;

Proc. Biol. Soc. Wash. 79:276–277; figs. 8–10 (shell), figs. 18–20 (radula).- Richling 2004; Malacologia 45:425.

*Helicina dysoni* var. *jansoni* Von Martens 1890; Biol. Cent. Amer.:40; pl. 1, fig. 18 (shell).

*Alcacia (Analcadia) dysoni bocourti* (Crosse & Fischer). Wagner 1908:90; pl. 15, figs. 16–19 (shell).

Type Locality.—*Helicina bocourti*: Isla de Útila, Honduras. *Helicina dysoni* var. *jansoni*: Bonacca Island [Isla Guanaja], Honduras.

Distribution.—HONDURAS, Dept. Islas de la Bahía: Isla Útila; Isla Roatán; Isla Guanaja. BELIZE: along the coast from Rocky Point to Puerto Honduras, near the Guatemala border. QUINTANA ROO: Bahía de Ascensión; Tulúm (Rehder 1966).

### *Helicina (Oxyrhombus) cinctella cinctella* Shuttleworth 1852

*Helicina cinctella* Shuttleworth 1852; in Bern Mittheil.:304.- Von Martens 1890; Biol. Cent. Amer.:29.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:332.- Fischer & Crosse 1893:403; pl. 55, figs. 6–6c, 7–7c (shell).- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:298–299; pl. 59, figs. 13–17 (shell).- Neubert & Gosteli:11; pl. 8, fig. 2 (shell).

*Helicina (Oxyrhombus) cinctella cinctella* Shuttleworth. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):32; pl. 2, fig. 5; pl. 3, fig. 14 (reproductive anatomy).

Type Locality.—Cordova [Córdoba], Veracruz, México. Syntypes: NMBE 15275/3.

Distribution.—JALISCO: Tepic (Von Martens 1890). VERACRUZ: Córdoba; Cerro de Plumas; Mirador; Orizaba (Von Martens 1890); Sumidero (H. B. Baker 1928).

### *Helicina (Oxyrhombus) cinctella bautistae* Wagner 1910

*Helicina (Oxyrhombus) cinctella bautistae* Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:209; pl. 59, figs. 18–20 (shell).

*Helicina (Oxyrhombus) cinctella bautista* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48.

Type Locality.—San Juan Bautista, Tabasco, México.

Holotype ZMB 103323.

Distribution.—Known only from the type locality.

### *Helicina (Oxyrhombus) ghiesbreghtii* Pfeiffer 1856

*Helicina ghiesbreghtii* Pfeiffer 1856:381.- Von Martens 1890; Biol. Cent. Amer.:28.- Pilsbry 1892:339.- Fischer & Crosse 1893:399; pl. 55, figs. 5–5c (shell).- Von Martens 1901; Biol. Cent. Amer.:202.- Thompson 1957; Nautilus 70:100.

*Helicina (Oxyrhombus) ghiesbreghtii* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:47

*Helicina ghiesbreghtii* Pfeiffer. Reeve 1874; Conch. Icon., Helicina: pl. 27, fig. 242 (shell).

*Helicina ghiesbreghtii* Pfeiffer. Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:296–297; pl. 59, figs. 3–5 (shell).

Type Locality.—Chiapas, México.

Distribution.—GUATEMALA: El Reposo, 8000 ft. alt.; San Francisco Miramar; Costa Cuca (Von Martens 1890).

CHIAPAS (Von Martens 1890). TABASCO: mountains of Poaná (Pilsbry 1892); 0.5–1.0 mi. E of Teapa (Thompson 1957).

***Helicina (Oxyrhombus) heighwayana* Dall 1909**

*Helicina heighwayana* Dall 1909; Smiths. Misc. Coll. 52:392.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:70; pl. 37, figs. 7–9 (shell).

Type Locality.—Sierra Darién, near the Rio Atrato, Panamá. Holotype USNM 111074.

Distribution.—PANAMÁ: Rio Puerco (Pilsbry 1926).

***Helicina (Oxyrhombus) isthmica* Pilsbry 1926**

*Helicina isthmica* Pilsbry 1926; Acad. Nat. Sci. Phila. 78:68; text-fig. 3B (shell).

Type Locality.—Rio Puerco, Panamá. Holotype ANSP 140713.

Distribution.—Known only from the type locality.

***Helicina (Oxyrhombus) oxyrhyncha* Crosse & Debeaux 1863**

*Helicina oxyrhyncha* Crosse & Debeaux 1863:266; pl. 9, fig. 4 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:69–70; text-figs. 3D, E, F (shell).

Type Locality.—not given.

Distribution.—PANAMÁ: Lowlands of Rio Tucuti, Panamá (Pilsbry 1926).

***Helicina (Oxyrhombus) ptychophora* Sykes 1902**

*Helicina ptychophora* Sykes 1902; Proc. Malac. Soc. London 5:20; text-fig. (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:69–70.

Type Locality.—Guatemala.

Distribution.—GUATEMALA: exact localities are unknown.

***Helicina (Oxyrhombus) sanguinea* Pfeiffer 1849**

*Helicina sanguinea* Pfeiffer 1849; Proc. Zool. Soc. Lond. (1848):124.- Sowerby 1866; Thesaurus Conch. 3:292; pl. 275, figs. 364, 365 (shell).- Reeve 1874; Conch. Icon., *Helicina*: pl. 20, fig. 178 (shell).- Von Martens 1890; Biol. Cent. Amer.:40.

*Oligyra (Analcadia) sanguinea* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:47.

Type Locality.—“Honduras”.

Distribution.—HONDURAS. Unknown.

***Helicina (Oxyrhombus) sowerbyana* Pfeiffer 1849**

*Helicina sowerbyana* Pfeiffer 1849; Proc. Zool. Soc. Lond. (1848):124.- Von Martens 1890; Biol. Cent. Amer.:28–29.- Fischer & Crosse 1893:444.- Von Martens 1901; Biol. Cent. Amer.:602.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782; pl. 54, figs. 7–8 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.

*Helicina (Oxyrhombus) sowerbyana* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48.

Type Locality.—“Guatemala”.

Distribution.—NUEVO LEON: Santiago (Correa-

Sandoval 1993). SAN LUÍS POTOSÍ: Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval 1998); Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: canyon 4 mi. W of Cd. Victoria (Pilsbry 1903); Salto del Tigre (23°58'31" N, 99°22'24" W); numerous localities in southern Tamaulipas (Correa-Sandoval & Rodriguez 2002, 2005).

**Subgenus *Succincta* Wagner 1905**

*Succincta* Wagner 1905; Denksch. Kaiserli. Akad. ... :315.

*Gemma* Wagner 1905; Denksch. Kaiserli. Akad. ... : (not *Gemma* Deshayes 1853).

Type Species.—*Succincta*: *Helicina succincta* Von Martens 1890. *Gemma*: *Helicina gemma* Preston 1903.

Distribution.—México and Central America.

Taxonomy.—Six species and six subspecies.

***Helicina (Succincta) arenicola arenicola* Morelet 1849**

*Helicina arenicola* Morelet 1849; Test. Noviss. I:21.- Von Martens 1890; Biol. Cent. Amer.:36.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:332.- Fischer & Crosse 1893:424–425; pl. 56, figs. 8, 8a-c (shell).- Von Martens 1901; Biol. Cent. Amer.:605.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:316; pl. 63, figs. 11–13 (shell).- Richards 1937; Proc. Amer. Philos. Soc. 77:257.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):29.- Rehder 1966; Proc. Biol. Soc. Wash. 79:276.

*Oligyra (Succincta) arenicola* (Morelet). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.- Thompson 1967; Bull. Fla. St. Mus. 11:229.

Type Locality.—Sisal, Yucatán, México; in sandy places.

Distribution.—CAMPECHE: numerous localities (Thompson 1967). QUINTANA ROO: Chancanab; Laguna Chichankanab, near Esmeralda; Tulum; San Miguel, Isla Cozumel; San Gerbacio (Rehder 1966); 7.1 mi. NNE of Xiatil; 2.3 mi. SSE of Xiatil (Thompson 1967). YUCATÁN: Silam; Ticul; Tabi; Uxmal; Tunkas; Santa Ana (Pilsbry 1891); Chichen Itza; Progreso; 8 mi. S of Progreso; 8 mi. NW of Chichen Itza (Harry 1950); 3.2 mi. S of Progreso; 1.0 mi. SSE of Puerto Telchac (Thompson 1967).

***Helicina (Succincta) arenicola raresulcata* Pfeiffer 1861**

*Helicina raresulcata* Pfeiffer 1861; Malak. Blätt. 8:173.- Strebel 1873:119; pl. 1a, fig. 9; pl. 2, fig. 9 (shell).- Von Martens 1890; Biol. Cent. Amer.:36.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:315; pl. 63, figs. 1–5 (shell).

*Oligyra (Succincta) arenicola raresulcata* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

Type Locality.—Veracruz, [Veracruz], México

Distribution.—Known only from the type locality.

***Helicina (Succincta) flavida flavida* Menke 1828**

*Helicina flavida* Menke 1828:79.- Strebel 1873:16; pl. 1a, figs. 10, 10a, 10b; pl. 2, fig. 10 (shell).- Von Martens 1890; Biol. Cent. Amer.:38–39.- Fischer & Crosse 1893:433; pl. 56, figs. 6–63 (shell).- Von Martens 1901; Biol. Cent. Amer.:606.- Hinkley 1907; Nautilus 21:71.- Richling 2004; Malacologia 45:386–387.

*Oligyra flavida flavida* (Menke). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.- Bequaert 1957; Bull. Mus. Comp. Zool. 115:206.- Thompson 1967; Bull. Fla. St. Mus. 11:229.

*Helicina (Succincta) flavida flavida* Menke. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):29–30; pl. 2, fig. 7 (reproductive anatomy).

Type Locality.—“Jamaica”.

Distribution.—COSTA RICA, Prov. Limón: Puerto Limón (Richling 2004; Malacologia 45). HONDURAS, Dept. Copán: Copán (Von Martens 1901). GUATEMALA, Dept. Alta Verapaz: Cobán (Von Martens 1890). Dept. Baja Verapaz: Senahu (Von Martens 1890). CAMPECHE: 10.2 mi. E of Escarcega; (Thompson 1967). CHIAPAS: Laguna Ocotol, 950 m alt. (Bequaert 1957; Bull. Mus. Comp. Zool. 115); Palenque (Thompson 1967). PUEBLA: Necaxa (H. B. Baker 1928). QUINTANA ROO: 4.0 mi. E of Xpujil [Campeche] (Thompson 1967). SAN LUÍS POTOSÍ: Carretera; Tamazunchale-El Taimán, 220 m alt. (21°14'23"N, 98°49'44" W); Carr. Jalpan-Xilitla, 6 km NW of Xilitla W, 830 m alt. (21°23'10" N, 99°03'56"); Las Pozas (arroyo), 520 m alt. (21°24'08" N, 98°59'44" W); Xilitla (21°22'55" N, 98°59'44" W); Las Cascadas, Tamasopo, (21°56'05" N, 99°05'00" W); Huichihuayán (21°28'32" N, 98°58'41" W); Los Ciruelos (21°18'02" N, 98°49'49" W); Barrio San Rafael, Tamazunchale (21°16'05" N, 98°46'03" W); Rio Moctezuma, Tamazunchale (21°15'21" N, 98°48'56" W) (Correa et al. 1998). TABASCO: Teapa; San Jan Bautista (Von Martens 1890). TAMAULIPAS: Tampico (Hinkley 1907); El Cielo Biosphere Reserve, Gomez Farias (Correa-Sandoval & Rodriguez 2002, 2005). VERACRUZ: Papantla; Veracruz; Misantla; Mirador (Von Martens 1890); San Rafael, Jicaltepec (Pilsbry 1896); numerous localities in northern Veracruz (Correa-Sandoval 2000).

#### ***Helicina (Succincta) flavida brevilabris* Pfeiffer 1857**

*Helicina brevilabris* Pfeiffer 1857; Proc. Zool. Soc. Lond. (1856):380.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:317–318; pl. 63, figs. 14–18 (shell).

*Oligyra (Succincta) flavida brevilabris* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS (Wagner 1910). TABASCO: Teapa; San Juan Bautista (Wagner 1910). VERACRUZ: Córdoba; Mirador; Papantla; Misantla (Wagner 1910).

#### ***Helicina (Succincta) flavida incommoda* Wagner 1905**

*Helicina brevilabris incommoda* Wagner 1905; Denksch. Kaiserli. Akad. ... :238; pl. 14, fig. 2.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:318; pl. 63, fig. 19 (shell).

Type Locality.—Guatemala.

Distribution.—GUATEMALA: exact locality unknown.

#### ***Helicina (Succincta) flavida strebeli* Pfeiffer 1861**

*Helicina strebeli* Pfeiffer 1861; Malak. Blätt. 8:173.- Strebel 1873:18; pl. 1, fig. 11 (shell); pl. 2, fig. 11 (shell).

*Oligyra (Succincta) flavida strebeli* (Pfeiffer). H. B. Baker 1922;

Proc. Acad. Nat. Sci. Phila. 74:47; pl. 3, fig. 3; pl. 4, fig. 12 (radula).

*Helicina (Succincta) flavida strebeli* Pfeiffer. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):28–29.

Type Locality.—Mirador, Veracruz, México.

Distribution.—PUEBLA: Necaxa, 2215–2625 ft. alt. (H. B. Baker 1928). VERACRUZ: Mirador (18°59' N, 96°14' W).

#### ***Helicina (Succincta) oaxacana* Pilsbry 1920**

*Helicina oaxacana* Pilsbry 1920:196; fig. 3 (shell).

*Oligyra (Succincta) oaxacana* (Pilsbry). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

Type Locality.—Puerto Angel, Oaxaca [México].

Distribution.—Known only from the type locality.

#### ***Helicina (Succincta) oweniana oweniana* Pfeiffer 1849**

*Helicina oweniana* Pfeiffer 1849:123.- Pfeiffer 1850:40–41; pl. 7, figs. 35–36 (shell).- Von Martens 1890; Biol. Cent. Amer.:38.- Fischer & Crosse 1893:429; pl. 56, figs. 4–4b, 4c (shell).- Von Martens 1901; Biol. Cent. Amer.:605–606.- Thompson 1957:100.

*Alcadia (Leialcadia) oweniana* (Pfeiffer). Wagner 1908:81; pl. 12, fig. 21–25 (shell).

*Oligyra (Succincta) oweniana oweniana* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina (Succincta) oweniana oweniana* Pfeiffer. Richling 2004; Malacologia 45: fig. 276 (shell).

Type Locality.—Chiapas, México. Lectotype BMNH 20010751 (Richling 2004).

Distribution.—GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959). MÉXICO. TABASCO: Teapa; 0.5–1.0 mi. E of Teapa (Thompson 1957). CHIAPAS: (Wagner 1908).

#### ***Helicina (Succincta) oweniana anozona* Von Martens 1875**

*Helicina anozona* Von Martens 1875:649.- Von Martens 1876:261; pl. 9, fig. 7 (shell).

*Helicina oweniana anozona* Von Martens. Fischer & Crosse 1893:429; pl. 56, figs. 4a, 5–5a (shell).- Richling 2004; Malacologia 45:389; figs 278 (shell).

*Alcadia (Leialcadia) oweniana anozona* (Von Martens). Wagner 1908:82; pl. 12, figs. 26–28 (shell).

*Oligyra oweniana* var. *anozona* (Von Martens). Bequaert 1957; Bull. Mus. Comp. Zool. 115:206.

Type Locality.—Vicinity of Cobán, Alta Verapaz, Guatemala. Lectotype ZMB 25604a (Richling 2004:389).

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cubilquitz. Dept. Baja Verapaz: Telemán (Von Martens 1890). CHIAPAS: Monte Libano, 600 m alt.; El Real, 600 m alt. (Bequaert 1957).

#### ***Helicina (Succincta) oweniana coccinostoma* Morelet 1849**

*Helicina coccinostoma* Morelet 1849; Test. Noviss. I:19.

*Helicina oweniana coccinostoma* Morelet. Von Martens 1890; Biol. Cent. Amer.:38.- Fischer & Crosse 1893:429; pl. 56, figs. 4a, 5, 5a (shell).- Von Martens 1901; Biol. Cent. Amer.:605–606.- Richling 2004; Malacologia 45:388–389; figs. 277 (shell).

*Alcadia (Leialcadia) oweniana coccinostoma* (Morelet). Wagner



1908:82; pl. 12, fig. 29 (shell).

*Oligyra (Succincta) oweniana coccinostoma* (Morelet). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45; pl. 5, fig. 24 (radula).-Bequaert 1957; Bull. Mus. Comp. Zool. 115:206.

Type Locality.—“*Petenensis sylvas*” [Dept. Petén], Guatemala. Lectotype: BMNH 1893.2.4.1605 (Richling 2004:388).

Distribution.—GUATEMALA, Dept. Petén: Betalulen (Wagner 1908). CHIAPAS: Laguna Ocotal, 950 m alt. (Bequaert 1957).

#### ***Helicina (Succincta) succincta* Von Martens 1890**

*Helicina succincta* Von Martens 1890; Biol. Cent. Amer.:36; pl. 1, figs. 6, 9 (shell).-Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782.-Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:315–316; pl. 63, figs. 6–1 (shell).

*Oligyra (Succincta) arenicola succincta* (Von Martens). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina (Succincta) succincta* Von Martens. H. B. Baker 1928; Occ. Pap. Mus. Zol. Univ. Mich. (193):30–31; pl. 4, fig. 26 (radula); pl. 2, figs. 3–4; pl. 3, fig. 13 (reproductive systems).

Type Locality.—Cordova [Córdoba], [Veracruz], México.

Distribution.—PUEBLA: Necaxa (H. B. Baker 1928). VERACRUZ: Texolo (Pilsbry 1903); Tlacolula; Cuesta de Misantla (Von Martens 1890).

#### **Subgenus *Gemma* Wagner 1905**

*Gemma* Wagner 1907:81.-Richling 2004; Malacologia 45: 427 (not *Gemma* Deshayes 1853).

Type Species.—*Helicina gemma* Preston 1903.

Distribution.—Eastern México and Central America.

Taxonomy.—We continue the use of the preoccupied subgeneric name *Gemma*, following Richling (2004), because of the uncertain taxonomic status of closely related subgenera. It may be decided that *Gemma* is synonymous with *Succincta*, where H. B. Baker (1922) had placed the name. Twelve species and three subspecies are recognized in “*Gemma*”.

#### ***Helicina (Gemma) beatrix beatrix* Angas 1879**

*Helicina beatrix* Angas 1879; Proc. Zool. Soc. Lond. 47:484; pl. 40, fig. 13 (shell).-Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:332.-Fischer & Crosse. 1893; Miss. Sci. Mex.:435. Pilsbry 1926b:127.-Monge-Najera: 1997:113.

*Helicina flavida* var. Von Martens 1890; Biol. Cent. Amer.:39.

*Helicina flavida* var. *beatrix* Angas. Von Martens 1900; Biol. Cent. Amer.:606.

*Alcacia (Leialcacia) beatrix* (Angas). Wagner 1908; in Martini & Chemnitz, Helicineen:83–84; pl. 14, figs. 19–22 (shell).

*Oligyra (Succincta) beatrix beatrix* (Angas). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina (Oligyra) beatrix* Angas. Pilsbry 1926a:59, 69, 71; fig. 3A (shell).-Pilsbry 1926b:127.

*Helicina (“Gemma”) beatrix beatrix* Angas. Richling 2004; Malacologia 45:283–297; figs. 98, 100–103 (shell); fig. 104 (operculum); fig. 105a-c (radula); figs. 106–107 (female reproductive system); fig. 120 (map).

Type Locality.—Costa Rica, only on hills up to 2500 ft. alt. Lectotype BMNH 1879.7.22.79 (Richling 2004).

Distribution.—COSTA RICA; Caribbean mountain slopes of the Cordierra Central and the Cordierra de Talamanca in the Provs. Cartago, Limón, and San José (Richling 2004).

#### ***Helicina (Gemma) beatrix confusa* (Wagner 1908)**

*Alcacia (Leialcacia) beatrix confusa* Wagner 1908:84; pl. 14, fig. 25 (shell).

*Oligyra (Succincta) beatrix confusa* (Wagner). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina (“Gemma”) beatrix confusa* (Wagner). Richling 2004; Malacologia 45:297–303; figs. 123–126 (shell); fig. 127 (operculum); figs. 128–129 (female reproductive system); fig. 130 (map).

Type Locality.—Alto Tararia (ca. 09°14'30" N, 83°00'30" W), or downstream, Prov. Limón, Costa Rica; 2500 m alt. Lectotype MIZ 8409 (Richling 2004).

Distribution.—COSTA RICA, the SE area of Prov. Limón below 400 m alt. (Richling 2004: fig. 130).

#### ***Helicina (Gemma) beatrix nicaraguae* (Wagner 1908)**

*Alcacia (Leiacadia) nicaraguae* Wagner 1908:84; pl. 14, figs. 23–24 (shell).

*Helicina (“Gemma”) beatrix nicaraguae* (Wagner). Richling 2004; Malacologia 45:284; figs. 99, 121 (shell).

Type Locality.—Nicaragua. Lectotype MIZ 8408 (Richling 2004).

Distribution.—NICARAGUA: exact locality unknown (Wagner 1908). PANAMÁ, Isla Colón: Las Gratas, 5 km NNW of Bocas del Toro (09°24'23" N, 82°16'15" W); interior of Isla Colón (Richling 2004).

#### ***Helicina (Gemma) beatrix riopejensis* Richling 2004**

*Helicina (“Gemma”) beatrix riopejensis* Richling 2004; Malacologia 45:303–308; figs. 131–135 (shell); fig. 136 (operculum); fig. 137–138 (female reproductive system); fig. 139 (map).

Type Locality.—SW of Liverpool, ca. 24 km W of Puerto Limón along the Rio Peje (09°55'46" N, 83°13'15" W), Prov. Limón, Costa Rica. Holotype UCR-INBio 3542625.

Distribution.—COSTA RICA, Prov. Limón: known only from the immediate vicinity of the type locality.

#### ***Helicina (Gemma) chiquitica* (Richling 2001)**

*Oligyra chiquitica* Richling 2001; Schriften zur Malak.; Schriften zur Malak.:1–2; figs. 1 (operculum), 2 (shell).

*Helicina (“Gemma”) chiquitica* (Richling). Richling 2004; Malacologia 45; 357–364; figs. 228–231 (shell), fig. 232 (operculum), fig. 233 (radula); fig. 234 (female reproductive system), fig. 241 (distribution).

Type Locality.—Approx. 9 km W of Matina, a little stream on the Rio Barbilla from the crossing of the road Siquierres to Limón, along a tributary of the Rio Barbilla, Limón Province, Costa Rica, (10°03'29" N, 83°22'24" W). Holotype: UCR-INBio 3404977.

Distribution.—COSTA RICA, Prov. Cartago: Parque Nacional Barbilla, 500 m alt. (09°58'26" N, 83°27'28"

W); Zona Protectora Rio Pacuare, Sector de La Estacion de Barbilla, 500 m alt. (09°50'50" N, 83°27'08" W). Prov. Heredia: S of Puerto Viejo de Sarapiquí, Zona Protectora La Selva, 60 m alt. (10°25'35" N, 84°00'18" W). Prov. Limón: S of Siquierres, along footpath stream up to Rio Pacuarito, 110 m alt. (10°05'38" N, 83°28'11" W) (Richling 2004).

***Helicina (Gemma) diaphana* Pfeiffer 1852**

*Helicina diaphana* Pfeiffer 1852:98.

*Helicina* ("Gemma") *diaphana* Pfeiffer. Richling 2004; Malacologia 45:336; fig. 188 (shell).

*Oligyra (Succincta) dysoni diaphana* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:47.

Type Locality.—Honduras. Possible syntypes BMNH 196282 (Richling 2004).

Distribution.—HONDURAS: no other locality information given.

***Helicina (Gemma) escondida* Richling 2004**

*Helicina* ("Gemma") *escondida* Richling 2004; Malacologia 45: 341–357; figs. 210–215 (shell), fig. 216 (operculum), fig. 217 (radula), fig. 218 (female reproductive system), fig. 227 (distribution).

Type Locality.—Costa Rica, Prov. Limón, approximately 9 km W of Matina, a little upstream on the Rio Barbilla from the crossing of the road from Siquierres to Limón, along a tributary of the Rio Barbilla, 60 m alt. (10°02'29" N, 83°22'24" W). Holotype UCR-INBio 354263.

Distribution.—COSTA RICA: known only from Cartago and Limón provinces, from below 800 m alt. Prov. Cartago: Turrialba, International American Agricultural Institute, 600 m alt. (ca. 09°54'30" N, 83°41' W). Prov. Limón: S of Puerto Viejo Sarapiquí, La Selva, 60 m alt. (10°25'53" N, 84°00'18" W); Cerro Mirado, 430 m alt. (09°36'37" N, 82°57'43" W); Sector Hitoy Cerere, Sendero Bobcara, 200 m alt. (09°40'31" N, 83°00'31" W); NE of Esatcion de Hitoy Cerere Sendero La Finca, 110 m alt. (09°40'36" N, 83°01'26" W); Sendero Bobcara, 798 m alt. (09°40'02" N, 83°04'09" W); Los Diamantes Farm, 20 km SE of Guapiles (ca. 10°11' N, 83°37' W); road along S bank of Rio Banano, opposite La Bomba (09°54'49" N, 83°03'56" W); Talamanca, Rio Estrella (09°43' N, 83°00' W). (All records from Richling 2004.)

***Helicina (Gemma) fragilis fragilis* Morelet 1851**

*Helicina fragilis* Morelet 1851; Test. Noviss. II:17.- Von Martens 1890; Biol. Cent. Amer.:35.- Fischer & Crosse 1893:420; pl. 57, figs. 7–7b, 9–9b (shell).- Von Martens 1901; Biol. Cent. Amer.:605.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782.

*Helicina* ("Gemma") *fragilis* Morelet. Richling 2004; Malacologia 45:334; figs. 185–186 (shell).

*Alcacia (Leialcacia) fragilis* (Morelet). Wagner 1908: pl. 14, figs. 9–12 (shell).

*Oligyra (Succincta) fragilis fragilis* (Morelet). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

Type Locality.—Sylvas Petenenses, Dept. Petén, Guatemala. Lectotype BMNH 1893.2.4.809 (Richling 2004).

Distribution.—GUATEMALA, Dept. Alta Verapaz:

Cobán (Wagner 1908). Dept. Baja Verapaz: Telemán, in the valley of the Rio Polochic; Purula, 4000 ft. alt. (Von Martens 1890). GUERRERO: Omilteme, 8000 ft. alt. (Von Martens 1890). VERACRUZ; Orizaba (Von Martens 1901).

***Helicina (Gemma) fragilis elata* Shuttleworth 1852**

*Helicina elata* Shuttleworth 1852; in Bern Mittheil.:304.

*Helicina* ("Gemma") *elata* Shuttleworth. Richling 2004; Malacologia 45:336; fig. 187 (shell).

*Helicina fragilis* Morelet (*in part*). Von Martens 1890; Biol. Cent. Amer.:35.

*Oligyra (Succincta) fragilis elata* (Shuttleworth). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina (Succincta) fragilis elata* Shuttleworth. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):27–28; pl. II, fig. 8 (female reproductive anatomy).

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Atoyac to Sumidero (H. B. Baker 1928).

***Helicina (Gemma) gemma* Preston 1903**

*Helicina gemma* Preston 1903:4; text-fig. (shell).

*Alcacia (Leialcacia) gemma* (Preston). Wagner:83; pl. 14, figs. 17–18 (shell).

*Oligyra (Succincta) gemma* (Preston). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

*Helicina* ("Gemma") *gemma* Preston. Richling 2004; Malacologia 45:318–334; figs. 159–162 (shell); 167–168 (radula); figs. 169–171 (female reproductive system); fig. 182 (distribution).

Type Locality.—San Carlos [Ciudad Quesada (10°20' N, 84°26' W), Costa Rica. Lectotype BMNH 1903.5.4.2 (Richling 2004).

Distribution.—COSTA RICA; generally distributed throughout the Caribbean slope of the northeastern sector of the country below 1200 m alt. NICARAGUA. Dept. Zelaya Norte: Cerro Salaya, Bosawas (Richling 2004).

***Helicina (Gemma) merdigera* Pfeiffer 1855**

*Helicina merdigera* Pfeiffer 1855:102.

*Helicina* ("Gemma") *merdigera* Pfeiffer. Richling 2004; Malacologia 45:334; figs. 183–184 (shell).

*Helicina fragilis* Morelet (*in part*). Von Martens 1890; Biol. Cent. Amer.:35.

*Oligyra (Succincta) fragilis merdigera* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:45.

Type Locality.—Veracruz [City], [Veracruz], México. Lectotype BMNH 20010752.1 (Richling 2004).

Distribution.—Known only from the type locality.

***Helicina (Gemma) mohriana* Pfeiffer 1861.**

*Helicina mohriana* Pfeiffer 1861; Malak. Blätt. 8:172–173.

*Helicina* ("Gemma") *mohriana* Pfeiffer. Richling 2004; Malacologia 45:334.

*Alcacia (Leialcacia) mohriana* (Pfeiffer). Wagner 1908:85; pl. 14, figs. 13–16 (shell).

Type Locality.—Orizaba, México. Type specimens lost (Richling 2004).

Distribution.—VERACRUZ: Orizaba; Córdoba (Wagner 1908).



***Helicina (Gemma) monteverdensis* Richling 2004**

*Helicina* (“*Gemma*”) *monteverdensis* Richling 2004; *Malacologia* 45:334–348; figs. 189–194 (shell); fig. 195 (operculum); fig. 196 (radula); figs. 197–199 (female reproductive system); fig. 209 (distribution).

Type Locality.—Cloud forest, Sendero Bosque Nuboso Monteverde, Reserva Biológica Bosque Nebosos, Cordillera Tilarán near Monteverde, Prov. Puntarenas, Costa Rica.

Distribution.—COSTA RICA: numerous localities in Alajuela, Guanacaste, and Puntarenas Provinces in the immediate vicinity of the type locality. Prov. Guanacaste: 6 mi. NNE of Tilarán (ca. 10°33' N, 84°59' W); Prov. San José: Alta La Palma (ca. 10°03' N, 84°00' W) (Richling 2004).

***Helicina (Gemma) talamancensis* (Richling 2001)**

*Oligyra talamancensis* Richling 2001; *Schriften zur Malak.*:3–5; fig. 3 (shell), 4 (operculum).

*Helicina* (“*Gemma*”) *talamancensis* (Richling). Richling 2004; *Malacologia* 45:308–318; figs. 140, 142–144 (shell); fig. 145 (operculum); figs. 146a–c (radula); figs. 147–148 (female reproductive systems); fig. 158 (map).

Type Locality.—Primary forest bordered by secondary growth, Fila Costeña, north of Bajo Bonta, north of Rio Claro, Prov. Puntarenas, Costa Rica, 980 m alt., 08°44'41" N, 83°02'03" W. Holotype: UCR-INBio 3404978.

Distribution.—COSTA RICA: Prov. Puntarenas and Prov. San José. Known from numerous localities in the south-central region of the Cordillera Talamanca (Richling 2004).

***Helicina (Gemma) terryae* Rehder 1940**

*Helicina terryae* Rehder 1940:350; *Jour. Wash. Acad. Sci.* 32:350; fig. 16 (shell).

*Helicina* (“*Gemma*”) *terryae* Rehder. Richling 2004; *Malacologia* 45:308, 316; fig. 141 (shell).

Type Locality.—Prov. Chiriquí, Panamá. Holotype USNM 536026 (Richling 2004).

Distribution.—Known only from the type locality.

**Subgenus *Tristramia* Crosse 1863**

*Tristramia* Crosse & Fischer 1863.

*Caloplisma* Crosse & Fischer in Fischer & Crosse 1893:405.

*Retorquata* Wagner 1905; *Denksch. Kaiserli. Akad.* ... 78:230.

*Turbinata* Wagner 1905; *Denksch. Kaiserli. Akad.* ... 42:218, 306.

*Rostrata* Wagner 1905; *Denksch. Kaiserli. Akad.* ... 42:218.

Type Species.—*Tristramia*: type by monotypy *Helicina salvini* Tristram 1861 (= *Helicina rostrata* Morelet 1849. *Caloplisma*: type by monotypy *Helicina rostrata* Morelet 1849. *Retorquata*: *Helicina zephyrina* Duclos 1833 (first species). *Turbinata*: type by tautonymy *Helicina turbinata* Pfeiffer 1846. *Rostrata*: type by tautonymy *Helicina rostrata* Morelet 1849.

Distribution.—México and south to Colombia.

Taxonomy.—Numerous species. Eighteen species and seven subspecies are recognized in México and Central America.

***Helicina (Tristramia) chrysocheila chrysocheila* Binney 1851**

*Helicina chrysocheila* Binney 1851:354; pl. 74, fig. 4 (shell).- Von Martens 1890; *Biol. Cent. Amer.*:33–34.- Pilsbry 1948:1081–

1082; figs. 578, d (shell).- Correa-Sandoval 1993; *Rev. Biol. Trop.* 41:685.- Correa-Sandoval, García-Cubas & Reguero 1998; *Acta Zool. Mex.* (73):13.- Correa-Sandoval 2000; *Acta Zool. Mex.* (79):8.- Correa-Sandoval & Rodríguez 2002; *Acta Zool. Mex.* (86):235.- Correa-Sandoval & Salazar 2005; *Acta Zool. Mex.* (21) 59.

*Helicina (Tristramia) chrysocheila chrysocheila* Binney. H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:51.

Type Locality.—No locality given.

Distribution.—NUEVO LEON: numerous localities in southern Nuevo Leon (Correa-Sandoval 2005). SAN LUIS POTOSÍ: numerous localities in southeastern part of state (Correa-Sandoval et al. 1998); 0.1 km W of Ejido Buenavista km 18, Carr. Mante-Cd. Valles, 320 m alt. (22°30'43" N, 99°01'50" W); Carr. Cd. Valles-Agua Buena km 37, 460 m alt. (21°53'24" N, 99°19'44" W); 2 km NW Poza de la Media Luna, 1070 m alt. (21°53'39" N, 100°03'56" W); Cascadas El Salto, 500 m alt. (22°34'38" N, 99°22'53" W); Carr. Cd. del Maíz-El Naranjo, km 35 (22°30'00" N, 99°22'06" W); Carr. Cd. del Maíz - El Naranjo (22°30'58" N, 99°20'15" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodríguez 2002, 2005). VERACRUZ: numerous localities in the northern part of state (Correa-Sandoval 2000).

***Helicina (Tristramia) chrysocheila shuttleworthi* Von Martens 1890**

*Helicina chrysocheila* Shuttleworth 1852; in *Bern Mittheil.*:303.- Neubert & Gosteli 2005; *Contr. Nat. Hist.* 5:9; pl. 8, fig. 1 (Shell).

*Helicina chrysocheila* var. *shuttleworthi* Von Martens 1890; *Biol. Cent. Amer.*:33; pl. 1, fig. 13 (shell).

*Helicina (Tristramia) chrysocheila shuttleworthi* Von Martens. H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:51.

Type Locality.—Cordova, Veracruz, México. Holotype NMBE 15267.

Distribution.—Known only from the type locality.

Taxonomy.—There seems to be little basis for recognizing *shuttleworthi* as distinct from *H. chrysocheila*.

***Helicina (Tristramia) delicatula* Shuttleworth 1852**

*Helicina delicatula* Shuttleworth 1852; in *Bern Mittheil.*:303.- Von Martens 1890; *Biol. Cent. Amer.*:37.- Wagner 1910; in *Martini & Chemnitz, Syst. Conch. Cab., Helicinidae*:310–311; pl. 62, figs. 4–6 (shell).- Neubert & Gosteli 2005; *Contr. Nat. Hist.* 5:11; pl. 8, fig. 3 (shell).

*Helicina (Tenuis) delicatula delicatula* Shuttleworth. H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:50.

*Helicina (Oligyra) delicatula* Shuttleworth. H. B. Baker 1928; *Occ. Pap. Mus. Zool. Univ. Mich.* (193):25–27; pl. II, fig. 2, pl. 3, fig. 12 (reproductive anatomy).

*Helicina heloisiae* Pfeiffer 1856:322.- Sowerby 1866; *Thes. Conch.* 3:288; pl. 272, figs. 283–284 (shell).- Wagner 1905; *Denksch. Kaiserli. Akad.*... :232; pl. 13, fig. 10 (shell).

Type Locality.—Cordova [Córdoba], Veracruz, México. Holotype: NMBE 19074.

Distribution.—VERACRUZ: Córdoba; Atoyac (Von Martens 1890).

***Helicina (Tristramia) durangoana durangoana*****Mousson 1883**

*Helicina durangoana* Mousson 1883:218; pl. 9, fig. 8 (shell).- Von Martens 1890; Biol. Cent. Amer.:37.- Fischer & Crosse 1893:426; pl. 56, figs. 7–7c (shell).- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:305; pl. 60, figs. 4–6 (shell).

*Helicina (Tenuis) durangoana durangoana* Mousson. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:50.

Type Locality.—Sierra Madre, Durango, México.

Distribution.—DURANGO: Ventanas (Von Martens 1890).

***Helicina (Tristramia) durangoana sagulensis* Wagner 1910**

*Helicina durangoana sagulensis* Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:305; pl. 60, fig. 7 (shell).

*Helicina (Tenuis) durangoana sagulensis* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:50.

Type Locality.—Sagula, Jalisco, México.

Distribution.—Known only from the type locality.

***Helicina (Tristramia) ehandienseis* Richling 2004**

*Helicina ehandienseis* Richling 2004; Malacologia 45:271–277; figs. 77–81 (shell); fig. 82 (operculum); fig. 83 (radula); fig. 84 (female reproductive anatomy).

Type Locality.—Parque Nacional de Amistad, Sector Las Alturas, southern Cordillera de Talamanca, S of Cerro Ehandi, campamento Ehandi, 2840 m alt. (09°01'33" N, 82°49'12" W), Prov. Puntarenas, Costa Rica. Holotype UCR-INBio 3542520.

Distribution.—Known only from the type locality.

***Helicina (Tristramia) elatior* Von Martens 1890**

*Helicina turbinata* Pfeiffer. Strebel 1874:13; pl. 1a, figs. 6b, c, f (shell).

*Helicina zephyrina* var. *elatior* Von Martens 1890; Biol. Cent. Amer.:31.

*Helicina elatior* Von Martens. Dall 1905; Smiths. Misc. Coll. 48:48:192.

Type Locality.—Not stated.

Distribution.—SAN LUIS POTOSÍ: Sierra Alvaréz; San Dieguito (Dall 1905). VERACRUZ: Papantla; Misantla; Mirador; Rio Misanla; Córdoba (Von Martens 1890).

***Helicina (Tristramia) fasciata providentiae* Pilsbry 1930**

*Helicina (Tristramia) fasciata providentiae* Pilsbry 1930:248–249, text-fig. 9 (shell).

Type Locality.—Isla de Providencia, ridge north of High Peak and valley running westward. Holotype ANSP 150717.

Distribution.—Known only from the type locality.

***Helicina (Tristramia) funcki* Pfeiffer 1849**

*Helicina funcki* Pfeiffer 1849; Proceedings of the Zoological Society of London, 16 (1848):121.- Pfeiffer 1850:33; pl. 9, figs. 1, 2 (shell).- Reeve 1874; Conch. Icon., *Helicina*: pl. 17, fig. 152 (shell).- Von Martens 1890; Biol. Cent. Amer.:33.-

Ancey 1897:87.- Von Martens 1900; Biol. Cent. Amer.:603–604.- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:306–307; pl. 61; figs. 11–15 (shell).- Pilsbry 1920a:3.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:59, 69, 71; fig. 3c (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:127.- Péres 1994:746.- Monge-Nájero 1997:113.

*Helicina (Retorquata) funcki* Pfeiffer. Wagner 1905; Denksch. Kaiserli. Akad. ... :232–233.

*Helicina (Retorquata) funcki costaricensis* Wagner 1905; Denksch. Kaiserli. Akad. ... :233; pl. 13; figs. 12a–12c (shell).- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:307; pl. 61, fig. 16 (radula).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

*Helicina deppeana parvidens* Pfeiffer. Pilsbry 1920a:3.

*Helicina (Tristramia) funcki parvidens* Pilsbry. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

*Helicina (Tristramia) funcki funcki* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.- H. B. Baker 1926; Proc. Acad. Nat. Sci. Phila. 76:42; pl. 5, figs. 8; pl. 6, fig. 9 (female and male reproductive systems).

*Helicina (Tristramia) funcki* Pfeiffer. Richling 2004; Malacologia 45:215–245; figs. 10–15, 26 (shell), fig. 16 (operculum), fig. 17 (radula), figs. 18–19 (female reproductive system); fig. 39 (Costa Rica, distribution).

Type Localities.—*Helicina funcki*: San Yago [Santiago], Prov. Veraguas, Panamá; lectotype: BMNH 20010497.1 (Richling 2004). *Helicina funcki costaricensis*: Sta. Clara [ca. 7 km NW of Upala, 10°56' N, 85°05' W]. Prov. Alajuela, Costa Rica; 250 m alt.; lectotype MIZ 8989a (Richling 2004). *Helicina deppeana parvidens*: Juan Viñas, Prov. Cartago, Costa Rica; 3300 ft. alt. [ca. 09° 54' N, 83°44'30" W]; holotype ANSP 105286.

Distribution.—COSTA RICA: numerous localities up to about 1600 m in the Provs. Alajuela, Cartago, Guanacaste, Heredia, Limón, Puntarenas and San José (Richling 2004). NICARAGUA, Dept. Rio San Juan: Greytown (Ancey 1897). PANAMÁ: numerous localities in Depts. Bocas del Toro, Colón and Canal Zone (Richling 2004). COLOMBIA: Santiago (Von Martens 1890).

***Helicina (Tristemia) hondurana* Richards 1938**

*Helicina hondurana* Richards 1938; Proc. Amer. Philos. Soc. 79:174–175; pl. 3, figs. 8, 9 (shell).

Type Locality.—West End, Isla de Roatán, Dept. Islas de la Bahía, Honduras. Holotype ANSP 17019.

Distribution.—HONDURAS: known only from Isla de Roatán.

***Helicina (Trisramia) notata* Pfeiffer 1856**

*Helicina delicatula notata* Pfeiffer 1856:323.- Von Martens 1890; Biol. Cent. Amer.:38.- Fischer & Crosse 1893:431; pl. 56; figs. 10–10b, 11–11a (shell).- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:319; pl. 62, figs. 23–28 (shell).

*Helicina (Tenuis) tenuis notata* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:50.

*Helicina (Tristramia) notata* Pfeiffer. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):27.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Atoyac (Von Martens 1890).

***Helicina (Tristramia) pitalensis* Wagner 1910**

*Helicina pitalensis* Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:308; pl. 61, figs. 17–19 (shell).

*Helicina (Tristramia) pitalensis* Wagner. Richling 2004; Malacologia 45:246–254; figs. 40–43, 52 (shell), fig. 44 (operculum), fig. 45 (radula), fig. 46 (female reproductive system), fig. 53 (distribution).

*Helicina funcki* Pfeiffer. Von Martens 1900; Biol. Cent. Amer.:33 (in part).

*Helicina (Tristramia) funcki pitalensis* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51

*Helicina amoena* Pfeiffer. Monge Nájero 1997:113.

Type Locality.—El Pital (near Londres, ca. [09°27' N, 84°05' W], Prov. Puntarenas, Costa Rica. Holotype ZMB 103240.

Distribution.—COSTA RICA, numerous localities in Alajuela and Puntarena provinces (Richling 2004).

***Helicina (Tristramia) punctisulcata punctisulcata* Von Martens 1890**

*Helicina punctisulcata* Von Martens 1890; 36–37; pl. 1, fig. 10 (shell).- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:294–295; pl. 59, fig. 6–8 (shell).- Richling 2004; Malacologia 45:277; pl. 87 (shell).

*Helicina (Oxyrhomba) punctisulcata punctisulcata* Von Martens. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48.

Type Locality.—Omiteme, Sierra Madre del Sur, Guerrero, México. Lectotype ZMB 103326a (Richling 2004).

Distribution.—Known only from the type locality.

***Helicina (Tristramia) punctisulcata cuericensis* Richling 2004**

*Helicina punctisulcata cuericensis* Richling 2004; Malacologia 45:277–283; figs. 89–93 (shell); fig. 94 (operculum); figs. 95a–c (radula); fig. 96 (female reproductive system).

Type Locality.—Estacion Cuerici, 4.5 km E of De Villa Mills, Sendero El Mirador, Cordillera de Talamanca, Prov. San José, Costa Rica (09°33'28" N, 83°40'13" W). Holotype UCR-INBio 3542622.

Distribution.—COSTA RICA: known only from the immediate vicinity of the type locality.

***Helicina (Tristramia) punctisulcata zunilensis* Wagner 1910**

*Helicina punctisulcata zunilensis* Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:295; pl. 59, fig. 6 (shell).- Richling 2004; Malacologia 45:278; fig. 88 (shell).

*Helicina (Oxyrhomba) punctisulcata zunilensis* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:48.

Type Locality.—Volcán Zunil on the border of Quetzaltenango and Sololá departments, Guatemala. Holotype ZMB 103324 (Richling 2004).

Distribution.—Known only from the type locality.

***Helicina (Tristramia) rostrata rostrata* Morelet 1849**

*Helicina rostrata* Morelet 1849; Test. Noviss. I:17.- Tate 1870; Amer. Jour. Conch. 5:159.- Sowerby 1866; Thes. Conch.

3:288; pl. 273, figs. 279–280 (shell).- Von Martens 1890; Biol. Cent. Amer.:30.- Fischer & Crosse 1893:465; pl. 55, figs. 8–8c (shell).- Von Martens 1901; Biol. Cent. Amer.:603.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:313; pl. 62, figs. 15–18 (shell).- Richards 1939; Proc. Amer. Philos. Soc. 81:34–35; fig. 4 (shell).- Péres & Lopéz 2002: 45–46.

*Helicina (Tristramia) rostrata rostrata* Morelet. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

*Helicina salvini* Tristram 1861; Proc. Zool. Soc. Lond. 29:233; pl. 26, figs. 9–10 (shell).

*Helicina rostrata* var. *simplex* Fischer & Crosse 1893:465; pl. 55, figs. 9–9c (shell).

Type Localities.—*Helicina rostrata*: San Agustín Lanquín, Alta Vera Paz, Guatemala. *Helicina salvini*: Guatemala. *Helicina rostrata* var. *simplex*: not stated.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán NICARAGUA, Dept. Chontales: Acoyapa (Von Martens 1890). Dept. Managua: San Diego (Tate 1870); Managua (Von Martens 1901). Reg. Autonono Atlantico Sur: Isla del Maíz (Richards 1939). Depts. Chontales, Boaco and León (Péres & Lopéz 2002).

***Helicina (Tristramia) rostrata denticulata* Pfeiffer 1855**

*Helicina denticulata* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:103.- Tate 1870; Amer. Jour. Conch. 5:159.- Sowerby 1866; Thes. Conch. 3:288; pl. 273, fig. 281 (shell).- Von Martens 1890; Biol. Cent. Amer.:30.- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:314; pl. 62, figs. 20–22 (shell).

*Helicina (Tristramia) rostrata denticulata* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

Type Locality.—San Pedro [San Pedro Sula], Honduras.

Distribution.—Known only from the type locality. NICARAGUA: forests of Chontales (Von Martens 1890).

***Helicina (Tristramia) rostrata matagalpensis* Wagner 1910**

*Helicina rostrata matagalpensis* Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:313–314; pl. 62, fig. 19 (shell).

*Helicina (Tristramia) rostrata matagalpensis* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

Type Locality.—Matagalpa, Nicaragua.

Distribution.—Known only from the type locality.

***Helicina (Tristramia) senachuensis* Wagner 1905**

*Helicina vernalis senachuensis* Wagner 1905; Denksch. Kaiserli. Akad. ... :234; pl. 13, fig. 15 (shell).

*Helicina senachuensis* Wagner. Wagner 1910a:304; pl. 61, figs. 7–10 (shell).

*Helicina (Tenuis) senachuensis* Wagner. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:50.

Type Locality.—“Senachu”, Guatemala,

Distribution.—Known only from the type locality. I have been unable to locate Senachu. There is a locality in Dept. Alta Verapaz named Senahu (15.4° N, 89.8° W).

***Helicina (Tristramia) sinuosa* Pfeiffer 1850**

*Helicina sinuosa* Pfeiffer 1850; Zeitschr. Malak.:191.- Von Martens



1890; Biol. Cent. Amer.:32.- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:297–298; pl. 59, figs. 1–2 (shell).

Type Locality.—México.

Distribution.—Unknown.

Remarks.—Status uncertain; this may be synonymous with *Helicina zephyrina* Duclos 1833.

### *Helicina (Tristramia) tenuis* Pfeiffer 1849

*Helicina tenuis* Pfeiffer 1849; Proc. Zool. Soc. Lond. (1848):124–125.- Von Martens 1890; Biol. Cent. Amer.:34–35.- Fischer & Crosse 1893:416; pl. 56, figs. 101b, 2–2b, 3–3b (shell).- Von Martens 1901; Biol. Cent. Amer.: 604.- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:302–303; pl. 60, figs. 15–23, 25 (shell).- H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (186):35–36.- Pilsbry 1926a:339.- Von Martens 1901; Biol. Cent. Amer.:605.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):12, 15, 32.- Van der Schalie 1940; Occ. Pap. Mus. Zool. Univ. Mich. (413):6, 9, 10.- Haas 1949; Nautilus 62:137, 138.- Thompson 1957; Nautilus 70:100.- Bequaert 1957; Bull. Mus. Comp. Zool. 115:207.

*Helicina (Tenuis) tenuis tenuis* Pfeiffer. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:50; pl. III, fig. 7; pl. IV, fig. 14 (radula).

*Helicina tenuis tenuis* Pfeiffer. Thompson 1967; Bull. Fla. St. Mus. 11:228–229.

*Helicina vernalis* Morelet 1849; Test. Noviss. I:20.- Sowerby 1866; Thes. Conch. 3:288; pl. 273, fig. 273 (shell).- Reeve 1874; Conch. Icon., *Helicina*: pl. 13, fig. 110 (shell).- Wagner 1905; Denksch. Kaiserli. Akad.... :233–234; pl. XIII, figs. 13a–13c (shell).

*Helicina chiapensis* Pfeiffer 1856.- Sowerby 1866; Thes. Conch. 3: pl. 272, figs. 255–257 (shell).- Reeve 1874; Conch. Icon., *Helicina*: pl. 13, fig. 110 (shell).

*Helicina tenuis chiapensis* Pfeiffer. Pilsbry 1892:339.

?*Helicina lindeni* Tristram 1862:5.- Sowerby 1866; Thes. Conch. 3:288; pl. 272; figs. 255–257 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):543.

*Helicina (Oligyra) lindeni* Tristram. Fischer & Crosse 1893:416–420; pl. 56, figs. 1–3 (shell).

*Helicina tenuis lindeni* Pfeiffer. Hinkley 1920; Nautilus 34:49, 52.

*Helicina vernalis verapazensis* Wagner 1905; Denksch. Kaiserli. Akad. ... :234; pl. 13, fig. 14 (shell).

*Helicina tenuis pitieri* Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:303–304; pl. 60, fig. 24 (shell).

*Helicina (Tristramia) tenuis* Pfeiffer. Richling 2004; Malacologia 45:254–271; figs. 54–61 (shell); fig. 62 (operculum); fig. 63 (radula); figs. 64, 65 (reproductive system).

Type Localities.—*Helicina tenuis*: Yucatán; lectotype BMNH 20010496 (Richling 2004). *Helicina vernalis*: *Petenensis Sylvas*, Dept. Petén, Guatemala; lectotype BMNH 1893.2.4.1991 (Fischer & Crosse 1893). *Helicina chiapensis*: Chiapas, México; syntypes ZMB 65624. *Helicina lindeni*: México. *Helicina tenuis pitieri*: Rio de los Plataneros S of Puerto Jimenez, Peninsula de Oso, Costa Rica (08°31'30" N, 83°18' W); holotype ZMB 103241. *Helicina vernalis verapazensis*: Verapaz, Guatemala.

Distribution.—Panamá north to Guerrero, México on the Pacific coast, and Veracruz on the Gulf of Mexico coast.

Most commonly encountered at lower elevations below 1500 m alt. PANAMÁ: Isla Barro Colorado (Pilsbry 1930). COSTA RICA: numerous localities. HONDURAS, Dept. Colón:2.6 km SW of La Brea (15°45'39" N, 86°00'08" W). Dept. Olancho: vicinity of Magua Cave, 15 km SSW of Guelaco (14°56.5' N, 86°07.5' W). EL SALVADOR, Dept. Ahuachapán: 6 km W of Atiquizaya, on road to Ahuachapán. GUATEMALA: numerous localities. CAMPECHE: 16.4 km E of Escarciga. CHIAPAS: 15.1 km W of San Cristobal, 2669 m alt.; 18.3 km N of Tuxtla Gutierrez, 1372 m alt.; 12.9 km N of Tuxtla Gutierrez, 1158 m alt.; 4.8 km SSE of Tuxtla Gutierrez, 822 m alt.; 7.5 km NNE of Huixtla 183 m alt.; 21.3 km NW of Huixtla, 300 m alt.; 44.4 km NW of Ocozocoautla, 610 m alt.; 24.5 km NW of Ocozocoautla, 823 m alt.; 34.1 km E, 16.4 km S of Comitán, 1524 m alt.; Ruins of Palenque. GUERRERO: 1 km E of Petaquillas, 1158 m alt.; 2.2 km NNE of Mazatlán, 1475 m alt.; limestone hill 1 km NW of Naranjito, 675 m alt. (18°05'03" N, 101°50'45" W). OAXACA: Lagunas, 259 m alt.; limestone ridge 4 km W of Cuautemoc, 100 m alt. (17°05'56" N, 94°54'25" W); limestone knoll 13 km ENE of Sarabia, 125 m alt. (17°05'54" N, 94°56'34" W). TABASCO: 3 km N of Vicente Guerrero, 160 m alt. (17°39'09" N, 92°56'00" W); 6.8 km W of Teapa. VERACRUZ: 5 km ENE of Cuautemoc, Oaxaca, 75 m alt. (17°06'59" N, 94°56'34" W); 7 km S, 7 km E of Catamaco, 350 m alt.; Laguna Encantada; limestone knoll 2 km SW of Plan Arroyo (17°14'15" N, 94°37'36" W).

The above records are from Richling (2004). The following records are given by other authors: GUATEMALA, Dept. Alta Verapaz: Cobán; Cubilguitz (Von Martens 1890). Dept. Baja Verapaz: Panzos; Chacoj; San Juan; Purula (Von Martens 1890). Dept. Quetzaltenango; Cerro Zunil; San Isidro; El Reposo; Zapote (Von Martens 1890). Dept. Totonicapán: Totonicapán Mountains (Von Martens 1890). CHIAPAS: El Real, 600 m alt.; Monte Libano, 600 m alt. (Bequaert 1957). TABASCO: San Juan Bautista; Teapa (Von Martens 1890); Poaná (Von Martens 1901); 0.5–1.0 mi. E of Teapa (Thompson 1957). VERACRUZ: Soledad (Von Martens 1890).

### *Helicina (Tristramia) trossula* Morelet 1849

*Helicina trossula* Morelet 1849; Test. Noviss. I:19.- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:311–312; pl. 62, figs. 10–14 (shell).

*Helicina flavida (in part)*. Von Martens 1890; Biol. Cent. Amer.:39. Type Locality.—Petén, Guatemala.

Distribution.—Known only from the type locality.

### *Helicina (Tristramia) turbinata* Pfeiffer 1848

*Helicina turbinata* Pfeiffer 1848; Zeitschri. Malak. 5:87.- Wagner 1910; *in* Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:308–309; pl. 61, figs. 20–25 (shell).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:781.

*Helicina zephyrina* Menke. Von Martens 1890; Biol. Cent. Amer.:30–32 (*in part*).

*Helicina zephyrina* var. *excavato-angulata* Von Martens 1890; Biol.

Cent. Amer.:31.

Type Localities.—*Helicina turbinata*: Jalapa, Veracruz, México. *Helicina zephyrina* var. *excavato-angulata*: Veracruz, México.

Distribution.—VERACRUZ: Antigua; Misantla; Mirador (Pilsbry 1903); Atoyac; Córdoba; Veracruz (Wagner 1910).

#### *Helicina (Tristramia) vanattae* Pilsbry 1910

*Helicina vanattae* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61 (1909):540–541 (not figured).

*Helicina (Tristramia) chysocheila vanattae* Pilsbry. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. 73:13.- Correa-Sandoval 2000; Acta Zool. Mex. 79:8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.

Type Locality.—On the sides of the canyon below Los Canoas, San Luis Potosí. Holotype ANSP 99025.

Distribution.—SAN LUÍS POTOSÍ: eastern part of state; sides of the highest peak S of Mecos Falls; Cascadas Micos (Sierra Colmena), 240 m alt. (22°06'35" N, 99°09'44" W); Carr. Cd. Valles-Agua Buena km 48, 900 m alt. (21°52'55" N, 99°22'06" W); Agua Buena, 3 km W of "Rincón Viborero", 440 m alt. (21°57'33" N, 99°22'37" W); Carr. Río Verde-San Luis Potosí, km post 169 (21°59'30" N, 100°11'50" W); Las Cascadas, Tamasopo, (21°56'05" N, 99°25'00" W); Cueva "El Salitre", Xilitla, numerous localities in the region; Huichihuayanes (21°28'32" N, 98°58'41" W) (Correa-Sandoval et al. 1998). Numerous localities in southern TAMAULIPAS (Correa-Sandoval & Rodriguez 2002 2005). VERACRUZ: San Juan Cuajinampa, La Ordeña, Papantla (Correa-Sandoval 2000).

#### *Helicina (Tristamia) zephyrina zephyrina* Duclos 1833

*Helicina zephyrina* Duclos 1833; in Guérin's Mag. Zool.:21.- Sowerby 1866; Thes. Conch. 3:288; pl. 273, figs. 266–269 (shell).- Von Martens 1890; Biol. Cent. Amer.:30–31 (*in part*).- Fischer & Crosse 1893:407; pl. 5, figs. 10–10c, 11 (shell).- Von Martens 1901; Biol. Cent. Amer.:603.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval 2000; Acta Zool. Mex. (79):8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.

*Helicina (Tristamia) zephyrina zephyrina* Duclos. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51; pl. 3, fig. 9; pl. 4, fig. 13 (radula).- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):32–33; pl. 6 (female reproductive anatomy).

*Helicina sandozi* Shuttleworth 1852; in Bern Mittheil.:303.- Neubert & Gosteli 2005; Contr. Nat. Hist. 5:16; pl. 9, fig. 2 (not reported since its original description; a *nomen oblitum*).

*Helicina behrendti* Pfeiffer 1862; Malak. Blätt. 8:173; pl. 3, figs. 14–15 (shell).

Type Localities.—*Helicina zephyrina*: "Vera Cruz". *Helicina sandozi*: "México". Syntypes: NMBE 19039/1. *Helicina behrendti*: not stated.

Distribution.—OAXACA: Tustepec [Tuxtepec] (Von Martens 1901). SAN LUÍS POTOSÍ: numerous localities in eastern part of state (Correa-Sandoval et al. 1998); 3 km E of

Antiguo Tamuín, 70 m alt. (21°57'04" N, 98°46'50" W); 5 km SE of Tampamolón, 170 m alt. (21°34'23" N, 98°49'28" W); 5 km SW of San Martín, 400 m alt. (21°21'57" N, 98°42'06" W); 2 km N of Huichihuayán, 250 m alt. (21°30'00" N, 98°59'12" W); Carr. 15 km SW of Tamazunchale, 140 m alt. (21°12'40" N, 98°51'34" W); Vega Larga, 5 km SW of Tamazunchale, 120 m alt. (21°14'23" N, 98°50'31" W); Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W); Río Gallinas, Ejido El Carpintero (21°54'08" N, 99°15'47" W); Xilitla (21°22'55" N, 98°59'44" W); Los Ciruelos (21°18'02" N, 98°49'49" W); Barrio San Rafael, Río Moctezuma, Tamazunchale (21°15'21" N, 98°48'56" W); Tamazunchale (21°15'21" N, 98°48'09" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005); Tampico (Hinkley 1907). VERACRUZ: numerous localities in northern part of state (Correa-Sandoval 2000); Jalapa, Mirador; Córdoba; Tejeria; Huatusco (Von Martens 1890); Texolo (Pilsbry 1903).

#### *Helicina (Tristramia) zephyrina deppeana* Von Martens 1863

*Helicina deppeana* Von Martens 1863; Monatsb. König. Preuss. Akad. Wiss. Berlin:540.- Sowerby 1866; Thes. Conch. 3:298; pl. 272, figs. 264–265 (shell).- Von Martens 1890; Biol. Cent. Amer.:52; pl. 1, figs. 7–8 (shell).- Wagner 1910; in Martini & Chemnitz, Syst. Conch. Cab., Helicinidae:309–310; pl. 62, figs. 1–3 (shell).

*Helicina (Tristramia) zephyrina deppeana* Von Martens. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

Type Locality.—México.

Distribution.—OAXACA: Yalalag, south of Villa Alta (Von Martens 1890). VERACRUZ: Jalapa; Soledad (Von Martens 1890).

#### *Helicina (Tristramia) zephyrina dientensis* Pilsbry 1903

*Helicina zephyrina dientensis* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782 (no figure given).

*Helicina zephyrina dientensis* Pilsbry. H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:51.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype ANSP 77238.

Distribution.—Known only from the type locality.

#### Genus *Alcadia* Gray 1840

Type Species.—*Helicina major* Gray 1824.

Distribution.—The West Indies and Central America.

Taxonomy.—Richling (2003) recognizes three subgenera. *Alcadia* s. s. and *Idesa* H. Adams. & A. Adams 1856, are confined to the West Indies. *Microalcadia* is endemic to Central America.

#### Subgenus *Microalcadia* Richling 2004

*Microalcadia* Richling 2004; Malacologia 45:370.

Type Species.—*Helicina hojarasca* Richling 2004.

Distribution.—Costa Rica.

Taxonomy.—Three species are referred to the subgenus.



***Alcadia (Microalcadia) boeckeleri (Richling 2001)***

*Helicina boeckeleri* Richling 2001; Schriften zur Malak.:6–7; figs. 9 (operculum), 10–11, 12B (shell).

*Alcadia (Microalcadia) boeckeleri* (Richling). Richling 2004; Malacologia 45:374–377; figs. 257–261 (shell), fig. 262 (operculum), fig. 263 (distribution).

Type Locality.—Primary forest, Parqué Nacional Guanacaste, about 10 km S of Santa Cecilia, Volcán Orosí, near field station Pitilla, Prov. Guanacaste, Costa Rica; 700 m alt. (10°59'18" N, 85°25'34" W). Holotype: UCR-INBio 3404980.

Distribution.—COSTA RICA: known only from the immediate vicinity of the type locality.

***Alcadia (Microalcadia) hojarasca (Richling 2001)***

*Helicina hojarasca* Richling 2001; Schriften zur Malak.:5–6; fig. 6 (operculum), 7–8, 11A (shell).

*Alcadia (Microalcadia) hojarasca* (Richling). Richling 2004; Malacologia 45:370–374; figs. 249–252 (shell), fig. 253 (operculum), fig. 254 (radula), fig. 255 (female reproductive system), fig. 256 (distribution).

Type Locality.—Cordillera de Tilarán, about 9 km N of Santa Elena, near Mirador Gerardo, Guanacaste Province, Costa Rica, 1450 m alt. (10°22'19" N, 84°48'25" W). Holotype UCR-INBio 3404389.

Distribution.—COSTA RICA: in addition to the type locality the species has been recorded from one other locality. Puntarens Prov.: Zona Protectora Arenal-Monteverde, 1500–1650 m alt. (10°18'08" N, 84°47'41" W).

***Alcadia (Microalcadia) exigua (Pfeiffer 1849)***

*Helicina exigua* Pfeiffer 1849; Proc. Zool. Soc. Lond. (1848):121.

?*Alcadia (Microalcadia) exigua* (Pfeiffer). Richling 2004; Malacologia 45:374.

Type Locality.—Honduras.

Distribution.—Central America. In 1849 Honduras included most of the Caribbean coast of Central America from the Yucatán Peninsula south to Costa Rica and Panamá.

**Genus *Lucidella* Swainson 1840**

*Lucidella* Swainson 1840, Richling 2004; Malacologia 45:194, 330.

Type Species.—*Helix aureola* Férussac 1822.

Distribution.—South Florida, the West Indies, and the Caribbean region of the South American mainland from French Guyana north to Veracruz, México.

Taxonomy.—Four subgenera are recognized. *Lucidella* s.s. and *Poeniella* H. B. Baker 1923 are confined to the West Indies region. *Lidsleya* Chitty 1857 is found in Jamaica and on the South American mainland (H. B. Baker 1922b). *Poenia* H. & A. Adams 1856, is found on the mainland from French Guyana north to México and on some near-by mainland islands in the Caribbean region.

**Subgenus *Poenia* H. Adams & A. Adams 1856**

*Poenia* H. Adams & A. Adams 1856:304 (type species: *Helicina unidentata* Pfeiffer 1847).

*Perenna* Guppy 1867:260 (type species: *Helicina lamellosa* Guppy 1867).

Distribution.—French Guyana and coastal islands north to Veracruz, México.

Taxonomy.—Five species are recognized. One is widely distributed on the mainland, one occurs on Isla de Roatán, one occurs on Islas del Cisne (*Lucidella pilsbryi* Clapp 1914), one occurs on Cuba (*Lucidella granum* Pfeiffer 1856), and one occurs on Grand Cayman Island (*Lucidella caymanensis* Pilsbry 1930).

***Lucidella (Poenia) lirata (Pfeiffer 1847)***

*Helicina lirata* Pfeiffer 1847; Zeitschr. Malak., 4:150.- Pfeiffer 1850; in Martini & Chemnitz, Syst. Conch. Cab., *Helicina*:14–15; pl. 9, figs. 14–17 (shell).- Strebel 1873:21; pl. 1a, fig. 8; pl. 2, fig. 8 (shell).- Von Martens 1891:41–42, 332; pl. 1, fig. 18 (shell).

*Helicina (Poenia) lirata* Pfeiffer. Fischer & Crosse 1893:397–399.

*Lucidella lirata* (Pfeiffer). Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Lucidella*:341; pl. 68, figs. 5–7 (shell).- Hinkley 1920; Nautilus 34:41, 49. 52.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:59, 71.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:127.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:339.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):12, 14–16, 33.- Richards 1938; Proc. Amer. Philos. Soc. 79:176.- Bequaert 1957; Bull. Mus. Comp. Zool. 115:208.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):8.- Haas & Solem 1960; Nautilus 73:130.- Branson & McCoy 1963; Nautilus 76:102–103.- Thompson 1967; Bull. Fla. St. Mus. 11:229.- Thompson 1982: fig. 13 (radula), figs. 27–28 (embryonic shell).- Péres & Lopéz 2002:47–49.- Richling 2004; Malacologia 45:377–386; figs. 264–267 (shell), fig. 268 (operculum), fig. 269 (radula), fig. 270 (female reproductive anatomy), fig. 273 (distribution in Costa Rica).

*Lucidella (Poenia) lirata* (Pfeiffer). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:54–55; pl. 3, fig. 5; pl. 5, fig. 21 (radula).- H. B. Baker 1922b; Occ. Pap. Mus. Zool. Univ. Mich. (186):36.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):33–34; pl. 2, figs. 9–11 (reproductive anatomy).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):543.

*Helicina unidentata* Pfeiffer 1849:125.- Sowerby 1866; Thes. Conch. 3:281; pl. 268, fig. 87 (shell).- Reeve 1874; Conch. Icon., *Helicina*: pl. 14, fig. 122 (shell).- Ancey 1886:254.

*Helicina lirata* var. *unidentata* Pfeiffer. Von Martens 1891:41, 607.

*Helicina (Perenna) lamellosa* Guppy 1867:260, pl. 10, fig. 4 (shell).

*Lucidella lirata lamellosa* Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Lucidella*:341–342; pl. 68, fig. 4 (shell).

*Helicina rusticella* Morelet 1849; Test. Noviss. I:21.

*Helicina lirata* var. *rusticella* Morelet. Von Martens 1891:41.- Fischer & Crosse 1893:397–399.- Von Martens 1900:607.

*Helicina semistriata* Sowerby 1866; Thes. Conch. 3:281; pl. 268, fig. 86 (shell).- Tate 1870:159.

*Helicina lirata* var. *semistriata* Sowerby. Von Martens 1891:41.

Type Localities.—*Helicina lirata*: Yucatán, México; primary type destroyed (Boss & Jacobson 1974). *Helicina unidentata*: Honduras; type probably lost (Boss & Jacobson 1974:37). *Helicina rusticella*: Isla de Carmen, México; syntype BMNH 1893.2.4. *Helicina semistriata*: not given; types destroyed (Boss & Jacobson 1974). *Helicina lamellosa*: Gulf of Paria, Trinidad; syntype BMNH 1874.10.30.12.

Distribution.—Widely distributed along the Caribbean Coast from French Guiana to central Veracruz, México, and on coastal islands. Central American and Mexican records follow. PANAMÁ: Tabernillo, Canal Zone; near Darién; Juan Minas; Cd. Panamá; Isla Taboga (Pilsbry 1926a); Bocas del Toro (Von Martens 1891). COSTA RICA: numerous localities in Limón and Puntarens provinces below 200 m alt. (Richling 2004). NICARAGUA, Depts. Boaco, Estelí, Matagalpa, Rivas and Rio San Juan (Pérez & López 2002). Dept. Matagalpa: 4.5 km S of Matagalpa, 1200 m alt. (Richling 2004). HONDURAS: Isla de Roatán (Richards 1938); Isla de Útila (Pilsby 1891). GUATEMALA, Dept. Izabal: Jocola (Hinkley 1920). Dept. Alta Verapaz: Chamá (Hinkley 1920). Dept. Petén: Tikal (Basch 1959). BELIZE, Cayo District: Rio Frio Cave (Haas & Solem 1960). QUINTANA ROO: 4 mi. E of Xpujil; 7.1 m. NNW of Xiatil (Thompson 1967). YUCATÁN: Chichen Itza (Bequaert & Clench 1933); Labna (Pilsbry 1901). CAMPECHE: Ciudad del Carmen (Branson & McCoy 1963); numerous localities (Thompson 1967). TABASCO: Teapa; San Juan Bautista (Von Martens 1891); 0.5–1.0 mi. E of Teapa (Thompson 1957). CHIAPAS: Selva Lacondona, Laguna Ocotal, 950 m alt.; Laguna Ocotal to El Censo, 1000 m alt. (Bequaert 1957). YUCATÁN.

***Lucidella (Poenia) midyetti* Richards 1938**

*Lucidella midyetti* Richards 1938; Proc. Amer. Philos. Soc. 79:175–176; pl. 3, figs. 3–4.

Type Locality.—Between Coxen Hole and French Harbor, Isla de Roatán, Dept. Islas de la Bahía, Honduras. Holotype ANSP 170021.

Distribution.—HONDURAS: known only from Isla de Roatán.

***Lucidella (Poenia) pilsbryi pilsbryi* Clapp 1914**

*Lucidella pilsbryi* Clapp 1914; Nautilus 27:100–101; pl. 6, figs. 6–7 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:243; pl. 15, figs. 2, 2a (shell).

Type Locality.—Islas del Cisne, Dept. Islas de la Bahía, Honduras. Holotype MCZ 22890.

Distribution.—Known only from the type locality.

***Lucidella (Poennia) pilsbryi indecora* Pilsbry 1930**

*Lucidella (Poennia) pilsbryi indecora* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 2:243; pl. 17, fig. 5.

Type Locality.—Isla del Cisne Pequeño, at the western third a short distance from the north shore, Dept. Islas de la Bahía, Honduras. Holotype ANSP 150881.

Distribution.—Known only from the type locality.

**Genus *Schasicheila* Shuttleworth 1852**

*Schasicheila* Shuttleworth 1852; in Bern Mittheil.:301.- Von Martens 1890; Biol. Cent. Amer.:43, 608.- Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Schasicheila*:351.- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:56–57.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):36.- Richling 2002:408–409.

Type Species.—*Helicina nicoleti* Shuttleworth 1852.

Distribution.—Eastern México from Tamaulipas south to Guatemala.

Taxonomy.—The genus is divided into three subgenera and includes ten species and two subspecies.

**Subgenus *Atoyac* H. B. Baker 1928**

*Atoyac* H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):36.

Type Species.—*Helicina alata* Pfeiffer 1849.

Distribution.—Northeast México from Nuevo León, southern Tamaulipas, southeastern San Luis Potosi and Veracruz.

Taxonomy.—Three species are recognized.

***Schasicheila (Atoyac) alata* (Pfeiffer 1849)**

*Helicina alata* Pfeiffer 1849; Proc. Zool. Soc. Lond. 17:87.

*Schazichila alata* (Pfeiffer). Strebel 1873:23–24; pl. 4, fig. 7 (shell).

*Schasicheila alata* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:43.- Von Martens 1901; Biol. Cent. Amer.:608.- Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Schasicheila*:353; pl. 69, figs. 20–21 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.- Richling 2004; Malacologia 45:408–409; figs. 325–327 (shell), fig. 328 (female reproductive anatomy).

*Schasicheila (Atoyac) alata* Pfeiffer. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):39; pl. 3, fig. 16 (male reproductive anatomy); pl. 4, figs. 19–20 (female reproductive anatomy).

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—CHIAPAS: Monte Libano, 600 m alt. (Bequaert 1957; Bull. Mus. Comp. Zool. 115). VERACRUZ: Mizantla (Strebel 1873); Mirador; San Cristobal; Atoyac; Jalapa (Von Martens 1890); Orizaba (Von Martens 1901).

***Schasicheila (Atoyac) fragilis* Pilsbry 1899**

*Schasicheila fragilis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:391.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:782–783; pl. 51, figs. 7, 7a (shell).- Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Schasicheila*:353; pl. 69, figs. 20–21 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):59.

*Schasicheila (Atoyac) fragilis* Pilsbry. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):40; pl. 5, figs. 30–31 (operculum), fig. 32 (shell sculpture).

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype ANSP 77237.

Distribution.—NUEVO LEÓN: Laguna de Sanchez (25° 19'58" N, 100°15'18" W). Hwy. Santiago-Matmorelos, km. 7 west (25°56'17" N, 99°58'25" W); Hwy. Iturbide-San Roberta, km. 48 (24°44'01" N, 99°55'35" W) (Correa-Sandoval & Salazar 2005). TAMAULIPAS: Victoria-Gomez Farias Hwy., Rio Frio (23°00'00" N, 99°05'30" W); La Tapona, Tula (23°08'31" N, 99°58'16" W); Ejida Manuel Avila Comacho (23°40'00" N, 98°59'18" W); Rancho El Armadillo (23°45'34" N, 99°05'10" W); Ejido Conrado Castillo (23°27'12" N, 99°27'34" W) (Correa-Sandoval & Rodriguez 2002).

***Schasicheila (Atoyac) xanthia* Pilsbry 1909**

*Schasicheila xanthia* Pilsbry 1909:540; text-fig. 1 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.

*Schasicheila (Atoyac) xanthia* Pilsbry. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):36.

Type Locality.—Canyon below Los Canoas, San Luís Potosí. Holotype ANSP 99024.

Distribution.—SAN LUÍS POTOSÍ: Cueva El Salitre, 6 km SW of Xilitla, 450 m alt. (21°22'55" N, 98°57'53" W) (Correa-Sandoval et al. 1998).

**Subgenus *Necaxia* H. B. Baker 1928**

*Necaxia* H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):36.

Type Species.—*Helicina minuscula* Pfeiffer 1859.

Distribution.—Guatemala north to San Luís Potosí.

Taxonomy.—A single species is recognized.

***Schasicheila (Necaxia) minuscula* (Pfeiffer 1859)**

*Helicina minuscula* Pfeiffer 1859; Proc. Zool. Soc. Lond. 27:29.

*Schasicheila minuscula* (Pfeiffer). Fischer & Crosse 1893:452; pl. 54, figs. 7–7b (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval 2000; Acta Zool. Mex. (79):8.

*Schasicheila minuscula* (Pfeiffer). Von Martens 1901; Biol. Cent. Amer.:608–609.

*Schasicheila (Necaxia) minuscula* (Pfeiffer). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):34–38; pl. 3, fig. 15 (male reproductive anatomy); pl. 4, figs. 17–18 (female reproductive anatomy); pl. 5, figs. 28 (radula).

*Schasicheila "minima"* ("Pfeiffer"). Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:98; pl. 3, fig. 6 (shell).

Type Locality.—Misantla, Veracruz, México (H. B. Baker 1928).

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (H. B. Baker 1928). SAN LUÍS POTOSÍ: Tamazunchale, 170 m alt. (21°15'21" N, 98°28'09" W); Cueva La Salitre, 6 km W of Xilitla, 830 m alt. (21°23'10" N, 99°03'56" W); 0.3 km NW Las Posas, 600 m alt. (21°24'38" N, 99°00'15" W) (Correa-Sandoval et al. 1998). VERACRUZ: Misantla, 410 m alt. (19°56' N, 97°44' W); Necaxa, 2625–4925 m alt. (H. B. Baker 1928); numerous localities in northern Veracruz (Correa-Sandoval 2000).

**Subgenus *Schasicheila* Shuttleworth 1852**

Distribution.—Eastern México from Tamaulipas south to Alta Verapaz, Guatemala.

Taxonomy.—Nine species and two subspecies are recognized.

***Schasicheila (Schasicheila) hidalgoana* Dall 1897**

*Schasicheila hidalgoana* Dall 1897; Nautilus 11:62.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:783–784; pl. 51, figs. 8, 8a (shell).- Hinkley 1907; Nautilus 21:71.- H. B. Baker 1922;

Proc. Acad. Nat. Sci. Phila. 74:57; pl. 5, figs. 18, 20 (radula).- H. B. Baker 1926; Proc. Acad. Nat. Sci. Phila. 76:49–50; pl. 8, figs. 24–26 (reproductive anatomy).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval 2000; Acta Zool. Mex. (79):8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex., (86):235.

*Schasicheila (Schasicheila) misantlensis* Fischer & Crosse. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):41.

Type Locality.—Encarnacion, Hidalgo, México. Holotype in the USNM.

Distribution.—SAN LUÍS POTOSÍ: numerous localities in eastern region of state; (Correa-Sandoval et al. 1998). NUEVO LEÓN: Don Soltero, Hwy. Laguna Sanchez-Cercado ( 25°20'54" N, 100°11'47" W). TAMAULIPAS: canyon 4 mi. W of Cd. Victoria (Pilsbry 1903); Ejido Filipe Angeles (23°30'00" N, 98°24'07" W); Ejido San Antonio, Rio Chihue (23°33'55" N, 99°20'02" W); Ejido El Olmo, Hidalgo (24°13'36" N, 99°24'49" W). (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve, Gomez Farias (Correa-Sandoval & Rodriguez. 2005). VERACRUZ: Rio Cazonas, Cazonas (20°37'17" N, 97°24'13" W); La Ordeña, Papantla (20°29'43" N, 97°18'17" W) (Correa-Sandoval 2000).

***Schasicheila (Schasicheila) hinkleyi* Pilsbry 1919**

*Schasicheila hinkleyi* Pilsbry 1919; Proc. Acad. Nat. Sci. Phila. 71:221; fig. 9 (shell), 10 (operculum).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) hinkleyi* Pilsbry. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):37.

Type Locality.—Chama, [Dept. Alta Verapaz], Guatemala. Holotype in the ANSP.

Distribution.—Known only from the type locality.

***Schasicheila (Schasicheila) misantlensis* Fischer & Crosse 1893**

*Schasicheila pannucea misantlensis* Fischer & Crosse 1893:449; pl. 54, figs. 5b-d (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) misantlensis* Fischer & Crosse. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):41–43.

Type Locality.—Misantla, [Veracruz], México.

Distribution.—VERACRUZ: Necaxa, 2215–5500 ft. alt. (H. B. Baker 1918).

***Schasicheila (Schasicheila) nicoleti* Shuttleworth 1852**

*Schasicheila nicoleti* Shuttleworth 1852; in Bern Mittheil.:302.- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57. Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.- Neubert & Gosteli 2005; Contr. Nat. Hist. 5:15; pl. 10, fig. 2.

*Helicina nicoleti* (Shuttleworth). Reeve 1874; Conch. Icon., *Helicina*: pl. 19, fig. 109.

*Schasicheila nicoleti* (Shuttleworth). Von Martens 1890; Biol. Cent. Amer.:43.

*Schasicheila (Schasicheila) nicoleti* Shuttleworth. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):40–41.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—TAMAULIPAS: Los Angeles, Sierra Tamaulipas (23°32'37" N, 98°29'39" W); Ranch El Carrizo,



25 km NE of Cd. Victoria (23°47'51" N, 97°59'39" W); Ejido El Sabinito (23°34'39" N, 98°21'22" W); Ejido Conrado Castillo (23°57'12" N, 99°27'34" W); 53 km NE of Cd. Victoria (24°04'54" N, 98°51'22" W) (Correa-Sandoval & Rodríguez 2002). VERACRUZ: Cerro de Plumas, near Córdoba; Jalapa (Von Martens 1890); Las Tortolas, 2650 ft. alt. (H. B. Baker 1928).

***Schasicheila (Schasicheila) palmeri* Dall 1905**

*Schasicheila palmeri* Dall 1905; Smiths. Misc. Coll. 48:19–192, pl. 44, figs. 3, 5 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) misantlensis* Fischer & Crosse. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):41.

Type Locality.—Sierra Alvaréz, San Luis Potosí, México; 7900 ft. alt. Holotype USNM 110397.

Distribution.—SAN LUÍS POTOSÍ: San Dieguito (Dall 1905).

***Schasicheila (Schasicheila) pannucea* (Morelet 1849)**

*Helicina pannucea* Morelet 1849; Test. Noviss. I:21.

*Schasicheila pannucea* (Morelet). Sowerby 1866; Thes. Conch. 3: pl. 269; figs. 68, 69 (shell).- Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Schasicheila*:352; pl. 70, figs. 1–4 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.- Bequaert 1957; Bull. Mus. Comp. Zool. 115:207.

*Schasicheila (Schasicheila) pannucea* (Morelet). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):42.

*Schasicheila pannucea* (Morelet). Von Martens 1890; Biol. Cent. Amer.:43, 608.- Fischer & Crosse 1893:448; pl. 54, figs. 5, 5a (shell).

*Helicina alata* (Menke). Reeve 1874; Conch. Icon., *Helicina*: pl. 13, fig. 107 (shell).

Type Locality.—San Luis, Dept. Petén, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Baja Verapaz: Senahu, N of Polochic Valley. Dept. Petén: San Luis (Von Martens 1890). CHIAPAS: Monte Libano, 600 m alt.

***Schasicheila (Schasicheila) pilsbryi* Wagner 1911**

*Schasicheila pilsbryi* Wagner 1911; in Martini & Chemnitz, Syst. Conch. Cab., *Schasicheila*:352; pl. 70, figs. 9–11 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) pilsbryi* Wagner. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):37.

Type Locality.—México or Guatemala.

Distribution.—Unknown.

***Schasicheila (Schasicheila) vanattai vanattai* Pilsbry 1899**

*Schasicheila vanattai vanattai* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:391.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:783; pl. 51, figs. 5, 5a (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) vannattai vannattai* Pilsbry. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):36.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):59.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype in the ANSP.

Distribution.—NUEVO LEÓN: Santiago (Correa-Sandoval 1993); numerous localities in southern region of state (Correa-Sandoval & Salazar 2005).

***Schasicheila (Schasicheila) vannattai tricostata* Pilsbry 1903**

*Schasicheila vannattai tricostata* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:783; pl. 51, fig. 5 (shell).- H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:57.

*Schasicheila (Schasicheila) vannattai tricostata* Pilsbry. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):37.

Type Locality.—Canyon 4 miles west of [Ciudad] Victoria, Tamaulipas, México. Holotype ANSP 85809.

Distribution.—Known only from the type locality.

***Schasicheila (Schasicheila) walkeri* Hinkley 1920**

*Schasicheila walkeri* Hinkley 1920; Nautilus 34:53 (unfigured).

Type Locality.—A bluff on the mountain north of Chama, Dept. Alta Verapaz, Guatemala. Holotype in the ANSP.

Distribution.—Known only from the type locality.

**Subfamily VIANINAE Baker 1922**

The subfamily Vianinae is distributed primarily in the West Indies. A single genus occurs in the study area.

**Genus *Pyrgodomus* Crosse & Fischer 1893**

*Pyrgodomus* Crosse & Fischer, in Fischer & Crosse 1893:440.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):43–46.

Type Species.—*Helicina chryseis* Tristram 1861.

Distribution.—*Pyrgodomus* is widely distributed at lower and intermittent elevations on calcareous substrata from Tamaulipas and Guerrero south to Prov. Puntarenas, Costa Rica.

Taxonomy.—Three species and one subspecies are recognized. The small size of the species and the paucity of adequate field surveys over much of this territory cause *Pyrgodomus* to be under-recorded. The genus is in critical need of review.

***Pyrgodomus fischeri* Pilsbry 1930**

*Pyrgodomus fischeri* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:243–244; pl. 15, fig. 3 (shell).

Type Locality.—Islas del Cisne, Dept. Islas de la Bahía, Honduras. Holotype ANSP 150868.

Distribution.—Known only from the type locality.

***Pyrgodomus microdinus microdinus* (Morelet 1851)**

*Helicina microdina* Morelet 1851; Test. Noviss. II:18.- Von Martens 1890; Biol. Cent. Amer.:39.

*Helicina (Idesa) microdina* Morelet. Fischer & Crosse 1893:438–439; pl. 56, fig. 9 (shell).

*Eutrochatella (Artecallossa) microdina* (Morelet). Wagner 1908:138; pl. 22, figs. 17–20 (shell).

*Eutrochatella (Pyrgodomus) microdinus microdinus* (Morelet). H. B. Baker 1922; Proc. Acad. Nat. Sci. Phila. 74:61.

*Pyrgodomus microdinus microdinus* (Morelet). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):45–46.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich.

(34):13, 33.- Richling 2004; *Malacologia* 45:364–370; figs. 242–245 (shell), fig. 246 (radula), fig. 247 (female reproductive system), fig. 248 (Costa Rica distribution).

*Helicina chryseis* Tristram 1862; *Proc. Zool. Soc. Lond.* (1861):5.- Von Martens 1891; *Biol. Cent. Amer.*:39; pl. 1, fig. 14 (shell).- Von Martens 1900; *Biol. Cent. Amer.*:606.

*Helicina (Pyrgodomus) chryseis* Tristram. Fischer & Crosse 1893:440; pl. 56, fig. 6 (shell).

*Eutrochatella microdina chryseis* (Tristram). Pilsbry 1920; *Proc. Acad. Nat. Sci. Phila.* 72:197.- Hinkley 1920; *Nautilus* 34:52.- H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:61.

*Pyrgodomus microdinus chryseis* (Tristram). H. B. Baker 1928; *Occ. Pap. Mus. Zool. Univ. Mich.* (193):45–46.

Type Localities.—*Helicina microdina*: Vera-paz [Dept. Alta Verapaz], Guatemala. Lectotype BMNH 1893.2.3.1986. (Richling 2004). *Helicina chryseis*: Guatemala, mountain forests of Vera Paz; location of the primary types are unknown.

Distribution.—Widely distributed at lower and intermittent elevations on calcareous substrata from Tamaulipas and Guerrero, México south to Prov. Puntarenas, Costa Rica. Numerous specimen lots of *Pyrgodomus* from Costa Rica, Nicaragua, Honduras, Guatemala, Belize, and México are in the UF collection. GUATEMALA, Dept. Alta Verapaz: Chama (Pilsbry 1920). MÉXICO. Numerous specimen lots of *Pyrgodomus* in the UF are from the states of Yucatán, Quintana Roo, Campeche, Tabasco, Chiapas, Oaxaca, Veracruz, San Luís Potosí, and Tamaulipas.

#### ***Pyrgodomus microdinus abditus* H. B. Baker 1928**

*Pyrgodomus microdina abditus* H. B. Baker 1928; *Occ. Pap. Mus. Zool. Univ. Mich.* (193):43–46; pl. 5, fig. 34 (shell), fig. 29 (radula); fig. 33 (operculum), pl. 4, fig. 21–24 (reproductive anatomy).

Type Locality.—Las Tortolas, Córdoba, Veracruz, México; 1300–3400 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: Córdoba; Atoyac Gorge to Sumidero (H. B. Baker 1928).

#### ***Pyrgodomus simpsoni* (Ancey 1886)**

*Trochatella simpsoni* Ancey 1886; *Bull. Soc. Malac. France* 2:235.

*Pyrgodomus simpsoni* (Ancey). Pilsbry 1904; *Proc. Acad. Nat. Sci. Phila.* 55:782; pl. 49, fig. 4 (shell).

*Eutrochatella (Pyrgodomus) simpsoni* (Ancey). H. B. Baker 1922; *Proc. Acad. Nat. Sci. Phila.* 74:61.

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—Known only from the type locality.

### **Superfamily AMPULLARIOIDEA Gray 1824**

#### **Family AMPULLARIIDAE Gray 1824**

Ampullariidae Gray 1824.- Cowie 1997; *Bulletin of Zoological Nomenclature* 54 (2).- Cowie & Thiengo 2003; *Malacologia* 45.

Pilidae Preston 1915.

Type Genus.—*Ampullaria* Lamarck 1799. *Ampullaria* is a junior synonym of *Pila* Röding 1798. The family name Pilidae was based on the genus *Pila*. The International Commission on Zoological Nomenclature [ICZN] 1999a, Opinion 1913 ruled that Ampullariidae is the valid name for

this family.

Distribution.—Freshwater in Tropical America, Africa and southeast Asia east to the Philippine Islands.

Taxonomy.—The taxonomy of this family is subjective and unstable. There is little agreement on the number of genera or subgenera, and the species level taxonomy is chaotic. Nearly all species were described on the basis of only the shell. In most instances only a single specimen was included in the original description. Frequently the locality of origin of type specimens was unknown or only vaguely known. The result of this history is that there is very little agreement concerning how many valid species exist among the hundreds of names that have been proposed. Cowie and Thiengo (2003) recognized 140 Neotropical species and subspecies as possibly valid among five indigenous genera. Their work represented a major effort to bring some order to this chaos. The following arrangement departs very little from their scheme.

#### **Genus *Marisa* Gray 1824**

*Marisa* Gray 1824; *Philos. Mag. & Jour.* 63:276.- Cowie & Thiengo 2003; *Malacologia* 45:49.

*Ceratodes* Guilding 1828; *Zool. Jour.* 3:537.

Type Species.—*Marisa*; *Helix cornuarietis* Linnaeus 1758 by subsequent designation of Gray 1847. *Ceratodes*: *Helix cornuarietis* Linnaeus 1758 by original designation.

Distribution.—South America, Central America.

Taxonomy.—Eight species have been described. Three are currently recognized. *Marisa cornuarietis* (Linnaeus) is found in northern South America; *M. planogyra* Pilsbry is found in the Rio Parana system, and *M. rotula* (Mousson) is known from Colombia, Panamá and Costa Rica.

#### ***Marisa rotula* (Mousson 1869)**

*Ampullaria rotula* Mousson 1869; *Malac. Blätt.* 16:183.- Von Martens 1899; *Biol. Cent. Amer.*:425; pl. 25, figs. 1, 1a, 1b.

*Ceratodes rotula* (Mousson). Mousson 1873; *Malac. Blätt.* 16:19.

*Marisa rotula* (Mousson). Pilsbry 1933; *Proc. Acad. Nat. Sci. Phila.* 85:71.

*Marisa cornuarietis* (Linnaeus). Cowie & Thiengo 2003; *Malacologia* 45:51.

Type Locality.—Colombia, lower part of the Rio Magdalena. Syntypes ZMZ 525321.

Distribution.—Colombia, Panamá, and Costa Rica. COSTA RICA (Von Martens 1899).

#### **Genus *Pomacea* Perry 1812**

*Pomacea* Perry 1812; *Arcana*: unnumbered plate.- Cowie & Thiengo 2003; *Malacologia* 45:51.

*Conchylium* Cuvier 1816:426.

*Limnopomus* Dall 1904; *Jour. of Conch.* 11:52.

Type Species.—*Pomacea*: *Pomacea maculata* Perry 1812, by original designation. *Conchylium*: *Nerita urceus* Müller 1774. *Limnopomus*: *Ampullaria columellaris* Gould 1848.

Distribution.—South America north to Tamaulipas along the east coast of México, and to Colima along the Pacific coast; the Windward Island of the Lesser Antilles; Jamaica;



Cuba; the southeastern United States.

Taxonomy.—Cowie & Thiengo (2003) recognize three subgenera. Only one occurs in Central America and México.

### Subgenus *Pomacea* Perry 1812

Distribution.—Same as for the genus.

Taxonomy.—Cowie and Thiengo (2003) listed 97 species in the subgenus *Pomacea*. Fourteen occur in the study area.

### *Pomacea auriformis* (Reeve 1856)

*Ampullaria auriformis* Reeve 1856; Conchologica Iconica 10: pl. 28; figs. 133a, b.- Von Martens 1899; Biol. Cent. Amer.:417.

*Pomacea auriformis* (Reeve). Pain 1964; Jour. of Conch. 25:225.- Cowie & Thiengo 2003; Malacologia 45:57.

Type Locality.—Honduras. Syntype BMNH 20020646.

Distribution.—Unknown. At the time that this species was described, Honduras included nearly the entire Caribbean Coast of Central America.

### *Pomacea belizensis* (Crosse & Fischer 1888)

*Ampullaria belizensis* Crosse & Fischer in Fischer & Crosse 1888: pl. 45; figs. 2, 2a–2c.- Crosse & Fischer 1890; Jour. de Conchyl. 38:110.- Fischer & Crosse 1890; 231; pl. 48; figs. 9, 9a.- Von Martens 1899; Biol. Cent. Amer.:417.

*Pomacea flagellata* (Say). Pain 1964; Jour. of Conch. 25:227.- Cowie & Thiengo 2003; Malacologia 45:58.

Type Locality.—No locality given by Crosse and Fischer in 1888. Belize (Fischer & Crosse 1890). Syntypes in MNHN.

Distribution.—Known only from the type locality.

### *Pomacea catemacensis* (H. B. Baker 1922)

*Ampullaria patula catemacensis* H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):39; pl. 14, figs. 1–2, pl. 15, fig. 7.

*Pomacea patula* (H. B. Baker). Naranjo-García & García-Cubas 1986; Ann. Inst. Biol. 56:603.- Espinoza-Chávez & Martínez-Jerónimo 2005; Veliger 47:213–217 (reproductive biology).- Cowie & Thiengo 2003; Malacologia 45:59.- Diupotex-Chong, Cazzaniga, Hernández-Santoyo & Betancourt-Rule 2004; Biocell. 28:279–285 (karyotype).

Type Locality.—Lago de Catemaco, Veracruz, México. Holotype: UMMZ 31850.

Distribution.—Known only from the type locality.

Remarks.—*Pomacea catemacensis* was described as a subspecies of *Ampullaria patula* Reeve 1856, from New Grenada (= Colombia) and Panamá (see Cowie & Thiengo 2003:71). The name *Ampullaria patula* Reeve is a primary junior homonym of *Ampullaria patula* Lamarck 1804 (Naticidae), and is not available for use. The identity of Reeve's species from New Grenada is unresolved, but it has no bearing on the status of *P. catemacensis*.

### *Pomacea cerasum* (Hanley 1854)

*Ampullaria cerasum* Hanley 1854:unnumbered page.- Von Martens 1899; Biol. Cent. Amer.:421; pl. 24, figs. 1–6.

*Pomacea cerasum* (Hanley). Cowie & Thiengo 2003; Malacologia 45:59.

Type Locality.—Not given.

Distribution.—TABASCO: Teapa (Von Martens

1899:421).

### *Pomacea conoidea* (Von Martens 1899)

*Ampullaria conoidea* Von Martens 1899; Biol. Cent. Amer.:423; pl. 24, figs. 10, 11.

*Pomacea conoidea* (Von Martens). Cowie & Thiengo 2003:60.

Type Locality.—Costa Rica.

Distribution.—Known only from the type locality.

### *Pomacea costaricana* (Von Martens 1899)

*Ampullaria costaricana* Von Martens 1899; Biol. Cent. Amer.:418–419; pl. 24, figs 14–17.

*Pomacea costaricana* (Von Martens). Cowie & Thiengo 2003:60.

Type Locality.—Not given. No type designated.

Distribution.—Von Martens (1899) gives the following locality records. NICARAGUA: Lago de Nicaragua. COSTA RICA, Prov. Puntarenas: Rio Saveyre, at Boca Culebra; Palmar, south of the Rio Grande de Terraba. PANAMÁ, Prov. Chiriquí: Chiriquí.

### *Pomacea cumingi cumingi* (King & Broderip 1831)

*Ampullaria cumingii* King & Broderip 1831; Zool. Jour. 5:332–349.

*Pomacea cumingi* (King & Broderip). Morrison 1946; Smithson. Misc. Coll. 106:6.- Morrison 1952; Nautilus 65:105–106.- Cowie & Thiengo 2003:61.

Type Locality.—Panamá, Archipiélago de las Perlas: Isla Saboga (Morrison 1952:105).

Distribution.—Known only from the type locality. Morrison (1946, 1952) recorded this species from Isla Pacheco, but later he discounted this locality.

### *Pomacea cumingi sanjoseensis* Morrison 1946

*Pomacea cumingii sanjoseensis* Morrison 1946; Smithson. Misc. Coll. 106:6–7; pl. 1, fig. 1.- Cowie & Thiengo 2003, Malacologia 45:74.

Type Locality.—Three small streams at the west end of Isla San José, Archipiélago de las Perlas, Panamá. Holotype USNM 542136.

Distribution.—Known only from the type locality.

### *Pomacea dacostae* (Sowerby 1909)

*Ampullaria dacostae* G. B. Sowerby 1909; Proc. Malac. Soc. London 8:348 (name), 359 (description, fig.)

*Pomacea dacostae* (G. B. Sowerby). Cowie & Thiengo 2003; Malacologia 45:61.

Type Locality.—Costa Rica. Syntype BMNH 10.19.35.

Distribution.—Known only from the type locality.

### *Pomacea flagellata flagellata* (Say 1827)

*Ampullaria flagellata* Say 1827:22.- Strebel 1873:25; pl. 3, fig. 14, pl. 3a, figs. 14 A-K, 15.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:325.- Von Martens 1899:405; pl. 23, figs. 1, 4, 4a, 4b.- Alderson 1925:35, 38, 42; pl. 9, fig. 7, pl. 10, figs. 2, 4.- H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):37.

*Pomacea flagellata* (Say 1827). Pain 1964; Jour. of Conch. 25:226–228; pl. 13, fig. 3.- Rangel-Ruiz 1987; Anales Inst. Biol. Univ. Nac. Auton. México 58:21–34; pl. 1 (shell, operculum); pl. 2 (radula); pls. 3–6 (anatomy).- Cowie & Thiengo 2003;

Malacologia 45:64.

Pain (1964) and Cowie & Thiengo (2003) listed the following names as synonyms:

- Ampullaria violacea* Valenciennes 1833. (type locality not given).  
*Ampullaria ochracea* Jay 1836.  
*Ampullaria malleata* Jonas 1844. (type locality: Tabasco).  
*Ampullaria labiosa* (Koch) Philippi 1851.  
*Ampullaria lamareckii* Philippi 1851.  
*Ampullaria hondurasensis* Reeve 1856.  
*Ampullaria flatalis* Reeve 1856. (type locality: Tabasco).  
*Ampullaria fumata* Reeve 1856.  
*Ampullaria columbiensis* (Sowerby) Reeve 1856.  
*Ampullaria* Von Martensiana Neville 1884.  
*Ampullaria strebeli* Fischer & Crosse 1890. (type locality: Misantla, Veacruz, in a small stream called the Brazo Seco).  
*Ampullaria strebeli* var. *prasina* Fischer & Crosse 1890.  
*Ampullaria belizensis* Fischer & Crosse 1890 [recognized as a distinct species here].  
*Ampullaria flagellata* var. *esculpta* Fischer & Crosse 1890. (type locality not given).  
*Ampullaria malleata* var. *arata* Fischer & Crosse 1890. (type locality: not given).  
*Ampullaria occlusa* Fischer & Crosse 1890. (type locality: freshwater lagoon of Tanasco, on the Pacific coast, three leagues from the mouth of the Rio Guacalata).  
*Ampullaria monachus* Fischer & Crosse 1890. (type locality: Santa Efigenia, Isthmus of Tehuantepec).  
*Ampullaria yucatanensis* Fischer & Crosse 1890.  
*Ampullaria eumicra* Fischer & Crosse 1890. (type locality: State of Oaxaca)  
*Ampullaria lemniscata* Fischer & Crosse 1890.  
*Ampullaria innexa* Fischer & Crosse 1890. (type locality: Monte de Mistam, near Coapam, Oaxaca).  
*Ampullaria malleata* var. *prasina* Fischer & Crosse 1890.  
*Ampullaria malleata* var. *oajacensis* Fischer & Crosse 1890. (type locality: Monte de Mistam, near Coapam, Oaxaca).  
*Ampullaria yucatanensis* var. *izabelensis* Von Martens 1899.

Type Locality.—For *Ampullaria flagellata* only. A short distance below [Ciudad] Veracruz, México. Lectotype ANSP 50645 (Pilsbry 1991a:325–326; H. B. Baker 1964:68).

Distribution.—From Tamaulipas south along eastern México to Dept. Petén, Guatemala and Belize, and along the Pacific coast from Colima southeast to Chiapas. Cowie and Thiengo (2003:64) *vide* Pain 1964 stated that this species is distributed from central México to the Rio Magdalena Basin, Colombia. Some records are as follow. COSTA RICA, Prov. Guanacaste: Rio de Cañas north of Santa Cruz (Pilsbry 1920:9). GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959) MÉXICO. CAMPECHE: 5–11 mi. E of Campeche (Branson & McCoy 1965). TABASCO: Villa Hermosa (Thompson 1967). VERACRUZ: Los Tuxtlas, Laguna Escondida, Laguna Zacatál and Laguna Sontecomapán (Rangel-Ruiz 1987). Widely introduced in the Pacific Islands and southeast Asia.

Taxonomy.—The systematic status of the many names associated with this widely distributed species is unsatisfactory. All of the names are based on shell characters that are variable and unreliable. However, to treat them as synonyms without careful morphological study or genetic

analysis is as arbitrary as was their original descriptions. Very few locality citations from the literature are repeated here, because of the long lists of synonyms that may or may not apply to *Pomacea flagellata* and its subspecies. The reader is referred to Cowie and Thiengo (2003) for these locality citations.

#### ***Pomacea flagellata dysoni* (Hanley 1854)**

- Ampullaria dysoni* Hanley 1854; Conch. Misc.: pl. 2, fig. 1.- Reeve 1856: pl. 11, fig. 49.- Von Martens 1899:417.- Kobelt 1912; Martini & Chemnitz, Syst. Conch. Cab., *Ampullaria*:110; pl. 44, fig. 1.- Alderson 1925:43; pl. 10, fig. 3.  
*Pomacea flagellata dysoni* (Hanley). Pain 1964; Jour. of Conch. 25:230; pl. 13, fig. 2.- Cowie & Thiengo 2003:62.  
Type Locality.—Honduras. Syntype BMNH 1907 11.21.65.

Distribution.—Known only from the type locality.

#### ***Pomacea flagellata erogata* (Crosse & Fischer 1890)**

- Ampullaria erogata* Crosse & Fischer 1890; Jour. de Conchyl. 38:251; pl. 46; figs. 6, 6a, 7.- Von Martens 1899:422.- Kobelt 1912, in Martini & Chemnitz, Syst. Conch. Cab., *Ampullaria*:134; pl. 50, figs. 9, 10.  
*Pomacea flagellata erogata* (Crosse & Fischer). H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):38.- Pain 1964; Jour. of Conch. 25:229–230; pl. 14, fig. 4.- Cowie & Thiengo 2003:63.  
Type Locality.—Not given.  
Distribution.—Same as for *Pomacea f. flagellata* (Pain 1964).

#### ***Pomacea flagellata guatemalensis* (Von Martens 1899)**

- Ampullaria flagellata* var. *guatemalensis* Von Martens 1899; Biol. Cent. Amer.:413; pl. 22, figs. 11, 11a.  
*Pomacea flagellata flagellata* (Say). Cowie & Thiengo 2003; Malacologia 45:65.  
Type Locality.—Paso Antonio, in the lower part of the Rio Michatoya, near the Pacific, Guatemala.  
Distribution.—Known only from the type locality.

#### ***Pomacea flagellata livescens* (Reeve 1856)**

- Ampullaria livescens* Reeve 1856: pl. 5, fig. 21.- Alderson 1925:39; pl. 9, figs. 9, 10.  
*Ampullaria paludos livescens* Reeve. Kobelt 1912; in Martini & Chemnitz, Syst. Conch. Cab., *Ampullaria*:118; pl. 46, fig. 1.  
*Pomacea flagellata livescens* (Reeve). Pain 1964; Jour. of Conch. 25:228–229; pl. 13, fig. 1.- Cowie & Thiengo 2003:67.  
*Ampullaria ghiesbreghtii* Reeve 1856; pl. 26, fig. 123. - Strebel 1873:31, pl. 3, fig. 16.  
*Ampullaria ghiesbreghtii* Reeve.- Fischer & Crosse 1890:233; pl. 47, fig. 8. - Alderson 1925:44; pl. 10, fig. 5.- Kobelt 1912:143; pl. 53, figs. 1–3.  
*Pomacea ghiesbreghtii* (Reeve). Pain 1953; Proc. Malac. Soc. London 29:222.  
*Pomacea flagellata gheisbreghtii* (Reeve). Bequaert 1957:210.  
*Pomus giganteus* Tristram 1864:414 (type locality: Lago de Petén, Guatemala).  
*Ampullaria chiapasensis* Crosse & Fischer 1890; Jour. de Conchyl. 38:235. (type locality: Las Playas, Chiapas, in marshes).  
*Ampullaria flagellata giganteus* (Tristram). Von Martens 1899; Biol.

Cent. Amer.:412; pl. 23, fig. 6.

*Ampullaria tristrami* Crosse & Fischer 1890; Jour. de Conchyl. 38:234. (type locality Lago de Petén, Guatemala).

*Ampullaria flagellata* var. *tristami* Von Martens 1899; Biol. Cent. Amer.:413; pl. 22, figs. 1, 12.- Kobelt 1912:128; pl. 47, fig. 2.- Hinkley 1920; Nautilus 34:45, 47, 49.

Type Locality.—For *Ampullaria livescens* only. Lake Petén, Dept. Petén, Guatemala. Syntype BMNH 1986214.

Distribution.—Chiapas, Tabasco, and the Dept. Petén, Guatemala (Pain 1964). BELIZE: (UF collections). TABASCO: Rio Grijalva, 4 mi. S of Villahermosa; Rio Grijalva 14 mi. N of Teapa (Thompson 1957). GUATEMALA, Dept. Izabal: Plantera, Rio Dulces near Livingston; Jocola, north side of Lago de Izabal. Dept. Alta Verapaz: Panzos, Rio Polochic (Hinkley 1920).

#### ***Pomacea lattarei lattarei* (Reeve 1856)**

*Ampullaria lattarei* Reeve 1856; Conchologica Iconographia, 10 (Ampullaria): pl. 5, fig. 22.- Tristram 1863; Proc. Zool. Soc. Lond. 31:414.- Kobelt 1915:146; pl. 54, figs. 1–4.

*Ampullaria delattarei* Reeve. Fischer & Crosse 1890:246 (emend.); pl. 45, figs. 4, 4a (shell).- Von Martens 1899; Biol. Cent. Amer.:419; pl. 24, fig. 8.- Alderson 1925:31–32; pl. 9, fig. 8.

*Ampullaria flagellata lattarei* Reeve. Hinkley 1920; Nautilus 34:47.

*Pomacea lattarei* (Reeve), Cowie & Thiengo 2003:67.

Type Locality.—Cobán, Guatemala. Lectotype BMNH 2020665 (Cowie & Thiengo 2003).

Distribution.—Northern and eastern Guatemala. Hinkley (1920) lists this species from rocks near Castillo San Felipe, Lago de Izabal, [Dept. Izabal], Guatemala.

Remarks.—The species was named by Reeve (1856) as *Ampullaria lattarei* for the French naturalist M. A. Delattre, because Reeve took the discoverer's name to be de Lattre, a titular designation of nobility. The ICZN code Appendix D, para. 21 (d) prohibits the use of a particle denoting nobility in a scientific name. Fischer and Crosse (1890) emended the name to *delattarei*, conforming to its correct orthography. However, ICZN Article 32 requires that the original spelling must be maintained, except as provided by para. 32 (c) (ii). If a name is misspelled due to a typographic error or a *lapsus calami*, and this is clear in the publication without reference to other sources, then the name can be emended. Reeve's original name must be retained, regardless of its incorrect etymology.

#### ***Pomacea lattarei chamana* (Hinkley 1920)**

*Ampullaria lattarei chamana* Hinkley 1920; Nautilus 34:53–54.

*Pomacea lattarei chamana* (Hinkley). Cowie & Thiengo 2003:59.

Type Locality.—Chama, near the Rio Tsalbha, Dept. Alta Verapaz, Guatemala. Lectotype ANSP 46321 (H. B. Baker 1964:168).

Distribution.—Known only from the type locality.

#### ***Pomacea miltocheila* (Reeve 1856)**

*Ampullaria miltocheilus* Reeve 1856. Conchologica Iconica 10: pl. 25, figs. 120a-b.- Von Martens 1899; Biol. Cent. Amer.:418.- Pain 1953; Proc. Malac. Soc. London 29:122–123.

*Ampullaria miltochilus* Reeve. Fischer & Crosse 1890:247.

*Pomacea cumings* (King & Broderip 1831). Cowie & Thiengo 2003; Malacologia 45:69.

Type Locality.—Province of Chiapas [= Chiapas], México. Lectotype BMNH 20020668.

Distribution.—VERACRUZ: Cazcajal, on the upper part of the Rio Uzpanapa (Pain 1953)

Remarks.—Cowie and Thiengo (2003) gave no justification for synonymizing this species with *Pomacea cumingi* (King & Broderip 1831), a species from Panamá.

#### ***Pomacea pealiana* (Lea 1834)**

*Ampullaria pealiana* Lea 1834; Obs. Unionidae II:16, tb. 23, fig. 77.

*Ampullaria pealeana* Lea. Von Martens 1899; Biol. Cent. Amer.:423; pl. 24, figs. 12, 13.

*Pomacea pealiana* (Lea). Cowie & Thiengo 2003; Malacologia 45:71.

Type Locality.—Turbaco, Colombia. Holotype ANSP 192933 (Abbott 1955).

Distribution.—Colombia, Ecuador, Venezuela, and Panamá (Cowie & Thiengo 2003:71). PANAMÁ, Prov. Veraguas: Veraguas (Von Martens 1899).

#### ***Pomacea picta* (Reeve 1856)**

*Ampullaria picta* Reeve 1856: pl. 24, figs. 117a, b.

*Pomacea picta* (Reeve). Cowie & Thiengo 2003; Malacologia 45:72.

Type Locality.—Mazatlán. Here restricted to Mazatlán, Guerrero, which is on the road south from México City to Acapulco. This is the locality from where many 19<sup>th</sup> Century species originated, very few of which occur at Mazatlán, Sinaloa, México. Syntypes BMNH 1907.11.21.91–92.

Distribution.—Known only from the type locality.

#### ***Pomacea zeteki* Morrison 1946**

*Ampullaria cumingi* King & Broderip. Von Martens 1899; Biol. Cent. Amer.:422 (in part).

*Pomacea zeteki* Morrison 1946; Smithson. Misc. Coll. 106:8.- Cowie & Thiengo 2003; Malacologia 45:77.

Type Locality.—A shallow margin of the Rio Chagres, near Gatuncilla, Panamá. Holotype USNM 542137.

Distribution.—Known only from the type locality.

### **Superfamily VIVIPAROIDEA Gray 1847**

#### **Family VIVIPARIDAE Gray 1847**

A single species of Viviparidae of questionable status has been recorded from México.

#### **Subfamily VIVIPARINAE Gray 1847**

##### **Genus *Viviparus* Montfort 1810**

##### ***Viviparus inornatus* (Binney 1865)**

*Vivipara inornata* Binney 1865; Amer. Jour. Conch. 1:49; pl. 7, fig. 1 (shell).- Binney 1865; Smiths. Misc. Coll. (144):113–114; text-fig. 225 (shell).- Von Martens 1899; Biol. Cent. Amer.:426.

*Paludina inornata* (Binney). Fischer & Crosse 1891:291.

*Viviparus geogrianius* (Lea). Clench & Fuller 1965; Occ. Pap. on Moll., 2:398–399; pl. 64, fig. 6 (lectotype).



Type Locality.—Chopatilo. Von Martens (1899) suggested that the orthography of Chopatilo probably is incorrect. He gives three localities with different spellings that may have been the place of origin of the types, one in Michoacán, one in Sonora and one in Nuevo León. The latter locality is here selected as the most probable: Hacienda Chapotito, near Cerralvo, Nuevo León, México (26.10° N, 99.62° W). Lectotype MCZ 234704 (Clench & Fuller 1965:397).

Distribution.—Known only from the type locality.

Remarks.—Clench and Fuller (1965:398–399) suggested that *Vivipara inornata* may be a synonym of *Viviparus georgianus* (Lea 1834) because of its resemblance to atypically green and unbanded specimens from northern Florida. This synonymy seems unlikely because the weakly impressed suture that characterizes *Viviparus inornatus* differs strikingly from the much more deeply impressed suture of *Viviparus georgianus*.

### Superfamily CYCLOPHOROIDEA Gray 1847

#### Family NEOCYCLOTIDAE Kobelt & Moellendorff 1897

Type Genus.—*Neocyclotus* Fischer & Crosse 1886.

Distribution.—American tropics, South Pacific islands.

Taxonomy.—Twenty-eight genera of Neocyclotidae are recognized currently in the neotropical region. Another six genera occur in the Pacific region. The generic and higher taxonomy of the cyclophorids is very unsettled. There is little agreement on the current classification regarding the numbers of families, subfamilies and genera. Three subfamilies of Neocyclotidae are recognized in the Neotropics. The Megalomastomatinae is found in Cuba, Hispaniola, Puerto Rico, and the Virgin Islands, and in eastern México, Guatemala and Belize. The Crocidopomatinae is found in Cuba, Hispaniola and the Lesser Antilles (Thompson 1967). The Neocyclotinae is found in the Greater and Lesser Antilles, and the mainland from México south to Bolivia.

#### Subfamily MEGALOMASTOMATINAE Blanford 1864

Megalomastominae Torre & Bartsch 1942; Bull. U. S. Nat. Mus. 181:2.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:142. Thompson 1969; Zoologica 54:37.

Type Genus.—*Megalomastoma* Swainson 1840.

Distribution.—Greater Antilles, Eastern México, Guatemala, and Belize.

Taxonomy.—Five genera are recognized, two in the México-Central American Region.

#### Genus *Aperostoma* Troschel 1847

*Aperostoma* Troschel 1847:44.- Heremanssen 1852:10.- H. B. Baker 1932; Nautilus 35:14.- H. B. Baker 1943; Nautilus 56:137.- Morrison 1955; Jour. Wash. Acad. Sci. 45:152.- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:46–48.- Thompson 1969; Zoologica 54:37.

*Cyrtotoma* Mörch 1852; Catalogus Conchyliorum 1:40.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:169.

*Habropoma* Crosse & Fischer 1880:8.- Fischer & Crosse 1890:127–129.

Type Species.—*Aperostoma*: *Cyclostoma mexicanum*

Menke 1830. *Cyrtotoma*: *Cyclostoma mexicanum* Menke 1830.- *Habropoma*: *Cyclostoma mexicanum* Menke 1830.

Distribution.—Eastern México from eastern San Luis Potosí south to Oaxaca and Veracruz.

Taxonomy.—Three species and one subspecies are recognized currently. Bartsch and Morrison (1942) recognized eight, most of which Solem (1956a) placed in synonymy.

#### *Aperostoma mexicanum mexicanum* (Menke 1830)

*Cyclostoma mexicanum* Menke 1830; Symopsis method. mollusc.:133.

*Aperostoma mexicanum* (Menke). Troschel 1847; Zeitschr. Malak., 4:44.- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:48; pl. 5, figs. 5–6 (shell), 10; pl. 6, figs. 6–10 (shell).

*Cyrtotoma mexicanum* (Menke). Mörch 1852; Catalogus conchyliorum, 1:40.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:173; pl. 22, figs. 4–6 (shell).

*Cyrtotoma mexicanum mexicanum* (Menke). H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):43–44.

*Habropoma mexicanum* (Menke). Fischer & Crosse 1890:130–132; pl. 35, figs. 5–5b (shell).

*Cyclophorus mexicanus* (Menke). Strebel 1873:8–9; pl. 1, fig. 1 (shell); pl. 1a, figs. 1–1b (shell).- Von Martens 1890:7–8.

*Cyrtotoma avus* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:169–170; pl. 22, figs. 22–24 (shell).

*Cyrtotoma ignotum* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:171; pl. 22, figs. 16–18 (shell).

*Cyrtotoma fischeri* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:171–172; pl. 22, figs. 13–15 (shell).

Type Localities.—*Cyclostoma mexicanum*: Papantla, Veracruz, México. *Cyrtotoma avus*: Motzorongo, Veracruz, México; holotype USNM 128285. *Cyrtotoma ignotum*: México; holotype USNM 523515. *Cyrtotoma fischeri*: Hacienda Coaotolapam, Veracruz, México; holotype USNM 515789.

Distribution.—OAXACA: Playa Vicente; Tustepe (Von Martens 1890). PUEBLA: Multatoyuca (Bartsch & Morrison 1942). VERACRUZ: Papantla; Misantla; Cuesta de Papantla; Jalapa; Cerro de Plumas (Von Martens 1890); Coaotolapam; Córdoba; Atoyac; Sumidero; Córdoba, Orizaba; Antigua (Solem 1956a).

Taxonomy.—The synonymy used here follows Solem (1956a) when significantly less material was available in museum collections. The taxonomy of the genus needs to be reviewed. Until then the distribution records given above should be regarded as tentative.

#### *Aperostoma mexicanum salleanum* (Von Martens 1865)

*Cyclophorus salleanus* Von Martens 1865:151.

*Habropoma salleana* (Martens). Fischer & Crosse 1880:133–134; pl. 35, figs. 4–4b (shell); pl. 38, figs. 1–1a (shell).

*Cyclophorus* (*Cyrtotoma*) *salleanus* Von Martens. Von Martens 1890; Biol. Cent. Amer.:7.

*Cyrtotoma salleanum* (Von Martens). Kobelt & Möllendorff 1907; Nach. Blätt. Deut. Ges., 29:140.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:170–171; pl. 22, figs. 19–21 (shell).

*Cyrtotoma mexicanum salleanum* (Von Martens). H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):42; pl. 16, figs. 8–12 (shell).

*Aperostoma mexicanum salleanum* (Von Martens). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):51.- Thompson 1969; Zoologica 54:37-39; text-fig. 2c (female reproductive system).

*Aperostoma mexicanum mexicanum* (Menke) (in part). Solem 1956a:48-50.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Barranca de Santa Maria, near Mirador; Orizaba; Misantla; Quilate, near Misantla; Atoyac; Coatepec; Jalapa (Von Martens 1890); 2.9 mi. E of Córdoba, 2500 ft. alt.; 4.3 mi. E of Córdoba, 2300 ft. alt.; 1.9 mi. SW, 0.8 mi. N of Fortín, 2900 ft. alt. (Thompson 1969).

#### *Aperostoma palmeri* (Bartsch & Morrison 1942)

*Cyrtotoma palmeri* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:172-173; pl. 22, figs. 1-3 (shell).

*Aperostoma mexicanum palmeri* (Bartsch & Morrison). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:50-51; pl. 5, figs. 1-4 (shell); pl. 6, figs. 1-5 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex., n. s. (73):13.- Correa-Sandoval & Rodriguez 2002; cta Zool. Mex., (86):235.

*Aperostoma palmeri* (Bartsch & Morrison). Thompson 1969; Zoologica 54:39; text-figs. 1-1B (pallial organs).

Type Locality.—Gomez Farías, Tamaulipas, México. Holotype USNM 198079.

Distribution.—HIDALGO: Chapulhuacan (Solem 1956a). SAN LUÍS POTOSÍ: 11.4 mi. E of Xilitla, 1100 ft. alt.; 7.5 mi. E of Xilitla (Thompson 1969); 6 km SE of Xilitla, 830 m alt. (21°23'10" N, 99°03'56" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: "El Cielo" Biosphere Reserve (Correa-Sandoval & Rodriguez 2005); numerous localities in the southern region of the state (Correa-Sandoval & Rodriguez 2002)..

#### *Aperostoma walkeri* H. B. Baker 1928

*Aperostoma walkeri* H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich.; (193):51; pl. 6, figs. 38, 40 (shell); pl. 6, fig. 39 (operculum).- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:51-52; pl. 5, figs. 14-15.- Correa-Sandoval 2000; Acta Zool. Mex. n. s. (79):8.

*Cyrtotoma walkeri* (H. B. Baker). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:174; pl. 22, figs. 10-12.

*Cyrtotoma goldmani* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:174; pl. 22, figs. 7-9.

Type Localities.—*Aperostoma walkeri*: forests on south side of Vaso de Tenango, Nacaxa, Puebla, México; holotype in the UMMZ. *Cyrtotoma goldmani*: Multatoyuca [Metlatoyuca], Puebla, México; holotype USNM 53516.

Distribution.—PUEBLA: Metlatoyuca; Necaxa. VERACRUZ: Coyutla; Misantla (Solem 1956a); El Cedral, Hwy.. Poza Rica-Tajín (20°29'11" N, 97°25'23" W); Ruinas El Tajín (20°26'29" N, 97°22'30" W) (Correa-Sandoval 2000).

#### Genus *Tomocyclus* Crosse & Fischer 1872

*Tomocyclus* Crosse & Fischer 1872; Jour. de Conchyl. 20:76.- Fischer & Crosse 1888:113-11.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:142-143.- Thompson 1963; Breviora

(181):1.

Type Species.—*Tomocyclus gealei* Crosse & Fischer 1872.

Distribution.—Belize, eastern Guatemala and southeast México in the states of Chiapas and Veracruz.

Taxonomy.—Five species are recognized.

#### *Tomocyclus gealei* Crosse & Fischer 1872

*Tomocyclus gealei* Crosse & Fischer 1872:77.- Fischer & Crosse 1886:118-120; pl. 40, figs. 1-3 (shell).- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:143-144; pl. 19, fig. 1 (shell).- Thompson 1963:2-3.

*Megalomastoma (Tomocyclus) gealei* (Crosse & Fischer). Von Martens 1890; Biol. Cent. Amer.:10.

Type Locality.—Chiapas, México.

Distribution.—GUATEMALA, Dept. Baja Verapaz: woods between Tactic and Tamahu; Polochic Valley above Panzos and Senahu (Von Martens 1890).

#### *Tomocyclus fistularis* Thompson 1963

*Tomocyclus fistularis* Thompson 1963; Breviora (181):3-4; pl. 1, figs. 1-3 (shell).

Type Locality.—High rainforest at Valentine Camp, 50 mi. southwest of Cayo, British Honduras [Belize]. Holotype UMMZ 194095.

Distribution.—BELIZE or GUATEMALA. The type locality, if correct, would place the species in the Dept. Petén, Guatemala.

#### *Tomocyclus guatemalensis* (Pfeiffer 1851)

*Cyclostoma guatemalensis* Pfeiffer 1851:245.- Pfeiffer 1853:267; pl. 36, figs. 1-14 (shell).

*Tomocyclus guatemalensis* (Pfeiffer). Crosse & Fischer 1872:76.- Fischer & Crosse 1886:124; pl. 40, fig. 11 (shell).- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:144; pl. 19, fig. 11 (shell).- Thompson 1963; Breviora (181):8

Type Locality.—Vera Paz, Guatemala.

Distribution.—Known only from the type locality.

#### *Tomocyclus lunai* Bartsch 1945

*Tomocyclus guatemalensis* (in part) Fischer & Crosse 1886:124; pl. 40, fig. 11a (shell).

*Tomocyclus lunai* Bartsch 1945; Proc. Biol. Soc. Wash. 58:63-63.- Thompson 1963; Breviora (181):8.

Type Locality.—Santecomopan, Veracruz, México. Holotype USNM 573547.

Distribution.—VERACRUZ: Santecomopan; San Martín Tuxtla; south slope of Volcán San Martín, 1040 ft. alt.; Volcán San Martín (Thompson 1963).

#### *Tomocyclus simulacrum* (Morelet 1849)

*Cyclostoma simulacrum* Morelet 1849; Test. Noviss. I:22.

*Cyslostoma copanense* Sowerby 1850; Thesaurus Conchyl., 1 (suppl.):165; pl. 31B, figs. 310, 311 (shell).

*Tomocyclus simulacrum* (Morelet). Crosse & Fischer 1872; Jour. de Conchyl. 20:76.- Fischer & Crosse 1886:121-124; pl. 40, figs. 9, 9a (shell); pl. 44, figs. 1, 1a (shell).- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:146-147; pl. 19, fig. 6 (shell).-



Thompson 1963; *Breviora* (181):5–8.

*Megalomastoma simulacrum* var. *gracilius* Von Martens 1890; *Biol. Cent. Amer.*:10.

*Tomocyclus siphonis* Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:145; pl. 19, fig. 5 (shell).

*Tomocyclus constrictus* Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:145–146; pl. 19, fig. 2 (shell).

Type Localities.—*Cyclostoma simulacrum*: Dept. Petén, Guatemala. *Cyclostoma copanensis*: Cobán, Guatemala (?). *Megalomastoma simulacrum* var. *gracilius*: Between Tactic and Tamahu, Dept. Baja Verapaz, Guatemala. *Tomocyclus siphonis*: Alta Verapaz, Guatemala. *Tomocyclus constrictus*: Cobán, Guatemala.

Distribution.—GUATEMALA. Dept. Alta Verapaz: Cobán; Chama; Finca de Providencia; near Arroyo Yalchatala, 4 km SW of Seiba; 1 km N of Finca Samac; 55 km NE of Cobán; Chinaja (Thompson 1963). Dept. El Quiché: 4–6 km NW of Hacienda Pacala (Thompson 1963).

#### Subfamily NEOCYCLOTINAE Kobelt & Möllendorff 1897

Distribution.—Widely distributed throughout the neotropical realm.

Taxonomy.—About 25 genera and numerous subgenera are recognized. Thirty-seven species occur in the study area.

#### Genus *Neocyclotus* Fischer & Crosse 1886

*Neocyclotus* Fischer & Crosse 1886:148.- Morrison 1955; *Jour. Wash. Acad. Sci.* 45:156.- Solem 1956; *Proc. Acad. Nat. Sci. Phila.* 108:52–53.- Thompson 1969; *Zoologica* 54:65–66.

*Aperostoma* (*Neocyclotus*) Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:203.

*Austrocyclotus* Bartsch 1942:132.- Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:195–196.- Morrison 1955; *Jour. Wash. Acad. Sci.* 45:156.

Type Species.—*Neocyclotus*: *Cyclostoma dysoni* Pfeiffer 1851 (by subsequent designation; Pilsbry 1910:533). *Austrocyclotus*: *Cyclostoma stramineum* Reeve 1843 (by original designation).

Distribution.—Veracruz south to Ecuador, Venezuela and the Lesser Antilles.

Taxonomy.—About 25 species are recognized. Six occur in the study area. *Neocyclotus dysoni* is widely distributed from Panamá north to Veracruz. Bartsch & Morrison (1842) divided the species into 13 subspecies. These are listed below, although the validity of some are in doubt (Solem 1956a). Many earlier distribution records are omitted from this report for *Neocyclotus dysoni* because their identities are nearly impossible to reconcile within the present classification.

#### *Neocyclotus bisinuatus* (Von Martens 1864)

*Cyclotus bisinuatus* Von Martens 1864; *Malak. Blätt.* 11:113; pl. 3, figs. 1–2 (shell).

*Cyclotus* (*Aperostoma*) *bisinuatus* (Von Martens). Von Martens 1890; *Biol. Cent. Amer.*:3.

*Neocyclotus* (*Neocyclotus*) *bisinuatus* (Von Martens). Kobelt & Möllendorff 1897; *Nachrb. Deut. Malak. Ges.* 29:137.

*Aperostoma* (*Aperostoma*) *bisinuatum* (Martens). Bartsch &

Morrison 1942; *Bull. U. S. Nat. Mus.* 181:235; pl. 33, figs. 5, 6 (shell).

*Neocyclotus bisinuatus* (Von Martens). Thompson 1969; *Zoologica* 54:71–73; pl. 1, fig. K (operculum); text-fig. 12, A-B (male reproductive system); text-fig. 14, A (female reproductive system).

Type Locality.—Elevated plains of Costa Rica.

Distribution.—COSTA RICA: Prov. Cartago: Tapantí, 4300 ft. alt.; 5 mi. E of Villa Neily; Inter American Agricultural Institute, Turrialba, 2000 ft. alt. (Thompson 1969). GUATEMALA, Dept. Retalhuleu: Costa Cuco above Retalhuleu; San Francisco Miramar, 2500 ft. alt. Dept. Huehuetenango: on the slope of Volcán de Santa Maria, 3000–5000 ft. alt. (Von Martens 1890).

#### *Neocyclotus capsceilius* Thompson 1969

*Neocyclotus capsceilius* Thompson 1969; *Zoologica* 54:73; pl. V, figs. e-h (shell, operculum).

Type Locality.—A wooded ravine on Cerro de la Muerte, 10.5 km N of San Isidro El General, Prov. San José, Costa Rica. Holotype UF 20148.

Distribution.—Known only from the type locality.

#### *Neocyclotus chrysacme* (Bartsch & Morrison 1942)

*Aperostoma* (*Neocyclotus*) *chrysacme* Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:219; pl. 20, figs. 13–15 (shell).

Type Locality.—Wani, Nicaragua. Holotype USNM 186112.

Distribution.—Known only from the type locality.

#### *Neocyclotus dysoni dysoni* (Pfeiffer 1851)

*Cyclostoma dysoni* Pfeiffer 1851; *Proc. Zool. Soc. Lond.* 19:243.- Pfeiffer 1853; *in* Martini & Chemnitz *Syst. Conch. Cab.*, 1:259; pl. 35, figs. 5–6 (shell).

*Neocyclotus dysoni* (Pfeiffer) *in part.* Fischer & Crosse 1888:164.

*Cyclotus* (*Aperostoma*) *dysoni* (Pfeiffer) *in part.* Von Martens 1890; *Biol. Cent. Amer.*:3.

*Poteria* (*Neocyclotus*) *dysoni* (Pfeiffer). H. B. Baker 1923; *Occ. Pap. Mus. Zool. Univ. Mich.* (137):33.

*Aperostoma* (*Neocyclotus*) *dysoni dysoni* (Pfeiffer). Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:207–208; pl. 28, figs. 28–30.- Thompson 1969; *Zoologica* 54:67–68.

Type Locality.—Honduras.

Distribution.—HONDURAS, Dept. Comayagua: 4 km SSW of Comayagua; 15.1 km N of Comayagua (Thompson 1969).

#### *Neocyclotus dysoni affinis* (Von Martens 1890)

*Cyclotus* (*Aperostoma*) *dysoni affinis* Von Martens 1890; *Biol. Cent. Amer.*:4; pl. 1, fig. 1 (shell).

*Neocyclotus* (*Neocyclotus*) *dysoni affinis* (Von Martens). Kobelt & Möllendorff 1897; *Nachrb. Deut. Malak. Ges.* 29:137.

*Poteria* (*Neocyclotus*) *dysoni affinis* (Von Martens). H. B. Baker 1923; *Occ. Pap. Mus. Zool. Univ. Mich.* (137):34.

*Aperostoma* (*Neocyclotus*) *dysoni affine* (Von Martens). Bartsch & Morrison 1942; *Bull. U. S. Nat. Mus.* 181:210–211; pl. 28, figs. 22–24 (shell).

Type Locality.—Bugaba, Panamá.

Distribution.—Known only from the type locality.

***Neocyclotus dysoni ambiguus* (Von Martens 1890)**

*Cyclotus* (*Aperostoma*) *dysoni ambiguus* Von Martens 1890; Biol. Cent. Amer.:4.

*Neocyclotus* (*Neocyclotus*) *dysoni ambiguus* (Von Martens). Kobelt & Möllendorff 1897; Nachrb. Deut. Malak. Ges. 29:137.

*Poteria* (*Neocyclotus*) *dysoni ambiguus* (Von Martens 1890). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137):34.

*Aperostoma* (*Neocyclotus*) *dysoni ambiguus* (Von Martens). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:211; pl. 28, figs. 10–12 (shell).

*Neocyclotus dysoni ambiguus* (Von Martens). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:53.- Thompson 1969; Zoologica 54:66; text-fig. 11, C-D (male reproductive system); text-fig. 13, A (female reproductive system).

Type Locality.—Soledad, between Córdoba and Orizaba, Veracruz, México.

Distribution.—CHIAPAS: Ixtapa; Tecpatán (Solem 1956); 8.0 mi. N of Tuxtla Gutierrez, 3100 ft. alt.; 8.6 mi. E of Chiapa de Corze, 3100 ft alt.; 14.9 mi. E of Chiapa de Corzo, 4400 ft. alt. (Thompson 1969). OAXACA: Rio Grande (Solem 1956a). TABASCO: 2.4 mi. E of Teapa; 2.6 mi. E of Teapa; 4.0 mi. W of Teapa (Thompson 1969). VERACRUZ: Jalapa; Octopan (Bartsch & Morrison 1942); Laguna Encantada, near San Andres Tuxtla (Thompson 1969).

***Neocyclotus dysoni aureus* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni aureus* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:209; pl. 28, figs. 13–15 (shell).

*Neocyclotus dysoni aureus* (Bartsch & Morrison). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:53–54.- Branson & McCoy 1963; Nautilus 76:103.

Type Locality.—Panistlahuaca, Oaxaca, México. Holotype USNM 523970.

Distribution.—CAMPECHE: 5–11 mi. E of Campeche (Branson & McCoy 1963). OAXACA: Gamboa; Panistlahuaca (Solem 1956a). EL SALVADOR, Dept. Santa Ana: Lago de Coatepeque. GUATEMALA: Lago de Amatitlan (Solem 1956a).

***Neocyclotus dysoni berendti* (Pfeiffer 1861)**

*Cyclotus berendti* Pfeiffer 1861; Malak. Blätt. 8:171.

*Neocyclotus berendti* (Pfeiffer). Fischer & Crosse 1886: pl. 28, figs. 4–5 (shell).- Fischer & Crosse 1888:167.- Branson & McCoy 1963; Nautilus 76:103.

*Cyclotus* (*Aperostoma*) *dysoni berendti* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:5.

*Cyclotus dysoni* form *multilineatus* Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:325.

*Poteria* (*Neocyclotus*) *berendti* (Pfeiffer). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137) 33. Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):350.

*Aperostoma* (*Neocyclotus*) *dysoni berendti* (Pfeiffer). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:212; pl. 29, figs. 4–6 (shell).

*Aperostoma dysoni berendti* (Pfeiffer). Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):25–26.

*Neocyclotus dysoni berendti* (Pfeiffer). Solem 1956; Proc. Acad.

Nat. Sci. Phila. 108:53.- Rehder 1966; Proc. Biol. Soc. Wash. 79:278.- Thompson 1967; Bull. Fl. St. Mus., 11:228.

Type Locality.—Dead shells found on the shore, Veracruz, Veracruz (Von Martens doubts this locality).

Distribution.—CAMPECHE: 5.1 mi. NNW of Dzibalchén (Thompson 1967). QUINTANA ROO: 12 km from Icaiche (Rehder 1966; 7.1 mi. NNW of Xiatile; 4.0 mi. E of Xpujil (Thompson 1967). YUCATÁN: 8 mi. S of Progreso; near Chichen Itza (Harry 1950); Chichen Itza (Bequaert & Clench 1933); 0.5 mi. E of Becanchén; 10.0 mi. SE of Becanchén (Thompson 1967); 1.5 mi. S off Libre Union (Branson & McCoy 1963).

***Neocyclotus dysoni cookei* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni cookei* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:215–216; pl. 29, figs. 10–12 (shell).

*Neocyclotus dysoni cookei* (Bartsch & Morrison 1942). Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):6.- Rehder 1966; Proc. Biol. Soc. Wash. 79:278.- Thompson 1967; Bull. Fla. St. Mus. 11:228.

Type Locality.—Uaxactun, Dept. Petén, Guatemala. Holotype USNM 524006.

Distribution.—BELIZE: near Punta Gorda; foot of a limestone hill, left bank of the Rio Belize, 1.5 mi. S of Cayo; W of Gales Point (Bartsch & Morrison 1942). GUATEMALA, Dept. Petén: Magalango; 2 km S of Flores; 2 km S of Puebla Nueva (Bartsch & Morrison 1942); Tikal National Park (Basch 1959). CAMPECHE: 7.2 mi. S of Pixtun; 19.2 mi. E of Silvituc; 10.2 mi. E of Escarega (Thompson 1967). QUINTANA ROO: 12 km from Icaiche (Rehder 1966).

***Neocyclotus dysoni dyeri* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni dyeri* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:205; pl. 28, figs. 31–33 (shell).

*Neocyclotus dysoni dyeri* (Bartsch & Morrison). Thompson 1969; Zoologica 54:68.

Type Locality.—La Ceiba, Honduras. Holotype USNM 215592.

Distribution.—HONDURAS, Dept. Colón: Belfate (Thompson 1969).

***Neocyclotus dysoni hinkleyi* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni hinkleyi* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:206–207; pl. 28, figs. 19–21 (shell).

Type Locality.—Guatemala. Holotype USNM 523968.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cacao Finca, Tres Aguas, near Senahu; Chama; Secanquim, 500 m alt. Dept. Izabal: Maya Farms, Quiriqua (Bartsch & Morrison 1942).

***Neocyclotus dysoni nicaraguensis* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni nicaraguensis* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:214–215; pl. 29, figs. 16–18 (shell).

*Neocyclotus dysoni nicaraguense* (Bartsch & Morrison). Thompson

1969; Zoologica 54:68.- Pérez & López 2002:50–52.

Type Locality.—Polvón, Nicaragua. Holotype USNM 524005.

Distribution.—COSTA RICA, Prov. Guanacaste:3.8 mi. S of Nicoya; 2.2 mi. SE of Nicoya, 500 ft. alt.; 1.2 mi. E of Caimital (Thompson 1969). NICARAGUA, Dept. Grenada, Dirio [Diria ?] (Bartsch & Morrison 1942). Numerous localities in the Dept. Estelí, Dept. Matagalpa, Dept. Managua, Dept. Leon (Péres & López 2002).

#### ***Neocyclotus dysoni ruatanensis* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni ruatanensis* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:207; pl. 28, figs. 7–9 (shell).

*Neocyclotus dysoni* var. *ruatanensis* (Bartsch & Morrison). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:54.

Type Locality.—Ruatan [Roatán] Island, Dept. Islas de la Bahía, Honduras. Holotype USNM 364702.

Distribution.—Known only from the type locality.

#### ***Neocyclotus dysoni sallei* (Bartsch & Morrison 1942)**

*Cyclotus* (*Aperostoma*) *dysoni* var. *minor* Von Martens 1890: pl. 1, fig. 2 (shell) (not *Cyclotus corrugator minor* Chitty 1857).

*Poteria* (*Neocyclotus*) *dysoni minor* (Von Martens). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137) 33.

*Aperostoma* (*Neocyclotus*) *dysoni sallei* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:213; pl. 29, figs. 7–9 (shell).

*Neocyclotus dysoni sallei* (Bartsch & Morrison 1942). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:53.

Type Locality.—Yucatán, México.

Distribution.—Known only from the type locality.

#### ***Neocyclotus dysoni sumichrasti* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni sumichrasti* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:209–210; pl. 28, figs. 25–27 (shell).

Type Locality.—Chontales forest, Nicaragua. Holotype USNM 523674.

Distribution.—Known only from the type locality.

#### ***Neocyclotus dysoni valerioi* (Bartsch & Morrison 1942)**

*Aperostoma* (*Neocyclotus*) *dysoni valerioi* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:213–214; pl. 29, figs. 19–21 (shell).

Type Locality.—Cervantes, [Prov. Cartago], Costa Rica. Holotype USNM 524003.

Distribution.—Known only from the type locality.

#### ***Neocyclotus panamensis* Da Costa 1904**

*Neocyclotus panamensis* Da Costa 1904; Proc. Malac. Soc. London 6:6; pl. 1, figs. 6–9 (shell).

*Poteria* (*Neocyclotus*) *panamensis* (Da Costa). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137) 37.

*Aperostoma* (*Austrocyclotus*) *panamense* (Da Costa). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:197–198; pl. 27, figs. 3–5.

Type Locality.—Chiriquí, Panamá.

Distribution.—Known only from the type locality.

#### ***Neocyclotus simplicostus* Thompson 1969**

*Neocyclotus simplicostus* Thompson 1969; Zoologica 54:68–71; pl. 11, figs. J-L (shell); pl. 1, fig. J (operculum); text-fig. 12E (male reproductive system) text-fig. 13D (female reproductive system).

Type Locality.—A ravine 4.2 mi. northwest of Escuintla, Chiapas; 300 ft. alt. Holotype UF 20167.

Distribution.—CHIAPAS: 21.3 mi. NW of Huixtla, 300 ft. alt.; 32.5 mi. NW of Huixtla, 200 ft. alt. (Thompson 1969).

#### **Genus *Incidostoma* Bartsch & Morrison 1942**

*Aperostoma* (*Incidostoma*) Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:187.

*Incidostoma* Morrison 1955; Jour. Wash. Acad. Sci. 45:155.

*Neocyclotus* (*Incidostoma*), Thompson 1969; Zoologica 54:73–74.

Type Species.—*Aperostoma* (*Incidostoma*) *malleatum* Bartsch & Morrison 1942.

Distribution.—Costa Rica south to Bolivia and Brazil.

Taxonomy.—*Aperostoma* Troschel was used by Bartsch and Morrison (1942:187–284) for a large group of mainland species. The genus name is not available for this group because Herrmannsen (1852) designated *Cyclostoma mexicanum* as the type species, which belongs in a different subfamily, the Megalomastomatinae. Of the eight subgenera of *Aperostoma* recognized by Bartsch (1942), Bartsch and Morrison (1942), and Morrison (1955), *Neocyclotus* is the oldest available name, and *Incidostoma* is the next oldest available name. *Incidostoma* and *Neocyclotus* differ sufficiently to be regarded as separate genera, following Morrison (1955).

Bartsch (1942) and Bartsch and Morrison (1942) listed 72 species in *Aperostoma* (= *Incidostoma* as used here). Ten species occur in the study area.

#### ***Incidostoma brujense* (Bartsch & Morrison 1942)**

*Aperostoma* (*Aperostoma*) *brujense* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:244; pl. 34, figs. 13–15.

Type Locality.—Cerro Bruja, Panamá; 500 ft. alt. Holotype USNM 251418.

Distribution.—PANAMÁ: mountains around Gaspasalana, High Mamoni (Bartsch & Morrison 1942).

#### ***Incidostoma carmioli* (Bartsch & Morrison 1942)**

*Aperostoma* (*Incidostoma*) *carmioli* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:233; pl. 32, figs. 19–21.

*Neocyclotus* (*Incidostoma*) *carmioli* (Bartsch & Morrison). Thompson 1969; Zoologica 54:74.

Type Locality.—Chitaria, Costa Rica. Holotype USNM 405227.

Distribution.—COSTA RICA, Prov. Cartago: Rio Chitaria, 2 km. N of Jabillas, 3000 ft. alt. (Thompson 1969).

#### ***Incidostoma confusum* (Sykes 1901)**

*Cyclostoma giganteum* Reeve. Pfeiffer 1848; in Martini & Chemnitz Syst. Conch. Cab., 1:11; pl. 1, fig. 11–14 (shell).

*Aperostoma confusum* Sykes 1901; Jour. of Malac., 8:106; pl. 10, fig. 2.

*Poteria* (*Neocyclotus*) *confusum* (Sykes). H. B. Baker 1923; Occ.



Pap. Mus. Zool. Univ. Mich. (137) 42.

*Aperostoma (Aperostoma) confusum* (Sykes). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:237; pl. 33, figs. 1–3.

Type Locality.—Panamá.

Distribution.—COLOMBIA, Dept. Choco: Acandí, a small village in the Gulf of Atrato, on the boundary between Panamá and Colombia (Bartsch & Morrison 1942).

#### ***Incidostoma costaricense* (Von Martens 1876)**

*Cyclotus quitesis costaricensis* Von Martens 1876:257.

*Aperostoma (Incidostoma) costaricense* (Von Martens). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:234; pl. 32, figs. 16–18 (shell).

Type Locality.—Costa Rica.

Distribution.—COSTA RICA (?): unknown.

#### ***Incidostoma exiguum* (Bartsch & Morrison 1942)**

*Aperostoma (Incidostoma) exiguum* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:234–235; pl. 32, figs. 10–12 (shell).

Type Locality.—Zorquin Valley, Talamanca, Costa Rica.

Holotype USNM 190281.

Distribution.—Known only from the type locality.

#### ***Incidostoma gigantea* (Reeve 1842)**

*Cyclotoma giganteum* Reeve 1842; Conchologica systematica, 2: pl. 99, fig. 17.- Sowerby 1843; Thesaurus conchyliorum:92; pl. 23, figs. 8, 9 (shell).

*Neocyclotus giganteus* (Reeve). Kobelt & Möllendorff 1897; Nachrb. Deut. Malak. Ges. 29:137.

*Aperostoma giganteum* (Reeve). Sykes 1901:105; pl. 10, fig. 1 (shell).

*Poteria (Neocyclotus) gigantea* (Reeve). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137) 40, 42.

*Aperostoma (Incidostoma) giganteum* (Reeve). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:237–238; pl. 33, figs. 7–9 (shell).

*Incidostoma gigantea* (Reeve). Morrison 1955; Jour. Wash. Acad. Sci. 45:157.

Type Locality.—In woods near Panamá, Panamá.

Distribution.—PANAMÁ: Cerro de Garagara, 20–900 m alt. (Bartsch & Morrison 1942).

#### ***Incidostoma impressum* (Thompson 1969)**

*Neocyclotus (Incidostoma) impressus* Thompson 1969; Zoologica 54:75–76; pl. VII, figs. A–C, G (shell); pl. I, fig. L (operculum); text-fig. 12, C–D (male reproductive system); text-fig. 14, C–D (female reproductive system).

Type Locality.—Along road immediately east of Nueva Castle [New Castle], Prov. Limón, Costa Rica. Holotype UF 20151.

Distribution.—COSTA RICA, Prov. Limón: Pandora. (Thompson 1969).

#### ***Incidostoma irregulare* (Pfeiffer 1855)**

*Cyclotoma (Cyclotus) irregulare* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:117.

*Cyclotus irregularis* (Pfeiffer). Reeve 1864; Conch. Iconica, 14: pl. 4, fig. 18 (shell).

*Cyclotus (Aperostoma) irregularis* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:3.- Von Martens 1900; Biol. Cent. Amer.:596.

*Poteria (Neocyclotus) irregulare* (Pfeiffer). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137):43.

*Aperostoma (Aperostoma) irregulare* (Pfeiffer). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:236; pl. 33, fig. 4 (shell).

*Neocyclotus (Incidostoma) irregulare* (Pfeiffer). Thompson 1969; Zoologica 54:74.

Type Locality.—Costa Rica.

Distribution.—COSTA RICA: Cache; Talamanca (Von Martens 1890); San Mateo, 250 m alt.; Ravine of Vijaqual in the valley of San Savenque; El Pital, in the alley of the Rio Naranjo; Alto de Mano Tigre, in the valley of the Rio Grande de Terraba; Quebrada de Tocori, in the valley of the Rio Paquera (Von Martens 1900). Prov. Limón: Pandora (Thompson 1969).

#### ***Incidostoma pittieri* (Von Martens 1900)**

*Cyclotus (Aperostoma) irregularis pittieri* Von Martens 1890; Biol. Cent. Amer.:597.

*Poteria (Neocyclotus) irregularis pittieri* (Von Martens). H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (137) 41.

*Aperostoma (Aperostoma) pittieri* (Von Martens). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:236–237.

Type Locality.—Salinas Bay northwestern Costa Rica.

Distribution.—Known only from the type locality.

#### ***Incidostoma portobellense* (Bartsch & Morrison 1942)**

*Aperostoma (Aperostoma) portobellense* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:242; pl. 34, figs. 7–9 (shell).

Type Locality.—Porto [Puerto] Bello, Panamá. Holotype USNM 251434.

Distribution.—Known only from the type locality.

#### **Genus *Dicrista* Thompson 1969**

*Dicrista* Thompson 1969; Zoologica 54:42–43.

Type Species.—*Dicrista liobasis* Thompson 1969 (by original designation).

Distribution.—West coast of México from Sinaloa south to Oaxaca, Costa Rica (?).

Taxonomy.—Seven species are recognized.

#### ***Dicrista cooperi* (Tryon 1863)**

*Cyclotus cooperi* Tryon 1863; Proc. Acad. Nat. Sci. Phila.:281; pl. 2, fig. 2 (shell).

*Mexcyclotus cooperi* (Tryon). Bartsch & Morrison 1842:180; pl. 24, figs. 10–12 (shell).

*Mexcyclotus lutescens* (Pfeiffer). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:181; pl. 24, figs. 12–15.- Solem 1956:55–56; pl. 5, figs. 12–13, 16.

*Dicrista cooperi* (Tryon). Thompson 1969; Zoologica 54:43–47; pl. II, figs. A–C (shell); pt. 1, fig. B; text-fig. 4, A (operculum).

Type Locality.—Near Mazatlán, Sinaloa, México. Holotype ANSP 13019.

Distribution.—SINALOA: Rosario. JALISCO: Hacienda de Istapa; San Sebastian. COLIMA: 7.6 mi. NNE of Manzanilla, 200 ft. alt. GUERRERO: Zihuatenejo. OAXACA: no specific locality. COSTA RICA: no specific

locality. (All records from Thompson 1969.)

***Dicrista damianensis* (Solem 1956)**

*Mexycyclotus damianensis* Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:57–58; pl. 5, fig. 11; pl. 6, figs. 13 18 (shell).

*Dicrista damianensis* (Solem). Thompson 1969; Zoologica 54:47–48; pl. III, figs. D-F (shell); pl. I, fig. C; text-fig. 4, B (operculum).

Type Locality.—1 mile north of San Pedro Damian Naranjillo, Michoacán, México (103°08' W 18°18' N). Holotype UMMZ 184837.

Distribution.—Known only from the type locality.

***Dicrista flavescens* Thompson 1969**

*Dicrista flavescens* Thompson 1969; Zoologica 54:49–51; pl. II, figs. G-I (shell); pl. I, fig. E; text-fig. 4, D (operculum); text-figs. 5, E-G (male reproductive system).

Type Locality.—7.8 miles south of Mazatlán, Guerrero, México. 3500 ft. alt. Holotype UF 20197.

Distribution.—Known only from the type locality.

***Dicrista indentata* Thompson 1969**

*Dicrista indentata* Thompson 1969; Zoologica 54:51–52; pl. II, figs. D-F (shell); pl. I, fig. F; text-fig. 4, E (operculum).

Type Locality.—10.0 miles southeast of San Vicente, Michoacán, México. 200 ft. alt. Holotype UF 20191.

Distribution.—Known only from the type locality.

***Dicrista liobasis* Thompson 1969**

*Dicrista liobasis* Thompson 1969; Zoologica 54:48–49; pl. III, figs. A-C; pl. I, fig. 13; text-fig. 4, C (operculum); text-figs. 5, A-B (male reproductive system); text-figs. 6, A-C (female reproductive system).

Type Locality.—A limestone sink 6.0 miles southwest and 6.6 miles east of Pihuamo, Jalisco, México. [ca. 19°25' N, 103°38' W]; 2000 ft. alt. Holotype UF 20194.

Distribution.—Known only from the type locality.

***Dicrista petersi* (Solem 1956)**

*Mexycyclotus petersi* Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:56–57; pl. 5, fig. 9; pl. 6, figs. 14–17 (shell).

*Dicrista petersi* (Solem). Thompson 1969; Zoologica 54:52; p. IV, figs. A, D (shell); pl. I, fig. G, text-fig. 4, F (operculum).

Type Locality.—La Placita [Sulatillo], Michoacán, México. (18°23' N, 103°37' W). Holotype UMMZ 184836.

Distribution.—Known only from the type locality.

***Dicrista rugosa* Thompson 1969**

*Dicrista rugosa* Thompson 1969; Zoologica 54:52–53; pl. IV, figs. E, G (shell); pl. I, fig. H; text-fig. 4, G (operculum); text-fig. 5, C-D (male reproductive system).

Type Locality.—A small limestone knoll 1.4 miles east of Colima, México.; 1800 ft. alt. Holotype UF 20199.

Distribution.—Known only from the type locality.

**Genus *Xenocyclus* Thompson 1969**

*Xenocyclus* Thompson 1969; Zoologica 54:55–56.

Type Species.—*Xenocyclus patulus* Thompson 1969 (by original designation).

Distribution.—Colima, México.

Taxonomy.—A single species is recognized.

***Xenocyclus patulus* Thompson 1969**

*Xenocyclus patulus* Thompson 1969; Zoologica 54:54–56: pl. 5, figs. A-D (shell); pl. I, fig. A, text-fig. 4, H (operculum); text-figs. 5, H-I (male reproductive system); text-fig. 6, D (female reproductive system).

Type Locality.—A limestone ridge 0.3 miles southeast of Tamala, México. 500 ft. alt. Holotype UF 20185.

Distribution.—Known only from the type locality.

**Genus *Amphicyclotus* Crosse & Fischer 1879**

*Amphicyclotus* Crosse & Fischer 1879; Jour. de Conchyl. 27:46.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:183–184.- Morrison 1955; Jour. Wash. Acad. Sci. 45:160.- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:43–44.- Thompson 1969; Zoologica 54:56.

*Megacyclotus* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:181.

Type Species.—*Amphicyclotus*: *Cyclostoma* (*Cyclophorus*) *boucardi* Pfeiffer 1856, by original designation. *Megacyclotus*: *Cyclostoma ponderosum* Pfeiffer 1851.

Distribution.—Southeast México, Guatemala, Belize, El Salvador and Honduras.

Taxonomy.—Eight species and two subspecies are recognized.

***Amphicyclotus boucardi* (Pfeiffer 1856)**

*Cyclostoma* (*Cyclophorus*) *boucardi* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:323; pl. 35, fig. 25.

*Cyclophorus boucardi* (Pfeiffer). Pfeiffer 1858; Monogr. pneumon. viv., 2:65.

*Amphicyclotus boucardi* (Pfeiffer). Fischer & Crosse 1880: pl. 35, fig. 1 (shell).- Fischer & Crosse 1888:142.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:184–185; pl. 24, figs. 4–6 (shell).

*Cyclophorus* (*Amphicyclotus*) *boucardi* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:6.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—Known only from the type locality.

***Amphicyclotus maleri* Crosse & Fischer 1883**

*Amphicyclotus maleri* Crosse & Fischer 1883:102.- Fischer & Crosse 1886: pl. 41, figs. 3–3c (shell).- Fischer & Crosse 1888:145.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:185–186; pl. 24, figs. 7–9 (shell).

*Cyclophorus* (*Amphicyclotus*) *maleri* (Crosse & Fischer). Von Martens 1890; Biol. Cent. Amer.:6.

Type Locality.—Tabasco, México.

Distribution.—OAXACA: Santa Efigenia, Tehuantepec (Von Martens 1890). TABASCO: Sierra Poaná (Solem 1956a).

***Amphicyclotus megaplanus* Morrison 1955**

*Amphicyclotus megaplanus* Morrison 1955; Jour. Wash. Acad. Sci.

45:160; figs. 29–31 (shell).- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:46.- Thompson 1969; Zoologica 54:63–64; pl. 1, fig. I (operculum); text-figs. 8, C-D (male reproductive system).

Type Locality.—Forests of Ocote, near Ocozocoautla [Ocozocoautla], Chiapas, México; 600–1000 m alt. Holotype USNM 618777.

Distribution.—CHIAPAS: 15.8 mi. NW of Ocozocoautla, 2700 ft. alt. (Thompson 1969).

#### ***Amphicyclotus palenquensis* (Pilsbry 1935)**

*Aperostoma* (*Amphicyclotus*) *palenquense* Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:3–4; pl. 1, figs. 3, 3a, 3b (shell).

*Megacyclotus palenquensis* (Pilsbry). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:183; pl. 24, figs. 16–18 (shell).

*Amphicyclotus* (*A.*) *palenquensis* (Pilsbry). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:44–45.

Type Locality.—District of Palenque, Chiapas, México. Holotype ANSP 106344.

Distribution.—CHIAPAS: Palenque. VERACRUZ: Motzorongo (Solem 1956a).

#### ***Amphicyclotus parvus* Thompson 1963**

*Amphicyclotus parvus* Thompson 1963:20–22; pl. II, figs. 4–7 (shell).- Thompson 1969; Zoologica 54:63; text-figs. 8, A-B (male reproductive system); text-fig. 9, C (female reproductive system).

Type Locality.—Hacienda Monte Cristo, Metapán, Dept. Santa Ana, El Salvador; 2200 m alt. Holotype UMMZ 195882.

Distribution.—Known only from the type locality.

#### ***Amphicyclotus paulsonorum* Thompson 1969**

*Amphicyclotus paulsonorum* Thompson 1969; Zoologica 54:61–63; pl. VI, figs. D-F (shell); text-figs. 8, E-F (male reproductive system); text-fig. 9 A (female reproductive system).

Type Locality.—A ravine 4.2 miles northwest of Escuintla, Chiapas, México; 300 ft. alt. Holotype UF 20180.

Distribution.—CHIAPAS: 21.3 mi. NW of Huixtla, 300 ft. alt.; 32.5 mi. NW of Huixtla, 200 ft. alt.; 10 mi. NW of Pijijiapan, 100 ft. alt. (Thompson 1969).

#### ***Amphicyclotus ponderosus* (Pfeiffer 1851)**

*Cyclostoma ponderosum* Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:283.

*Cyclophorus ponderosus* (Pfeiffer). Pfeiffer 1852; Monogr. pneumon. viv. 1:97.

*Amphicyclotus ponderosus* (Pfeiffer). Fischer & Crosse 1880: pl. 35, fig. 3 (shell).- Fischer & Crosse 1888:147.- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:46.

*Cyclophorus* (*Amphicyclotus*) *ponderosus* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:5.- Von Martens 1900:597.

*Megacyclotus ponderosus* (Pfeiffer). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:182–183; pl. 24, figs. 19–21 (shell).

Type Locality.—Not given.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Senahu (Von Martens 1890); San Juan (Von Martens 1900); Chama; Secanquin, 550 m alt. (Bartsch & Morrison 1942).

#### ***Amphicyclotus texturatus texturatus* (Sowerby 1850)**

*Cyclostoma texturatum* Sowerby 1850; Thesaurus conchyliorum (suppl.):160; pl. 31A, fig. 303 (shell).

*Amphicyclotus texturatus* (Sowerby). Fischer & Crosse 1880: pl. 35, figs. 2–2b (shell).- Fischer & Crosse 1886:144.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:186; pl. 24, figs. 1–3 (shell).

*Amphicyclotus texturatus texturatus* (Sowerby). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:45.

Type Locality.—Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Finca Providencia; Finca Caluchen; Finca Samac (Solem 1956a). CHIAPAS: Chiquihuite; Soconusco (Solem 1956a).

#### ***Amphicyclotus texturatus goldfussi* (Boettger 1892)**

*Aperostoma* (*Amphicyclotus*) *goldfussi* Boettger 1892; Nach. Blätt. Deut. Malak. Ges., 24:203.

*Amphicyclotus goldfussi* (Boettger). Kobelt & Möllendorff 1907; Nach. Blätt. Deut. Malak. Ges., 29:139.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:184.

*Cyclophorus* (*Amphicyclotus*) *texturatus goldfussi* (Boettger). Von Martens 1900; Biol. Cent. Amer.:598.

*Amphicyclotus texturatus goldfussi* (Boettger). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:145.

Type Locality.—San Pedro Sula, Honduras.

Distribution.—HONDURAS, Dept. Colón: Tarral (Solem 1956a).

#### ***Amphicyclotus texturatus spiralis* Thompson 1969**

*Amphicyclotus* (*A.*) *texturatus texturatus* (Sowerby). Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:45 (*in part*).

*Amphicyclotus texturatus spiralis* Thompson 1969; Zoologica 54:59–61; pl. VI, figs. A-C (shell); text-figs. 7, A-C (male reproductive system); text-fig. 9, D (female reproductive system).

Type Locality.—Coffee grove 4.7 mi. north-northeast of Huixtla, Chiapas, México; 600 ft. alt. Holotype UF 20176.

Distribution.—CHIAPAS: Escuintla (Solem 1956a); 12.7 mi. NNE of Huixtla, 1500 ft. alt.; 14.6 mi. NNE of Huixtla, 2100 ft. alt. (Thompson 1969).

#### **Genus *Barbacyclus* Bartsch & Morrison 1942**

*Barbacyclus* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:175.- Thompson 1969; Zoologica 54:64.

Type Species.—*Cyclophorus underwoodi* Da Costa 1900, by original designation.

Distribution.—Costa Rica.

Taxonomy.—Three species are recognized.

#### ***Barbacyclus boucardi* (Angas 1878)**

*Cyclopus boucardi* Angas 1878; Proc. Zool. Soc. Lond. 46:73; pl. 5, figs. 3–4 (shell).- Von Martens 1890; Biol. Cent. Amer.:5.

*Neocyclopus* (*Neocyclopus*) *boucardi* (Angas). Kobelt & Möllendorff 1907; Nach. Blätt. Deut. Malak. Ges., 29:137.

*Aperostoma princeps angasianum* Pilsbry 1935:3.

*Barbacyclus boucardi* (Angas). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:177–178; pl. 23, figs. 4–6 (shell).



Type Locality.—San Carlos, Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: La Emilia, near Guapiles (Pilsbry 1935).

***Barbacyclus princeps* (Pilsbry 1935)**

*Cyclotus boucardi* Angas 1879; Proc. Zool. Soc. Lond. 47:483 (not *Cyclotus boucardi* Angas 1878:73).

*Aperostoma (Amphicyclotus) princeps* Pilsbry 1935:3; pl. 1, figs. 1–1b (shell).

*Barbacyclus princeps* (Pilsbry). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:175–176; pl. 23, figs. 1–3 (shell).- Thompson 1969; Zoologica 54:64; text-fig. 7, D-E (male reproductive system).

Type Locality.—Mouth of the Rio Banana, 5 miles from Limón, Costa Rica. Holotype ANSP 12930.

Distribution.—COSTA RICA, Dept. Limón: Moin Hill (Thompson 1969).

***Barbacyclus underwoodi* (Da Costa 1900)**

*Cyclophorus underwoodi* Da Costa 1900; Proc. Malac. Soc. London 4:67; pl. 7, figs. 5–8 (shell).

*Cyclophorus (Amphicyclotus) underwoodi* Da Costa. Von Martens 1900; Biol. Cent. Amer.:598.

*Amphicyclotus underwoodi* (Da Costa). Kobelt 1902; Das Tierreich, Cyclophoridae:257.- Kobelt 1912; in Martini & Chemnitz Syst. Conch. Cab., 1:919; pl. 135, figs. 2–4 (shell).

*Babacyclus underwoodi* (Da Costa). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:176–177; pl. 23, figs. 7–9 (shell).

Type Locality.—Carillo, Costa Rica.

Distribution.—Known only from the type locality.

**Genus *Calacyclotus* Bartsch & Morrison 1942**

*Calacyclotus* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:178.

Type Species.—*Amphicyclotus olssoni* Pilsbry 1926 by original designation.

Distribution.—Panamá and immediately adjacent Colombia.

Taxonomy.—Two species are known.

***Calacyclotus atratensis* Bartsch & Morrison 1942**

*Calacyclotus atratensis* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:179; pl. 23, figs. 10–12 (shell).

Type Locality.—Mountains near the mouth of the Rio Atrato in Colombia. Holotype USNM 206291.

Distribution.—PANAMÁ-COLOMBIA: known only from the type locality. The Rio Atrato lies on the border between Colombia and Panamá.

***Calacyclotus olssoni* (Pilsbry 1926)**

*Amphicyclotus olssoni* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:65–66; pl. 9, figs 13–15 (shell).

*Calacyclotus olssoni* (Pilsbry). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:178–179.

Type Locality.—Near Lagarto, Dept. Colón, Panamá. Holotype ANSP 47354.

Distribution.—COLOMBIA, Dept. Choco: Acandí, Gulf

of Atrato (Bartsch & Morrison 1942).

**Neocyclotidae of doubtful occurrence in México and Central America**

***Mexcyclotus lutescens* (Pfeiffer 1851)**

*Cyclosytoma lutescens* Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:250.

*Mexcyclotus lutescens* (Pfeiffer). Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:179.- Solem 1956; Proc. Acad. Nat. Sci. Phila. 108:55–56.- Thompson 1969; Zoologica 54:61–62.

Taxonomy.—The species name is a *nomen dubium* (Thompson 1969; Zoologica 54:41–42). As a consequence the genus name is also a *nomen dubium*. The species was first described from Brazil, but was later credited to México. The syntypes lack opercula, and the identity of the species cannot be determined with certainty. This, coupled with the doubtful occurrence of the species, make identification of populations untenable.

**Family DIPLOMMATINIDAE Pfeiffer 1856**

Distribution.—The family is widely distributed on islands along the western Pacific rim, on the eastern Asian mainland and in the Neotropical Region. The family includes numerous genera and species. A single genus occurs in the Neotropical Region.

**Genus *Adelopoma* Doering 1884**

*Adelopoma* Doering 1884; Bol. Acad. Nac. Cien. Córdoba, 7:457.- Ancy 1899; Jour. de Conchyl. 47:194–197.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:148.

Type Species.—*Adelopoma tucma* Doering 1884.

Distribution.—Eastern México south to Argentina.

Taxonomy.—Eight species are recognized. Two occur in the study area.

***Adelopoma costaricense* Bartsch & Morrison 1942**

*Adelopoma costaricense* Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:150; pl. 40, fig. 4 (shell).- Pérez & López 2001; Malac. Rev. 33/34:92.

Type Locality.—Santa María, Costa Rica; 1550 m alt. Holotype USNM 516034.

Distribution.—Known only from the type locality. NICARAGUA, Dept. Jinotega: Apanés; Cartuja; Selva Negra (Pérez & López 2001).

***Adelopoma stollii* (Von Martens 1890)**

*Diplommatina stollii* Von Martens 1890; Biol. Cent. Amer.:20–21; pl. 1, fig. 19–19b (shell).

*Palaina (Eupalaina) stollii* (Von Martens). Kobelt & Moellendorff 1898:133.

*Adelopoma Stollii* (Von Martens). Ancy 1899; Jour. de Conchyl. 47:197.- Kobelt 1902:480.- Hinkley 1907; Nautilus 21:78.- Bartsch & Morrison 1942; Bull. U. S. Nat. Mus. 181:149; pl. 40, figs. 2–3 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. n. s. (73):3.- Pérez & López 2001; Malac. Rev. 33/34:92.

Type Locality.—NW Guatemala: in the District

Cholhuitz, on the slope of the Volcán de Santa María, at the plantation Helvitia. I have not located this place with certainty. The Global Gazetteer Version 2.1. Jan 26, 2006, lists Cholhuitz, Dept. Huehuetenango (15.87 N, 91.55 W).

Distribution.—Reported from northeastern México, Guatemala and Nicaragua. GUATEMALA: only from the type locality. NICARAGUA, Dept. Jinotega: Puene Pra; Las Pilas; La Cartuja (Pérez & López 2001). SAN LUÍS POTOSÍ: 15.5 km SW of Tamazunchale, 140 m alt. (21°12'26" N, 98°53'25" W); Vega Larga, 5 km SW of Tamazunchale, 120 m alt. (21°14'23" N, 98°50'31" W); Vega Larga, 140 m alt. (21°13'24" N, 98°50'00" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: Tampico, in river drift (Hinkley 1907); "El Cielo" Biosphere Reserve (Correa-Sadoval & Rodriguez 2005).

### Superfamily CERITHIOIDEA Flemming 1822

#### Family PLEURO CERIDAE Fischer 1885

Distribution.—North and South America, east Asia, and Africa. The geographic restrictions of the family are poorly understood because of the unsatisfactory taxonomy and phylogeny of the many genera placed here.

Taxonomy.—Ten genera are recognized in North America. One occurs in México.

#### Genus *Lithasiopsis* Pilsbry 1910

*Lithasiopsis* Pilsbry 1910; Proc. Malac. Soc. London 9:47–50.-Thompson 1959; Occ. Pap. Univ. Mich. Mus. Zool., (600):1.

*Pachychilus* (*Oxymelania*). Morrison 1954; Proc. U. S. Nat. Mus. 103:365.

Type Species.—*Lithasiopsis hinkleyi* Pilsbry 1910.

Distribution.—Confined to the Rio Panuco system and the Rio Guayalejo system of northeastern México.

Taxonomy.—Four species are recognized.

#### *Lithasiopsis crassus* Thompson 1959

*Lithasiopsis crassa* Thompson 1959; Occ. Pap. Univ. Mich. Mus. Zool., (600):2; text-figs. a, c-f; pl. 1, figs. a-f (shell).

Type Locality.—Rio Sabinas [Rio Guayalejo system], Pano Ayuctle, 5 miles NE of Gomez, Farias, Tamaulipas, México. Holotype UMMZ 195130.

Distribution.—TAMAULIPAS: known only from the Rio Sabinas (Thompson 1959).

#### *Lithasiopsis darnelli* Thompson 1959

*Lithasiopsis darnelli* Thompson 1959; Occ. Pap. Univ. Mich. Mus. Zool., (600):4; text-figs. b, g-j; pl. 1, figs. g-l (shell).

Type Locality.—Rio Sabinas [Rio Guayalejo system], above La Unión, Tamaulipas, México. Holotype UMMZ 195098.

Distribution.—TAMAULIPAS: known only from the Rio Sabinas (Thompson 1959).

#### *Lithasiopsis hinkleyi* Pilsbry 1910

*Lithasiopsis hinkleyi* Pilsbry 1910; Proc. Malac. Soc. London 9:48; figs. 1–3.

Type Locality.—Rio Coy [Rio Panuco system], San Luis Potosí, México. Holotype in the ANSP.

Distribution.—Known only from the type locality.

#### *Lithasiopsis mexicanus* Pilsbry 1910

*Lithasiopsis mexicanus* Pilsbry 1910; Proc. Malac. Soc. London 9:49; fig. 4.

Type Locality.—Rio Montezuma [= Moctezuma] [Rio Panuco system], at the ford, a short distance above Tampamolón, San Luis Potosí, México. Cotype in the ANSP.

Distribution.—Known only from the type locality.

### Family PACHYCHILIDAE Troschel 1857

Distribution.—México south to northern South America, southeastern Asia, Africa.

Taxonomy.—As with the Pleuroceridae, the geographic, morphological, taxonomic, and phylogenetic parameters relating to this family remain poorly understood. Two genera are recognized in México and Central America.

#### Genus *Amnipila* Pilsbry 1956

*Amnipila* Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:38.

Type Species.—*Pachychilus pila* Pilsbry & Hinkley 1910.

Distribution.—Rio Tamasopo, San Luis Potosí, México.

Taxonomy.—The genus is monotypic.

#### *Amnipila pila* (Pilsbry & Hinkley 1910)

*Pachychilus pila* Pilsbry & Hinkley 1910, Proc. Acad. Nat. Sci. Phila. 61:521; pl. 24, figs. 1–5.

*Amnipila pila* (Pilsbry & Hinkley). Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:38–38; text-fig. 4; pl. 4, figs. 7–9.

Type Locality.—Rio Tamosopo above and below the natural Bridge, near Verastuagu, San Luis Potosí, México. Holotype ANSP 99559 (Pilsbry 1956).

Distribution.—SAN LUÍS POTOSÍ: known only from the immediate vicinity of the type locality.

#### Genus *Pachychilus* I. Lea and H. C. Lea 1850

*Pachychilus* I. and H. C. Lea 1850; Proc. Zool. Soc. Lond. 18:179.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):19–56.- Fischer & Crosse 1892; Mission Sci. Mex., II:320–371.- Von Martens 1899; Biol. Cent. Amer.:435–464.- Morrison 1954; Proc. U. S. Nat. Mus. 103:364–367.

*Cercimelania* Crosse & Fischer 1892; Miss. Sci. Mex. II:327, 328, 340.

*Sphaeromelania* Rovereto 1899; Atti. Soc. Ligust. Sci. Nat. Geogr., 10:109 (substitute name for *Pachychilus*).

Distribution.—Eastern México from Tamaulipas south to the Isthmus of Tehuantepec and from there southeast along east and west coast drainages at lower elevations to Nicaragua. From there the range is disjunct to the area near Puerto Cabello, Venezuela. Three species occur in Cuba.

Taxonomy.—*Pachychilus* are large, handsome aquatic snails. Generally they are abundant, and they are the most conspicuous invertebrates present in streams and lakes where they occur. The snails have very limited dispersal ability.

Populations are limited genetically and geographically, and numerous forms occur in nature. Because of their abundance and conspicuous appearance specimens found their way into the laboratories of early European and American naturalists. Numerous specific and subspecific names were proposed to account for the observed variation. Whether these represent valid taxa or not remains to be determined. For the most part the taxonomic arrangement used herein follows Von Martens (1899), with subsequently described species inserted where it seems appropriate. Fischer and Crosse (1892) provided an exhaustive synonymy of the species known to then. Von Martens (1899) summarized subsequent literature. The reader is referred to the monographs by Reeve (1861), Brot (1874), Fischer & Crosse (1892), and Von Martens (1899) for aid in identifying the earlier known species.

### Subgenus *Pachychilus* I. Lea & H. C. Lea 1850

*Pachychilus* I. Lea & H. C. Lea 1850; Proc. Zool. Soc. Lond. 18:179.  
*Cercimelania* Fischer & Crosse 1892; Miss. Sci. Mex. II:327, 328, 340.

Type Species.—*Melania laevisissima* Sowerby 1824 (Reeve 1861; Conch. Icon. (Melania): pl. 18, fig. 126).  
*Cercimelania*: *Melania liebmanni* Philippi 1848.

Distribution.—Eastern México from Veracruz south to Nicaragua. One species, *Pachychilus laevisissimus*, occurs in Venezuela. Three species occur in Cuba.

Taxonomy.—Fifteen species and five subspecies have been proposed for members of this subgenus.

### *Pachychilus (Pachychilus) apsis* (Lea 1850)

*Melania apsis* Lea 1850; Proc. Zool. Soc. Lond. 18:90.- Reeve 1861; Conch. Icon. (Melania): pl. 38, fig. 266.- Brot 1974; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):40; pl. 5, fig. 3.

*Pachychilus apsis* (Lea). Fischer & Crosse 1892; Miss. Sci. Mex. II:356.- Von Martens 1899; Biol. Cent. Amer.:455.

Type Locality.—Vera Cruz, in marshy places.

Distribution.—Known only from the type locality.

### *Pachychilus (Pachychilus) chrysalis chrysalis* (Brot 1872)

*Melania chrysalis* Brot 1872; Mátériaux fam. Melaniens, 3:39: pl. 2, fig. 5.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):47; pl. 5, fig. 11.

*Pachychilus chrysalis* (Brot). Fischer & Crosse 1892; Miss. Sci. Mex. II:342; pl. 51, figs. 8, 8a-c.- Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 44:340.- Von Martens 1899; Biol. Cent. Amer.:457; pl. 27, figs. 6-9 (juvs.), figs.15-18 (shell).- Von Martens 1901; Biol. Cent. Amer.:646.

*Pachychilus chrysalis* var. *vulneratus* Fischer & Crosse 1892; Miss. Sci. Mex. II:342; pl. 51, figs. 9, 9a, 10, 10a.

*Pachychilus vulneratus* Fischer & Crosse. Pilsbry 1900; Nautilus 13:139.

*Pachychilus larvatus* Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):336; pl. 34, figs. 11, 11a-c.- Fischer & Crosse 1892; Miss. Sci. Mex. II:344.

Type Localities.—*Melania chrysalis*: not given.

*Pachychilus chrysalis* var. *vulneratus*: San Pedro Gineta, Isthmus of Tehuantepec, Oaxaca, México. *Pachychilus larvatus*: San Pedro Gineta, Isthmus of Tehuantepec, Oaxaca,

México.

Distribution.—CHIAPAS: San Pedro Jineta; Ixtacomitan. TABASCO: Teapa; Rio Puyacatengo, near Teapa (Pilsbry 1900). NICARAGUA: Lago de Managua (Von Martens 1901).

### *Pachychilus (Pachychilus) chrysalis nympha* Von Martens 1899

*Pachychilus chrysalis* var. *nympha* Von Martens 1899; Biol. Cent. Amer.:457; pl. 27, figs. 12-14.

Type Locality.—Rio Sucio, El Salvador.

Distribution.—Known only from the type locality.

### *Pachychilus (Pachychilus) corvinus corvinus* (Morelet 1849)

*Melania corvina* Morelet 1849; Test. Noviss. I:26.- Reeve 1861; Conch. Icon. (Melania): pl. 19, fig. 135b. Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):36; pl. 5, fig. 1.

*Pachychilus corvinus* (Morelet).- H. & A. Adams 1854; Gen. Moll.:298; pl. 31, fig. 7-7b.

*Pachychilus corvinus* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:336; pl. 52, figs. 7-7c.- Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 44:340.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):41.

*Melania cinerea* Morelet 1849; Test. Noviss. I:26.- Reeve 1861; Conch. Icon. (Melania): pl. 35, fig. 235.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):38; pl. 4, figs. 6.

*Pachychilus cinereus* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:334; pl. 52, figs. 8, 8a-c.- Von Martens 1899; Biol. Cent. Amer.:459.

*Melania panucula* Morelet 1851; Test. Noviss. II:23.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):27; pl. 3, figs. 3, 3a-b.

*Pachychilus panucula* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:341; pl. 53, figs. 8, 8a.- Von Martens 1899; Biol. Cent. Amer.:458.

*Melania tumidus* Tristram 1863; Proc. Zool. Soc. Lond. 31:413.

*Melania tumida* Tristram. Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):23.

*Pachychilus tumidus* (Tristram). Fischer & Crosse 1892; Miss. Sci. Mex. II:357.

*Pachychilus panucula* var. *tumidus* (Tristram). Von Martens 1899; Biol. Cent. Amer.:457; pl. 27, fig.5.

*Melania mexicana* Reeve 1861; Conch. Icon. (Melania): pl. 18, fig. 129.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):45; pl. 5, fig. 9.

*Pachychilus mexicanus* (Reeve). Fischer & Crosse 1892; Miss. Sci. Mex. II:340.

*Pachychilus corvinus* var. *lutescens* Fischer & Crosse 1892; Miss. Sci. Mex. II:336; pl. 53, figs. 7, 7a.

Type Localities.—*Melania corvina*: small streams of the Department of Verapaz, Guatemala. *Melania cinerea*: in the rivers of Cobán, Alta Vera Paz, Guatemala. *Melania panucula*: rivers of the Department of Petén, Guatemala. *Melania tumida*: lake of Petén, Guatemala. *Melania mexicana*: México. *Pachychilus corvinus* var. *lutescens*: Cobán, [Dept. Alta Verapaz], Guatemala.

Distribution.—TABASCO: Sierra Poaná. GUATEMALA, Dept. Alta Verapaz: Chejel; Chama; Tactic; Cobán; between Chama and Cobán (Hinkley 1920); Rio de la Pasión



system (Goodrich & Van der Schalie 1937). Dept. Baja Verapaz: Stream of Santa Rosa. Dept. Izabal: Rio Cavech; Rio Dulce near Livingston (Hinkley 1920). NICARAGUA: Rio Tungla, near Quiquina (Fluck 1905).

***Pachychilus (Pachychilus) corvinus indifferens* Crosse & Fischer 1891**

*Pachychilus indifferens* Crosse & Fischer 1891; Jour. de Chonchyl., 39:25.- Fischer & Crosse 1892; Miss. Sci. Mex. II:337; pl. 50, figs. 8–8c.

*Pachychilus corvinus indifferens* Crosse & Fischer. Goodrich & Van der Schalie 1937; Misc. Pub. Univ. Mich. Mus. Zool. (34):41. Type Locality.—Rio Motagua, Guatemala.

Distribution.—GUATEMALA, Dept. Baja Verapaz: Rio Motagua. Dept. Petén: Lago de Petén; Lago de Eckibix (Goodrich & Van der Schalie 1937).

***Pachychilus (Pachychilus) explicatus* Fischer & Crosse 1892**

*Pachychilus indifferens* var. *explicatus* Fischer & Crosse 1892; Miss. Sci. Mex. II:337; pl. 53, figs. 9, 9a (10, 10a).

*Pachychilus explicatus* Fischer & Crosse. Von Martens 1899; Biol. Cent. Amer.:459.

Type Locality.—Rio Machaquila, Dept. Petén, Guatemala.

Distribution.—Known only from the type locality.

***Pachychilus (Pachychilus) hinkleyi* (Marshall 1921)**

*Sphaeromelania hinkleyi* Marshall 1921; Proc. U. S. Nat. Mus. 58:301; pl. 17, figs. 4–13.

Type Locality.—Rio Tsalbha, Chamá, Dept. Alta Verapaz, Guatemala. Holotype USNM 336412.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920).

***Pachychilus (Pachychilus) indiorum* (Morelet 1849)**

*Melania indiorum* Morelet 1849; Test. Noviss. I:25.

*Melania laevissima* Sowerby. Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):34; pl. 4, fig. 5b.

*Pachycheilus laevissimus* (Sowerby). H. & A. Adams 1854:299; pl. 31, fig. 7.

*Pachychilus laevissimus* (Sowerby). Fischer & Crosse, 338.

*Pachycheilus indiorum* (Morelet). H. & A. Adams 1854:299.- Von Martens 1899; Biol. Cent. Amer.:455.- Goodrich & Van der Schalie 1937:42.

*Melania laevissima* var. *costato-plicata* Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):35; pl. 5, fig. 5.

*Pachychilus laevissimus* var. *costatoplicatus* (Brot). Fischer & Crosse 1892; Miss. Sci. Mex. II:329; pl. 33, fig. 5.

*Pachychilus indiorum* var. *costatoplicatus* (Brot). Von Martens 1899; Biol. Cent. Amer.:456.

*Pachychilus laevissimus* var. *varicosus* Fischer & Crosse 1892; Miss. Sci. Mex. II:329; pl. 53, fig. 6.

*Pachychilus indiorum* var. *varicosus* Fischer & Crosse. Von Martens 1899; Biol. Cent. Amer.:456.

*Melania sallei* Reeve 1861; Conch. Icon. (Melania): pl. 19, fig. 133.

*Melania radix* Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):30; pl. 3, fig. 5.

Type Localities.—*Melania indiorum*: Near the ruins, Palenque, Chiapas, México. *Melania laevissima* var. *costato-*

*plicata*: Palenque, Chiapas, México. *Pachychilus laevissimus* var. *varicosus*: Palenque, Chiapas, México. *Melania sallei*: not given. *Melania radix*: not given.

Distribution.—GUATEMALA, Dept. Alta Verapaz: La Ceiba (Goodrich & Van der Schalie 1937); Panzos; Chejel (Hinkley 1920). Dept. Guatemala: Lago de Amatitlán (Hinkley 1920). Dept. Izabal: Rio Cavech; Rio Dulce, near Livingston; Jocola; Panzos (Hinkley 1920). MÉXICO, CHIAPAS: Palenque. OAXACA: Isthmus of Tehuantepec. VERACRUZ: San Andres Tuxtla.

***Pachychilus (Pachychilus) liebmanni liebmanni* (Philippi 1848)**

*Melania liebmanni* Philippi 1848:58; pl. 5, fig. 8.- Reeve 1961; Conch. Icon. (*Melania*): pl. 20, fig. 139.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):48; pl. 6, fig. 1. *Pachychilus liebmanni* (Philippi). Fischer & Crosse 1892; Miss. Sci. Mex. II:347.- Von Martens 1899; Biol. Cent. Amer.:453; pl. 27, figs. 1, 2.

Type Locality.—México.

Distribution.—VERACRUZ: Playa Vicente (Von Martens 1899).

***Pachychilus (Pachychilus) liebmanni gassiesi* (Reeve 1861)**

*Melania gassiesi* Reeve 1861; Conch. Icon. (Melania): pl. 35, fig. 236.

*Pachychilus liebmanni* var. *gassiesi* (Reeve). Von Martens 1899; Biol. Cent. Amer.:454.

Type Locality.—Central America.

Distribution.—Unknown.

***Pachychilus (Pachychilus) liebmanni gracilior* Von Martens 1899**

*Pachychilus liebmanni* var. *gracilior* Von Martens 1899; Biol. Cent. Amer.:453.

*Melania gassiesi* (Reeve) Gassies 1863:93.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):47; pl. 5, fig. 12.

*Pachychilus gassiesi* (Reeve). Fischer & Crosse 1892; Miss. Sci. Mex. II:348; pl. 51, fig. 5.

Type Locality.—Rio Teotalcingo, Oaxaca, México.

Distribution.—Known only from the type locality.

***Pachychilus (Pachychilus) oerstedii oerstedii* (Mörch 1860)**

*Pachychilus oerstedii* Mörch 1860; Malak. Blätt. 7:79.- Von Martens 1899; Biol. Cent. Amer.:458; pl. 27, figs. 3–5.

*Melania oerstedii* (Mörch). Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):46; pl. 5, fig. 10.

*Pachychilus jansonii* H. Adams 1870. Proc. Biol. Soc. London:795.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):40.

Type Locality.—*Pachychilus oerstedii*: Segovia, Nicaragua. *Pachychilus jansonii*: Chontales, Nicaragua.

Distribution.—HONDURAS, Dept. Copán: Lancetilla (Pilsbry 1931:84). NICARAGUA, Dept. Chontales: Chontales. Dept. Matagalpa: Arroyo Alasan, Matagalpa.

Remarks.—Spelling of species and subspecies name *örstedii* is corrected to *oerstedii* following ICZN Article 32.5.2.1.

***Pachychilus (Pachychilus) oerstedii planensis (Lea 1858)***

*Melania planensis* Lea 1858; Proc. Acad. Nat. Sci. Phila.:118.- Lea 1864; Obs. Unionidae, 11:83; pl. 22, fig. 26.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):33; pl. 4, fig. 3.

*Pachychilus oerstedii* var. *planensis* (Lea). Von Martens 1899; Biol. Cent. Amer.:459.

*Pachychilus planensis* (Lea). Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):42.

Type Locality.—Plan and Omoa, valley of the Rio Ulúa, Honduras.

Distribution.—GUATEMALA, Dept. Izabal: Puerto Barrios (Goodrich & Van der Schalie 1937). HONDURAS: only from the type locality.

Remarks.—Spelling of species name *oerstedii* is corrected to *oerstedii* following ICZN Article 32.5.2.1.

***Pachychilus (Pachychilus) pottsianus Hinkley 1920***

*Pachychilus pottsianus* Hinkley 1920; Nautilus 33:54–55.

Type Locality.—A small stream near Jocola, Dept. Izabal, Guatemala. Type specimen not designated; presumably in Hinkley Collection, Illinois Museum of Natural History, University of Illinois.

Distribution.—GUATEMALA, Dept. Izabal: known only from the immediate vicinity of the type locality. Jocola was a plantation on the north side of the Lago de Izabel. *Pachychila pottsianus* was collected from two small rills on a hillside behind Jocola.

***Pachychilus (Pachychilus) schumoi Pilsbry 1931***

*Pachychilus schumoi* Pilsbry 1931; Nautilus 44:84; pl. 7, fig. 1 (shell).

Type Locality.—Rio Negro [Rio Salinas], Chamá, Dept. Alta Verapaz, Guatemala. Holotype ANSP 76231.

Distribution.—Known only from the type locality.

***Pachychilus (Pachychilus) turati (Villa 1854)***

*Melania turati* Villa 1854; in Strobel, Giornale di Malacologia 2:113.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):39; pl. 5, figs. 2, 2a.

*Pachychilus turatii* (Villa). Fischer & Crosse 1892; Miss. Sci. Mex. II:355; pl. 51, figs. 1, 1a. Von Martens 1899; Biol. Cent. Amer.:454; pl. 25, figs. 10–20.

*Melania gassiesi* Reeve. Strebel 1873:37; pl. 4, figs. 35, 35a-b.

Type Locality.—Not given.

Distribution.—VERACRUZ: Rio Atoyac; Rio Jamapa; Jalapa; near Orizaba; Córdoba (Von Martens 1899).

**Subgenus *Pilsbrychilus* Morrison 1952**

*Pilsbrychilus* Morrison 1952; American Malacological Union News Bulletin and Annual Report (1948):7.- Morrison 1954; Proc. U. S. Nat. Mus. 103:366.

Type Species.—*Pachycheilus dalli* Pilsbry 1896.

Distribution.—Southern México.

Taxonomy.—A single species is recognized.

***Pachychilus (Pilsbrychilus) dalli Pilsbry 1896***

*Pachycheilus dalli* Pilsbry 1896; Science, 3:608.- Pilsbry 1896;

Proc. Acad. Nat. Sci. Phila. 48:269.

*Pachychilus dalli* Pilsbry. Von Martens 1899; Biol. Cent. Amer.:456; pl. 26, fig. 4.

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—Known only from the type locality. The type locality most likely is the Isthmus of Tehuantepec, and not the city. Numerous searches have been made in the area near the city, but without success in finding the species.

**Subgenus *Glyptomelania* Crosse & Fischer 1892**

*Glyptomelania* Fischer & Crosse 1892; Miss. Sci. Mex. II:328, 351.- Von Martens 1899; Biol. Cent. Amer.:438.- Morrison 1954; Proc. U. S. Nat. Mus. 103:366.

Type Species.—*Melania glaphyra* Morelet 1849.

Distribution.—Nicaragua, Honduras, El Salvador, and Guatemala north to Chiapas and Tabasco, México.

Taxonomy.—Five species and twelve subspecies are recognized.

***Pachychilus (Glyptomelania) glaphyrus glaphyrus (Morelet 1849)***

*Melania glaphyra* Morelet 1849; Test. Noviss. I:24.- Reeve 1861; Conch. Icon. (*Melania*): pl. 2, fig. 8.

*Pachychilus glaphyrus* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:352; pl. 52, fig. 2a.- Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 45:339; pl. 14, fig. 5.- Von Martens 1899; Biol. Cent. Amer.:444.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):39.

Type Locality.—Not given.

Distribution.—GUATEMALA. Dept. Izabal: Jocolo (Hinkley 1920). Dept. Alta Verapaz: Arroyo Yalchactilá, Rio de la Passion, ca. 4 miles southwest of La Ceiba (Goodrich & Van der Schalie 1939). Dept. Petén: Springs of the [Rio] Usumacinta (Fischer & Crosse 1892).

***Pachychilus (Glyptomelania) glaphyrus bicarinatus Von Martens 1901***

*Pachychilus glaphyrus* var. *Pilsbry* 1893; Proc. Acad. Nat. Sci. Phila. 45:339; pl. 14, fig. 6.

*Pachychilus glaphyrus* var. *bicarinatus* Von Martens 1901; Biol. Cent. Amer.:445.

Type Locality.—Tabasco, México.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) glaphyrus glaphyroides Fischer & Crosse 1892.***

*Melania immanis* var. *ε* Brot; 1874:22; pl. 2, fig. 1f.

*Pachychilus glaphyrus* var. *ε glaphyroides* Fischer & Crosse 1892; Miss. Sci. Mex. II:352.- Von Martens 1899; Biol. Cent. Amer.:444.

Type Locality.—Springs of the Rio Usumacinta, Guatemala.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) glaphyrus immanis (Morelet 1851)***

*Melania immanis* Morelet 1851; Test. Noviss. II:22.- Reeve 1861;

Conch. Icon. (*Melania*): pl. 35, fig. 238.

*Pachychilus glaphyrus immanis* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:351; pl. 53; Figs. 1, 1a.- Von Martens 1899; Biol. Cent. Amer.:438.

Type Locality.—Small streams in the Province of Petén, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Dolores; Cobón; Rio Jacito at Punta Gorda (Von Martens 1899:444).

***Pachychilus (Glyptomelania) glaphyrus polygonotus*  
(Lea 1850)**

*Melania polygonotus* Lea 1850:195.- Reeve 1861; Conch. Icon. (*Melania*): pl. 3, fig. 11.

*Pachychilus glaphyrus polygonotus* (Lea). Fischer & Crosse 1892; Miss. Sci. Mex. II:351.- Von Martens 1899; Biol. Cent. Amer.:444.

*Pachychilus glaphyrus rovirosai* Pilsbry 1892; Proc. Acad. Nat. Sci. Phila. 44:153; pl. 8, fig. 10.- Pilsbry 1893; Nautilus 7:62; pl. 1, figs. 9, 10.

Type Localities.—*Melania polygonotus*: “Copan”. Syntypes in the USNM. (It is not clear whether Lea intended Copán, Dept. Santa Bárbara, Honduras, or Cobán, Dept. Alta Verapaz, Guatemala, as suggested by Von Martens. If Copán is the type locality it seems highly unlikely that *rovirosai* could be a synonym of *polygonotus* as suggested by Von Martens 1899:444.) *Pachychilus rovirosai*: Limón, Tabasco, México. Holotype ANSP.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Dolores (Von Martens 1899). TABASCO: western brow of the little ridge of the Limón, Sierra Poaná (Pilsbry 1893b).

***Pachychilus (Glyptomelania) glaphyrus pyramidalis*  
(Morelet 1851)**

*Melania pyramidalis* Morelet 1849; Test. Noviss. I:25.

*Melania opiparis* Morelet. Reeve 1861; Conch. Icon. (*Melania*): pl. 5, fig. 25.

*Melania godmani* Tristram 1863:113.

*Pachychilus godmani* (Tristram). Fischer & Crosse 1892; Miss. Sci. Mex. II:363.

*Pachychilus glaphyrus* vars.  $\eta$ ,  $\theta$ . Fischer & Crosse 1892; Miss. Sci. Mex. II:353; pl. 52, figs. 1, 1a; pl. 53, fig. 4.

*Pachychilus glaphyrus pyramidalis* (Morelet). Von Martens 1899; Biol. Cent. Amer.:446; pl. 25, figs. 2, 3.

Type Localities.—*Melania pyramidalis*: Small streams of the interior of Tabasco, México. *Melania godmani*: Lake Petén, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Panzos (Hinkley 1920). Dept. Izabal: Jocolo (Hinkley 1920); Esmeralda (Hinkley 1920); Livingston (Hinkley 1920); across the Rio Dulce from Livingston (Hinkley 1920). Dept. Petén: San Luís; Lake Petén (Von Martens 1899).

***Pachychilus (Glyptomelania) glaphyrus scamnatus*  
Fischer & Crosse 1892**

*Pachychilus glaphyrus* var.  $\delta$  *scamnatus* Fischer & Crosse 1892; Miss. Sci. Mex. II:352; pl. 52, fig. 2.- Von Martens 1899; Biol.

Cent. Amer.:444.

Type Locality.—Cobán, Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) glaphyrus opiparis* (Morelet  
1851)**

*Melania opiparis* Morelet 1851:23.

*Pachychilus immanis* var.  $\beta$  Brot 1872; 21; pl. 2, fig. 1b.

*Pachychilus glaphyrus* var.  $\zeta$  *semilaevis* Fischer & Crosse 1892; Miss. Sci. Mex. II:352; pl. 53, figs. 2, 2a.- Von Martens 1899; Biol. Cent. Amer.:445.

*Pachychilus glaphyrus* var.  $\theta$  *opiparis* Fischer & Crosse 1892; Miss. Sci. Mex. II:353; pl. 53, fig. 3.- Von Martens 1899; Biol. Cent. Amer.:445.

Type Localities.—*Melania opiparis*: Dolores, Dept. Petén, Guatemala. *Pachychilus glaphyrus* var.  $\zeta$  *semilaevis*: Dolores, Dept. Petén, Guatemala.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) lacustris lacustris*  
(Morelet 1849)**

*Melania lacustris* Morelet 1849; Test. Noviss. I:25.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (*Melaniaceen*):25.

*Pachychilus lacustris* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:359; pl. 51, figs. 3, 3a; pl. 52, figs. 4, 4a.- Von Martens 1899; Biol. Cent. Amer.:447.

*Pachychilus glaphyrus lacustris* (Morelet). Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):40.

Type Locality.—Lake near Izabal, Guatemala.

Distribution.—GUATEMALA, Dept. Guatemala: Lago de Amatitlán (Hinkley 1920). Dept. Izabal: Jocolo (Hinkley); Lago de Izabal (Von Martens 1899).

***Pachychilus (Glyptomelania) lacustris amphibolus* Fischer  
& Crosse 1892**

*Pachychilus lacustris* var. *amphibolus* Fischer & Crosse 1892; Miss. Sci. Mex. II:360; pl. 52, fig. 3.- Von Martens 1899; Biol. Cent. Amer.:447.

*Pachychilus lacustris* var. *pumila* Fischer & Crosse 1892; Miss. Sci. Mex. II:360; pl. 51, figs. 4, 4a.

*Pachychilus lacustris* var. *pumilus* Fischer & Crosse. Von Martens 1899; Biol. Cent. Amer.:448.

*Pachychilus lacustris* var. *major* Fischer & Crosse 1892; Miss. Sci. Mex. II:360.- Von Martens, 448; pl. 25, fig. 8.

*Pachychilus lacustris* var. *terebralis* Fischer & Crosse 1892; Miss. Sci. Mex. II:360; pl. 52, fig. 3a.- Von Martens 1899; Biol. Cent. Amer.:448.

*Pachychilus lacustris* var. *eliminatus* Fischer & Crosse 1892; Miss. Sci. Mex. II:360.- Von Martens 1899; Biol. Cent. Amer.:448.

*Pachychilus lacustris* var. *conradi* Von Martens 1899; Biol. Cent. Amer.:448; pl. 25, figs. 9, 10.

*Pachychilus glaphyrus lacustris* (Morelet). Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):40.

Type Localities.—All of these varieties were described from Lago de Izabal, Dept. Izabal, Guatemala.

Distribution.—GUATEMALA, Dept. Izabal: Lago de Izabal. Dept. Petén: Arroyo Subín; Rio de la Pasion (Goodrich & Van der Schalie 1937).



***Pachychilus (Glyptomelania) largillierti largillierti*  
(Philippi 1843)**

*Melania largillierti* Philippi 1843:62, pl. 2, fig. 10.- Reeve 1861; Conch. Icon. (Melania): pl. 18, fig. 127.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):31; pl. 4, figs. 1a-c.

*Pachychilus largillierti* (Philippi).- Fischer & Crosse 1892; Miss. Sci. Mex. II:364; pl. 52, figs. 5, 5a.- Von Martens 1899; Biol. Cent. Amer.:450; pl. 25, fig. 12; pl. 26, fig. 2.- Von Martens 1901; Biol. Cent. Amer.:645; pl. 44, fig. 17.- Goodrich & Van der Schalie 1937:40-41.

*Melania intermedia* Von dem Busch, in Philippi 1844:160; pl. 3, fig. 4.- Reeve 1861; Conch. Icon. (Melania): pl. 20, fig. 141.

*Melania rusticula* Von dem Busch 1858:36.

*Melania rubicunda* Reeve 1861; Conch. Icon. (Melania): pl. 31, fig. 206.

*Melania salvini* Tristram 1863:413.

*Melania salvini* Tristram. Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):27 (amended name).

*Pachychilus subexaratus* Crosse & Fischer 1891:219.- Fischer & Crosse 1892; Miss. Sci. Mex. II:350; pl. 52, fig. 6.

*Pachychilus largillierti* var. *nodulosus* Von Martens 1899; Biol. Cent. Amer.:451; pl. 25, fig. 4.

Type Localities.—*Melania largillierti*: not given. *Melania intermedia*: Lago de Nicaragua. *Melania rusticula*: not given. *Melania rubicunda*: not given. *Melania salvini*: Rio de La Pason, Dept. Alta Verapaz, Guatemala. *Pachychilus subexaratus*: a small stream near Lago de Izabal, Guatemala. *Pachychilus largillierti* var. *nodulosus*; Paso Antonio, Guatemala.

Distribution.—GUATEMALA, Dept. Escuintla: Mirandilla. Dept. Guatemala: Lago de Amatitlan; Rio Michatoya, issuing from the lake; Rio Maria Linda; (Morelet); Paso Antonio, near Torola. Dept. Izabal: Rio Cavech; Plantera (Hinkley 1920). Dept. Petén: Rio de la Pasion. Dept. Zacapa: Lagarto, near Zacapa. NICARAGUA: Lago de Nicaragua. EL SALVADOR, Dept. San Miguel: Joya.

***Pachychilus (Glyptomelania) largillierti stollii* Von  
Martens 1899**

*Pachychilus largillierti* var. *stollii* Von Martens 1899; Biol. Cent. Amer.:452; pl. 25, figs. 5-9.

Type Locality.—Environs of Retalhuleu, Dept. Retalhuleu, Guatemala.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) obeliscus obeliscus* (Reeve  
1861)**

*Melania obeliscus* Reeve 1861; Conch. Icon. (Melania): pl. 4, figs. 20.- Brot 1874:24; pl. 3, fig. 1a.

*Pachychilus obeliscus* (Reeve). Fischer & Crosse 1892; Miss. Sci. Mex. II:358.- Von Martens 1899; Biol. Cent. Amer.:446.

Type Locality.—Honduras.

Distribution.—HONDURAS: unknown.

***Pachychilus (Glyptomelania) obeliscus examartus* Fischer  
& Crosse 1892**

*Melania obeliscus* var.  $\gamma$  Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):24; pl. 3, fig. 1b.

*Pachychilus obeliscus* var. *examartus* Fischer & Crosse 1892; Miss. Sci. Mex. II:358.- Von Martens 1899; Biol. Cent. Amer.:447.

Type Locality.—Not given.

Distribution.—Unknown.

***Pachychilus (Glyptomelania) obeliscus pyrgiscus* Fischer  
& Crosse 1892**

*Pachychilus obeliscus* var. *pyrgiscus* Fischer & Crosse 1892; Miss. Sci. Mex. II:358; pl. 50, figs. 9a, 9b.- Von Martens 1899; Biol. Cent. Amer.:447; pl. 25, fig. 6.

Type Locality.—Not given.

Distribution.—GUATEMALA, Dept. Petén: Lago de Petén.

***Pachychilus (Glyptomelania) potomarchus* Pilsbry 1892**

*Pachychilus potomarchus* Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 45:340; pl. 14, fig. 7.

*Pachychilus glaphyrus potomarchus* Pilsbry. Von Martens 1899; Biol. Cent. Amer.:446.

Type Locality.—Tabasco, México.

Distribution.—Known only from the type locality.

***Pachychilus (Glyptomelania) subnodosus* (Philippi 1847)**

*Melania subnodosa* Philippi 1847:173; pl. 4, fig. 18.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):29; pl. 3, fig. 5.

*Pachychilus subnodosus* (Philippi). Fischer & Crosse 1892; Miss. Sci. Mex. II:366.- Von Martens 1899; Biol. Cent. Amer.:450; pl. 25, figs. 11, 13.

Type Locality.—Not given.

Distribution.—NICARAGUA, Dept. Managua: Managua (Von Martens 1899).

**Subgenus *Oxymelania* Fischer & Crosse 1892**

*Oxymelania* Fischer & Crosse 1892; Miss. Sci. Mex. II:328, 366.- Von Martens 1899; Biol. Cent. Amer.:461.

*Potamanax* Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 44:304.

Type Species.—*Oxymelania*: *Melania schiedeanus* Philippi 1843. *Potamanax*: *Pachychilus (Potamanax) rovirosai* Pilsbry 1893.

Distribution.—Streams from the Rio Guayalejo system in northeastern México south to the Rio Usumacinta system in Guatemala.

Taxonomy.—Eighteen species and four subspecies are recognized.

***Pachychilus (Oxymelania) apheles* Thompson 1967**

*Pachychilus apheles* Thompson 1967; Nautilus 81:26; pl. 28, figs. 1-5.

Type Locality.—A spring run 14 miles west northwest of Ciudad Valles, on the road to Rio Verde, San Luis Potosí, México. Holotype UF 19756.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) atratus* Pilsbry & Hinkley 1910**

*Pachychilus atratus* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:524-525; pl. 23, figs. 13-18.- Pilsbry 1956, Proc.

Acad. Nat. Sci. Phila. 108:36; pl. 4, figs. 6, 10, 13, 14, 15.

*Pachychilus atratus ganinas* Pilsbry & Hinkley 1910; pl. 23, figs. 19, 20.- Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:36.

*Pachychilus atratus suprastratus* Pilsbry & Hinkley 1910:526.- Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:36 (as *multistriatus*).

Type Localities.—*Pachychilus atratus*: Rio Tamasopo near Verastagu, San Luís Potosí, México; holotype and 3 figured paratypes ANSP 99570 (Pilsbry 1956:33). *Pachychilus atratus ganinas*: Rio Ganina [Gallina] 3 miles SW of San Dieguito, San Luís Potosí; holotype ANSP 99577. *Pachychilus atratus suprastratus*: Rio Valles at Mecos Falls, and some rapids 2 miles west of Mecos, San Luís Potosí; holotype ANSP 99575.

Distribution.—SAN LUÍS POTOSÍ: known from the the type localities cited above.

***Pachychilus (Oxymelania) corpulentus* Thompson 1967**

*Pachychilus corpulentus* Thompson 1967; Nautilus 81:28; pl. 28, fig. 1–5.

Type Locality.—Nacimiento de Rio Mante, about 5 miles west of Ciudad Mante, Tamaulipas, México [Rio Guayalejo system]. Holotype UF 19754.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) graphium* (Morelet 1849)**

*Melania graphium* Morelet 1849; Test. Noviss. I:26.- Reeve 1861; Conch. Icon. (Melania): pl. 21, fig. 150.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):41, pl. 5, fig. 4.

*Pachycheilus graphium* (Morelet). H. & A. Adams 1854:298.

*Pachychilus graphium* (Morelet). Fischer & Crosse 1892; Miss. Sci. Mex. II:332; pl. 51, figs. 2, 2a.- Von Martens 1899; Biol. Cent. Amer.:461.- Von Martens 1901; Biol. Cent. Amer.:646.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):39–40; text-fig. 1:7 (radula).

*Pachychilus cumingi* Lea 1850. Proc. Zool. Soc. Lond. 18:179.

*Melania renovata* Brot 1862; Matériaux fam. Mélaniens, 1:43.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):41; pl. 5, fig. 5.

*Melania gracilis* Tristram 1863; Proc. Zool. Soc. Lond. 31:413.

*Pachychilus tristrami* Fischer & Crosse 1892; Miss. Sci. Mex. II:369.

*Pachychilus graphium* var. *reducta* Fischer & Crosse 1892; Miss. Sci. Mex. II:333.

*Pachychilus graphium* var. *transcendens* Fischer & Crosse 1892; Miss. Sci. Mex. II:333; pl. 50, figs. 7, 7a.

Type Localities.—*Melania graphium*: streams of Verapaz. *Pachychilus cumingi*: Cobán, in large rivers. *Melania renovata*: not given. *Melania gracilis*: Lago de Petén. *Pachychilus tristrami*: Lago de Petén. *Pachychilus graphium* var. *reducta*: Verapaz. *Pachychilus graphium* var. *transcendens*: in affluents of the Rio Usumacinta, San Miguel Uspatan, Dept. El Quiché, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: on road between Cobán and Chamá (Hinkley 1920). Dept. Izabal: Esmeralda (Hinkley 1920). Dept. El Quiché. Dept. Petén: Lago de Petén. YUCATÁN: (Von Martens 1901).

***Pachychilus (Oxymelania) humerosus* Pilsbry & Hinkley 1910**

*Pachychilus humerosus* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:526

Type Locality.—Rio Tamasopo near Verastagua, above and below the Natural Bridge, San Luís Potosí, México. Holotype and paratype ANSP 99579.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) moctezumensis* Pilsbry & Hinkley 1910**

*Pachychilus moctezumensis* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:522; pl. 24, figs. 11, 12.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108: text-fig. 2 (radula).

Type Locality.—Rio Moctezuma at the ford south of Tampamolón, San Luís Potosí, México. Holotype and three figured paratypes ANSP 99568.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) monachus* Pilsbry & Hinkley 1910**

*Pachychilus monachus* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:527; pl. 24, figs. 21–25.- Thompson 1967; Nautilus 81: pl. 28, figs. 6–10.

Type Locality.—Rio Coy [Choy?], 3 miles south of Los Palmas, San Luís Potosí, México. Holotype and four figured paratypes ANSP 99581.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) pleurostriatus pleurostriatus* (Say 1831)**

*Melania pleurostriata* Say 1831; New Harmony Disseminator of Useful Knowledge, December 1831.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):44.

*Pachychilus pleurostriatus* (Say). Fischer & Crosse 1892; Miss. Sci. Mex. II:370.- Von Martens 1899; Biol. Cent. Amer.:449; pl. 26, fig. 1.- Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:523; pl. 23, figs. 1–5.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:32; text-fig. 1 (radula).

*Melania rubida* Lea 1856; Proc. Acad. Nat. Sci. Phila.:145.- Lea 1864; Obs. Unionidae, 11:77; pl. 22, fig. 16.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):341; pl. 34, fig. 2.

Type Localities.—*Melania pleurostriata*: not given.

*Melania rubida*: México.

Distribution.—SAN LUÍS POTOSÍ: Rio Coy. A record from Laguna de Chapala, Jalisco is discounted here (Von Martens 1899).

***Pachychilus (Oxymelania) pleurostriatus longus* Pilsbry & Hinkley 1910**

*Pachychilus pleurostriatus longus* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:524; pl. 23, figs. 11, 12.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:33.

Type Locality.—Rio Ganina [Gallina], three miles southwest of San Dieguito, San Luís Potosí, México.

Holotype and figured paratype ANSP 99583.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) pleurostriatus tamosopensis*  
Pilsbry & Hinkley 1910**

*Pachychilus pleurostriatus tamosopensis* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:524; pl. 23, figs. 6–9.- Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:33.

Type Locality.—A small stream north of the mill south of the Tamasopo Sugar Co., San Luís Potosí, México. Holotype and 4 figured paratypes ANSP 99584.

Distribution.—Known only from the type locality.

***Pachychilus (Oxymelania) pleurotoma* Pilsbry &  
Hinkley 1910**

*Pachychilus pleurotoma* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:530; pl. 24, figs. 13–15.- Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:37.

Type Locality.—First rill on the road [from Tampamolón] to the Rio Moctezuma, San Luís Potosí, México. Holotype and figured paratypes ANSP 99592.

Distribution.—SAN LUÍS POTOSÍ: small streams near Tampamolón; Rio Axtla, Xilitla (Pilsbry 1956).

***Pachychilus (Oxymelania) schiedeanus schiedeanus*  
(Philippi 1843)**

*Melania schiedeanus* Philippi 1843:62; pl. 2, fig. 11.- Reeve 1861; Conch. Icon. (*Melania*): pl. 15, fig. 101.- Strebel 1873:35; pl. 4, figs. 37, 37a. Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):42; pl. 5, figs. 6, 6a.

*Pachychilus schiedeanus* (Philippi). Fischer & Crosse 1892; Miss. Sci. Mex. II:366; pl. 50, figs. 10–10b.- Von Martens 1899; Biol. Cent. Amer.:462.

Type Locality.—Small brooks and ditches around the City of México. This occurrence has not been corroborated by subsequent investigations.

Distribution.—VERACRUZ: Misantla; Rio de Misantla; Arroyo Viejo, 3 miles from Misantla; Córdoba; Coatepec.

***Pachychilus (Oxymelania) schiedeanus strebelianus*  
Fischer & Crosse 1892**

*Melania saussurei* (Brot?). Strebel 1873; Beitrag. Mex. Land- und Süßw.-Conch. I:36; 43, 43a.

*Pachychilus schiedeanus* var. *strebelianus* Fischer & Crosse 1892; Miss. Sci. Mex. II:396.

*Pachychilus schiedeanus* var. *strebelianus* Fischer & Crosse. Von Martens 1899; Biol. Cent. Amer.: 462.

Type Locality.—Streams of Palpoala, close to Misantla, Veracruz; México.

Distribution.—VERACRUZ: known only from the vicinity of the type locality.

***Pachychilus (Oxymelania) saussurei* (Brot 1874)**

*Melania saussurei* Brot; 1860; in Rev. Zoology:264; pl. 17, fig. 11.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):43; pl. 5, fig. 7.

*Pachychilus saussurei* (Brot). Fischer & Crosse 1892; Miss. Sci.

Mex. II:368.- Von Martens 1899; Biol. Cent. Amer.:462.

Type Locality.—Swamps in the woods bordering the Rio Grande, between Tampico and México. This Rio Grande runs into the Lagoon of Meztitlán. The road from Tampico to México City crosses the river between Zacualtipán and Atotonilco, Hidalgo (Von Martens 1899).

Distribution.—Known only from the type locality. Apparently this species is extinct. Attempts by the author to locate populations in 2000 were unsuccessful.

***Pachychilus (Oxymelania) suturalis* Pilsbry & Hinkley 1910**

*Pachychilus suturalis* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:529; pl. 24, figs. 16–29.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:37.

Type Locality.—Creek near Tampamolón, San Luís Potosí, México. Holotype and 4 figured paratypes ANSP 99585.

Distribution.—SAN LUÍS POTOSÍ: streams in the vicinity of Tampamolón; Coxcatlán; creek ca. 7 miles S of Huichihuayán; Tamazunchale (Pilsbry 1956).

***Pachychilus (Oxymelania) tristis* Pilsbry & Hinkley 1910**

*Pachychilus tristis* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:522; pl. 24, figs. 7–10.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:33.

Type Locality.—Rio Tamasopo at the natural bridge, near Verastagu, San Luís Potosí, México. Holotype and 3 figured paratypes NSP 99566.

Distribution.—SAN LUÍS POTOSÍ: known only from the immediate vicinity of the type locality.

***Pachychilus (Oxymelania) vallesensis vallesensis*  
Hinkley 1907**

*Pachychilus vallesensis* Hinkley 1907; Nautilus 21:25; pl. 5, figs. 1–3, 5–7.- Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:528.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:37.

Type Locality.—Rio Valles, Valles, San Luís Potosí, México. Holotype ANSP 96592.

Distribution.—TAMAULIPAS, Rio Guayalejo system: Rio Frio, Gomez Farias; Rio Temesi, below the bridge at Magiscatzin (Pilsbry 1956). SAN LUÍS POTOSÍ, Rio Panuco system: Rio Moctezuma at the ford south of Tampamolón; Rio Panuco, Pujal (Pilsbry & Hinkley 1910).

***Pachychilus (Oxymelania) vallesensis attenuatus* Pilsbry  
& Hinkley 1910**

*Pachychilus vallesensis* Hinkley 1907; Nautilus 21: pl. 5, figs. 4, 8, 9.

*Pachychilus vallesensis attenuatus* Pilsbry & Hinkley 1910; Proc. Acad. Nat. Sci. Phila. 61:528.

Type Locality.—Chaimai Creek, about halfway between Valles and Pujal, San Luís Potosí, México. Holotype and figured paratype ANSP 96592a.

Distribution.—SAN LUÍS POTOSÍ: in addition to the type locality this subspecies is known from the Rio Casas Viejas, coming from the north of Valles and emptying into the



Rio Valles some miles east of Mecos Falls (Pilsbry & Hinkley 1910).

### Subgenus *Potamanax* Pilsbry 1892

*Potamanax* Pilsbry 1892:431.- Pilsbry 1893b:63.

*Pachychilus (Oxymelania)* Fischer & Crosse, in part. Morrison 1954; Proc. U. S. Nat. Mus. 103:365.

Type Species.—*Potamanax rovirosai* Pilsbry 1892.

Distribution.—Three species are recognized from the Rio Usumacinta system of Guatemala and adjacent México.

### *Pachychilus (Potamanax) pasionensis* Pilsbry 1956

*Pachychilus pilsbryi* (Von Martens). Goodrich & Van der Schalie 1937; Misc. Pub. Univ. Mich. Mus. Zool., (34):42–43.

*Pachychilus pasionensis* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:34; pl. 4, figs. 4, 5.

Type Locality.—A small arroyo tributary to the Rio de la Pasión east of Sebol, Dept. Alta Verapaz, Guatemala. Holotype UMMZ 65510.

Distribution.—GUATEMALA: known only from the Rio de la Pasión in the Dept. Petén and the Dept. Alta Verapaz (Goodrich & Van der Schalie 1937).

### *Pachychilus (Potamanax) pilsbryi* Von Martens 1899.

*P.[otamanax] rovirosai* Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 44:431; pl. 14, figs. 8, 9.- Pilsbry 1893; Nautilus 7:64: pl. 3, figs. 8, 9.

*Pachychilus (Potamanax) rovirosai* (Pilsbry). Fischer & Crosse 1892; Miss. Sci. Mex. II:668; pl. 71, fig. 12.

*Pachychilus pilsbryi* Von Martens 1899; Biol. Cent. Amer.:463; pl. 46, fig. 8. (new name for *P. [Potamanax] rovirosai* Pilsbry 1892, non *Pachychilus glaphyrus* var. *rovirosai* Pilsbry 1892.- Von Martens 1901; Biol. Cent. Amer.:646, pl. 44, fig. 8.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:34; pl. 4, figs. 11, 12.

Type Locality.—Sierra Poaná, Tabasco, México. Cotypes (2) ANSP 63386.

Distribution.—TABASCO: Rio Usumacinta, Santa Gertruda (Von Martens 1899); Santa Gertrudis, Rio Usumacinta (Von Martens 1901).

Remarks.—The name *pilsbryi* was proposed by Von Martens, because he considered *Potamanax* not to be distinct from *Pachychilus*, subgen. *Oxymelania*. Thus, *Potamanax rovirosai* Pilsbry 1892, p. 341 is a primary homonym of *Pachychilus glaphyrus rovirosai* Pilsbry 1892, p. 153. However, Pilsbry (1893) compared *Potamanax* to the Cuban species *Hemisinus brevis* (Orbigny) (Thiaridae) and not to *Pachychilus*. The generic and familial affinities of this species remain to be resolved. Pilsbry did not address these questions in 1956 (Proc. Acad. Nat. Sci. Phila. 109).

### *Pachychilus (Potamanax) sargi* (Crosse & Fischer 1875)

*Melania sargi* Crosse & Fischer 1875; Jour. de Conchyl. 23:225, pl. 11, fig. 4.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melaniaceen):335; pl. 34, figs. 12, 12a.

*Pachychilus sargi* (Crosse & Fischer). Fischer & Crosse 1892; Miss. Sci. Mex. II:338; pl. 51, figs. 6, 6a, 7.- Von Martens 1899; Biol. Cent. Amer.:463.

Type Locality.—Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Cahabón (Von Martens 1899).

### Family THIARIDAE Gill 1871

#### Genus *Aylacostoma* Spix 1827

*Aylacostoma* Spix 1827; in Wagner, Testacea fluviatilia ... Braziliam..., Munich:15; pl. 8.- Morrison 1954; Proc. U. S. Nat. Mus. 103:375, 376.

Type Species.—*Melania glabra* Spix 1827.

Distribution.—Central America south to southern Brazil.

Taxonomy.—The genus contains four subgenera, two of which occur in Central America (Morrison 1954).

#### Subgenus *Aylacostoma* Spix 1827

Distribution.—Guatemala, Colombia and Venezuela south to southeastern Brazil.

Taxonomy.—One species occurs in Guatemala. Numerous species are found in South America.

#### *Aylacostoma (Aylacostoma) rubiginosum* (Morelet 1849)

*Melania rubiginosa* Morelet 1849; Testacea Noviss. I:25.

*Hemisinus rubiginosus* (Morelet). H. & A. Adams 1854; Gen. Recent Mollusca, I:303.- Reeve 1860: pl. 3, figs. 13, 13a.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab. (Melanidae):394; pl. 41, fig. 1.- Hinkley 1920; Nautilus 34:47.

*Semisinus rubiginosus* (Morelet). Fischer & Crosse 1892:318; pl. 50, figs. 11, 11a-d.- Von Martens 1899; Biol. Cent. Amer.:464.

*Aylacostoma rubiginosum* (Morelet). Morrison 1954; Proc. U. S. Nat. Mus. 103:377.

*Melania petenensis* Tristram 1862; Proceedings of the Zoological Society:441.

*Hemisinus petenensis* (Tristram). Brot 1862; Materiaux fam. Melaniens, 2:51.

*Hemisinus zoster* Brot 1862; Materiaux fam. Melaniens, 2:62.

Type Localities.—*Melania ruiginosa*: Lago de Izabal, [Dept. Izabal], Guatemala. *Melania petenensis*: Lake of Petén, Guatemala. *Hemisinus zoster*: not given.

Distribution.—GUATEMALA, Dept. Izabal: Jocala, on the north shore of Lago de Izabal (Hinkley 1920). Dept. Petén: Lake of Petén (Von Martens 1899).

#### Subgenus *Hemisinus* Swainson 1840

*Hemisinus* Swainson 1840; Treatise on Malacology:200, 341.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab., (Melanidae):369.- Morrison 1954; Proc. U. S. Nat. Mus. 103:367 - Gomez, Strong & Glaubrecht, 2011; Malacologia 53:229-250.

*Semisinus* P. Fischer 1885; Manuel de Conchyl., 701.- Fischer & Crosse 1892:313.- Von Martens 1899; Biol. Cent. Amer.:464.

Type Species.—*Melania lineolata* Gray 1828.

Distribution.—Jamaica, Central America south to Ecuador and to Peru.

#### *Aylacostoma (Hemisinus) maculatum* (Lea 1832)

*Melania maculata* Lea 1832; Trans. Amer. Philos. Soc. 5:194; pl. 19, fig. 75.

*Semisinus maculatus* (Lea).- Von Martens 1901; Biol. Cent. Amer.:646; pl. 46, fig. 7.

*Melania osculatii* Ant. Villa 1855; Notizie intorno al genera *Melania*, in Atti dell' Accad. Fisico-Medio-statistica di Milano, 2:8.

*Hemisinus osculatii* (Villa). Reeve 1860: pl. 3, fig. 10.- Brot 1874; in Martini & Chemnitz, Syst. Conch. Cab., (Melanidae):379; pl. 8, figs. 8, 8, 8a-b.

Type Localities.—*Melania maculata*: “Peru”. *Melania osculatii*: Quito, Ecuador.

Distribution.—COSTA RICA: confluence of the Rio Shei and the Rio Tararia (Von Martens 1901). COLOMBIA. ECUADOR.

#### Genus *Melanoides* Olivier 1804

Type Species.—*Turba tuberculata* O. F. Müller, 1774.

Distribution.—Africa east through southern and eastern Asia, Indonesia, northern Australia, and Pacific Islands.

Taxonomy.—Numerous species have been described. The number of valid taxa remains undetermined.

#### *Melanoides tuberculata* (O. F. Müller 1774)

Distribution.—Africa, Asia, Australia, the Pacific Islands. Introduced widely into Neotropical and Neotemperate regions. The species is spreading rapidly throughout México and Central America, and by now it is assumed to be established in nearly all drainage systems in these countries.

Taxonomy.—Brandt (1974:164) listed 37 synonyms for *Melanoides tuberculatus*. *Melanoides* are parthenogenetic uni-parental species, in which each individual is reproductively independent from all other individuals. Bi-parental species evolutionary concepts do not apply to such organisms. *Melanoides turriculus* (Lea 1850) is a name that is commonly encountered in the Neotropical literature. It is generally regarded as a synonym of *M. tuberculatus*.

#### Superfamily LITTORINOIDEA Children 1834

##### Family ANNULARIIDAE Henderson & Bartsch 1920

Distribution.—West Indies, south Florida, México south to Panamá, Colombia and Venezuela.

Taxonomy.—Numerous genera, subgenera and species.

Remarks.—Historically the classification of annulariids and their sister group, the Eur-Asian-Ethiopian Pomatiidae, has been based on structure of the operculum and upon breathing devices associated with the aperture. Henderson and Bartsch (1920) provided a comprehensive classification of the Annulariidae based on these features. The opercula of many of the México-Central American species were not known at that time. The classification presented below reflects new material I have examined. Solem (1961) adapted sub-generic terminology for the mainland species proposed by H. B. Baker (1928). Watters (2006) reviewed the family and proposed a classification that differs from systems adapted by previous workers. He de-emphasised the importance that other authors placed upon opercular and apertural features. His descriptions of generic groups are difficult to interpret because they do not adequately discriminate between some

genera, even in different subfamilies. It is beyond the scope of this study to try to address the generic nomenclature proposed by Watters (2006), because most of the names apply to West Indian taxa and have little bearing on the fauna of México and Central America. This work follows the classification utilized by Solem (1961), because it depicts phylogenetic and biogeographic relationships more clearly than later attempts to address these problems.

Watters (2006) provided a wealth of information on the species. He listed over 1500 species and subspecies names. This was the first compilation of species-group taxa since Henderson & Bartsch (1920), and it was a monumental achievement by itself. Fifteen species are known from México and Central America.

#### Subfamily CHONDROPOMATINAE Henderson & Bartsch 1920

##### Genus *Chondropoma* Pfeiffer 1847

*Chondropoma* Pfeiffer 1847; Zeit. Malak. 4:109.- Henderson 1914; Nautilus 27:138.- Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58.- Torre & Bartsch 1942; Proc. U. S. Nat. Mus. 89:349.- Bartsch 1946; Bull. U. S. Nat. Mus. 192:5.- Solem 1961; Arch. Moll. 90:204.- Watters 2006:25–28.

*Gouldipoma* Watters 2006:71.

Type Species.—*Chondropoma: Cyclostoma sagra* Orbigny 1842; by original designation. *Gouldipoma: Chondropoma callipeplum* Solem 1961a, by original designation.

Distribution.—Widely distributed in the West Indies and the circum-Caribbean region of the mainland from Florida and México south to Venezuela.

Taxonomy.—Many species and subspecies. Watters (2006) distinguished *Gouldipoma* from *Chondropoma* on the basis of shell sculpture. He transferred *Parachondria* Dall 1905 from the Subfamily Rhytidopominae to subgeneric status with *Chondropoma*. He changed the generic definitions of both and included many disparate species. He synonymized ten other subgenera and genera with *Parachondria*, further complicating a taxonomic dilemma. For purposes of this study I follow Solem (1961). The species tentatively are referred to the subgenus *Chondropomium*. Five species of *Chondropoma* are recognized from México and Central America.

##### Subgenus *Chondropomium* Henderson & Bartsch 1920

*Chondropomium* Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58:60.- Watters 2006:62–63.

Type Species.—*Chondropoma weinlandi* Pfeiffer 1862.

Distribution.—Hispaniola, Jamaica, México, Central America and Venezuela.

Taxonomy.—About 20 species are included in the subgenus.

##### *Chondropoma (Chondropomium) callipeplum* Solem 1961

*Chondropoma callipeplum* Solem 1961; Arch. Moll. 90:207; pl. 11, fig. 21; pl. 12, fig. 24r (shell).

*Gouldipoma callipeplum* (Solem). Watters 2006:71 183.

Type Locality.—Wani, Nicaragua. Holotype USNM 186093.

Distribution.—Known only from the type locality.

***Chondropoma (Chondropomium) cordovanum* Pfeiffer 1856**

*Chondropoma cordovanum* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:91–92; pl. 25; figs. 18–19 (shell).- Fischer & Crosse 1890:207–210; pl. 41, figs. 6a–6c (shell).- Von Martens 1890; Biol. Cent. Amer.:15, 17; Solem 1961; Arch. Moll. 90:204–205; pl. 11, figs. 15–17 (shell), pl. 12, figs. n, o (sculpture).

*Chondropoma (Chondropomium) cordovanum* Pfeiffer. H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):50.

*Halotudora cordovana* (Pfeiffer). Watters 2006:73, 216.

Type Locality.—Cordova [Córdoba], Veracruz, México. Syntypes in the BMNH, ZMB and the MNHN.

Distribution.—VERACRUZ: Central Veracruz, near Córdoba.

***Chondropoma (Chondropomium) gruneri* (Pfeiffer 1846)**

*Cyclostoma gruneri* Pfeiffer 1846; Zeit. Malak. 3:47.- Pfeiffer 1847: pl. 10; figs. 28–29 (shell).

*Cistula gruneri* (Pfeiffer). Gray 1850; Cyclophoridae....:59.- Pfeiffer 1851; Zeit. Malak. 8:170.

*Chondropoma gruneri* (Pfeiffer). Reeve 1863; Conch. Icon., *Chondropoma*:9, fig. 68 (shell)- Von Martens 1890:18.

*Ctenopoma gruneri* (Pfeiffer). Fischer & Crosse 1890:188, 191.

*Choanopoma (Choanopomops) gruneri* (Pfeiffer). Solem 1961; Arch. Moll. 90:203.

*Halotudora gruneri* (Pfeiffer). Watters 2006:73, 283.

Type Locality.—Honduras; here restricted to Belize.

Distribution.—BELIZE: numerous specimen samples in the Florida Museum of Natural History.

***Chondropoma (Chondropomium) kuesteri* (Pfeiffer 1851)**

*Cyclostoma kuesteri* Pfeiffer. Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:249.- Pfeiffer 1854: pl. 41, figs. 9–10 (shell).

*Cistula kuesteri* Pfeiffer 1852; Monogr. pneumo. vivent., 1:265.

*Chondropoma kuesteri* (Pfeiffer). Reeve 1863; Conch. Icon., *Chondropoma*: pl. 11, fig. 87 (shell).- Von Martens 1890:18.

*Ctenopoma kuesteri* (Pfeiffer). Fischer & Crosse 1890:194–186; pl. 42, figs. 7–7b.

*Choanopoma (Choanopomops) kuesteri* (Pfeiffer). Solem 1961; Arch. Moll. 90:203–204.

*Halotudora kuesteri* (Pfeiffer). Watters 2006:73, 321.

Type Locality.—Honduras; here restricted to Belize.

Distribution.—BELIZE: numerous specimen samples in the Florida Museum of Natural History.

***Chondropoma (Chondropomium) rubicundum* (Morelet 1849)**

*Cyclostoma rubicundum* Morelet 1849; Test. Noviss. I:22.- Pfeiffer 1854; in Martini & Chemnitz Syst. Conch. Cab., *Cyclostoma*:280; pl. 37, figs. 29, 30 (shell).

*Chondropoma rubicundum* (Morelet). Pfeiffer 1851; Zeit. Malak. 8:173. Reeve 1863; Conch. Icon., *Chondropoma*: pl. 6, fig. 47 (shell).- Fischer & Crosse 1890:205–207; pl. 41, fig. 5 (shell).- Von Martens 1890:16–17.- Hinkley 1920; Nautilus 34:42, 44, 52.- Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool.

Univ. Mich. (34):31.- Bequaert 1957:212.- Solem 1961; Arch. Moll. 90:205–206; pl. 11, figs. 18–20; pl. 12, figs. 24p, 24q (shell).

*Chondropoma (Chondropomium) rubicundum* (Morelet). Henderson & Bartsch 1920; Proc. U.S. Nat. Mus. 58:60.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):50.

*Gouldipoma cordovanum* (Pfeiffer). Watters 2006:72, 448.

*Cyclostoma acerbulum* Morelet 1851; Test. Noviss. II:19.

*Chondropoma acerbulum* (Morelet). Fischer & Crosse 190:210–211; pl. 41, figs. 4–4d (shell).- Von Martens 1890:17.

*Cistula subangulatum* Von Martens 1886; Sitz.-berg. Gesell. naturf. Freud. berlin, (10):162.

*Chondropoma subangulatum* (Von Martens). Von Martens 1890; Biol. Cent. Amer.:17; pl. 1, fig. 5 (shell).

Type Localities.—*Cyclostoma rubicundum*: Petén et Verapaz, Guatemala. *Cyclostoma acerbulum*: Verapaz, Guatemala. *Chondropoma subangulatum*: Telemán, Guatemala.

Distribution.—BELIZE: Cayo Dist. Succolz (Solem 1961a). HONDURAS: extreme northwest of the country in the Dept. Cortés (UF). GUATEMALA: numerous localities in the Depts. Petén, Alta Verapaz, and Baja Verapaz (Goodrich & van der Schalie 1937; Hinkley 1920; Solem 1961). CHIAPAS: Laguna Ocotal, 950 m alt. (Bequaert 1957). TABASCO (Solem 1961).

**Subfamily ANNULARIINAE Henderson & Bartsch 1920**

Taxonomy.—Two genera occur in the México-Central American region.

**Genus *Annularia* Schumacher 1817**

*Annularia* Schumacher 1817:60, 196.- Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58:71, 72.- Watters 2006:85–87 (in part).

Type Species.—*Turbo lincina* Linnaeus 1758.

Distribution.—The Greater Antilles, México.

Taxonomy.—A single species occurs in the study area. Numerous species occur in the West Indies.

***Annularia sumichrasti* Crosse & Fischer 1874**

*Choanopoma sumichrasti* Crosse & Fischer 1874; Jour. de Conchyl. 22:283.- Fischer & Crosse 1890:184–185; pl. 41, figs. 9, 9a (shell).- Solem 1961; Arch. Moll. 90:196–197 (in part).- Thompson 1966; Nautilus 80:27; figs. 3, 4 (operculum).

*Halotudora sumichrasti* (Crosse & Fischer). Watters 2006:73.

Type Locality.—Isthmus of Tehuantepec, [Oaxaca], México.

Distribution.—OAXACA: reported only from the type locality. Common in a small area on the south side of the Isthmus of Tehuantepec (UF).

Taxonomy.—Solem (1961) confused this species with *Choanopoma chiapensis* Crosse & Fischer 1877. Opercular differences indicate that they belong in different genera.

**Genus *Tudora* Gray 1850**

*Tudora* Gray 1850:48.- Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58:75, 76–77.

Type Species.—*Cyclostoma similis* Gray 1843 [= *Cyclostoma megacheilos* Potiez & Michaud 1838].



Distribution.—Jamaica, Caribbean coastal areas of the mainland; Dutch West Islands.

Taxonomy.—Henderson and Bartsch (1920) listed seven subgenera. H. B. Baker proposed the subgenus *Tudorata* to include mainland species found in Central America and South America.

#### Subgenus *Tudorata* H. B. Baker 1924

*Tudorata* H. B. Baker 1924; Occ. Pap. Mus. Zool. Univ. Mich. (152):152:44–45.- Solem 1960; Arch. Moll. 90:428.

*Tudora* Gray 1850; Watters 2006:77.

Type Species.—*Tudora muskusi* H. B. Baker 1924.

Distribution.—Coastal areas of the mainland from Venezuela north to Panamá; Dutch West Indies.

Taxonomy.—Six species are recognized. One occurs in Central America.

#### *Tudora (Tudorata) thomasi* Solem 1961

*Tudora (Tudorata) thomasi* Solem 1961; Arch. Moll. 90:208; pl. 11, fig. 23 (shell); pl. 12, fig. 24s (sculpture).

*Gouldipoma thomasi* (Solem). Watters 2006:72, 508.

Type Locality.—Natural Bridge of the Rio Puerto near the shore of Madden Lake, Canal Zone, Panamá. Holotype FMNH 73390.

Distribution.—Known only from the type locality.

#### Subfamily RHYTIDOPOMINAE Henderson & Bartsch 1920

##### Genus *Choanopoma* Pfeiffer 1847

*Choanopoma* Pfeiffer 1847; Zeit. Malak. 3:47.- H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):47–48.

Type Species.—*Turbo lincina* Linnaeus 1758.

Distribution.—West Indies, Caribbean coastal areas of the mainland.

Taxonomy.—Much controversy centers about the use of the name *Choanopoma*. Henderson & Bartsch (1920) and Waters (2006) treated *Choanopoma* as a synonym of *Annularia*. H. B. Baker (1928) recognized *Choanopoma* as a valid genus. Solem (1961) followed H. B. Baker but pointed out the unstable taxonomy surrounding the name *Choanopoma*. A single subgenus, *Choanopomops*, is recognized in México and Central America.

#### Subgenus *Choanopomops* H. B. Baker 1928

*Choanopomops* H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):48.- Solem 1961; Arch. Moll. 90:194.- Watters 2006:58 (in part).

*Halotudora* Watters 2006:73.

Type Species.—*Chondropomops: Cyclostoma largillietii* Pfeiffer 1846. *Halotudora: Cyclostoma radiosum* Morelet 1849.

Distribution.—Caribbean coastal areas of the mainland, Jamaica and Cuba (H. B. Baker 1928).

Taxonomy.—Nine species are recognized in México and Central America. Additional species occur in northern South America and Jamaica.

#### *Choanopoma (Choanopomops) andrewsae* (Ancey 1886)

*Cyclostoma andrewsae* Ancey 1886; Ann. de malac. 2:251–252.

*Colobostylus andrewsae* (Ancey). Fischer & Crosse 1890:218.

*Choanopoma andrewsae* (Ancey). Von Martens 1890; Biol. Cent. Amer.:16; pl. 1, fig. 4 (shell).- Richards 1937; Proc. Amer. Philos. Soc. 77:256.- Richards 1938; Proc. Amer. Philos. Soc. 79:176, 178.- Thompson 1967; Bull. Fla. St. Mus. 11:222–227, figs. 6a, b (operculum).

*Chondropoma andrewsae* (Ancey).- Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58:60.

*Choanopoma (Choanopomops) andrewsae andrewsae* (Ancey). Solem 1961; Arch. Moll. 90:198; pl. 10, fig. 10 (shell); pl. 12, fig. 24I (sculpture).

*Choanopoma cozumelense* Richards 1937; Proc. Amer. Philos. Soc. 77:256; pl. 4, fig. 3 (shell).- Solem 1961; Arch. Moll. 90:198; pl. 10, fig. 7 (shell); pl. 12, fig. 24g (sculpture).

*Choanopoma andrewsae roatanense* Richards 1938; Proc. Amer. Philos. Soc. 79:174; pl. 3, figs. 1, 7 (shell).- Solem 1961; Arch. Moll. 90:200; pl. 10, fig. 10 (shell); pl. 12, fig. 24I (sculpture).

*Annularia (Choanopomops) cozumelensis* (Richards). Rehder 1966; Proc. Biol. Soc. Wash. 79:279.

*Tudorisca andrewsae andrewsae* (Ancey). Watters 2006:79, 140.

*Tudorisca andrewsae roatanense* (Richards). Watters 2006:79, 140.

*Tudorisca cozumelense* (Richards). Watters 2006:79, 218.

Type Localities.—*Cyclostoma andrewsae*: Isla de Útila, Dept. Islas de la Bahía, Honduras. *Choanopoma cozumelense*: San Gerbacio, Isla Cozumel, Quintana Roo, México; holotype ANSP 167749. *Choanopoma andrewsae roatanense*: West End, Isla de Roatán, Honduras; holotype ANSP 170018.

Distribution.—HONDURAS: Dept. Islas de la Bahía: Isla de Roatán; Isla de Útila. CAMPECHE: 5.1 mi. NNW of Dzilbachén; 3.6 mi. S of Hopelchén; 3.4 mi. S of Cayál. QUINTANA ROO: Tulúm (Rehder 1966); 4.0 mi. E of Xpujil, Campeche; 7.1 mi. NNW Xiatil; 2.3 mi. SSE Xiatil; San Sebastian, Isla Cozumel (Thompson 1967c). YUCATÁN: 0.8 mi. NE Becanchén; 10.0 mi. NE Becanchén; Chichen Itza (Thompson 1967c).

#### *Choanopoma (Choanopomops) chiapasense* Crosse & Fischer 1877

*Choanopoma chiapasense* Crosse & Fischer 1877; Jour. de Conchyl. 25:362–363.- Fischer & Crosse 1890:182–184; pl. 41, figs. 8, 8a (shell).- Bequaert & Clench 1931; Occ. Pap. Boston Soc. Nat. Hist. 5:426.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):542.- Bequaert 1957:225.

*Tudora (Tudorisca) chiapensis* [sic] (Crosse & Fischer 1877). Henderson & Bartsch 1920; Proc. U. S. Nat. Mus. 58:76.

*Choanopoma (Choanopomops) sumichrasti* var. *chiapasense* Crosse & Fischer. Solem 1961; Arch. Moll. 90:197; pl. 10, fig. 4 (shell); pl. 12, fig. 24d (sculpture).

*Choanopoma (Choanopomops) chiapensis* [sic] Crosse & Fischer. Thompson 1966; Nautilus 80:27; fig. 4 (operculum).

*Halotudora chiapasense* (Crosse & Fischer). Watters 2006:73, 201.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: Santo Domingo; Chivela; Lagunas (Solem 1961a); 8 km. E of Chiapa de Corzo, 3100 ft. alt; 14.9 mi. E of Chiapa de Corzo, 4400 ft. alt.; 8 mi. km of Tuxtla Gutierrez, 380 ft. alt. (Thompson 1966).

***Choanopoma (Choanopomops) gaigei* Bequaert & Clench  
1931**

*Choanopoma gaigei* Bequaert & Clench 1931; Occ. Pap. Boston Soc. Nat. Hist. 5:425–426.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):540–542; text-fig. 26; pl. 68, figs. 8–11 (shell).- Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):72.- Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):12, 15, 22, 32.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):26–28.- Solem 1961; Arch. Moll. 90:197, pl. 10, fig. 5 (shell); pl. 12, fig. 24e (sculpture).- Branson & McCoy 1963; Nautilus 76:104.- Thompson 1966; Nautilus 80:27.- Thompson 1967; Bull. Fla. St. Mus. 11:225, 227.

*Choanopoma gaigei* [sic] Bequaert & Clench.- Richards 1937; Proc. Amer. Philos. Soc. 77:257.

*Halotudora gaigei* (Bequaert & Clench). Watters 2006:73, 269.

Type Locality.—Chichen Itza, Yucatán, México. Holotype UMMZ 49190.

Distribution.—GUATEMALA, Dept. Petén: 1 mi. NW of Paso Caballo; 4 mi. N of Paso Caballo (Goodrich & van der Schalie 1937). CAMPECHE: numerous localities (Thompson 1967c). QUINTANA ROO: 4.0 mi. E of Xpujil (Campeche); 7.1 mi. NNE of Polyuc; 2.3 mi. SSE Polyuc (Thompson 1966). YUCATÁN: vicinity of Chichen Itza (Bequaert & Clench 1931, 1933, 1936; Harry 1950); 0.8 mi. NE Becanthen (Thompson 1966).

***Choanopoma (Choanopomops) largillierti* (Pfeiffer 1846)**

*Cyclostoma largillierti* Pfeiffer 1846; Zeit. Malak. 3:46.- Pfeiffer 1847; Zeit. Malak. 4: pl. 14, figs. 26, 27 (shell).

*Cyclostoma grataloupi* Pfeiffer 1853 [for 1851]; Proc. Zool. Soc. Wash.:246, 247.- Pfeiffer 1854; pl. 40, figs. 28, 29 (shell).

*Ctenopoma largillierti* (Pfeiffer). Fischer & Crosse 1890:196–197; pl. 42, figs. 10–10b (shell).

*Ctenopoma grataloupi* (Pfeiffer). Fischer & Crosse 1890:199–200; pl. 42, figs. 8–8b (shell).

*Chondropoma largillierti* (Pfeiffer). Von Martens 1890; Biol. Cent. Amer.:19.

*Licina (Choanopomops) largillierti* (Pfeiffer). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):46–49, pl. 2, fig. 35.

*Licina (Choanopomops) grataloupi* (Pfeiffer). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):48–49; pl. 2, fig. 36 (radula).

*Choanopoma largillierti* (Pfeiffer). Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):540.- Richards 1937; Proc. Amer. Philos. Soc. 77:257.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):259.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):26–28; fig. 3 (shell).- Branson & McCoy 1963; Nautilus 76:104–105.- Thompson 1966; Nautilus 80:27.- Thompson 1967; Bull. Fla. St. Museum, 11:224–225.- Watters 2006:58, 326.

*Choanopoma (Choanopomops) largillierti* (Pfeiffer). Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):71–72.- Haas & Solem 1960; Nautilus 73:130.- Solem 1961; Arch. Moll. 90:200–202; pl. 10, figs. 11, 12 (shell); pl. 12, figs. 24j, 24k (sculpture).

*Choanopomops grataloupi* (Pfeiffer). Watters 2006:58, 279.

*Choanopomops largillierti* (Pfeiffer). Watters 2006:58, 326.

Type Locality.—*Cyclostoma largillierti*: Yucatán,

México. *Cyclostoma grataloupi*: Yucatán, México.

Distribution.—CAMPECHE: numerous localities (Thompson 1967c). YUCATÁN: numerous localities (Bequaert & Clench 1938; Branson & McCoy 1963; Thompson 1966, 1967). QUINTANA ROO: Tulúm (Rehder 1966); numerous localities (Thompson 1966). BELIZE: Chetumal (Solem 1961).

***Choanopoma (Choanopomops) martensianum* (Pilsbry 1900)**

*Chondropoma martensianum* Pilsbry 1900; Nautilus 13:140.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:780; pl. 52, figs. 4, 4a (shell).- Thompson 1957; Nautilus 70:100.- Solem 1961; Arch. Moll. 90:197–198; pl. 10, fig. 6 (shell); pl. 12, fig. 24f (sculpture).

Type Locality.—Sierra Poaná, Tabasco, México. Holotype ANSP 63417.

Distribution.—TABASCO: known only from the type locality and from near-by areas near Teapa (Thompson 1957).

***Choanopoma (Choanopomops) osberti* (Tristram 1861)**

*Adamsilla osberti* Tristram 1861; Proc. Zool. Soc. Lond. 29:232.- Fischer & Crosse 1890:178–179; pl. 42, figs. 13–13b (shell).

*Licina osberti* (Tristram). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):48.

*Choanopoma osberti* (Tristram). Von Martens 1890; Biol. Cent. Amer.:16.- Solem 1961; Arch. Moll. 90:195–197; pl. 10, fig. 2 (shell); pl. 12, fig. 24b (sculpture).

*Annularia rigidula* (Morelet). Haas 1949; Nautilus 62:136.

*Parachondrops osberti* (Tristram). Watters 2006:47, 386–387.

Type Locality.—Guatemala.

Distribution.—GUATEMALA, Dept. Sacatepéquez: Sacatepéquez (Solem 1961).

***Choanopoma (Choanopomops) radiosum* (Morelet 1849)**

*Cyclostoma radiosum* Morelet 1849; Test. Noviss. I:22.

*Cistula radiosum* (Morelet). Pfeiffer 1851; Zeit. Malak. 8:169.- Crosse & Fischer 1883:103.- Hinkley 1920; Nautilus 34:44.

*Chondropoma radiosum* (Morelet). Reeve 1963; Conch. Icon., *Chondropoma*: pl. 9, fig. 69 (shell). Von Martens 1890; Biol. Cent. Amer.:18.- Pilsbry 1900; Nautilus 13:140.

*Ctenopoma sargi* Crosse & Fischer 1883; Jour. de Conchyl. 31:103.

*Ctenopoma radiosum* (Morelet). Fischer & Crosse 1890:188–191; pl. 42, figs. 1–1b (shell).

*Ctenopoma sargi* Crosse & Fischer. Fischer & Crosse 1890:191–194; pl. 42, figs. 4–4b (shell).

*Choanopoma radiosum* (Morelet). Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):20. 31.- Thompson 1966; Nautilus 80:28.

*Licina radiosum* (Morelet). Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):7.

*Choanopoma (Colobostylus) radiosum* (Morelet). Haas & Solem 1960; Nautilus 73:130; pl. 13, figs. 5–7.

*Choanopoma (Choanopomops) radiosum* (Morelet). Solem 1961; Arch. Moll. 90:197–198; 202–203; pl. 11, figs. 13, 14 (shell); pl. 12, fig. 24i (sculpture).

*Chondropoma sargi* (Crosse & Fischer). Von Martens 1890:18.

*Halotudora radiosum* (Morelet). Watters 2006:73, 430.

Type Locality.—*Cyclostoma radiosum*: Petén, Guatemala. *Cistula sargi*: San Miguel de Tucuru, Dept. Alta

Verapaz, Guatemala (Solem 1961).

Distribution.—BELIZE: Punta Gorda; Gales Point; Bienque Viejo; Augustino (Solem 1961). GUATEMALA: widely distributed in the Depts. Petén, Alta Verapaz, and Izabal (Solem 1961).

***Choanopoma (Choanopomops) rigidulum* (Morelet 1851)**

*Cyclostoma rigidulum* Morelet 1851; Test. Noviss. II:18.

*Adamsiella rigidula* (Morelet). Fischer & Crosse 1890:176–178; pl. 42, figs. 12–12b (shell).

*Choanopoma rigidulum* (Morelet). Von Martens 1890; Biol. Cent. Amer.:16; pl. 1, fig. 3 (shell).

*Choanopoma (Choanopoma) rigidulum* (Morelet). Haas & Solem 1960; Nautilus 73:130.

*Choanopoma (Choanopomops) rigidulum* (Morelet). Solem. 1961; Arch. Moll. 90:195–196; pl. 10, fig. 1 (shell); pl. 12, fig. 24a (sculpture).

*Licina (Choanopomops) rigidulum* (Morelet). H. B. Baker 1928; Occ. Pap. Mus. Zool. Univ. Mich. (193):48–49.

*Parachondrops rigidulus* (Morelet). Watters 2006:47, 442.

Type Locality.—San Luís, Dept. Petén, Guatemala [Watters 2006]. Holotype BMNH 93.2.4.704–5.

Distribution.—GUATEMALA: reported only from the type locality. BELIZE: Cayo District: Rio Frio Cave, 2 mi. from Augustine (Haas & Solem 1960).

***Choanopoma (Choanopomops) terecostatum* Thompson 1966**

*Choanopoma terecostatum* Thompson 1966; Nautilus 80:24–28; figs. 1, 5 (operculum); figs. 7 (shell).

*Halotudora terecostata* (Thompson). Watters 1906:73, 506.

Type Locality.—Limestone hillside 15.8 miles [25 km] northwest of Ocozocoautla, Chiapas, 2700 ft. [830 m] alt. Holotype UMMZ 216554.

Distribution.—Known only from the type locality.

**Annulariidae of doubtful occurrence in México and Central America**

***Chondropoma turritum* Pfeiffer 1853**

*Chondropoma turritum* Pfeiffer 1853 [for 1851]; Proc. Zool. Soc. Lond. 19:248.- Pfeiffer 1854:310; pl. 41, figs. 1–2 (shell).- Von Martens 1890; Biol. Cent. Amer.:19–20.- Solem 1962; Arch. Moll. 90:207; pl. 11, fig. 22 (shell).

*Gouldipoma turritum* (Pfeiffer). Watters 2006:72, 527.

Type Locality.—Honduras.

Distribution.—Unknown.

Remarks.—*Chondropoma turritum* is very similar to *Chondropoma canescens* (Pfeiffer 1852) from Cuba. It may be a West Indian species incorrectly attributed to Honduras.

***Cyclostoma vespertinum* Morelet 1851**

*Cyclostoma vespertinum* Morelet 1851; Test. Noviss. II:19.

*Chondropoma vespertinum* (Morelet). Fischer & Crosse 1890:211–212; pl. 41, figs. 7, 7a (shell).- Von Martens 1890:19, 610.- Torre & Bartsch 1938; Proc. U. S. Nat. Mus. 85:341–342.- Solem 1961; Arch. Moll. 90:209.- Watters 2006:534.

Remarks.—This species was erroneously recorded by Morelet (1851) as coming from Palenque, Chiapas, México. Torre and Bartsch (1938) identified it as a species from the

Isle of Pines, Cuba.

***Cistula pleurophorum* Pfeiffer 1852**

*Cistula pleurophorum* Pfeiffer 1853 [for 1851]; Proc. Zool. Soc. Lond. 19:169.- Fischer & Crosse 1890:218.

*Chondropoma pleurophorum* (Pfeiffer). Von Martens 1890:16.

*Choanopoma (Choanopomops) pleurophorum* (Pfeiffer). Solem 1961; Arch. Moll. 90:198–199; pl. 10, fig. 9 (shell).

Type Locality.—Honduras.

Distribution.—Unknown. This species has not been found since its original description. It may be a West Indian species (Solem 1961).

***Cistula trochlearis* Pfeiffer 1852**

*Cistula trochlea* Pfeiffer 1851; Zeitsch. Malakozoologie 8 (11):171. (*Non* Benson 1851).

*Cistula trochlearis* Pfeiffer 1852; Mono. Pneum. Viv.:275–276.- Solem 1961; Arch. Moll. 90:209–211.

Type Locality.—“Guadeloupe”.

Distribution.—Unknown. Solem (1961) and Watters (2006) regarded this species as a *nomen dubium*.

**Superfamily RISSOOIDEA Gray 1847**

**Family HYDROBIIDAE Troschel 1857**

Taxonomy.—This is a very large, cosmopolitan family of fresh and brackish water snails. The family includes several hundred genera. One hundred and thirteen (113) species occur in the study area.

**Subfamily COCHLIOPINAE Tryon 1866**

Cochliopinae Tryon 1866.- Taylor 1966.- Hershler & Thompson 1992.

Littoridininae Thiele 1928.- Taylor 1966 (in part).

Mexithaaminae Taylor 1966 (in part).

Paludiscalinae Taylor 1966 (in part).

Semiscalinae Giusti & Pezolli 1980.

Type Genus.—*Cochliopa* Stimpson 1865.

Distribution.—North America, throughout South America, the West Indies, central Africa and the Mediterranean region.

Taxonomy.—About thirty-nine genera are recognized in the study area.

**Genus *Aroapyrgus* Baker 1931**

*Aroa* Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (210):33. (Type species by original designation: *Potamopyrgus ernesti vivens* Baker 1930.) *Non* Walker 1855, Lepidoptera.

*Aroapyrgus*, Baker 1931; Nautilus 44:124. Hershler & Thompson 1992; Malac. Rev. Suppl. 5:24. (Replacement name for *Aroa* H. B. Baker 1930.)

*Sioliella* Haas 1949; Anal. Inst. Biol. Mex.,20:307 (type species by original designation: *Sioliella effusa* Haas 1949 (subjective synonym)).

Distribution.—North and South America from San Luís Potosí, México, south to Colombia and east to Pará State, Brazil.

Taxonomy.—Twenty-nine species are recognized



(Hershler & Thompson 1992). Nineteen occur in the study area.

***Aroapyrgus alleei* Morrison 1946**

*Aroapyrgus alleei* Morrison 1946; Smiths. Misc. Coll. 106:14; pl. 2, fig. 4; pl. 3, fig. 3.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:26.

Type Locality.—Allee Stream, Barrow Colorado Island, Gutun Lake, Canal Zone, Panamá. Holotype USNM 542142. Distribution.—Known only from the type locality.

***Aroapyrgus chagresensis* Morrison 1946**

*Aroapyrgus chagresensis* Morrison 1946; Smiths. Misc. Coll. 106:14–15; pl. 2, fig. 3; pl. 3, fig. 4.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:26.

Type Locality.—Río Chagres, Gatuncilla, Panamá. Holotype USNM 542144.

Distribution.—PANAMÁ: recorded only from the Río Chagres at the type locality and Madronal.

***Aroapyrgus cisterninus* (Walker 1919)**

*Ammicola cisternina* Walker 1919; Occ. Pap. Mus. Zool. Univ. Mich. (73):1–2; pl. 1, fig. 1.

*Aroapyrgus cisternina* (Walker). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:26

Type Locality.—Reservoir north of Guatemala City, Dept. Guatemala, Guatemala. Holotype UMMZ 47161.

Distribution.—Known only from the type locality.

***Aroapyrgus clenchi* (Goodrich & Van der Schalie 1937)**

*Somatogyrus clenchi* Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):37; pl. 1, fig. 6.

*Aroapyrgus clenchi* (Goodrich & Van der Schalie). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:26.

Type Locality.—Río de La Pasión, Sayaxche, Dept. Petén, Guatemala. Holotype in the UMMZ.

Distribution.—GUATEMALA, Dept. Petén: Río de La Pasión and Arroyo Subín. TABASCO: Río Usumacinta and tributaries.

***Aroapyrgus conchensis* (Walker 1919)**

*Ammicola conchensis* Walker 1919; Occ. Pap. Mus. Zool. Univ. Mich. (73):3–4; pl. 1, figs. 4–5.

*Aroapyrgus conchenensis* (Walker). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:27.

Type Locality.—“Conchens River”, Guatemala. UMMZ 38508.

Distribution.—Known only from the type locality.

***Aroapyrgus costaricensis* (Mörch 1860)**

*Hydrobia costaricensis* Mörch 1860:67.- Frauenfeld 1864:594.

*Ammicola costaricensis* (Mörch). Von Martens 1899; Biol. Cent. Amer.:435; pl. 22, fig. 6; 644.

*Aroapyrgus costaricensis* (Mörch). Thompson 1968; Fla. Hydrob.:150.- Malek, E. A., R. Brenes & G. Rojas 1975; Jour. parasit., 61:355–359.- Hershler & Thompson 1992; Malac.

Rev. Suppl. 5:27.

Type Locality.—Río Torres, Prov. San José, Costa Rica. Location of syntypes unknown.

Distribution.—COSTA RICA: Streams at intermediate elevations of San José, Cartago, and Puntarenas provinces.

***Aroapyrgus guatemalensis* (Fischer & Crosse 1891)**

*Ammicola guatemalensis* Fischer & Crosse 1891; Miss. Sci. Mex. II: 264; pl. 50, figs. 5–5b.

*Ammicola hyalina* (Fischer & Crosse) (*in part*). Von Martens 1899; Biol. Cent. Amer.:432.

*Aroapyrgus guatemalensis* (Fischer & Crosse). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:27.

Type Locality.—Lago de Amatitlán, Dept. Guatemala, Guatemala.

Distribution.—Known only from the type locality. A record from Lago de Catemaco, VERACRUZ, México (Baker 1922) requires confirmation.

***Aroapyrgus hinkleyi* (Walker 1919)**

*Ammicola hinkleyi* Walker 1919; Occ. Pap. Mus. Zool. Univ. Mich. (73):4; pl. 1, fig. 6.

*Aroapyrgus hinkleyi* (Walker). Thompson 1968; Fla. Hydrob.:27.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:27.

Type Locality.—Reservoir north of Guatemala City, Dept. Guatemala, Guatemala. Holotype UMMZ 47162.

Distribution.—Known only from the type locality.

***Aroapyrgus joseana* Morrison 1946**

*Aroapyrgus joséana* Morrison 1946; Smiths. Misc. Coll. 106:15–16; pl. 2, fig. 6; pl. 3, fig. 8.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:27.

Type Locality.—A northern tributary of the Río Mata Puerco Estuary, Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542147.

Distribution.—PANAMÁ: known only from small streams on Isla San José.

***Aroapyrgus mexicanus* (Pilsbry 1910)**

*Somatogyrus mexicanus* Pilsbry 1910; Nautilus 23:98–99; pl. 9, fig. 3.

*Aroapyrgus mexicanus* (Pilsbry). Hershler & Thompson 1992; Malacological Rev., Suppl. 5:28.

Type Locality.—Río Coy, on the road to Tampamolán, San Luis Potosí, México. Lectotype ANSP 99023 (Baker 1964).

Distribution.—Known only from the type locality.

***Aroapyrgus orizabensis* (Crosse & Fischer 1891)**

*Ammicola orizabensis* Crosse & Fischer 1891; Jour. de Conchyl. 39: 24.- Fischer & Crosse 1891; Miss. Sci. Mex. II:263; pl. 50, figs. 4–4b.- Von Martens 1899; Biol. Cent. Amer.:432.

*Aroapyrgus orizabensis* (Crosse & Fischer). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Near Orizaba, Veracruz State, México.

Distribution.—VERACRUZ: known only from the immediate vicinity of the type locality.

***Aroapyrgus panamensis* (Tryon 1863)**

*Amnicola panamensis* Tryon 1963; Proc. Acad. Nat. Sci. Phila. 15:146; pl. 1, fig. 6.- Von Martens 1899; Biol. Cent. Amer.:432.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:781; pl. 52, fig. 11.

*Aroapyrgus panamensis* (Tryon). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:27.

Type Locality.—Panamá. Holotype ANSP 58067.

Distribution.—Known only from the type locality. A record for Javalí, Dept. Chontales, Nicaragua (Tate 1870:153) refers to *A. tryoni*.

***Aroapyrgus panzosensis* (Walker 1919)**

*Amnicola panzosensis* Walker 1919; Occ. Pap. Mus. Zool. Univ. Mich. (73):3; pl. 1, figs. 2–3.

*Aroapyrgus panzosensis* (Walker). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Panzos, Río Polochic Valley, Dept. Alta Verapaz, Guatemala. Holotype UMMZ 37389.

Distribution.—Known only from the type locality.

***Aroapyrgus pasionensis* (Goodrich & Van der Schalie 1937)**

*Amnicola pasionensis* Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):36; pl. 1, fig. 4.

*Aroapyrgus pasionensis* (Goodrich & Van der Schalie). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Arroyo Subín, a tributary of the Río de La Pasión, about 3 km above Santa Teresa, Dept. Petén, Guatemala. Holotype UMMZ.

Distribution.—GUATEMALA: known from the Río de la Pasión and tributaries, Dept. Petén, and from the Río Usumacinta and tributaries, TABASCO, México.

***Aroapyrgus petenensis* (Morelet 1851)**

*Paludina petenensis* Morelet 1851; Test. Noviss. II:21.

*Amnicola petenensis* (Morelet). Frauenfeld 1864:635. Fischer & Crosse 1891; Miss. Sci. Mex. II:262; pl. 50, figs. 3–3b.- Von Martens 1899; Biol. Cent. Amer.:430–431.- Goodrich, and Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):36.

*Aroapyrgus petenensis* (Morelet). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Lago de Itza, Dept. Petén, Guatemala.

Distribution.—GUATEMALA: known from various lakes in the Dept. Petén

***Aroapyrgus rhegoides* (Morelet 1851)**

*Paludina rhegoides* Morelet 1851; Test. Noviss. II:22.

*Amnicola rhegoides* (Morelet). Von Martens 1899; Biol. Cent. Amer.:432; pl. 22, fig. 4.

*Aroapyrgus rhegoides* (Morelet). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Lago de Coatepeque, Dept. Santa Ana, El Salvador.

Distribution.—Known only from the type locality.

***Aroapyrgus stollii* (Von Martens 1901)**

*Amnicola stollii* Von Martens 1901; Biol. Cent. Amer.:645; pl. 46, fig. 14.

*Aroapyrgus stollii* (Von Martens). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Lago de Atitlán, Dept. Sololá, Guatemala.

Distribution.—Known only from the type locality.

***Aroapyrgus subangulatus* (Von Martens 1899)**

*Amnicola subangulata* Von Martens 1899; Biol. Cent. Amer.:435; pl. 22, fig. 5.

*Aroapyrgus subangulata* (Von Martens). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

Type Locality.—Río Torres, in the environs of San José, Prov. San José, Costa Rica; 1100 m alt.

Distribution.—COSTA RICA, Prov. Limón: recorded from the type locality and from a small stream between the Río Madre de Dios and the Río Hondo, 80 m alt.

***Aroapyrgus tryoni* (Pilsbry 1904)**

*Amnicola tryoni* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:781; pl. 52, fig. 10.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:9.

*Aroapyrgus tryoni* (Pilsbry). Thompson 1968; Fla. Hydrob.:150.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:29.

Type Locality.—Roots of plants in a swampy pool near Javalí, Dept. Chontales, Nicaragua. Holotype ANSP 58066a.

Distribution.—Known only from the type locality. COSTA RICA: Río Reventazón, Juan Vinales, 800 m; 4 mi SW of Cartago, 1200 m (Pilsbry 1920). A record from Tampico, México almost certainly is in error (Hinkley 1907:79).

**Genus *Chorrobis* Hershler, Liu & Landye 2011**

*Chorrobis* Hershler, Liu & Landye, 2011; J. Molluscan Studies 77:16.

Type Species.—*Chorrobis crassilabrum* Hershler, Liu & Landye 2011.

Distribution.—COAHUILA.

Taxonomy.—A single species is known.

***Corrobis crassilabrum* Hershler, Liu & Landye 2011**

*Corrobis crassilabrum* Hershler, Liu & Landye 2011; J. Molluscan Studies 77:16–20; figs. 6A-C, F-G (shell), K-L (operculum), 7A-D (radula), 8A-C (reproductive anatomy)

Type Locality.—An unnamed spring in a private recreation area on the road to Los Lirios (south-southeast of El Chorro, east-southeast of Saltillo, Coahuila (25°22'49" N, 100°47'20" W). Holotype USDNM 873423.

Distribution.—COAHUILA: known from four small springs in the immediate vicinity of the type locality.

**Genus *Coahuilix* Taylor 1966**

*Coahuilix* Taylor 1966; Veliger 9:180.- Hershler 1985; Malacologia 26:53–54.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:31.

Type Species.—By original designation: *Coahuilix hubbsi* Taylor 1966.

Distribution.—Cuatro Ciénegas Basin, Coahuila, México.

Taxonomy.—Two species are recognized (Hershler & Thompson 1992).

#### ***Coahuilix hubbsi* Taylor 1966**

*Coahuilix hubbsi* Taylor 1966; Veliger 9:180–181; figs. 8–13.- Hershler 1985; Malacologia 26:54–57; figs. 15A-E, 16, 17.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:31; figs. 17–18.

Type Locality.—Pozo de Becerra, Cuatro Ciénegas Basin, Coahuila, México. Holotype UMMZ 220180.

Distribution.—COAHUILA: endemic to springs in the Cuatro Ciénegas Basin.

#### ***Coahuilix landyei* Hershler 1985**

*Coahuilix landyei* Hershler 1985; Malacologia 26:57–58; figs. 15F, G, I, J, K.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:33.

Type Locality.—A small spring 1.12 km south of the north tip of the Sierra de San Marcos, Cuatro Ciénegas Basin, Coahuila, México. Holotype ANSP A9894n.

Distribution.—COAHUILA: endemic to springs in the Cuatro Ciénegas Basin.

#### **Genus *Cochliopa* Stimpson 1865**

*Cochliopa* Stimpson 1865; Amer. Jour. Conch. 1:52. Morrison 1946; Smiths. Misc. Coll. 106:27.- Taylor 1966; Veliger 9:175.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:33.

Type Species.—*Amnicola rowelli* Tryon 1863, by original designation.

Distribution.—Pacific coastal streams of Panamá and Costa Rica.

Habitat.—Brackish water and freshwater just above the brackish zone.

Taxonomy.—Four species are recognized.

#### ***Cochliopa diazensis* Morrison 1946**

*Cochliopa diazensis* Morrison 1946; Smiths. Misc. Coll. 106:27–28; pl. 2, fig. 15; pl. 3, fig. 18.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:33–34.

Type Locality.—Río Juan Diaz, just below Las Sabanas Road bridge east of Cd. Panamá, Prov. Panamá, Panamá. USNM 542170.

Distribution.—Known only from the type locality.

#### ***Cochliopa joséana* Morrison 1946.**

*Cochliopa joséana* Morrison 1946; Smiths. Misc. Coll. 106: 28–29; pl. 2, fig. 18; pl. 3, fig. 19.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5: 32–33; fig. 20a, c, d; fig. 21.

Type Locality.—Río Mata Puerco, which opens into the Ensenada de Bodega, southwest part of Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542173.

Distribution.—PANAMÁ: known only from small streams on Isla San José.

#### ***Cochliopa perforata* Thompson & Hershler 1991**

*Cochliopa perforata* Thompson & Hershler 1991; Proc. Biol. Soc. Wash. 104:671–672; fig. 2.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5: 35; fig. 20b.

Type Locality.—A small stream 1 km northwest of Golfito Bay, Prov. Puntarenas, Costa Rica. Holotype UF 175911.

Distribution.—COSTA RICA, Prov. Puntarenas: known only from small streams near Golfito.

#### ***Cochliopa rowelli* (Tryon 1863)**

*Amnicola rowelli* Tryon 1863; Proc. Acad. Nat. Sci. Phila. 15:147; pl. 1, figs. 8–9.

*Cochliopa rowelli* (Tryon). Stimpson 1865; Amer. Jour. Conch. 1:52.- Pilsbry 1905; Nautilus 19:91–92.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:198.- Morrison 1946; Smiths. Misc. Coll. 106:27; pl. 3, fig. 17.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:34.

Type Locality.—Restricted to Río Matasnillo, Cd. Panamá, Panamá (Morrison 1946). Lectotype ANSP 58282a (Baker 1946).

Distribution.—PANAMÁ: known only from the type locality, where it is now extinct.

#### **Genus *Cochliopina* Morrison 1946**

*Cochliopina* Morrison 1946; Smiths. Misc. Coll. 106:18–19.- Taylor 1966; Veliger 9: 176.- Hershler 1985; Malacologia 26:65.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:36.

Type Species.—By original designation: *Cochliopa riograndensis* Pilsbry and Ferriss 1906.

Distribution.—North America, Central America, and South America from Texas south to the Río Santiago, Ecuador.

Taxonomy.—Nineteen species are recognized, all occurring the study area.

#### ***Cochliopina australis* Morrison 1946**

*Cochliopina australis* Morrison 1946; Smiths. Misc. Coll. 106:23–24; pl. 2, fig. 13; pl. 3, fig. 14.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:37–38.

Type Locality.—Musselshell Creek just above the lagoon on the southeast end of Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542165.

Distribution.—Known only from the type locality.

#### ***Cochliopina compacta* (Pilsbry 1910)**

*Cochliopa compacta* Pilsbry 1910; Nautilus 23:99; pl. 9, figs. 4–5.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:197.

*Cochliopina compacta* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38; fig. 33f.

Type Locality.—Río Choy, at the cave, south of Las Palmas, San Luís Potosí, México. Holotype ANSP 99007a.

Distribution.—Known only from the type locality.

#### ***Cochliopina dulcensis* (Marshall 1920)**

*Cochliopa dulcensis* Marshall 1920; Proc. U. S. Nat. Mus. 58:302; pl. 17, figs. 1–3.

*Cochliopina dulcensis* (Marshall). Morrison 1946; Smiths. Misc.



Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38.

Type Locality.—Río Dulce, Dept. Izabal, Guatemala.

Holotype USNM 336413.

Distribution.—Known only from the type locality.

***Cochliopina extremis* Morrison 1946**

*Cochliopina extremis* Morrison 1946; Smiths. Misc. Coll. 106:22–23; pl. 2, fig. 11; pl. 3, fig. 13.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38.

Type Locality.—Small stream with a 100-yard lagoon just east of the southern tip of Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542163.

Distribution.—Known only from the type locality.

***Cochliopina francesae* (Goodrich & Van der Schalie 1937)**

*Cochliopina francesae* Goodrich & Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):38; pl. 1, fig. 3.

*Cochliopina francesae* (Goodrich & Van der Schalie). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38.

Type Locality.—Río de La Pasion, at the mouth of the Arroyo Chajchinic, northwest of Porvenir, Dept. Alta Verapaz, Guatemala. Holotype in the UMMZ.

Distribution.—Known from The Río de La Pasión, GUATEMALA, and the Río San Pedro, TABASCO, México.

***Cochliopina fratercula* Morrison 1946**

*Cochliopina fratercula* Morrison 1946; Smiths. Misc. Coll. 106:21–22; pl. 2, fig. 9; pl. 3, fig. 11.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38.

Type Locality.—Río Mata Puerco, Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542157.

Distribution.—Known only from the type locality.

***Cochliopina guatemalensis* (Morelet 1851)**

*Valvata guatemalensis* Morelet 1851; Test. Noviss. II:22.- Fischer & Crosse 1892:302; pl. 48, fig. 2–2b; pl. 50, fig. 1–1b.

*Cochliopina guatemalensis* (Morelet). Von Martens 1899; Biol. Cent. Amer.:428.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:198.

*Cochliopina guatemalensis* (Morelet). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:38–39.

Type Locality.—Río Michatoya, near the port of Istapa [Puerto Ixstapa], Dept. Escuintla, Guatemala.

Distribution.—GUATEMALA: known for certain only from the type locality.

***Cochliopina hinkleyi* (Pilsbry 1920)**

*Cochliopina hinkleyi* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:198–199; fig. 4.

*Cochliopina hinkleyi* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Lago de Izabal near Jocolo, Dept. Izabal, Guatemala. Holotype ANSP 46246a.

Distribution.—Known only from the type locality.

***Cochliopina infundibulum* (Von Martens 1899)**

*Cochliopina infundibulum* Von Martens 1899; Biol. Cent. Amer.:429; pl. 23, fig. 2.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:198.

*Cochliopina infundibulum* (Von Martens). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39; fig. 22a.

Type Locality.—Guatemala.

Distribution.—Río Usumacinta System of TABASCO and CHIAPAS, México. GUATEMALA: Dept. Petén

***Cochliopina izabal* (Pilsbry 1920)**

*Cochliopina izabal* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:200–201; figs. 6a–f.

*Cochliopina izabal perstriata* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:201; fig. 7.

*Cochliopina izabal* (Pilsbry). Morrison. 1946:19.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Lago de Izabal, near Jocolo, Dept. Izabal, Guatemala. Holotype ANSP 45638a.

Distribution.—Known only from the type locality.

***Cochliopina juradoi* Morrison 1946**

*Cochliopina juradoi* Morrison 1946; Smiths. Misc. Coll. 106:20–21; pl. 2, fig. 8; pl. 3, fig. 10.- Taylor 1966; Veliger 9:176.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Stream leading to the northwest mangrove marsh on Isla San José, Archipelago de las Perlas, Panamá. Holotype USNM 542154.

Distribution.—Known only from the type locality.

***Cochliopina milleri* Taylor 1966**

*Cochliopina milleri* Taylor 1966; Veliger 9:77; text-figs. 6–7; pl. 13, figs. 12–13.- Hershler 1985; Malacologia 26:68–70; figs. 23a–h, 24–26.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Río Mesquites at the main road 9 km southwest of Cuatro Ciénegas, Coahuila, México. Holotype UMMZ 220182.

Distribution.—COAHUILA: known only from the immediate vicinity of the type locality.

***Cochliopina minor* (Pilsbry 1920)**

*Cochliopina minor* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:199–200; fig. 5.

*Cochliopina minor* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:177.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Polvón, Dept. León, Nicaragua. Holotype ANSP 58286.

Distribution.—Known only from the type locality.

***Cochliopina navalis* Morrison 1946**

*Cochliopina navalis* Morrison 1946; Smiths. Misc. Coll. 106:22; pl. 2, fig. 12; pl. 3, fig. 12.- Taylor 1966; Veliger 9:177.- Hershler

& Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—A small stream flowing into the southwestern bay, Isla San José, Archipelago de Les Perlas, Panamá. Holotype USNM 542160.

Distribution.—Known only from the type locality.

#### ***Cochliopina picta* (Pilsbry 1910)**

*Cochliopina picta* Pilsbry 1910; Nautilus 23:100; pl. 9, figs. 1–2.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:197.

*Cochliopina picta* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:19.- Taylor 1966; Veliger 9:177.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:39.

Type Locality.—Río Coy, near the ford on the road to Tampamolón, San Luís Potosí, México. Holotype ANSP 99013a.

Distribution.—SAN LUÍS POTOSÍ: known only from the vicinity of the type locality, and the Río Ganina near Rascón.

#### ***Cochliopina riograndensis* (Pilsbry & Ferriss 1906)**

*Cochliopina riograndensis* Pilsbry & Ferriss 1906:171, pl. 9, figs. 10–13.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:197.

*Cochliopina riograndensis* (Pilsbry & Ferriss). Morrison 1946; Smiths. Misc. Coll. 106:18.- Taylor 1966; Veliger 9:177.- Hershler 1985; Malacologia 28:71–72; fig. 231.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:93–94.

Type Locality.—Río San Filipe, near the Río Grande, Val Verde County, Texas. Holotype ANSP 91324a.

Distribution.—Streams in Val Verde County, Texas. COAHUILA: Cuatro Ciénegas Basin. SAN LUÍS POTOSÍ: Río Valles. TAMAULIPAS: Río Panuco and Río Sabinas systems.

#### ***Cochliopina tryoniana* (Pilsbry 1890)**

*Cochliopina tryoniana* Pilsbry 1890; Nautilus 4:52.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:331; pl. 15, fig. 12.- Von Martens 1899; Biol. Cent. Amer.:428–429; pl. 23, figs. 9–9c.- Pilsbry 1920:198.

*Cochliopina tryoniana* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:18.- Taylor 1966; Veliger 9:177.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:40.

Type Locality.—Polvón [= Palvón], Dept. León, Nicaragua. ANSP 58285a.

Distribution.—NICARAGUA: Pacific coastal streams south to the Río Terraba. COSTA RICA.

#### ***Cochliopina wetmorei* Morrison 1946**

*Cochliopina wetmorei* Morrison 1946; Smiths. Misc. Coll. 106:24–25; pl. 2, fig. 16; pl. 3, fig. 15.- Taylor 1966; Veliger 9:177.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:40.

Type Locality.—Río Marina, east side of Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542167.

Distribution.—Known only from the type locality.

#### ***Cochliopina zeteki* Morrison 1946**

*Cochliopina zeteki* Morrison 1946; Smiths. Misc. Coll. 106:19–20;

pl. 2, fig. 7; pl. 3, figs. 5, 9.- Taylor 1966; Veliger 9:177.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:40.

Type Locality.—Dead leaves along the east margin of the Río Juan Díaz, just below the Las Sabanas Road bridge, east of Cd. Panamá, Prov. Panamá, Panamá. Holotype USNM 542152.

Distribution.—Known only from the type locality.

#### **Genus *Emmericiella* Pilsbry 1909**

*Emmericiella* Pilsbry 1909; Nautilus 23:46.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:42.

Type Species.—By original designation: *Emmericia* (*Emmericiella*) *novamundi* Pilsbry 1909.

Distribution.—Subterranean headwaters of the Río Choy, San Luís Potosí, México.

Taxonomy.—The genus contains two species.

#### ***Emmericiella longa* (Pilsbry 1909)**

*Emmericia* (*Emmericiella*) *longa* Pilsbry 1909; Nautilus 23:46; pl. 5, figs. 11–12.

*Emmericiella longa* (Pilsbry). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:44.

Type Locality.—Río Choy, Luis Potosí, México. Holotype ANSP 99022.

Distribution.—Known only from the type locality.

#### ***Emmericiella novimundi* (Pilsbry 1909)**

*Emmericia* (*Emmericiella*) *novimundi* Pilsbry 1909; Nautilus 23:46; pl. 5, figs. 9–10.

*Emmericiella novimundi* (Pilsbry). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:44–45; figs. 26–27.

Type Locality.—Banks of the Río Choy near the cave, San Luis Potosí, México. Holotype ANSP 99021a.

Distribution.—Known only from the type locality.

#### **Genus *Eremopyrgus* Hershler 1999**

*Eremopyrgus* Hershler 1999; Veliger 42:306–337.

Type Species.—*Eremopyrgus eganensis* Hershler, 1999.

Distribution.—Nevada State, U.S.A. and Chihuahua State, México.

Taxonomy.—Two species are recognized. One occurs in México.

#### ***Eremopyrgus elegans* Hershler, Liu & Lande 2002**

*Eremopyrgus elegans* Hershler, Liu & Lande 2002; J. Molluscan Studies 68:8–11; Fig. 1 (shell); Fig. 2 (operculum); Fig. 3 (radula); Fig. 4 (reproductive anatomy); Fig. 5 (map).

Type Locality.—Ojo Vareleño, 2.4 km NW of Casas Grandes, Chihuahua, 1514 m alt. (30°24' N, 107°59' W). Holotype USNM 892119.

Distribution.—Known only from the type locality.

#### **Genus *Juturnia* Hershler, Liu and Stockwell 2002**

*Juturnia* Hershler, Liu and Stockwell 2002; Proc. Biol. Soc. Wash. 115:172–175.

Type Species.—*Durangonella coahuilae* Taylor 1966.

Distribution.—Lower Rio Grande region of North America.

Taxonomy.—Three species, one of which occurs in México.

***Juturnia coahuilae* (Taylor 1966)**

*Durangonella coahuilae* Taylor 1966; Veliger 9:184–186; pl. 14, figs. 19, 22.- Hershler 1985; Malacologia 26:81–87; figs. 32–36.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:41; figs. 24b-d, 25.

*Juturnia coahuilae* (Taylor).- Hershler, Liu and Stockwell 2002; Proc. Biol. Soc. Wash. 115:175.

Type Locality.—Laguna Grande within about 300 m of the mouth of the Río Churince, and about 17 km southwest of Cuatro Ciénegas, Coahuila, México. Holotype UMMZ 220159.

Distribution.—COAHUILA: endemic to the Cuatro Ciénegas Basin.

**Genus *Lithococcus* Pilsbry 1911**

*Lithococcus* Pilsbry 1911; Princeton Exp. Patagonia, 3:602.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:61.

Type Species.—By original designation: *Lithoglyphus multicarinatus* Miller 1878.

Distribution.—Pacific coastal streams from the Río Barú, Costa Rica south to the Río Santiago system in northwest Ecuador.

Taxonomy.—Three species are recognized, one of which occurs in Costa Rica.

***Lithococcus aletes* Thompson & Hershler 1991**

*Lithococcus aletes* Thompson & Hershler 1991:676–677; fig. 6.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:63.

Type Locality.—Río Barú, 0.5 km above mouth of river, Prov. Puntarenas, Costa Rica. Holotype UF 36378.

Distribution.—Known only from the type locality.

**Genus *Littoridina* Souleyet 1852**

*Littoridina* Souleyet 1852:563.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:63.

Type Species.—By original designation *Littoridina guadichaudii* Souleyet 1952.

Distribution.—North America, Central America and South America: coastal streams and estuaries from Texas and Colima, México south to Ecuador.

Habitat.—Brackish marshes and freshwater streams.

Taxonomy.—Four species. Many tropical American hydrobioids have been described as species of *Littoridina*. Most of these now are placed in *Heleobia* (Hershler & Thompson 1992).

***Littoridina crosseana* (Pilsbry 1910)**

*Amnicola crosseana* Pilsbry 1910; Nautilus 23:98; pl. 9, fig. 6.

*Littoridina crosseana* (Pilsbry). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:66–67; fig. 38a-d, 39a-b, 40c.

Type Locality.—Ponds at La Barra, Tampico, Tamaulipas,

México. Holotype ANSP 99502a.

Distribution.—Common in brackish marshes in the immediate area of Corpus Cristi, Texas. TAMAULIPAS: Tampico. TABASCO.

***Littoridina microcona* Thompson & Hershler 1991**

*Littoridina microcona* Thompson & Hershler 1991; Proc. Biol. Soc. Wash. 104:277–278; figs. 7.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:67–68; fig. 40a.

Type Locality.—Marshy pool 1.0 km north of Boca de Barranca, Prov. Puntarenas, Costa Rica. Holotype UF 175912.

Distribution.—COSTA RICA: confined to brackish streams and marshes in Prov. Puntarenas

***Littoridina orcutti* (Pilsbry 1928)**

*Amnicola orcutti* Pilsbry 1928; Proc. Acad. Nat. Sci. Phila. 80:115–116; fig. 2.

*Littoridina orcutti* (Pilsbry). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:67–68; fig. 40b.

Type Locality.—Manzanillo, Colima, México. Holotype ANSP 144801.

Distribution.—NAYARIT: brackish marshes 2 km northeast of San Blas, southeast to the Laguna de Mitla, GUERRERO.

**Genus *Littoridinops* Pilsbry 1952**

*Littoridinops* Pilsbry 1952; Nautilus 66:51.- Thompson 1968:56.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:68.

Type Species.—By original designation *Amnicola tenuipes* Couper 1844.

Distribution.—Atlantic coast of North America from New Jersey south to Campeche, México; Bahama Islands, Grand Cayman Island, Cuba.

Habitat.—Brackish and freshwater.

Taxonomy.—Four species, one of which occurs in México.

***Littoridinops tampicoensis* (Pilsbry & Hinkley 1907)**

*Paludestrina tampicoensis* Pilsbry & Hinkley 1907; Nautilus 21:39; pl. 5, fig. 13.

*Littoridinops tampicoensis* (Pilsbry & Hinkley). Taylor 1966; Veliger 9:187.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:70–71.

Type Locality.—In river drift, Tampico, México. ANSP 93813a.

Distribution.—TAMAULIPAS-VERACRUZ: known only the immediate vicinity of the type locality.

**Genus *Mesobia* Thompson & Hershler 1991**

*Mesobia* Thompson & Hershler 1991; Proc. Biol. Soc. Wash. 104:679.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:74.

Type Species.—*Mesobia pristina* Thompson and Hershler 1991.

Distribution.—Known only from Lago de Yajoa,



Honduras.

Habitat.—Freshwater.

Taxonomy.—One species.

***Mesobia pristina* Thompson & Hershler 1991**

*Mesobia pristina* Thompson & Hershler 1991; Proc. Biol. Soc. Wash. 104:679–680; figs. 8.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:74; figs. 45a-d, 46a-c.

Type Locality.—Lago de Yajoa, at the north side of an island near Agua Azul, Dept. Cortés, Honduras. Holotype UF 40421.

Distribution.—Known only from the type locality.

**Genus *Mexipyrgus* Taylor 1966**

*Mexipyrgus* Taylor 1966; Veliger 9:188.- Hershler 1985; Malacologia 26:87.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:74.

Type Species.—*Mexipyrgus carranzae* Taylor 1966.

Distribution.—COAHUILA: endemic to the Cuatro Ciénegas Basin.

Habitat.—Freshwater.

Taxonomy.—The genus is monotypic.

***Mexipyrgus carranzae* Taylor 1966**

*Mexipyrgus carranzae* Taylor 1966; Veliger 9:191; pl. 15, figs. 27–32; text-fig. 16.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:75–78; figs. 47a-d, 48a-c.

*Mexipyrgus churinceanus* Taylor 1966; Veliger 9:190–191; pl. 16, figs. 33–39; pl. 17, figs. 40–41.- Hershler 1985; Malacologia 26:87–105; figs. 37–45.

*Mexipyrgus escobedae* Taylor 1966; Veliger 9:191–192; pl. 14, figs. 23–26.

*Mexipyrgus lugoi* Taylor 1966; Veliger 9:192–193; pl. 17, figs. 42–45.

*Mexipyrgus mojarralis* Taylor 1966; Veliger 9:193; pl. 18, figs. 46–49; 51–53.

*Mexipyrgus multilineatus* Taylor 1966; Veliger 9:193–194; pl. 18, figs. 50, 54–57.

Holotypes.—*Mexipyrgus carranzae*: UMMZ 220211.

*Mexipyrgus churinceanus*: UMMZ 220150. *Mexipyrgus escobedae*: UMMZ 220202. *Mexipyrgus lugoi*: UMMZ 220185. *Mexipyrgus mojarralis*: UMMZ 220192. *Mexipyrgus multilineatus*: UMMZ 220197.

Type Localities.—*Mexipyrgus carranzae* Laguna Tio Candido, 14 km south of Cuatro Ciénegas. *Mexipyrgus churinceanus*: Laguna Churince, 16 km southwest of Cuatro Ciénegas. *Mexipyrgus escobedae*: Laguna Escobeda, 12 km south of Cuatro Ciénegas. *Mexipyrgus lugoi*: Río Mesquites at the main road 9 km southwest of Cuatro Ciénegas. *Mexipyrgus mojarralis*: West Laguna in El Mojarral, 1.7 km ENE of the northern tip of Sierra San Marcos. *Mexipyrgus multilineatus*: East Laguna in El Mojarral, 1.9 km ENE of the northern tip of Sierra San Marcos. All localities are in the Cuatro Ciénegas Basin, Coahuila, México.

Distribution.—COAHUILA: endemic to the Cuatro Ciénegas Basin.

**Genus *Mexithauma* Taylor 1966**

*Mexithauma* Taylor 1966; Veliger 9:205.- Hershler 1985; Malacologia 26:72.- Hershler & Thompson 1992; Malac. Rev.

Suppl. 5:78.

Type Species.—*Mexithauma quadripaludium* Taylor 1966.

Distribution.—México, endemic to the Cuatro Ciénegas basin, Coahuila.

Habitat.—Freshwater.

Taxonomy.—Monotypic.

***Mexithauma quadripaludium* Taylor 1966**

*Mexithauma quadripaludium* Taylor 1966; Veliger 9:205–207; pl. 19, figs. 58–63; text-fig. 22.- Hershler 1985; Malacologia 26:72–78; figs. 27–31.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:78–80; 79–80.

Type Locality.—Laguna Tio Candido, 9.3 km south of the northern tip of the Sierra de San Marcos, Cuatro Ciénegas Basin, Coahuila (Hershler 1985). Holotype UMMZ 220214.

Distribution.—COAHUILA: endemic to the Cuatro Ciénegas Basin (Hershler 1985).

**Genus *Minkleyella* Hershler, Liu & Landye 2011**

*Minkleyella* Hershler, Liu & Landye 2011; J. Molluscan Studies 77:20.

Type Species.—*Minkleyella balnearis* Hershler, Liu, & Landye 2011.

Distribution.—Known from a single locality in Chihuahua.

Taxonomy.—A single species is recognized.

***Minkleyella balnearis* Hershler, Liu & Landye 2011**

*Minkleyella balnearis* Hershler, Liu & Landye 2011; J. Molluscan Studies 77:20–22; figs. 6D-E, H-J (shell), M-N (operculum), 7E-H (radula), 8D-F (reproductive anatomy).

Type Locality.—Ojo de Dolores (outflow at northeast end of parking lot) south-southwest of Ciudad Jimenez, Chihuahua ( 27°01'55" N, 104°57'10" W). Holotype USNM 874037.

Distribution.—Known only from the type locality.

**Genus *Onobops* Thompson 1968**

*Onobops* Thompson 1968; Fla. Hydrob.:28.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:83.

Type Species.—*Onobops crassa* Thompson 1968.

Distribution.—Atlantic coast of the United States from Maryland south to Campeche, México.

Habitat.—Brackish marshes.

Taxonomy.—Two species occur in the southeastern United States. Numerous unidentified species samples are present in the Florida Museum of Natural History from the Gulf coastal region of the United States and México.

**Genus *Paludiscala* Taylor 1966**

*Paludiscala* Taylor 1966; Veliger 9:207.- Hershler 1985; Malacologia 26:58.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:85.

Type Species.—*Paludiscala caramba* Taylor 1966.

Distribution.—Endemic to the Cuatro Ciénegas Basin, Coahuila, México.

Habitat.—Freshwater.

Taxonomy.—The genus is monotypic.

***Paludiscala caramba* Taylor 1966**

*Paludiscala caramba* Taylor 1966; Veliger 9:207–208; pl. 13, figs. 11, 14, 16; text-figs. 23–25.- Hershler 1985; Malacologia 26:59–64; figs. 19–22.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:85–87; figs. 55–56.

Type Locality.—Stream draining marsh due east of Majorral West Laguna, about 10 km south of Cuatro Ciénegas, Coahuila, México. Holotype UMMZ 220164.

Distribution.—COAHUILA: springs in the Cuatro Ciénegas Basin (Hershler 1985).

**Genus *Phreatoceras* Hershler & Longley 1987**

*Hadoceras* Hershler & Longley 1986; Proc. Biol. Soc. Wash. 99:122–125. (Not *Hadoceras* Strand 1934, Cephalopoda.)

*Phreatoceras* Hershler & Longley 1987; Proc. Biol. Soc. Wash. 100:402.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:87.

Type Species.—*Hadoceras taylori* Hershler & Longley 1986.

Distribution.—North America; Springs in Real County, Texas, and in the Cuatro Ciénegas Basin, Coahuila, México.

Taxonomy.—Monotypic.

***Phreatoceras taylori* (Hershler & Longley 1986)**

*Hadoceras taylori* Hershler & Longley 1986; Proc. Biol. Soc. Wash. 99:125–135; figs. 1–11.

*Phreatoceras taylori* (Hershler & Longley). Hershler & Longley 1987:402.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:87–89; figs. 57–58.

Type Locality.—Roaring Springs, Real County, Texas. Holotype USNM 849000.

Distribution.—Known from springs in Real Co., and Williamson Co., Texas, and the Cuatro Ciénegas Basin, COAHUILA.

**Genus *Pseudotryonia* Hershler 2001**

*Pseudotryonia* Hershler 2001; Smithsonian Contr. Zool., 612:15–16.- Hershler, Liu & Landye 2011; J. Molluscan Studies 77:10.

Type Species.—*Tryonia alamosae* Taylor 1987.

Distribution.—Southeastern United States, Texas, New Mexico, Chihuahua and Durango, México.

Taxonomy.—The genus includes six specie. Two occur in México.

***Pseudotryonia mica* Hershler, Liu & Landye 2011**

*Pseudotryonia mica* Hershler, Liu & Landye 2011; J. Molluscan Studies 77:10–14; figs. 2A–C, G–H (shell), K–L (operculum), 3A–E (radula), 4 A–C (rproductive anatomy).

Type Locality.—Ojo de Dolores, mani spring pool, southwest of Ciudad Jimenez, Cihuahua (27°01'53.5" N, 104°57'12" W). Holotype USNM 1001930.

Distribution.—CHIHUAHUA: known only from the immediate vicinity of the type locality.

***Tryonia pasajae* Hershler, Liu & Landye 2011**

*Tryonia pasajae* Hershler, Liu & Landye 2011; J. Molluscan Studies 77:14–16; figs. 2E, F, I, J (shell), M–O (operculum), 3E–H (radula), 4D,–E (reproductive aatomy).

Type Locality.—An unnamed spring at El Tanque (second pool below spring source) wet-northwest of Cuencame de Cenicerros, Durango, México. Holotype USNM 1133662.

Distribution.—Known only from the type locality.

**Genus *Pyrgophorus* Ancey 1888**

*Pyrgophorus* Ancey 1888; Bull. Soc. Malac. France 5:188.- Taylor 1966; Veliger 9:194.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:89.

Type Species.—*Pyrgulopsis spinosus* Pilsbry & Call 1886.

Distribution.—West Indies, North America, Central America and South America; south Florida, the West Indies excluding the Bahama Islands and the Cayman Islands; coastal Mississippi, Louisiana, Texas, south though the coastal lowlands of east México to the Isthmus of Tehuantepec; lowland areas from Chiapas and Tabasco south through Central America to Ecuador on the Pacific coast, and the Caribbean-Atlantic drainage systems east and south to Pará State, Brazil.

Habitat.—Primarily freshwater; occasionally in brackish water.

Taxonomy.—The species-level systematics of *Pyrgophorus* is in need of study. Forty-five species and subspecies have been described on the basis of shell characters. The shells frequently bear ornate sculpture which varies greatly within and between populations. Similar ornate or smooth shell forms appear throughout the range of the genus. The assignment of names to specimens is highly subjective because most species and subspecies were not adequately diagnosed, illustrated or critically compared to related forms. Taylor (1966) and Hershler and Thompson (1992) reviewed the taxonomic history of the nominate forms. It is uncertain if more than just a few of these are valid. The oldest species name for the genus is *parvulus* Guilding 1828, described from the Windward Islands, West Indies. Most Méxicoan and Central America populations are referred by authors to *Pyrgophorus coronatus* (Pfeiffer 1840). Names applicable to most other Méxicoan and Central American forms are listed in the synonymy given for *coronatus*. I am comfortable in recognizing only two species in México and Central America, *Pyrgophorus coronatus* (Pfeiffer 1840) and *Pyrgophorus exiguus* (Morelet 1851), although other nominate species are also retained in this list. Extralimital taxa are listed in Hershler and Thompson (1992:91–94).

***Pyrgophorus coronatus* (Pfeiffer 1840)**

*Paludina coronata* Pfeiffer 1840:253.- Küster 1852; in Martini & Chemnitz, Syst. Conch. Cab., ed. 2 (*Paludina*):51; pl. 11, figs. 11–12.

*Hydrobia coronata* (Pfeiffer). Von Martens 1858; in Wiegmann's Archis f. Naturg. 24:192.

*Amnicola coronata* (Pfeiffer). Fischer 1860; Jour. de Conchyl. 8:363.  
*Pyrgulopsis coronatus* (Pfeiffer). Ancey 1888; Bull. Soc. Malac. France 5:197.  
*Potamopyrgus coronatus* (Pfeiffer). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 34:328.  
*Pyrgophorus coronatus* (Pfeiffer). Taylor 1966; Veliger 9:194.  
*Paludina crystallina* Pfeiffer 1840:253. (Matanzas, Matanzas Province, Cuba [Aguayo and Jaume 1947].)  
*Melania spinifera* C. B. Adams 1845:17. (Jamaica.)  
*Paludina jamaicensis* C. B. Adams 1849. (Jamaica.)  
*Paludina cisternicola* Morelet 1851; Test. Noviss. II:21. (Campeche, Campeche, México.)  
*Paludina ornata* Morelet 1851; Test. Noviss. II:21. (Lago de Coatepeque, El Salvador.)  
*Paludina cisternina* Küster 1852:51; pl. 10, figs. 9–10. (Bay of Campeche, México.)  
*Amnicola candeana inermis* Fischer 1860; Jour. de Conchyl. 8:363. (Type locality not stated.)  
*Amnicola candeana gibbosa* Fischer 1860; Jour. de Conchyl. 8:364. (Bay of Campeche, México.)  
*Hydrobia reevei* Frauenfeld 1863:526; pl. 8.  
*Pyrgulopsis nicaraguanus* Ancey 1888; Bull. Soc. Malac. France 5:194. (Nicaragua.)  
*Pyrgula nicaraguensis* Newcomb, MS; in Ancey 1888; Bull. Soc. Malac. France 5:194.  
*Pyrgulopsis nicaraguanus costuliferus* Ancey 1888; Bull. Soc. Malac. France 5:195. (Nicaragua.)  
*Purgulopsis nicaraguanus duplicatus* Ancey 1888; Bull. Soc. Malac. France 5:195. (Nicaragua.)  
*Pyrgulopsis newcombianus* Ancey 1888; Bull. Soc. Malac. France 5:196. (Nicaragua.)  
*Pyrgulopsis productus* Ancey 1888; Bull. Soc. Malac. France 5:197. (Nicaragua.)  
*Purgulopsis wrighti* Ancey 1888; Bull. Soc. Malac. France 5:199. (Lago de Coatepeque, El Salvador.)  
*Pyrgulopsis wrighti plicatus* Ancey 1888; Bull. Soc. Malac. France 5:199. (Lago de Coatepeque, El Salvador.)  
*Pyrgulopsis wrighti transitans* Ancey 1888; Bull. Soc. Malac. France 5:200. (Lago de Coatepeque, El Salvador.)  
*Pyrgulopsis wrighti oblongus* Ancey 1888; Bull. Soc. Malac. France 5:200. (Lago de Coatepeque, El Salvador.)  
*Pyrgulopsis wrighti minimus* Ancey 1888; Bull. Soc. Malac. France 5:201. (Lago de Coatepeque, El Salvador.)  
*Pyrgulopsis wrighti obesus* Ancey 1888; Bull. Soc. Malac. France 5:201. (Lago de Coatepeque, El Salvador.)  
*Amnicola coronata unicarinata* Von Martens 1899; Biol. Cent. Amer.:433–434. Type locality not stated. Here restricted to Veracruz, Veracruz, México. Earlier, Von Martens (1873) recorded this form from Vieque. Taylor (1966) and Hershler & Thompson (1992) listed *unicarinatus* as a *nomum nudum*, but the form is diagnosed by Von Martens (1899:431), and he cited the description and figure given by Strebel (1873:34; pl. 5, fig. 34a), thus validating the use of the name.  
*Pyrgulopsis coronatus* Ancey 1888; Bull. Soc. Malac. France 5:198 (*non Paludina coronata* Pfeiffer 1840). (Veracruz, México.)  
 Type Locality.—Matanzas, Matanzas Province, Cuba (Aguayo and Jaume 1947).  
 Distribution.—Coastal and lowland regions of México from Tamaulipas and Oaxaca south to Venezuela; West Indies in general.

### ***Pyrgophorus chagresensis* (Morrison 1946)**

*Lyrodes chagresensis* Morrison 1946; Smiths. Misc. Coll. 106:16–16; pl. 2, fig. 6; pl. 3, fig. 6.  
*Pyrgophorus chagresensis* (Morrison). Taylor 1966; Veliger 9:194.–Hershler & Thompson 1992; Malac. Rev. Suppl. 5:92.  
 Type Locality.—Río Chagres near Gatuncillo, Prov. Panamá, Panamá. Holotype USNM 542149.  
 Distribution.—Known only from the type locality.

### ***Pyrgophorus conoideus* (Ancey 1888)**

*Pyrgulopsis conoideus* Ancey 1888; Bull. Soc. Malac. France 5:196.  
*Pyrgophorus conoideus* (Ancey).- Taylor 1966; Veliger 9:194.–Hershler & Thompson 1992; Malac. Rev. Suppl. 5:92.  
 Type Locality.—Nicaragua.  
 Distribution.—NICARAGUA: uncertain distribution.

### ***Pyrgophorus hydrobioides* (Ancey 1888)**

*Pyrgulopsis hydrobioides* Ancey 1888; Bull. Soc. Malac. France 5:201.  
*Amnicola* (?) *hydrobioides* (Ancey). Von Martens 1899; Biol. Cent. Amer.:435–436.  
*Pyrgophorus hydrobioides* (Ancey). Taylor 1966; Veliger 9:194.–Hershler & Thompson 1992; Malac. Rev. Suppl. 5:93.  
 Type Locality.—Lago Coatepeque, Dept. Santa Ana, El Salvador.  
 Distribution.—Known only from the type locality.  
 Remarks.—Von Martens (1899) suggested that the type is a mislabeled specimen of *Hydrobia ulvae* from the coast of France.

### ***Pyrgophorus spinosus* (Call & Pilsbry 1886)**

*Pyrgulopsis spinosus* Call & Pilsbry 1886; Proc. Davenport Acad. Nat. Sci., 5:14, pl. 2, figs. 17–19.  
*Potamopyrgus spinosus* (Call & Pilsbry).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:327.- Walker 1918; Misc. Pub. Mus. Zool. Univ. Mich. (6):140.  
*Hydrobia texana* Pilsbry 1887; Proc. Davenport Acad. Nat. Sci., 5:33; pl. 3, figs. 1–6. (Guadalupe River and Comal Creek, New Braunfels, Comal County, Texas.)  
*Pyrgulopsis spinosus brevispira* Ancey 1888; Bull. Soc. Malac. France 5:193. (Comal Creek, New Braunfels, Comal, County, Texas.)  
*Pyrgophorus spinosus* (Call & Pilsbry). Taylor 1966; Veliger 9:195.–Hershler & Thompson 1992; Malac. Rev. Suppl. 5:93.  
 Type Locality.—Comal Creek, New Braunfels, Comal County, Texas. Syntypes of *Potamopyrgus spinosus*: not located. Lectotype of *Hydrobia texanus*: ANSP 68908a (H. B. Baker 1964)  
 Distribution.—South Central Texas, including the Rio Bravo del Norte (Rio Grand), COAHUILA and CHIHUAHUA.  
 Remarks.—Pilsbry (1891) found little reason for retaining *spinosus* as a distinct species from *coronatus*.

### ***Pyrgophorus vulcani* (Von Martens 1901)**

*Amnicola vulcani* von Martens 1901; Biol. Cent.-Ameri.:645; pl.44, fig. 13 (shell).



*Pyrgophorus volcani* (von Martens), Thompson 1968; Fla. Hydrobiidae:150.

Type Locality.—Lago de Atitlan, Dept. Sololá, Guatemala.

Distribution.—Known only from the type locality.

***Pyrgophorus zeteki* (Morrison 1946)**

*Lyrodes zeteki* Morrison 1946; Smiths. Misc. Coll. 106:17; pl. 2, fig. 10.

*Pyrgophorus zeteki* (Morrison). Taylor 1966; Veliger 9:195.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:94.

Type Locality.—Pedro Miguel, Canal Zone, Panamá. Holotype USNM 432871.

Distribution.—Known only from the type locality.

**Genus *Subcochliopa* Morrison 1946**

*Subcochliopa* Morrison 1946; Smiths. Misc. Coll. 106:25.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:99.

Type Species.—*Subcochliopa trochus* Morrison 1946.

Distribution.—Pacific coastal streams of Panamá and Costa Rica.

Habitat.—Brackish water and freshwater zone immediately above brackish zone.

Taxonomy.—Three species are recognized.

***Subcochliopa colabrensis* Morrison 1946**

*Subcochliopa colabrensis* Morrison 1946; Smiths. Misc. Coll. 106:26; pl. 2, fig. 14; pl. 3, fig. 16.- Taylor 1966; Veliger 9:179.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:101.

Type Locality.—Río Colabre [Río Culebra], Río Bayamo drainage, Prov. Panamá, Panamá. Holotype USNM 542169.

Distribution.—Known only from the type locality.

***Subcochliopa trochulus* (Von Martens 1899)**

*Cochliopa trochulus* Von Martens 1899; Biol. Cent. Amer.:429; pl. 23, fig. 2

*Subcochliopa trochulus* (Von Martens). Morrison 1946; Smiths. Misc. Coll. 106:25.- Taylor 1966; Veliger 9:197.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:101.

Type Locality.—Here restricted to El Pozo, Río Grande de Terraba, Puntarenas Province, Costa Rica.

Distribution.—Southwestern COSTA RICA. In addition to the type locality the species has been recorded from marshes at Sierpe.

***Subcochliopa trochus* Morrison 1946**

*Subcochliopa trochus* Morrison 1946; Smiths. Misc. Coll. 106:25-26.- Taylor 1966; Veliger 9:179.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:99-101; figs. 65a, d (shell), 65b (operculum), 65e (radula), 66 (reproductive system).

Type Locality.—Sona, Río Tribique, Prov. Veraguas, Panamá. Holotype USNM 542168.

Distribution.—PANAMÁ. occurring in smaller streams draining into the Río San Pablo, Prov. Veraguas: Quebrada Tolerique, 3 km SE of Sona; Río San Juan, 2.5 km SE of Soledad.

**Genus *Tepalcatia* Thompson & Hershler 2002**

*Tepalcatia* Thompson & Hershler 2002; Proc. Biol. Soc. Wash. 115:196.

Type Species.—By original designation *Tepalcatia tela* Thompson & Hershler 2002.

Distribution.—The Rio Balsas basin of southern México. Habitat.—Freshwater springs and streams.

Taxonomy.—Three species are recognized.

***Tepalcatia bakeri* (Pilsbry 1891)**

*Potamopyrgus ? bakeri* Pilsbry 1891; Nautilus 5:9- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:328-329; pl. 15, figs. 9-11.- Fischer & Crosse 1891; Miss. Sci. Mex. II:277.- Baker 1964; Proc. Acad. Nat. Sci. Phila. 116:171 (lectotype selection).

*Amnicola bakeri* (Pilsbry 1891). Von Martens 1899; Biol. Cent. Amer.:435.

*Tryonia bakeria* (Pilsbry 1891). Taylor 1966; Veliger 9:196.

*Tepalcatia bakeri* (Pilsbry 1891). Thompson & Hershler 2002; Proc. Biol. Soc. Wash. 115:203; fig. 12.

Type Locality.—Specimens were dug from the bank of a stream east of Yauntepec, Morelos. Lectotype ANSP 61578 (Thompson & Hershler).

Distribution.—Known only from the type locality.

***Tepalcatia polia* (Thompson & Hershler 1991)**

*Aroapyrgus polius* Thompson & Hershler 1991; Proc. Biol. Soc. Wash. 104:669-671; fig. 1.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:28.

*Tepalcatia polia* (Thompson & Hershler). Thompson & Hershler 2002; Proc. Biol. Soc. Wash. 115:197-202; figs. 8-11.

Type Locality.—A small spring-fed pool 3.5 km northeast of Tamazulapán del Progreso, Oaxaca, México. Holotype UF 175028.

Distribution.—Known only from the type locality.

***Tepalcatia tela* Thompson & Hershler 2002**

*Tepalcatia tela* Thompson & Hershler 2002; Proc. Biol. Soc. Wash. 115:192-197; figs. 2-7.

Type Locality.—A stream (Los Ultimos) 3.0 km north of Santa Ana Amitlán, Michoacán, 430 m alt.; 19°10.7'N, 102°32.1' W. Holotype UF 287449.

Distribution.—MICHOACÁN: in addition to the type locality this snail is known from a spring-fed lagoon, La Mojada, 7.5 km NW of Apatzingan.

**Genus *Texadina* Abbott & Ladd 1951**

*Texadina* Abbott & Ladd 1951; Jour. Wash. Acad. Sci. 41:335.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:102.

Type Species.—*Littoridina (Texadina) sphinctostoma* Abbott & Ladd 1951.

Distribution.—Coast of the Gulf of Mexico from Pensacola Bay, Florida, west and south to the Laguna de Terminos, Campeche, México; Jamaica.

Habitat.—Brackish marshes.

Taxonomy.—Two species are recognized. One occurs in México.

***Texadina sphinctostoma* (Abbott & Ladd 1951)**

*Littoridina* (*Texadina*) *sphinctostoma* Abbott & Ladd 1951; Jour. Wash. Acad. Sci. 41:335, text-figs. 1–12.- Solem 1961; Nautilus 74:158.

*Texadina sphinctostoma* (Abbott & Ladd). Taylor 1966; Veliger 9:196.- García-Cubas 1963; Bol. Inst. Geol. Univ. Nac. Aut. Méx., 67:1–55.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:102–105; figs. 67a, c (shell), 67b (operculum), 67a (radula), 68 (reproductive anatomy).

Type Locality.—1.5 miles north of Webb Point, northwest side of San Antonio Bay, 27 miles northeast of Rockport, Texas. Holotype USNM 596722.

Distribution.—Marshes along the Gulf of Mexico coast from Pensacola Bay, Florida, west and south to Campeche. The only record in México is the Laguna de Terminos, CAMPECHE (García-Cubas 1963).

**Genus *Tryonia* Stimpson 1865**

*Tryonia* Stimpson 1865; Smiths. Misc. Coll. (201):54.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:107. (Type species: *Tryonia clathrata* Stimpson 1865.)- Hershler 2001; Smiths. Contrib. Zool., (612):3–5.

*Calipyrgula* Pilsbry 1934; Nautilus 48:15. (Type species: *Calipyrgula carinifera* Pilsbry 1934.)

*Durangonella* Morrison 1945:20.- Taylor 1966; Veliger 9:184.- Hershler 1985; Malacologia 26:78–80.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:40–41. (Type species: *Hydrobia seemani* Frauenfeld 1863.)

*Hyalopyrgus* Thompson 1968:43. (Type species: *Bythinella aequicostata* Pilsbry 1889.)

*Paupertryonia* Taylor 1987; Bull. New Mexico Bur. Mines and Min. Res. 116:41. (Type species: *Potamopyrgus cheatumi* Pilsbry 1935.)

Distribution.—Northern Sonora and Chihuahua, México; southwestern desert region of California, Nevada, Utah, Arizona, New Mexico and western Texas, and in the southeast in the central part of the Florida Peninsula.

Habitat.—Freshwater.

Taxonomy.—The genus includes about 16 extant species (Hershler 2001). Two occur in México. Hershler, Liu and Stockwell (2002) demonstrated that the type species of *Durangonella* is a *Tryonia*. Three other species that are known only from shells were described as species of *Durangonella*, and they are assigned to *Tryonia* tentatively.

***Tryonia dugesiana* (Morrison 1945)**

*Durangonella dugesiana* Morrison 1945; Nautilus 59:21; pl. 3, fig. 3.- Taylor 1966; Veliger 9:184.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:42.

Type Locality.—Andocutira, Michoacán (amended to Andocutin, Guanajuato by Taylor 1966). Holotype USNM 433473.

Distribution.—Known only from the type locality.

***Tryonia exigua* (Morelet 1851)**

*Melania exigua* Morelet 1851; Test. Noviss. II:23.

*Tryonia exigua* (Morelet). Fischer & Crosse 1891; Miss. Sci. Mex. II:275; pl. 50, figs. 2–2b.- Von Martens 1899; Biol. Cent.

Amer.:436.- Taylor 1966; Veliger 9:197.- Hershler 2001; Smiths. Contrib. Zool., (612):9.

*Paludestrina exigua* (Morelet). Goodrich and Van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):36.

*Pyrgophorus exigua* (Morelet). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:93, 94.

*Melania minuta* Brot 1862:42.

Type Locality.—Lago de Petén Itza, Dept. Petén, Guatemala.

Distribution.—Known only from the type locality.

***Tryonia hertleini* (Drake 1956)**

*Lyrodes hertleini* Drake 1956; Bull. South. Calif. Acad. Sci. 55:44–46; pl. 15.

*Tryonia hertleini* (Drake). Hershler & Thompson 1992; Malac. Rev. Suppl. 5:110.- Hershler 2001; Smiths. Contrib. Zool., (612):10.

Type Locality.—Springs, Las Palomas, Chihuahua, México. Holotype CAS 9982.

Distribution.—Known only from the type locality. Possibly extinct.

***Tryonia mariae* (Morrison 1945)**

*Durangonella mariae* Morrison 1945; Nautilus 59:20; pl. 3, fig. 2.- Taylor 1966; Veliger 9:184.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:42.

Type Locality.—One meter below the bed of the presently dry Lago de Tlahuac, 20 km east of Xochimilco, Distrito Federal, México. Holotype USNM 433399.

Distribution.—Known only from the type locality.

***Tryonia pilsbryi* (Morrison 1945)**

*Durangonella pilsbryi* Morrison 1945; Nautilus 59:22; pl. 3, fig. 4.- Taylor 1966; Veliger 9:184.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:42.

Type Locality.—Paso del Río, Colima, México. Holotype USNM 362551.

Distribution.—Known only from the type locality.

***Tryonia seemani* (Frauenfeld 1863)**

*Hydrobia seemani* Frauenfeld 1863:1025.- Frauenfeld 1865:1; pl. 8, fig. 1.- Fischer & Crosse 1891; Miss. Sci. Mex. II:271.

*Ammicola* (?) *seemani* (Frauenfeld). Von Martens 1899; Biol. Cent. Amer.:435.

*Durangonella seemani* (Frauenfeld). Morrison 1945:20.- Taylor 1966; Veliger 9:184.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:42.

*Tryonia seemani* (Frauenfeld). Hershler, Liu and Stockwell 2002; Proc. Biol. Soc. Wash. 115.

Type Locality.—Durango (it is not clear whether Frauenfeld intended this to mean the city or the state). Cotypes in the Vienna Naturhistorisches Museum.

Distribution.—DURANGO: known only from a spring at Ciudad Durango, which was a domestic water source for the city many years earlier. Possibly extinct.

**Genus *Zetekina* Morrison 1947**

*Zetekella* Morrison 1946; Smiths. Misc. Coll. 106:11 [non *Zetekella* Drake 1944, Hemiptera].

*Zetekina* Morrison 1947; Nautilus 60:102. Hershler & Thompson 1992; Malac. Rev. Suppl. 5:112–114.

Type Species.—*Littoridina frenata* Pilsbry 1935.

Distribution.—Streams along the Pacific drainage of Nicaragua, Costa Rica, and Panamá.

Habitat.—Brackish water and freshwater just above the brackish zone.

Taxonomy.—Seven species are recognized.

#### ***Zetekina frenata* (Pilsbry 1935)**

*Littoridina frenata* Pilsbry 1935:5; text-figs. 1–1a.

*Zetekella frenata* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:12.

*Zetekina frenata* (Pilsbry). Morrison 1947; Nautilus 60:102.- Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:114; figs. 73a, 73d (shell).

Type Locality.—Río Juan Díaz, Cd. Panamá, Prov. Panamá, Panamá. Holotype ANSP 161776.

Distribution.—Known only from the type locality.

#### ***Zetekina kompi* (Morrison 1946)**

*Zetekella kompi* Morrison 1946; Smiths. Misc. Coll. 106:13; pl. 2, fig. 2; pl. 3, fig. 2.

*Zetekina kompi* (Morrison). Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:114.

Type Locality.—Río Mata Puerco, west side of Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542140.

Distribution.—Known only from the type locality.

#### ***Zetekina martensi* (Pilsbry 1935)**

*Littoridina martensi* Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:5; text-fig. 2.

*Zetekella martensi* (Pilsbry). Morrison 1946; Smiths. Misc. Coll. 106:11.

*Zetekina martensi* (Pilsbry). Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:114.

Type Locality.—Río Fula, Dept. León, Nicaragua. Holotype ANSP 27227.

Distribution.—Known only from the type locality.

#### ***Zetekina melanioides* (Von Martens 1899)**

*Amnicola melanioides* Von Martens 1899; Biol. Cent. Amer.:439; pl. 22, fig. 8.

*Littoridina melanioides* (Von Martens). Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:5.

*Zetekella melanioides* (Von Martens). Morrison 1946; Smiths. Misc. Coll. 106:11.

*Zetekina melanioides* (Von Martens). Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:115.

Type Locality.—Golfo Dulce, Río de los Platanales, Prov. Puntarenas, Costa Rica.

Distribution.—Known only from the type locality.

#### ***Zetekina panamensis* (Bartsch 1920)**

*Syncera panamensis* Bartsch 1920; Bull. U. S. Nat. Mus. 58:164; pl. 12, fig. 8.

*Zetekella panamensis* (Bartsch). Morrison 1946; Smiths. Misc. Coll.

106:11.

*Zetekina panamensis* (Bartsch). Taylor 1966; Veliger 9:198.

Type Locality.—Río Matasnillo, Panamá. Holotype USNM 150870.

Distribution.—Known only from the type locality. Apparently extinct.

#### ***Zetekina tenuis* (Von Martens 1899)**

*Amnicola melanioides tenuis* Von Martens 1899; Biol. Cent. Amer.:436; pl. 22, fig. 9.

*Littoridina tenuis* (Von Martens). Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:5.

*Zetekella tenuis* (Von Martens). Morrison 1946; Smiths. Misc. Coll. 106:11.

*Zetekina tenuis* (Von Martens). Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:112.

Type Locality.—In a small stream running into the Río Boto, Golfo Dulce, Prov. Puntarenas, Costa Rica.

Distribution.—COSTA RICA: known only from the type locality and from marshes at Seripe, Prov. Puntarenas (Von Martens 1899).

#### ***Zetekina veraguasensis* (Morrison 1946)**

*Zetekella veraguasensis* Morrison 1946; Smiths. Misc. Coll. 106:12, pl. 2, fig. 1; pl. 3, fig. 1.

*Zetekina veraguasensis* (Morrison). Taylor 1966; Veliger 9:198.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:115.

Type Locality.—Río Tribique, Sona, Prov. Veraguas, Panamá. Holotype USNM 542139.

Distribution.—PANAMÁ: streams draining into the Río San Pablo, Prov. Veraguas

### **Subfamily LITHOGLYPHINAE Tryon 1866**

#### **Genus *Pterides* Pilsbry 1909**

*Pterides* Pilsbry 1909; Nautilus 23:48.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:130.

Type Species.—*Pterides pterostoma* Pilsbry 1909.

Distribution.—Río Choy and Río Ganina in eastern San Luís Potosí, México.

Taxonomy.—Three species are recognized.

#### ***Pterides bisinulabris* Pilsbry 1909**

*Pterides bisinulabris* Pilsbry 1909; Nautilus 23:48–49; pl. 5, figs. 7–8.

Type Locality.—Río Ganina, three miles southwest of San Dieguito, San Luís Potosí, México. Holotype ANSP 99015.

Distribution.—Known only from the type locality.

#### ***Pterides pterostoma* Pilsbry 1909**

*Pterides pterostoma* Pilsbry 1909; Nautilus 23:48; pl. 5, figs. 1–2, 5–6.- Hershler & Thompson 1992; Malac. Rev. Suppl. 5:130.

Type Locality.—Not given. Holotype ANSP 99016a.

Distribution.—SAN LUÍS POTOSÍ (?): unknown.

#### ***Pterides rhabdus* Pilsbry 1909**

*Pterides rhabdus* Pilsbry 1909; Nautilus 23:48; pl. 5, figs. 3–4.



Type Locality.—Río Choy near the cave, San Luis Potosí, México. Holotype ANSP 99107.

Distribution.—Known only from the type locality.

### Subfamily NYMPHOPHILINAE Taylor 1966

#### Genus *Pyrgulopsis* Call & Pilsbry 1886

*Pyrgulopsis* Call & Pilsbry 1886; Proc. Davenport Acad. Sci. 5:9.- Hershler & Thompson 1987; Nautilus 101:28–31.- Hershler 1994; Smiths. Contrib. Zool. (554):5–14.- Liu & Hershler 2005; Molecular Phylogeny and Evolution 34:284–298. (Type species by original designation: *Pyrgula nevadensis* Stearns 1883.)

*Fontelicella* Gregg & Taylor 1965:103. (Type species by original designation: *Fontelicella californiensis* Gregg & Taylor 1965.)

*Natricola* Gregg & Taylor 1965:108. (Type species by original designation: *Pomatiopsis robusta* Walker 1908.)

*Microammicola* Gregg & Taylor 1965:109. (Type species by original designation: *Ammicola micrococcus* Pilsbry 1893.)

*Nymphophilus* Taylor 1966. (Type species by original designation: *Nymphophilus minkleyi* Taylor 1966.)

*Savaginius* Taylor 1966a:130. (Type species by original designation: *Paludestrina nana* Chamberlain & Berry 1933.)

*Mexistiobia* Hershler 1985; Malacologia 26:46. (Type species by original designation: *Mexistiobia manantiali* Hershler 1985.)

*Apachecoccus* Taylor 1987:32. (Type species by original designation: *Apachecoccus arizonae* Taylor 1987.)

*Yaquicoccus* Taylor 1987:34. (Type species by original designation: *Yaquicoccus bernardinus* Taylor 1987.)

Distribution.—Western North America, including the Snake River basin, California coastal drainages, Baja California, Colorado River basin, Rio Grande basin, Pecos River basin and internal drainages of northern México.

Taxonomy.—About 125 species are currently recognized, seven in México.

#### *Pyrgulopsis acarinatus* (Hershler 1985)

*Nymphophilus acarinatus* Hershler 1985; Malacologia 26:45; fig. 9 (shell).

*Pyrgulopsis acarinata* (Hershler). Liu & Hershler 2005; Molecular Phylogeny and Evolution 34:296.

Type Locality.—A large spring along a dirt road, 10.7 km south of the tip of the Sierra de San Marcos, Cuatro Ciénegas Basin, Coahuila, México. Holotype ANSP 355255.

Distribution.—COAHUILA: known only from the type locality and Santa Tecla Laguna, 22 km south of the tip of the Sierra de San Marcos.

#### *Pyrgulopsis brandi* (Drake 1953)

*Ammicola brandi* Drake 1953; Jour. Wash. Acad. Sci. 43:27; figs. 1–6.- Taylor 1975; Pap. Paleo. Mus. Paleo. Univ. Mich. 10:44.

*Pyrgulopsis brandi* (Drake). Hershler 1994; Smiths. Contrib. Zool., (554):22–23; figs. 4e (female anatomy), 9g (shell), 9h-i (operculum), 33b (radula), 44b (penis).

Type Locality.—Springs at Las Palomas, Chihuahua, México. Holotype USNM 601494.

Distribution.—Known only from the type locality. Presumed to be extinct due to drying up of springs at the type locality.

#### *Pyrgulopsis cedrosensis* (Pilsbry 1927)

*Paludestrina cedrosensis* Pilsbry 1927:188; fig. 3.

*Fontelicella cedrosensis* (Pilsbry). Gregg & Taylor 1965:108.- Taylor 1976:55.

*Pyrgulopsis cedrosensis* (Pilsbry). Hershler 1994; Smiths. Contrib. Zool. (554):27–28; figs. 11d (shell), 11e-f (operculum), 34a (radula).

Type Locality.—Bernstein's Spring on east side of Isla de Cedros, Baja California Norte, México. Holotype ANSP 141408.

Distribution.—BAJA CALIFORNIA NORTE: apparently endemic to springs on Isla de Cedros. Not found in recent years.

#### *Pyrgulopsis chihuahua* (Pilsbry 1928)

*Fluminicola chihuahua* Pilsbry 1928:116; fig. 3.- H. B. Baker 1964:171.

*Cochliopa chihuahua* (Pilsbry). Pilsbry 1935:92.- Taylor 1966; Veliger 9:179.- Taylor 1967:153.- Taylor 1975:56.

*Pyrgulopsis chihuahua* (Pilsbry). Hershler 1994; Smiths. Contrib. Zool. (554):28–32; figs. 12a-b (shell), 12c-d (operculum), 34b (radula), 45a (penis).

Type Locality.—Ojo Caliente de Santa Rosa, north-central Chihuahua (Taylor 1967). Holotype ANSP 141266 (Baker 1964:171).

Distribution.—CHIHUAHUA: known from the type locality, and from Ojo Caliente de Rosetilla, east of Delicias.

#### *Pyrgulopsis manantiali* (Hershler 1985)

*Mexistiobia manantiali* Hershler 1985; Malacologia 26:47–53; figs. 10–11 (shell), 12 (radula), 13 (external morphology), 14 (female reproductive system).

*Pyrgulopsis manantiali* (Hershler). Hershler & Thompson 1987:29; fig. 8 (penis).- Hershler 1994; Smiths. Contrib. Zool. (554):47; figs. 19a (shell), 19b-c (operculum), 37a (radula), 48a (penis).

Type Locality.—A small spring 100 m south of Rio Mesquites at Tierra Blanca, Cuatro Ciénegas basin, Coahuila, México. Holotype ANSP 355205.

Distribution.—COAHUILA: known only from the Cuatro Ciénegas basin.

#### *Pyrgulopsis minkleyi* (Taylor 1966)

*Nymphophilus minkleyi* Taylor 1966; Veliger 9:199–203; pl. 13, figs. 15, 17; text-figs. 17–19 (shell), 20 (operculum), 21 (penis).- Thompson 1979; Malac. Rev. 12:41–46; figs. 1–7 (shell), 8–9 (nervous system), 10 (radula), 11–15 (reproductive anatomy).- Hershler 1985; Malacologia 26:40–45; fig. 4 (shell), fig. 5a (head), fig. 5b (operculum), fig. 6 (radula), fig. 7 (female reproductive anatomy), fig. 8 (male reproductive anatomy).

*Pyrgulopsis minkleyi* (Taylor). Liu & Hershler 2005; Molecular Phylogeny and Evolution 34:296.

Type Locality.—Río Mesquites at the main road 9 km southwest of Cuatro Ciénegas, Coahuila, México. Holotype UMMZ 220188.

Distribution.—COAHUILA: endemic to the Cuatro Ciénegas basin.

#### *Pyrgulopsis palomasensis* (Pilsbry 1895)

*Bythinella palomasensis* Pilsbry 1895; Nautilus 9:68.- Dall 1897; Proc. U. S. Nat. Mus. 19:369; pl. 31, fig. 9 (shell).- Pilsbry

1916; *Nautilus* 29:111.- Drake 1953; *Jour. Wash. Acad. Sci.* 43:27.- Drake 1956; *Bull. South. Calif. Acad. Sci.* 55:46.- Taylor 1967; *Veliger* 10:156.

*Amnicola palomasensis* (Pilsbry). Von Martens 1899; *Biol. Cent. Amer.*:134.

*Fontelicella palomasensis* (Pilsbry). Taylor 1975; *Pap. Paleo. Mus. Paleo. Univ. Mich.* 10:141.

*Pyrgulopsis palomasensis* (Pilsbry). Hershler 1994; *Smiths. Contrib. Zool.* (554):57–58; figs. 22 (shell).

Type Locality.—Laguna de Palomas, 1.6 km south of International Boundary Survey Monument Number 21, Mimbres Valley, Chihuahua (Taylor 1967). Lectotype USNM 130016 (Hershler 1994).

Distribution.—Known only from the type locality.

#### ***Pyrgulopsis patzcuarensis* Pilsbry 1891**

*Pyrgulopsis patzcuarensis* Pilsbry 1891; *Nautilus* 5:9.- Pilsbry 1891; *Proc. Acad. Nat. Sci. Phila.* 43:330; pl. 15, fig. 8.

*Tryonia patzcuarensis* (Pilsbry). Taylor 1966; *Veliger* 9:197.

Type Locality.—Lake Patzcuaro, Michoacán, México. Holotype ANSP 61588.

Distribution.—Known only from the type locality. Possibly extinct.

#### **Subfamily status uncertain**

#### **Genus *Rachipteron* Thompson 1964**

*Rachipteron* Thompson 1964; *Rev. Biol. Trop.* 12:97–98.- Taylor 1966; *Veliger* 9:171.- Hershler & Thompson 1992; *Malac. Rev. Suppl.* 5:4. (Type species by monotypy: *Rachipteron philopelum* Thompson 1964.)

Distribution.—Brackish marshes along the Pacific coast of Costa Rica.

Taxonomy.—The family relationships of the genus remain in question. Taylor (1966) suggested a relationship with the Stenothyridae, an East Asian family of brackish water snails. Higher group relationships cannot be resolved until the female reproductive anatomy is examined. The genus is monotypic.

#### ***Rachipteron philopelum* Thompson 1964**

*Rachipteron philopelum* Thompson 1964; *Rev. Biol. Trop.* 12:98–101; figs 1a-b (external morphology), 1c (operculum), 1d-e (penis), 1f (radula), 2 (shell).

Type Locality.—Seepage pools along the banks of the Rio Grande de Tárcoles, about 1/4 mile above the mouth of the river, Costa Rica (09°44' N, 84°37'W). Holotype UMMZ 216478.

Distribution.—COSTA RICA: known only from brackish streams along the Pacific coast of Costa Rica. In addition to the type locality the species is recorded from Quebrada Bomba Vieja at Boca de Barranca, Prov. Puntarenas

#### **Family ASSIMINEIDAE H. Adams & A. Adams 1856**

#### **Genus *Assiminea* Fleming 1828**

Type Species.—*Assiminea grayana* Fleming 1828.

Distribution.—Tropical and sub-tropical regions of

much of the world.

Taxonomy.—There are numerous species. Only five have been recorded from the New World. Two are brackish water inhabitants. Three occur in freshwater (Hershler, Liu & Lang 2007), of which a single species is found in México.

#### ***Assiminea cienegensis* Hershler, Liu & Lang 2007**

*Assiminea* sp. Taylor 1966; *Veliger* 9:208.

*Assiminea pecos* Taylor 1987; *Bull. New Mexico Bur. Mines and Mineral Res.* 116:8–9 (in part).

*Assiminea cienegensis* Hershler, Liu & Lang 2007; *Hydrobiologia* (579):328–333; figs. 4, 6 (shell), figs. 7a, 7b (protoconch), figs. 7c, 7d (operculum), figs. 8–9 (anatomy), figs. 10a-f (radula).

Type Locality.—Southern portion of a spring-marsh complex just W of Mex. Hwy. 30, ca. 2.5 km N of Poza de la Becerra, Cuatro Ciénegas Basin, Coahuila, México (ca. 26°53' N, 102°08' W). Holotype USNM 1071402.

Distribution.—COAHUILA: known only from the Cuatro Ciénegas Basin.

#### **Superfamily VALVATOIDEA Gray 1840**

#### **Family VALVATIDAE Gray 1840**

Distribution.—Holarctic.

Taxonomy.—A single genus is recognized generally.

#### **Genus *Valvata* Müller 1774**

*Valvata* O. F. Müller 1774:198.- Fischer & Crosse 1891:293–302.- Von Martens 1899; *Biol. Cent. Amer.*:426. (Type species by original designation: *Valvata crista* Müller 1774.)

Distribution.—Holarctic in distribution.

Taxonomy.—Thirteen species occur in North America. Two species are known from México.

#### ***Valvata beltrami* Contreras-Arquiet 1993**

*Valvata beltrami* Contreras-Arquiet 1993; *Publ. Biol., Univ. Auto. de Nuevo León, Supl.* 1:1–6.

Type Locality.—Manantiel Charco Azul, San José de Avilés, Aramberri, Nuevo León, México. Holotype USNM 860587.

Distribution.—NUEVO LEÓN: known only from the type locality, and from Manantiel La Prensa, 2 km N of the type locality.

#### ***Valvata humeralis humeralis* Say 1829**

*Valvata humeralis* Say 1829; *New Harmony Disseminator of Useful Knowledge* II:244.- Burch 1989; *Walkerana* 1:81–82, fig. 25 (shell).- Pilsbry 1903; *Proc. Acad. Nat. Sci. Phila.* 55:778–779; pl. 52, figs. 12, 12a (shell).- Hinkley 1907; *Nautilus* 21:79.

*Valvata humeralis* Say (*humerosa* Say). Strebel 1873:33; pl. 4, fig. 42 (shell).

*Valvata strebeli* Fischer & Crosse 1891:304.

*Valvata humeralis strebeli* Fischer & Crosse.- Von Martens 1899; *Biol. Centr. Amer.*, 427.

Type Locality.—Lakes around México City, Distrito Federal, México. Syntypes ANSP 1904 (H. B. Baker 1965).

Distribution.—MÉXICO, DISTRITO FEDERAL: México City; Lago de Xochimilco (Pilsbry 1903). *Valvata*

*humeralis humeralis* is found from Montana south to Colorado and west to British Columbia and California (Burch 1989). Henderson (1929) contended that western U.S. records are based on *Valvata humeralis californica* Pilsbry 1908, which most authors subsequent to 1908 recognize as a valid subspecies. Burch (1989) did not list *V. h. californica*. In México, *Valvata humeralis humeralis* is known only from the type locality near Ciudad México, and from one locality in SAN LUIS POTOSÍ: Rio Valles near Valles (Hinkley 1907).

***Valvata humeralis pilsbryi* Von Martens 1899**

*Valvata humeralis* Say. Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:326.

*Valvata humeralis* var. *pilsbryi* Von Martens 1899; Biol. Cent. Amer.:427.

*Valvata humeralis* var. *patzcuaroensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:392.

Type Locality.—Lago de Patzcuaro, Michoacán, México. Holotype ANSP 77192a [H. B. Baker 1965].

Distribution.—Known only from the type locality.

**Subclass PULMONATA Cuvier 1814**

**Superfamily LYMNAEOIDEA Rafinesque 1815**

**Family LYMNAEIDAE Rafinesque 1815**

**Subfamily LYMNAEINAE Rafinesque 1915**

**Genus *Fossaria* Westerlund 1885**

*Fossaria* Westerlund 1885; Fauna der in der paläartischen Region lebenden Binnenconchylien, V:49.

Type Species.—*Buccinum truncatula* Müller 1774

Distribution.—Europe, Asia, Africa, North America, the West Indies, Central America and South America.

Taxonomy.—Numerous species.

**Subgenus *Fossaria* Westerlund 1885**

Distribution.—The Holarctic Realm.

Taxonomy.—Numerous species. One species and two subspecies occurs in the study area.

***Fossaria obrussa obrussa* (Say 1825)**

*Lymnaeus obrussus* Say 1825; Jour. Phila. Acad. 5:123.

*Galba obrussa* (Say). F. C. Baker 1911; Chicago Acad. Sci. Spec. Pub. 3:270–283; pl. 26, figs. 8–13; pl. 31, figs. 20–37.

*Fossaria obrussa* (Say). Taylor 1966; Veliger 9:209.- Burch 1980; Walkerana 1:172; figs. 570, 575 (shell).

*Lymnaea decidiosa* (Gould). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 54:777.

Type Locality.—Harrowgate, Philadelphia Co., Pennsylvania. Two syntypes ANSP 58700.

Distribution.—Widely distributed in the Canada and the United States south to Texas and Arizona. A single record exists for México. COAHUILA: Saltillo (Pilsbry 1904)

***Fossaria (Fossaria) obrussa modicella* (Say 1825)**

*Lymnaeus modicellus* Say 1825; Jour. Acad. Nat. Sci. Phila. 5:122.

*Galba humilis modicella* (Say). F. C. Baker 1911; Chicago Acad. Sci. Sp. Pub. 3:259–268; pl. 29, figs. 31–37 (shell); pl. 31, figs. 1–9 (shell).

*Fossaria (Fossaria) modicella* (Say). Bequaert & Miller 1973:190–191.

*Fossaria obrussa modicella* (Say). Burch 1980; Walkerana 1:172; fig. 574.

Type Locality.—Susquehanna River at Oswego, Tioga Co., New York. Syntypes ANSP 58790 (2).

Distribution.—Widespread in North America south to the Mexican border. BAJA CALIFORNIA NORTE: Sierra Laguna (F. C. Baker 1911). CHIHUAHUA: Laguna Toronto, La Boquilla, Dist. Camargo (ca. 27°30' N, 105°30' W) (Bequaert & Miller 1973). SONORA: 10 mi. N of Imuris, 3300 ft. alt. (30°50' N, 110°50' W) (Bequaert & Miller 1973).

**Subgenus *Bakerlymnaea* Weyrauch 1964**

*Nasonia* F. C. Baker 1928; Bull. Wisconsin Geol. Nat. Hist. Survey 70 (1):264 (non *Nasonia* Ashmead 1904, Hymenoptera).

*Bakerlymnaea* Weyrauch 1964; Arch. für Moll. 93:169.

Type Species.—*Lymnaea cubensis* Pfeiffer 1839.

Distribution.—Southern United States and the West Indies south to Patagonia.

Taxonomy.—Numerous species and subspecies are recognized. Three occur in the study area.

***Fossaria (Bakerlymnaea) bulimoides techella* (Haldeman 1867)**

*Limnaea techella* Haldeman 1867; Amer. Jour. Conch. 3:194; pl. 6, fig. 4 (shell).

*Galba bulimoides techella* (Haldeman). F. C. Baker 1911; Chicago Acad. Sci. Sp. Pub. 3:214–217; pl. 27, figs. 30–35 (shell); pl. 28, figs. 1–3, 8 (shell).

*Stagnicola (Bakerlymnaea) bulimoides techella* (Haldeman). Bequaert & Miller 1971:195–196.

*Fossaria (Bakerlymnaea) bulimoides techella* (Haldeman). Burch 1980; Walkerana 1:174; fig. 586 (shell).

Type Locality.—Texas. Syntypes ANSP 59604 (4).

Distribution.—BAJA CALIFORNIA NORTE: near San Diego Co., California (F. C. Baker 1911). SONORA: pond on hwy. 15, 55 mi. S of Nogales; drift of Rio Sonoyta, Sonoyta; estuary of Rio Mayo at Huatobampito; Rio Yaqui, 4 mi. N of Cd. Obregon (Bequaert & Miller 1973). TAMAULIPAS; drift of Rio Purificacion near Carmen, 24 mi. W of Padilla (Bequaert & Miller 1973).

***Fossaria (Bakerlymnaea) cubensis* (Pfeiffer 1839)**

*Limnaea cubensis* Pfeiffer 1839; in Wieg. Arch. 1:354.- Strebel 1873:58; pl. 4, fig. 33.- Fischer & Crosse 1880:50.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 55:320.- Von Martens 1899; 379.

*Lymnaea cubensis* (Pfeiffer). Hinkley 1907; Nautilus 21:78.

*Galba cubensis* (Pfeiffer). F. C. Baker 1911; Chicago Acad. Sci. Sp. Pub. 3:204–28; pl. 27, figs. 9–16 (shell).

*Fossaria (Bakerlymnaea) cubensis* (Pfeiffer). Burch 1980:174; fig. 387 (shell).

Type Locality.—Cuba.

Distribution.—Florida and Texas south to Venezuela; the West Indies. GUATEMALA, Dept. Sacatepéquez: Antigua. BAJA CALIFORNIA NORTE: Sanzal, Bahía Todos Santos (F. C. Baker 1911). SAN LUIS POTOSÍ: El Abra; Cd. Victoria



(Hinkley 1907). VERACRUZ: Cd. Veracruz; Rio Tenoya; Orizaba (Von Martens 1899).

***Fossaria (Bakerlymnaea) viator (Orbigny 1835)***

*Limnaeus viator* Orbigny 1835; Magazin de Zoologie 1835:24.

*Lymnaea viator* Orbigny. Pilsbry 1911; Princeton Univ. Exped. to Patagonia, pt. 5:525; text-fig. 1 (radula); pl. 46, fig. 8 (shell).- Hubendick 1951.- Kungliga Svenka Vetenskapsakademiens Handlingar, 3 (1):140–141; figs. 323 (map), 324 (shell).

*Limnaeus viatrix* Orbigny 1835; Voyage dans L'Amérique Méridional, Moll.:340; pl. 43, figs. 1–3 (error for *Limnaeus viator* Orbigny).

*Lymnaea viatrix* (Orbigny). Paraense 1982; Memorias do Instituto Oswaldo Cruz, 77:181–188.

*Fossaria viatrix* (Orbigny). Rangel-Ruiz 1994; Walkerana 7:29–37; fig. 1 (shell).- Rangel-Ruiz 1995; Malacological Review 28:71–79.

Type Locality.—Restricted by Pilsbry to banks of the Rio Negro, 7 or 8 leagues above the mouth, 41° S lat., Argentina.

Distribution.—México and Cuba south to Chile and Argentina (Paraense 1982). The identity of Mexican populations attributed to this species requires confirmation. CAMPECHE: Ciudad de Carmen. JALISCO: Lago de Chapala. TABASCO: Tecolapa; Teapa. VERACRUZ: Jalapa; Teoloyucán.

**Genus *Pseudosuccinea* F. C. Baker 1908**

*Pseudosuccinea* F. C. Baker 1908; Science, n. s., 27:943.

Type Species.—*Lymnaea columella* Say 1817.

Distribution.—North America south to Panamá, and the West Indies.

Taxonomy.—A single species, *Pseudosuccinea columella*, is recognized in North and Central America. *Pseudosuccinea fransisca* (Poey 1858) is a Cuban species.

***Pseudosuccinea columella* (Say 1817)**

*Lymnaea columella* Say 1917; Jour. Acad. Nat. Sci., 1:44.

*Pseudosuccinea columella* (Say 1817). F. C. Baker 1911; Sp. Pub. Chicago Acad. Sci. 3:163–171; pl. 10, fig. B (reproductive anatomy); pl. 23, figs. 8–30 (shell); pl. 23, figs. 1–4 (shell).

Type Locality.—Not stated.

Distribution.—The typical form is found from Nova Scotia west to Manitoba, south to Florida and Texas. It has been widely introduced elsewhere (Hubendick 1951:52).

Taxonomy.—F. C. Baker (1911) listed four subspecies. He reported only *Pseudosuccinea columella championi* from the study area.

***Pseudosuccinea columella championi* (Von Martens 1899)**

*Limnaea columella* var. *championi* Von Martens 1899; Biol. Cent. Amer.:379; pl. 19, fig. 12 (shell).

*Pseudosuccinea columella championi* (Von Martens). F. C. Baker 1911; Sp. Pub. Chicago Acad. Sci. 3:175–177; pl. 24, fig. 20 (shell).

Type Locality.—Bigabo, Panamá.

Distribution.—Central México south to Panamá. PANAMÁ: Bigabo. NICARAGUA, Dept. Chontales: Polvón. MÉXICO: Cd. México. MICHOACÁN: lake near Uruapan.

NAYARIT: Tepic.

Remarks.—The taxonomic status and geographic distribution of this subspecies need to be investigated.

**Genus *Stagnicola* Leach 1830**

*Stagnicola* Leach, in Jeffreys, 1830; Trans. Linn. Soc. 16:370.

Type Species.—*Buccinum palustris* Müller 1774.

Distribution.—Circumboreal; North America south to central México.

Taxonomy.—Two subgenera are recognized in the Nearctic Region. One occurs in the study area. The number of species in *Stagnicola* is debatable. *Stagnicola elodes* is the only recognized species in the study area. *Lymnaeus attenuatus* is considered a synonym, but further study may reveal it to be a distinct species.

***Stagnicola elodes* (Say 1821)**

*Lymnaeus elodes* Say 1821; Jour. Acad. Nat. Sci. Phila. 2:169.

*Galba elodes* (Say). F. C. Baker 1911; Chicago Acad. Sci. Sp. Pub. 3:322–327; pl. 30, figs. 32–34; pl. 34, figs. 11–19, 21–24 (shell).

*Stagnicola elodes* (Say). Burch 1980; Walkerana 1:176; figs. 600–606, 611 (shell).

*Lymnaea elodes* (Say). Paraense 1994; Malacological Review 27:5–11; figs. 1–3 (shell), 4–7 (reproductive anatomy), 8–11 (digestive system), 12 (pallial organs), 13 (radula).

*Lymnaeus deciduosus* (Say). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:777.

*Lymnaeus attenuatus* Say 1829; New Harmony Dis., II:244.

*Lymnaea attenuata* (Say). Strebel 1873:57; pl. 5, figs. 32, 32a.- Fischer & Crosse 1880:49.- Von Martens 1899:375–377.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:776.

*Galba attenuata* (Say). F. C. Baker 1911; Chicago Acad. Sci. Spec. Publ. 3:353–355; pl. 37, figs. 33, 34 (shell).

Type Locality.—*Lymnaeus attenuatus*: ditches and ponds in the vicinity of México City, México. Syntypes in the ANSP.

Distribution.—Interior basin of Canada south to new England, California and New Mexico with outlying populations in central México. COAHUILA: Saltillo (Pilsbry 1904). HIDALGO: Zimapan (Von Martens 1899). MÉXICO: Tlalpam (Pilsbry 1904). Lago de Chalco (Von Martens 1899). MORELOS: Laguna de Quila, near Zempoala (Paraense 1994).

**Superfamily PLANORBOIDEA Rafinesque 1815**

**Family ANCYLIDAE Rafinesque 1815**

**Subfamily FERRISSIINAE Walker 1917**

**Genus *Ferrissia* Walker 1908**

*Ferrissia* Walker 1908; Nautilus 17:15.- Basch 1963; Bull. Mus. Comp. Zool. 129:126–128.

Type Species.—*Ancylus rivularis* Say 1817.

Distribution.—North America and the West Indies south to Panamá.

Taxonomy.—Numerous species have been described. Basch (1963) placed many of these in synonymy. The taxonomic status of the Middle American species remains to

be determined. Two species are listed for the study area.

***Ferrissia bayacalifornica* Walker 1924**

*Ferrissia bayacalifornica* Walker 1924; Jour. Wash. Acad. Sci. 14:431; fig. 1.- Wurtz 1951; Nautilus 64:124.

*Ferrissia walkeri* (Pilsbry & Ferriss). Basch 1963; Bull. Mus. Comp. Zool. 129:433.

Type Locality.—A small pool 2.5 miles inland from San José del Cabo, Baja California Sur, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Ferrissia occidentalis* Walker 1924**

*Ferrissia occidentalis* Walker 1924; Jour. Wash. Acad. Sci. 14:431; fig. 2.

*Ferrissia walkeri* (Pilsbry & Ferriss). Basch 1963; Bull. Mus. Comp. Zool. 129:433.

Type Locality.—A small pool 2.5 miles inland from San José del Cabo, Baja California Sur, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

**Genus *Gundlachia* Pfeiffer 1849**

*Gundlachia* Pfeiffer 1849; Zeitsch. für Malak. 6:98.- Wurtz 1951; Nautilus 64:126.

Type Species.—*Gundlachia ancyloformis* Pfeiffer 1849.

Distribution.—North America south to Guatemala and Honduras.

Taxonomy.—Wurtz (1951) recognized seven species.

***Gundlachia hinkleyi* Walker 1917**

*Gundlachia hinkleyi* Walker 1917; Nautilus 31:51–53; pl. 1, figs. 10–16 (shell); pl. 3, fig. 1 (radula).- Hinkley 1920; Nautilus 34:38, 40.- Wurtz 1951; Nautilus 64:126.

Type Locality.—Maya Farms, Quirigua, Dept. Izabal, Guatemala. Holotype UMMZ 43455.

Distribution.—GUATEMALA, Dept. Guatemala: Lago de Amatitlan (Hinkley 1920). Dept. Izabal: Quirigua.

***Gundlachia hjalmarsoni* Pfeiffer 1858**

*Gundlachia hjalmarsoni* Pfeiffer 1859; Malak. Blätt. 5:197.- Von Martens 1899:403.- Wurtz 1951; Nautilus 64:126.

Type Locality.—Santa Rosa, Honduras. Santa Rosa is the name of a municipality in both the Honduran departments of Colón and Copán.

Distribution.—Known only from the type locality.

**Genus *Hebetancylus* Pilsbry 1914**

*Hebetancylus* Pilsbry 1914; Proc. Acad. Nat. Sci. Phila. 65:671.- Wurtz 1951; Nautilus 64:126.- Basch 1963; Bull. Mus. Comp. Zool. 129:422.

Type Species.—*Ancylus moricandi* Orbigny 1837.

Distribution.—Cuba and Hispaniola in the West Indies; Florida and Texas south to Brazil and Paraguay.

Taxonomy.—Wurtz lists eight species in the genus. Two occur in the study area.

***Hebetancylus excentricus* (Morelet 1851)**

*Ancylus excentricus* Morelet 1851; Test. Noviss. II:17.- Fischer & Crosse 1886:37; pl. 30, figs. 16, 16a (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:3.- Von Martens 1899:402–403.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:777.

*Velletia excentrica* (Morelet). Tate 1970; Amer. Jour. Conch. 5:158.  
*Laevapex excentricus* (Morelet). Hinkley 1920; Nautilus 34:39, 40.- Walker 1923; The Ancyloidae of South Africa:10.- Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):70.

*Ferrissia excentrica* (Morelet). Wurtz 1951; Nautilus 64:125.- Solem 1954; Nautilus 68:6–7.

*Gundlachia excentrica* (Morelet). Taylor 1966; Veliger 9:206.

*Hebetancylus excentricus* (Morelet). Basch 1963; Bull. Mus. Comp. Zool. 129:422–426; fig. 9 (shell), fig. 10 (anatomy).- Burch 1980; Walkerana 1:214; figs. 762, 769 (shell).

*Ancylus excentricus* var. *biolleyi* Von Martens 1899; Biol. Cent. Amer.:402.

*Ancylus excentricus* var. *pittieri* Von Martens 1899; Biol. Cent. Amer.:402.

Type Locality.—Lago de Itza [Petén], Dept. Petén, Guatemala.

Distribution.—Florida and Texas south to Costa Rica. COSTA RICA, Prov. San José: Rio Torres; San José (Von Martens 1899). Prov. Puntarenas: Rio de Las Platanales (Von Martens 1899). NICARAGUA, Dept. Chontales: San Nicolas, San Agustin (Tate 1870). GUATEMALA, Dept. Guatemala: Lago de Amatitlan (Hinkley 1920). Dept. Izabal: Quirigua (Hinkley 1920). Dept. Petén: Lago de Itza. COAHUILA: Rio Salado de los Nadadores, at El Cariño de la Montaña, 20 mi. E of Cuatro Cieneegas (Taylor 1966). DURANGO: Laguna del Progreso (Solem 1944). MICHOACÁN: presa near Uruapan (Pilsbry 1903). YUCATÁN: Shkolak (Pilsbry 1891); Xanaba Cenote Grande, 8 mi. SW of Chichen Itza; Chotch Cenote 2 mi. NE of Pista (Bequaert & Clench 1936).

***Hebetancylus providentialis* Wurtz 1951**

*Hebetancylus providentialis* Wurtz 1951; Nautilus 64:127–128; pl. 4, figs. 8, 8a.

Type Locality.—Huffington's Creek, Isla de Providencia, Colombia. Holotype ANSP 186643a.

Distribution.—Known only from the from type locality.

**Genus *Laevapex* Walker 1908**

*Laevapex* Walker 1908; Nautilus 1908, 17:15.- Wurtz 1951; Nautilus 64:125.- Basch 1963; Bull. Mus. Comp. Zool. 129:418.

Type Species.—*Ancylus fuscus* C. B. Adams 1841.

Distribution.—North America and the West Indies south to Panamá.

Taxonomy.—Approximately ten species are recognized in the literature. Four occur in the study area.

***Laevapex aguadae* (Goodrich & van der Schalie 1937)**

*Ferrissia* (*Laevapex*) *aguadae* Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):34–35; pl. 1, figs. 7, 7a (shell).

Type Locality.—Aguada de Copó, 1 mile south of La Libertad, Dept. Petén, Guatemala. Holotype in the UMMZ.

Distribution.—GUATEMALA: Goodrich & van der Schalie (1937) reported this species from seven unspecified localities and the type locality.

***Laevapex joseana* (Morrison 1946)**

*Ferrissia* (*Laevapex*) *joseana* Morrison 1946; Smiths. Misc. Coll. 106:39; pl. 1, figs. 5, 6 (shell).- Wurtz 1951; Nautilus 64:129.

Type Locality.—Flood-plain pools along the middle reaches of a stream opening into the northwest mangrove swamp on Isla San José, Archipelago de Las Perlas, Panamá. Holotype USNM 542179.

Distribution.—Known only from the type locality.

***Laevapex papillaris* (Von Martens 1899)**

*Ancylus papillaris* Von Martens 1899; Biol. Cent. Amer.:402; pl. 21, figs. 11, 11a, 12, 12a (shell).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:777.- Wurtz 1951; Nautilus 64:130.

Type Locality.—Rio Ameca, Jalisco, México.

Distribution.—JALISCO: Rio Ameca. MÉXICO: Tlalpam. MICHOACÁN: Uruapan. NUEVO LEÓN: Monterey (Pilsbry 1904).

***Laevapex sallei* (Bourguignat 1857)**

*Ancylus sallei* Bourguignat 1857; Aménités Malac., ii:32.- Bourguignat 1857; Rev. et Mag. Zool. 1857:16.- Strebel 1873:63; pl. 4, fig. 35 (shell).- Fischer & Crosse 1886:38; pl. 30, figs. 17, 17a, 17b (shell).- Von Martens 1899:401.

Type Locality.—Laguna Larga de Toxpan, near Córdoba, Veracruz, México.

Distribution.—VERACRUZ: Veracruz (Strebel 1873).

**Genus *Uncancylus* Pilsbry 1914**

*Uncancylus* Pilsbry 1914; Proc. Acad. Nat. Sci. Phila. 65:671.- Wurtz 1951; Nautilus 64:128–129.

Type Species.—*Ancylus barilensis* Moricand 1845.

Distribution.—Guadeloupe, Jamaica, Costa Rica south to Brazil and Argentina.

Taxonomy.—Wurtz (1951) lists seven species and one subspecies. Two occur in the study area.

***Uncancylus ameliae* Pilsbry 1920**

*Uncancylus ameliae* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:9; lower and right text-fig. 4 (shell).

Type Locality.—Rio Zapote, at confluence with the Rio Reventazón, Prov. Cartago, Costa Rica; 3450 ft. alt. Holotype ANSP 105260.

Distribution.—Known only from the type locality.

***Uncancylus calverti* Pilsbry 1920**

*Uncancylus calverti* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:7–9; left and upper text-fig. 4 (shell); text-fig. 5 (radula).

Type Locality.—Brook near Rio Reventazón, Juan Viñas, Prov. Cartago, Costa Rica; 2500 ft. alt. Holotype ANSP 105277.

Distribution.—Known only from the type locality.

**Undetermined species of Ancyliidae**

***Ancylus haldemani* Boettger 1853**

*Ancylus depressus* Boettger 1844; Monogr. 4 (*non Ancylus depressus* Deshayes 1824).

*Ancylus haldemani* Boettger 1853; Jour. de Conchyl. 4:180.- Binney 1865; Land & Freshwater Shells N. Amer. 2:141; fig. 236.- Wurtz 1951; Nautilus 64:130.

Type Locality.—México.

Distribution.—Unknown.

***Ancylus sallei* Boettger 1857**

*Ancylus sallei* Boettger 1857; Rev. Mag. Zool., 9:16.- Wurtz 1951; Nautilus 64:131.

Type Locality.—México and Cuba.

Distribution.—Unknown.

**Family PLANORBIDAE Rafinesque 1815**

**Subfamily PLANORBINAE Rafinesque 1815**

**Genus *Gyraulus* Charpentier 1837**

*Gyraulus* Charpentier 1837; Mem. Soc. Helv. De Sci. Natur., 1:21.

Type Species.—*Planorbis hispidus* Draparnaud (= *Planorbis albus* O. F. Müller 1774).

Distribution.—Europe, Africa, Asia, the Philippines, Australia, Tasmania, New Caledonia, Fiji and North America.

Taxonomy.—Four subgenera are recognized (Zilch 1959). One occurs in the study area.

**Subgenus *Torquis* Dall 1905**

*Torquis* Dall 1905; Harriman Alaska Exp., XIII:83, 86.

Type Species.—*Planorbis parvus* Say 1817.

Distribution.—North America, northern Asia, Europe.

Taxonomy.—Three species occur in North America (Burch 1980). A single species occurs in the study area. A second species is placed here provisionally.

***Gyraulus* (*Torquis*) *parvus* (Say 1817)**

*Planorbis parvus* Say 1817; in Nicholson's Encyclop. 2: pl. 1, fig. 5 (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.

*Planorbis* (*Gyraulus*) *parvus* Say. Von Martens 1899:394.

*Gyraulus parvus* (Say). Branson, McCoy & Sisk 1964; Southwestern Natur. 9:103–104.- Bequaert & Miller 1973:204–205.- Burch 1980; Walkerana 1:194; fig. 709 (shell).

Type Locality.—Delaware River, eastern North America.

Distribution.—North America from Alaska and northern Canada to the Greater Antilles and south in México at least to Morelos. MORELOS: Yautepac (Pilsbry 1891). SONORA: Rio Nacuzari, 7 mi. S of Nacuzari (Branson et al. 1964).

***Gyraulus* “*percarinatus*” Paraense 2000**

*Gyraulus percarinatus* Paraense 2000; Malac. Rev. 33/34:16–19; fig. 11A (shell), fig. 11B (reproductive anatomy), fig. 12 (radula).

Type Locality.—Grounds of the Faculty of Agronomy, Panamá University of Tocumen, Prov. Panamá, Panamá. No type specimens designated.

Distribution.—Known only from the type locality.



Taxonomy.—The name *Gyraulus percarinatus* Paraense 2000 is invalid, because the description does not include the designation of a holotype as required by ICZN Articles 16.4 and 62.4.

#### Subfamily DREPANOTREMINAE Zilch 1959

Distribution.—American subtropics and tropics from Texas and the Greater Antilles south to Argentina.

Taxonomy.—Three genera are recognized, *Antillorbis*, *Drepanotrema*, and a Brazilian genus, *Acrorbis* Ohdner 1937.

#### Genus *Antillorbis* Harry & Hubendick 1964

*Antillorbis* Harry & Hubendick 1964; Göeborgs Kungl. Vetenskaps- och Vitterhets-samhälles handlingar, ser. 6, ser. B:29–30.

Type Species.—*Planorbis circumlineatus* Shuttleworth 1854 (= *Planorbis aeruginosus* Morelet 1851).

Distribution.—The west Indies, México and Central America.

Taxonomy.—A single species is recognized.

#### *Antillorbis aeruginosus* (Morelet 1851)

*Planorbis aeruginosus* Morelet 1851; Test. Noviss. II:15.

*Gyraulus aeruginosus* (Morelet). Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):33.

*Antillorbis feruginosus* (Morelet). Harry & Hubendick 1964; Göeborgs Kungl. Vetenskaps- och Vitterhets-samhälles handlingar, ser. 6, ser. B:30–33; figs. 90–92, 114–117 (shell), fig. 25(jaw), fig. 26 (radula), figs. 27–30 (anatomy).

*Drepanotrema* (*Antillorbis*) *aeruginosus* (Morelet). Bequaert & Miller 1973:209.- Burch 1980; Walkerana 1 (3):194 196; fig. 710 (shell).

*Planorbis salleanus* Dunker 1853; Proc. Zool. Soc. Lond. 54.

*Planorbis circumlineatus* Shuttleworth 1854; Ann. Lyc. Nat. Hist. N.Y. 6:72.- Shuttleworth 1854; Mill. Naturf. Ges. Bern 1854:96.

*Planorbaria circumlineatus* (Shuttleworth). Neubert & Gosteli 2003; Contributions to Natural History 1:17; pl. 1, figs. 1.

*Planorbis lineatus sonorensis* Cooper 1893; Proc. Calif. Acad. Sci. (2) 3:343; pl. 14, figs. 10a-d (shell).

*Planorbis filocinctus* Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:156; pl. 9, figs. 1–3 (shell). (not *Planorbis filocinctus* von Sandberger 1875).

*Planorbis arizonensis* Pilsbry & Ferriss 1915; Proc. Acad. Nat. Sci. Phila. 67:390 (replacement name for *Planorbis filocinctus* P. & F.).

*Gyraulus arizonensis* (Pilsbry & Ferriss). Richards 1937; Trans. Amer. Philos. Soc. 77:255.

*Planorbis santacruzensis* Germain 1932; Rec. Indian Museum 21:138; figs. 18–21 (shell).

Type Localities.—*Planorbis aeruginosus*: Lago de Izabal, Guatemala. *Planorbis salleanus*: Santo Domingo (= Hispaniola). *Planorbis circumlineatus*: Humacao, Puerto Rico. Syntypes Naturhistorische Museum Bern 18952/16 (Neubert & Gosteli 2003:17). *Planorbis lineatus sonorensis*: San Miguel, Sonora, México. *Planorbis filocinctus*: drift of San Pedro River, Benson, Cochis Co., Arizona. *Planorbis santacruzensis*: St. Croix.

Distribution.—West Indies, southern Texas and Arizona

south to Panamá. GUATEMALA, Dept. Guatemala: outlet of Lago Amatitlan, near Cd. Guatemala (Goodrich & van der Schalie 1937). Dept. Izabal: Lago de Izabal (Morelet 1851). QUINTANA ROO: Isla Cozumel, swamp near San Miguel; swamp near San Gerbacio (Richards 1937). SONORA: San Miguel (Cooper 1893).

#### Genus *Drepanotrema* Fischer & Crosse 1880

*Drepanotrema* Fischer & Crosse 1880:59, 75.- H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (210):48–51.- Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:58–59.- Harry & Hubendick 1964; Meddel. Gotenb. Mus. Zool. Avdel. 136:26–29.

Type Species.—*Planorbis yzabelensis* Crosse & Fischer 1879 (= *Planorbis anatinus* Orbigny 1835).

Distribution.—Tropical America from Texas and the west Indies south to Argentina.

Taxonomy.—Two subgenera are recognized.

#### Subgenus *Drepanotrema* Fischer & Crosse 1880

Distribution.—Same as for the genus.

Taxonomy.—F. C. Baker (1945:118) listed eight species. Two occur in the study area.

#### *Drepanotrema* (*Drepanotrema*) *anatinum* (Orbigny 1835)

*Planorbis anatinus* Orbigny 1835; Mag. de Zool. 5 (62):28.

*Drepanotrema anatinum* (Orbigny). Aguayo 1933; Nautilus 47:64–68.- F. C. Baker 1945; Moll. Fam. Planorbidae:118; pl. 9, figs. 1–3 (reproductive anatomy); pl. 68, fig. 3 (radula); pl. 79, figs. 16–18 (shell); pl. 124, figs. 1–13, 30 (shell).- Harry & Hubendick 1964; Meddel. Gotenb. Mus. Zool. Avdel. 136:21, figs. 87–89, 118–120 (shell).- Paraense 2000; Malac. Rev. 33:12–13; figs. 7A (shell), 7B (reproductive anatomy).

*Planorbis haldemani* C. B. Adams 1849; Contrib. to Conch.:43.

*Planorbis caracasnsis* Gundlach 1857; Malak Blätt. 4:179.

*Planorbis esperanzensis* Tryon 1866; Amer. Jour. Conch. 2:10; pl. 2, figs. 11–13.

*Planorbis yzabalensis* Crosse & Fischer 1879; Jour. de Conchyl. 342.- Fischer & Crosse 1880:75; pl. 33, figs. 2, 2a-c (shell).

*Planorbis* (*Hippeutus*) *yzabalensis* (Crosse & Fischer). Von Martens 1899; Biol. Cent. Amer.:397–398.

*Anisus* (*Gyraulus*) *lenzi* Benthem Jutting 1943; Archiv für Hydrobiologie 39:460.

Type Locality.—*Planorbis anatinus*: Rio Parana, Argentina; syntype in the BMNH (Aguayo 1933). *Planorbis haldemani*: Jamaica. *Planorbis esperanzensis*: Esperanza, Cuba. *Planorbis aracasnsis*: Trinidad, Cuba. *Planorbis yzabalensis*: Lago de Izabal, Guatemala. *Anisus* (*Gyraulus*) *lenzi*: Rio São Francisco, San Pedro Dias-Buchr, Pernambuco, Brazil.

Distribution.—Widely distributed throughout the West Indies and from Texas south to Argentina and Brazil. PANAMÁ, Canal Zone: Gamboa (Aguayo 1933). Prov. Panamá: ditch at the National University, Tocumán (Paraense 2000). COSTA RICA, Prov. Guanacaste: Catalina (Paraense 2000). NICARAGUA, Dept. Rivas: Rivas (Paraense 2000). GUATEMALA, Dept. Izabal: Lago de Izabal, Mariscos; El Prado (Paraense 2000). Dept. Santa Rosa: Rio Helado,

Taxisco. BELIZE: Belize Dist.: Boston Village (Paraense 2000). TABASCO: Rio Usumacinta; Balancan (Von Martens 1899).

***Drepanotrema (Drepanotrema) lucidum (Pfeiffer 1839)***

*Planorbis lucidus* Pfeiffer 1839; in Weigmanns, Arch. für Naturgesch.:354.

*Planorbis (Drepanotrema) lucidus* Pfeiffer. Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):67–68.

*Drepanotrema lucidum* (Pfeiffer). H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (210):48–49; pl. 28, fig. 9 (radula).- F. C. Baker 1945; Moll. Fam. Planorbidae:118; pl. 11, figs. 1–7 (reproductive anatomy); pl. 46, fig. 16 (kidney); pl. 48, fig. 11 (stomach); pl. 50, fig. 27 (jaw); pl. 68, fig. 2 (radula); pl. 78, figs. 11–13 (shell); pl. 124, figs. 29, 30, 32 (shell); pl. 125, figs. 1–17 (shell).- Harry & Hubendick 1964; Meddel. Gotenb. Mus. Zool. Avdel. 136:22–23; figs. 84–86 (shell), figs. 121–123 (shell).- Paraense 2000; Malac. Rev. 33/34:16; fig. 9A (shell), fig. 9B (reproductive anatomy).

Type Locality.—Cuba.

Distribution.—The West Indies and México south to Brazil and Peru. NICARAGUA, Dept. Granada: Granada. Dept. Rivas: Rivas (Paraense 2000). GUATEMALA, Dept. Izabal: Mariscos (Paraense 2000). BELIZE: Belize Dist.: pond by road to International Airport (Paraense 2000). YUCATÁN: Aguado Halal near Merida; aguado 14 km N, 2 km E of Merida; Aguado Daadz, 6.5 mi. SW of Chichen Itza (Bequaert & Clench 1936).

**Subgenus *Fossulorbis* Pilsbry 1934**

*Fossulorbis* Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:59.- F. C. Baker 1945; Moll. Fam. Planorbidae:118.

Type Species.—*Planorbis cultratus* Orbigny 1841.

Distribution.—The West Indies and southern Texas south to Argentina.

Taxonomy.—Six species and four subspecies occur in the study area.

***Drepanotrema (Fossulorbis) cimex (Moricand 1839)***

*Planorbis cimex* Moricand 1839; Mém. Soc. Phys. Hist. Nat., Genève 8:143; pl. 3, figs. 8–9 (shell).

*Drepanotrema (Fossulorbis) cimex* (Moricand). F. C. Baker 1945; Moll. Fam. Planorbidae:148; pl. 127, figs. 1–3, 7, 8, 16 (shell); pl. 128, figs. 17–22 (shell). - Harry & Hubendick 1964; Meddel. Gotenb. Mus. Zool. Avdel. 136:24–28; figs. 81–83, 14–16, 130 (shell).- Burch 1980; Walkerana 1:198; fig. 715 (shell).

Type Locality.—Bahia, Brazil.

Distribution.—Known from southern Texas, México, Central America, the West Indies, Venezuela and Brazil.

***Drepanotrema (Fossulorbis) cultratum cultratum (Orbigny 1841)***

*Planorbis cultratus* Orbigny 1841; in Sagra, Hist. Fis. Polit. y nat. de Cuba, Moluscos:196; pl. 14, figs. 5–8.- Fischer & Crosse 1880:68; pl. 32, figs. 7, 7a-c (shell).- Von Martens 1899; Biol. Cent. Amer.:395–396.- Hinkley 1920; Nautilus 34:38.

*Planorbis (Spiralina) cultratus* Orbigny. Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):67.

*Drepanotrema cultratum* (Orbigny). H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (210):51; pl. 29, fig. 8 (radula).- Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:60; pl. 11, figs. 7–8b (shell).- Richards 1937; Trans. Amer. Philos. Soc. 77:255.- F. C. Baker 1945; Moll. Fam. Planorbidae:118, 388, 392; pl. 76, fig. 10 (reproductive anatomy); pl. 78 figs., 17–19 (shell).

Type Locality.—Martinique (Pilsbry 1934:60).

Distribution.—The Lesser Antilles, Venezuela and Colombia. NICARAGUA, Dept. Chontales: San Agustin, near Acoyapa (Von Martens 1988). GUATEMALA, Dept. Guatemala: ditch along railroad at Laguna, Lago Amatitlan (Hinkley 1920). QUINTANA ROO: swamp a few miles N of San Miguel (Richards 1937). YUCATÁN: Xanaba Cenote Grande, 8 km SW of Chichen Itza (Bequaert & Clench 1936).

***Drepanotrema (Fossulorbis) cultratum anitense (Cooper 1893)***

*Planorbis (Anisus) anitensis* Cooper 1893; Proc. Calif. Acad. Sci. ser. 2, 3:341–342; pl. 14, fig. 8 (shell).

*Drepanotrema cultratum anitense* (Cooper). F. C. Baker 1945; Moll. Fam. Planorbidae:118, 488; pl. 126, figs. 17–19 (shell).

Type Locality.—Santa Anita, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: lagoon, Santa Rita (F. C. Bater 1945).

***Drepanotrema (Fossulorbis) cultratum duenasianum (Tristram 1861)***

*Planorbis dueñasensis* Tristram 1861; Proc. Zool. Soc. Lond. 29:232.

*Drepanotrema cultratum dueñasianum* (Tristram). Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:60; pl. 11, figs. 6, 6a, 6b (shell).- F. C. Baker 1945; Moll. Fam. Planorbidae:118, 490; pl. 17, figs. 9–12 (shell).

Type Locality.—Lago de Dueñas, Dept. Sacatepéquez, Guatemala.

Distribution.—GUATEMALA, Dept. Guatemala: pools along railroad near Lago de Amatitlan (Pilsbry 1934). Dept. Sacatepéquez: Lago de Dueñas.

Remarks.—Spelling of the name of the subspecies *dueñasianum* is corrected to *duenasianum* as mandated by Article 35.2.1 of the ICZN.

***Drepanotrema (Fossulorbis) cultratum labrosum Pilsbry 1934***

*Drepanotrema cultratum labrosum* Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:61; pl. 11, figs. 9–11 (shell).- F. C. Baker 1945; Moll. Fam. Planorbidae:118; 492; pl. 128, figs. 6–10 (shell).

Type Locality.—Brownsville, Texas. Holotype ANSP 143416.

Distribution.—Southern Texas south to southern Tamaulipas. TAMAULIPAS: drift debris of the Rio Panuco (Pilsbry 1934).

***Drepanotrema (Fossulorbis) cultratum panuco Pilsbry 1934***

*Drepanotrema cultratum panuco* Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:60–61; pl. 11, figs. 4–5a (shell).- F. C. Baker 1945; Moll. Fam. Planorbidae:118, 492; pl. 128, figs. 3–5 (shell).

Type Locality.—Pasture west of San Dieguito, San Luis Potosí, México. Holotype ANSP 107619.

Distribution.—SAN LUIS POTOSÍ: San Dieguito. TAMAULIPAS: Tampico (Pilsbry 1934).

***Drepanotrema (Fossulorbis) depressissimum***  
(Moricand 1839)

*Planorbis depressissimus* Moricand 1839; Mém. Soc. Phys. Hist. Nat. Genève, 8:143–144; pl. 3, figs. 10, 11 (shell).

*Drepanotrema depressissimum* (Moricand). F. C. Baker 1945; Moll. Fam. Planorbidae:118; pl. 127, figs. 17–19 (shell).- Paraense 2000; Malac. Rev. 33/34:14–15; fig. 8A (shell), fig. 8B (reproductive anatomy).

Type Locality.—Bahia, Brazil.

Distribution.—Widely distributed in South America, Central America and the West Indies (Paraense 2000). COSTA RICA, Prov. Guanacaste: Catalina (Paraense 2000). NICARAGUA, Dept. Chontales: Acoyapa. Dept. Rivas: Rivas (Paraense 2000).

***Drepanotrema (Fossulorbis) kermatoides* (Orbigny 1835)**

*Planorbis kermatoides* Orbigny 1835; Mag. de Zool., (62):27.

*Drepanotrema (Fossulorbis) kermatoides* (Orbigny). F. C. Baker 1945; Moll. fam. Planorbidae:148; pl. 126, figs. 13–16 (shell).- Harry & Hubendick 1964; Meddel. Gotenb. Mus. Zool. Avdel. 136:23–24; figs. 78–80, 137–129 (shell).- J. B. Burch 1980; Walkerana 1:196; figs. 711 (shell).- Rehder 1966; Proc. Biol. Soc. Wash. 79:280.

Type Locality.—Providence of Lima, Peru.

Distribution.—Lesser Antilles, Texas, México, Central America, Venezuela, Peru and Brazil (Harry & Hubendick 1964). QUINTANA ROO: Isla Cozumel (Rehder 1966).

Taxonomy.—Paraense (2000) suggested that records for *Drepanotrema kermatoides* from México and Central America may pertain to *D. depressissimum*.

***Drepanotrema (Fossulorbis) sumichrasti* (Crosse & Fischer 1879)**

*Planorbis sumichrasti* Crosse & Fischer 1879; Jour. de Conchyl. 27:342.- Fischer & Crosse 1880:69; pl. 33, figs. 6, 6a-d (shell).- Von Martens 1899; Biol. Cent. Amer.:396.

*Drepanotrema sumichrasti* (Crosse & Fischer). F. C. Baker 1945; Moll. Fam. Planorbidae:118; pl. 12, figs. 11–16 (shell).

Type Locality.—Cacoprieto, Isthmus of Tehuantepec, Oaxaca, México.

Distribution.—PANAMÁ, Canal Zone: Isla Barro Colorado (F. C. Baker 1945). OAXACA: Cacoprieto.

***Drepanotrema (Fossulorbis) surinamense* (Clessin 1884)**

*Planorbis surinamensis* Clessin 1884; in Martini & Chemnitz; System. Conch. Cab., Ed. 2, *Planorbis*:126; pl. 17, fig. 11.

*Drepanotrema surinamense* (Clessin). Paraense 2000; Malac. Rev. 33/34:16; fig. 10A (shell), Fig. 10B (reproductive anatomy).

Type Locality.—Surinam.

Distribution.—PANAMÁ, Prov. Panamá: Juan Diaz, ca. 6 km NE of Ciudad Panamá; Las Cumbres; Hippodrome Presidente Ramón; Tocuman (Paraense 2000). COSTA

RICA: Prov. Guanacaste: Catalina (Paraense 2000).

**Subfamily BIOMPHALARIINAE H. Watson 1954**  
**Genus *Biomphalaria* Preston 1910**

*Biomphalaria* Preston 1910; Ann. Mag. Nat. Hist. ser. 8, 6:533.- Paraense & Deslandes 1958; Rev. Brasil. Biol. 18:65–70.- IZCN Opinion 735 1965.

*Tropicorbis* Pilsbry & Brown 1914; Proc. Acad. Nat. Sci. Phila. 66:212.

*Platythaphius* Pilsbry 1924; Proc. Acad. Nat. Sci. Phila. 78:

*Australorbis* Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:55–56.

*Obstructio* Haas 1939; Field Mus. Nat. Hist. Zool. Ser., 24:100.

*Lateorbis* F. C. Baker 1945; Moll. Fam. Planorbidae:85.

Type Species.—*Biomphalaria*: *Biomphalaria smithi* Preston 1910. *Platythaphius*: *Planorbis hertopleurus* Pilsbry & Vanatta 1896. *Tropicorbis*: *Planorbis liebmanni* Philippi 1850 (= *Planorbis maya* Morelet 1849; = *Planorbis havanensis* Pfeiffer 1839, *vide* Paraense & Deslandes 1958). *Australorbis*: *Planorbis glabratus* Say 1818. *Obstructio*: *Planorbis janeirensis* Clessin 1884. *Lateorbis*: *Planorbis pallidus* C. B. Adams 1846.

Distribution.—Africa, Tropical America.

Taxonomy.—The systematics of this genus is very unsettled at present. There is a large number of species in Africa and tropical America. The genus has received a great deal of study because of its importance as intermediate hosts for human schistosome parasites. However, many species not directly implicated as schistosome hosts remain poorly studied. Division of *Biomphalaria* into subgenera is not advisable at present.

***Biomphalaria albicans* (Pfeiffer 1848)**

*Planorbis albicans* Pfeiffer 1839; Weigmanns Arch für Naturgesch.:354.

*Taphius albicans* (Pfeiffer). Harry & Hubendick 1964; Göeborgs Kungl. Vetenskaps-och Vitterhets-samhälles handlingar, ser. 6, ser. B:50–52; figs. 105–107, 149–155 (shell).

*Biomphalaria albicans* (Pfeiffer). Abdel-Malek 1969; Malacologia 7:190, 198, 200; fig. 8 (reproductive anatomy), figs. 17a, 17b, 18 (shell).

Type Locality.—Cuba.

Distribution.—Reported from the Greater Antilles, some Lesser Antilles, Louisiana, Texas, México and Central America (Harry & Hubendick 1964). COSTA RICA, Prov. Cartago: near Turrialba (Abdel-Malek 1969). BELIZE: Belize Dist.: Central Farms (Abdel-Malek 1969).

Taxonomy.—Paraense (1996a) treated this species as a synonym of *Biomphalaria helophila* (Orbigny 1835).

***Biomphalaria belizensis* (Crosse & Fischer 1878)**

*Planorbis belizensis* Crosse & Fischer 1879; Jour. de Conchyl. 27:342.- Fischer & Crosse 1880:68; pl. 32, figs. 6, 6a, 6b (shell).- Von Martens 1899; Biol. Cent. Amer.:390.

*Biomphalaria belizensis* (Crosse & Fischer 1878).

Type Locality.—Belize.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; San Miguel Tucará (Fischer & Crosse 1880).



BELIZE. TABASCO (Von Martens 1899).

***Biomphalaria boucardianus* (Preston 1907)**

*Planorbis boucardianus* Preston 1907; Ann. & Mag. Nat. Hist. ser. 2:20; 497, text-fig. 17 (shell).

*Tropicorbis boucardianus* (Preston). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 900, 506; pl. 132, figs. 31, 32 (shell); pl. 135, figs. 17–19 (shell).

Type Locality.—México.

Distribution.—NARARIT: Manzanillo (F. C. Baker 1945).

***Biomphalaria fieldi* (Tryon 1863)**

*Planorbis fieldi* Tryon 1863; Proc. Acad. Nat. Sci. Phila. 15:281; pl. 1, figs. 4, 5 (shell).- Tate 1870; Amer. Jour. of Conch. 5:159.

*Planorbis (Gyraulus) fieldi* Tryon. Von Martens 1899; Biol. Cent. Amer.:394–395; pl. 21, fig. 6 (shell).

*Tropicorbis fieldi* (Tryon). F. C. Baker 1945; Moll. Fam. Planorbidae:84, 500; pl. 132, figs. 24–30 (shell).

*Biomphalaria fieldi* (Tryon). Abdel-Malek 1969; Malacologia 7:198; fig. 7 (reproductive anatomy), fig. 17 (shell).

Type Locality.—Panamá.

Distribution.—PANAMÁ, Canal Zone: Gatún (F. C. Baker 1945; Abdel-Malek 1969). NICARAGUA, Dept. Grenada: Lago de Nicaragua, Grenada (Tate 1870).

***Biomphalaria gracilentus* (Gould 1855)**

*Planorbis gracilentus* Gould 1855; Proc. Boston Soc. Nat. Hist. 5:129.

*Tropicorbis (Tropicorbis) gracilentus* (Gould). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 496, 506; pl. 130, figs. 1–12 (shell); pl. 135, figs. 32–35 (shell).

Type Locality.—Great Colorado Desert lowlands, United States. Holotype USNM 26477 (F. C. Baker 1945:496).

Distribution.—BAJA CALIFORNIA SUR: 30 mi. SW of Santiago, México (F. C. Baker 1945).

***Biomphalaria havanensis* (Pfeiffer 1839)**

*Planorbis havanensis* Pfeiffer 1839; Arch. Naturgesch., 5:354.

*Tropicorbis havanensis* (Pfeiffer). F. C. Baker 1945; Moll. Fam. Planorbidae: pl. 13, figs. 1–11 (reproductive anatomy); pl. 46, fig. 13 (kidney); pl. 68, fig. 8 (radula); pl. 70, fig. 4 (animal); pl. 130, figs. 18–28 (shell).

*Taphius havanensis* (Pfeiffer). Paraense & Deslandes 1958; Rev. Brasil. Biol. 18:87–91; fig. 1 (shell), fig. 2 (pallial organs), fig. 3 (reproductive anatomy), fig. 4 (radula).

*Biomphalaria havanensis* (Pfeiffer). Bequaert & Miller 1973:205–208.- Thompson 1984; Freshwater snails of Florida:72; figs. 155–157 (shell).- Yung, Pointier & Parera 1997; Malac. Rev. 30:115–117, fig. 1 (map), fig. 2 (reproductive anatomy), fig. 3 (shell).

*Planorbis diciptiens* C. B. Adams 1849; Contr. Conch. 3:43.

*Planorbis maya* Morelet 1849; Test. Noviss. I:16.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):538.

*Planorbis (Gyrorbis) maya* Morelet. Fischer & Crosse 1880:72–73; pl. 33, figs. 4–4c (shell).

*Planorbis (Gyraulus) maya* Morelet. Von Martens 1899; Biol. Cent. Amer.:392; pl. 21, fig. 13 (shell).

*Planorbis (Tropicorbis) maya* (Morelet). Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):66.

*Tropicorbis (Tropicorbis) maya* (Morelet). F. C. Baker 1945; Moll. Fam. Planorbidae:85; pl. 130, figs. 13–17 (shell).

*Taphius maya* (Morelet). Paraense & Deslandes 1957a; Jour. de Conchyl. 97:49–57; figs. 1–3 (shell), fig. 4 (animal), fig. 5 (pallial organs), fig. 6 (reproductive anatomy), fig. 7 (radula).

*Planorbis liebmanni* Philippi 1850; in Dunker, Martini & Chemnitz, Syst. Conch. Cab., 17:59; pl. 10, figs. 32–34 (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:777.- Pilsbry 1928; Proc. Acad. Nat. Sci. Phila. 80:117.

*Tropicorbis liebmanni* (Philippi). Paraense & Deslandes 1957b; Rev. Brasil. Biol. 17:427–434.- Paraense 1958; Rev. Brasil. Biol. 18:68–70; fig. 6 (reproductive anatomy).

Type Localities.—*Planorbis havanensis*: Havana, Cuba (Yung et al. 1997). *Planorbis diciptiens*: Jamaica. *Planorbis maya*: in cisterns, Ciudad Campeche, Campeche. *Planorbis liebmanni*: Veracruz, México.

Distribution.—West Indies, México and Central America; South American distribution remains to be determined. EL SALVADOR, Dept. San Salvador: Cd. San Salvador (Paraense 2000). GUATEMALA, Dept. Sacatepéquez: Antigua (Von Martens 1899); Lago de Dueñas (Paraense 2000). BELIZE: Belize Dist.: Boston Village (Paraense 2000). CAMPECHE: Isla de Carmen; Campeche; lake at km 49, road from Cd. Campeche to Merida (Paraense & Deslandes 1957b). NUEVO LEÓN: Topo Chico, near Monterey (Pilsbry 1903). OAXACA: Isthmus of Tehuantepec. TAMAULIPAS: Mesa de Solis, near La Lajilla, between Padilla and Jimenez (Pilsbry 1928). VERACRUZ. YUCATÁN: Merida (Pilsbry 1891); Tabi (Von Martens 1899); cave at Actun Has; hacienda Yocat; Ticul District (Bequaert & Clench 1933); aguado 14 km N, 2 km E of Merida; Aguado Halal, near Merida; pool 3 km S of Progreso (Bequaert & Clench 1936).

Taxonomy.—Paraense and Deslandes (1957b) synonymized *Planorbis liebmanni* (Philippi 1850) with *Planorbis maya* (Morelet 1849), and in turn (1958) they synonymized *Planorbis maya* with *Planorbis havanensis* (Pfeiffer 1839). Records of *Biomphalaria havanensis* from Florida, Mississippi, Louisiana and Texas (Abdel-Malek 1969) require further study concerning their specific status.

***Biomphalaria helophila* (Orbigny 1835)**

*Planorbis helophilus* Orbigny 1835; Mag. de Zool., (62):27.

*Biomphalaria helophila* (Orbigny).- Ruiz 1987; Universidad y Ciencias, 4:33–43; map 1; pl. 1 (shell); pl. 2 (radula); pl. 3 (reproductive anatomy).- Paraense 2000; Malac. Rev., 33:4; figs. 2A (shell); 2B (reproductive anatomy).

*Australorbis albicans* (Pfeiffer 1839). Paraense and Deslandes 1962; Nautilus 75:156–161; figs. 1 (shell, radula, reproductive anatomy).

*Planorbis dentiens* Morelet 1849; Test. Noviss. I:18.- Fischer & Crosse 1880; pl. 33, figs. 7, 7a, 7b, 7d (shell).

*Planorbis dentiens* var. *edentula* Fischer & Crosse 180:81; pl. 34, figs. 6, 6a-c (shell).

*Planorbis declivus* Tate 1870; Amer. Jour. of Conch. 5:159 (not *Planorbis declivus* Braun 1848).

*Tropicorbis tatei* Baker 1941; Nautilus 54:96–97 (replacement name for *Planorbis declivus* Tate 1870).

*Tropicorbis shimeki* F. C. Baker 1945; Moll. Fam. Planorbidae:218–219; pl. 134, figs. 12–14, 28 (shell).

Type Localities.—*Planorbis helophila*: Lima, Peru. *Planorbis cannarum*: Belize. *Planorbis dentiens*: Belize. *Tropicorbis shimeki*: Ometepe [Isla de Ometepe], Nicaragua; holotype USNM 534290.

Distribution.—EL SALVADOR, Dept. Santa Ana: Lago de Coatepeque (Paraense 2000). GUATEMALA, Dept. Izabal: El Prodo (Paraense 2000). NICARAGUA, Isla de Ometepe (F. C. Baker 1945). Dept. Chontales: Acoyapa (Paraense 2000). VERACRUZ: Coatzacoalcos (F. C. Baker 1945). Los Tuxtlas, Laguna Escondida and Laguna Zacatal (18°35'–18°36' N, 94°04'–95°05' W) (Ruíz 1987).

#### ***Biomphalaria hondurasensis* (Clesson 1878)**

*Planorbis hondurasensis* Clesson 1878; in Martini & Chemnitz, Syst. Conch.-Cab., Ed. 2, Limnaeidae:164; pl. 24, fig. 2 (shell).- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.

*Planorbis* (*Gyraulus*) *hondurasensis* Clesson. Von Martens 1899; Biol. Cent. Amer.:393.

Type Locality.—Santa Rosa, Honduras.

Distribution.—HONDURAS: “Santa Rosa”. COSTA RICA: Rio Torres (Von Martens 1899). Prov. San José: ditch along road from San José to La Verbena.

#### ***Biomphalaria kuhniiana* (Clessin 1885)**

*Planorbis kuhnerianus* Clessin 1883; in Martini & Chemnitz, Syst. Conch. Cab., ed. 2, *Planorbis*:108; pl. 11, fig. 12 (shell).

*Planorbis kuhniiana* Clessin 1885; in Martini & Chemnitz, Syst. Conch. Cab., ed. 2, *Planorbis*:413 (substitute name for *Planorbis kuhnerianus* Clessin 1883).

*Tropicorbis kuhniianus* (Clessin). F. C. Baker 1945; Moll. Fam. Planorbidae: pl. 132, figs. 6–9 (shell).

*Biomphalaria kuhniiana* (Clessin). Paraense 1988; Mem. do Inst. Oswaldo Cruz, 83:1–12.- Paraense 2000; Malac. Rev. 33:5–6; text-figs. 3A (shell), 3b (reproductive anatomy).

*Planorbis isthmicus* Pilsbry 1920e:78–79; text-figs. (shell).

*Tropicorbis (lateorbis) isthmicus* (Pilsbry). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 498; pl. 131, figs. 1–7 (shell).

Type Locality.—*Planorbis kuhniiana*: Paramaribo, Surinam. *Planorbis isthmicus*: “Chinese” wells at Cd. Panamá, Panamá.

Distribution.—PANAMÁ, Prov. Panamá: Cd. Panamá; Lago de Miraflores (F. C. Baker 1945); Las Cumbres, near Cd. Panamá; National University, Tucuman; Lago Isleta, environs of Cd. Panamá (Paraense 2000).

#### ***Biomphalaria nicaraguana* (Morelet 1851)**

*Planorbis nicaraguana* Morelet 1851; Test. Noviss. II:14.- Von Martens 1899:391–392; pl. 21, fig. 10 (shell).

*Biomphalaria nicaraguana* (Morelet). Paraense 2000; Malac. Rev. 33:7–9; text-fig. 4A, 4B (shell); 4C, 4D (reproductive anatomy).

Type Locality.—Lago de Nicaragua. “Type” BMNH 1993.2.4.594).

Distribution.—NICARAGUA, Dept. Chontales:

Acoyapa, near Lago de Nicaragua (Paraense 2000). Dept. Rio San Juan: Rio San Juan (Von Martens 1899).

#### ***Biomphalaria obstructa* (Morelet 1849)**

*Planorbis obstructus* Morelet 1849; Test. Noviss. I:16.

*Planorbula obstructa* (Morelet). Fischer & Crosse 1880:78; pl. 33, figs. 3, 3a–3d (shell); 34, figs. 7, 7a–7d (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.- Hinkley 1920; Nautilus 34:38.- Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):68.- Richards 1937; Trans. Amer. Philos. Soc. 77:255.

*Planorbis* (*Planorbula*) *obstructus* (Morelet). Von Martens 1899; Biol. Cent. Amer.:398–399.

*Tropicorbis* (*Obstructio*) *obstrutus* (Morelet). Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):33.- F. C. Baker 1945; Moll. Fam. Planorbidae:85, 128, 262, 336, 372, 388, 492, 494, 502, 504; pl. 13, figs. 1–3 (reproductive anatomy); pl. 50, fig. 11 (jaw); pl. 68, fig. 7 (radula); pl. 76, fig. 7 (shell); pl. 128, figs. 26–33 (shell); pl. 129, figs. 4, 8, 9 (shell); pl. 133, figs. 28–35 (shell); pl. 134, figs. 10, 11, 22 (shell).- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):7, 24.- Bequaert 1957; Bull. Mus. Comp. Zool. 116:214.

*Biomphalaria obstructa* (Morelet). Abdel-Malek 1969; Malacologia 7:186–190; 194–196; figs. 2A, 2B (reproductive anatomy), figs. 9–11 (shell), fig. 21A (radula).- Paraense 1990; Mem. do Inst. Oswaldo Cruz, 85:391–399.- Paraense 2000; Malac. Rev. 33:9–12; text-figs. 5A, 5B, 5C (shell), 5D (reproductive anatomy); figs. 6A, 6B (shell); 6C (reproductive anatomy).

*Planorbis cannarum* Morelet 1849; Test. Noviss. I:16.

*Segmentina donbilli* Tristram 1861; Proc. Zool. Soc. Lond. 29:232.

*Tropicorbis obstructus donbilli* (Tristram). F. C. Baker 1945; Moll. Fam. Planorbidae:85; pl. 129, figs. 17–25; pl. 131, figs. 15–26 (shell).

*Planorbis berendti* Tryon 1866; Amer. Jour. Conch. 2:10; pl. 2, figs. 14–16 (shell).- Strebel 1873:45; pl. 5, fig. 23 (shell).

*Planorbula obstructa anodonta* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:219 (not illustrated).

*Tropicorbis obstructus anodontus* (Pilsbry). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 502; pl. 133, figs. 36–40 (shell).

Type Localities.—*Planorbis obstructus*: Isla de Carmen, Campeche, México. *Planorbis cannarum*: Belize. *Segmentina donbilli*: Lago de Dueñas, Guatemala. *Planorbis berendti*: Orizaba, Veracruz, México. *Planorbula obstructa anodonta*: reservoir 4 miles north of Guatemala City, Guatemala.

Distribution.—Gulf coastal regions of the United States south to Belize, Guatemala, and El Salvador. EL SALVADOR, Dept. San Salvador: Cd. San Salvador (Paraense 2000). GUATEMALA, Dept. Escuintla: Escuintla (Von Martens 1899). Dept. Guatemala: Lago Amatitlan; reservoir N of Cd. Guatemala (F. C. Baker 1945). Dept. Izabal: Lago de Izabal, Marisco. Dept. Sacatepéquez: Lago de Dueñas, San Miguel Dueñas (Paraense 2000). Dept. Petén: Lago de Petén; aguado NW of San Benito (Goodrich & van der Schalie 1937). BELIZE: Belize Dist.: Boston Village (Paraense 2000). CAMPECHE: Isla de Carmen; Aguado Yalic, Chapoton (Bequaert & Clench 1936). CHIAPAS: Laguna Ocotal to El Censo (Bequaert 1957). OAXACA: San Carlos, east of Oaxaca; Isthmus of Tehuantepec (Fischer & Crosse 1880). QUINTANA ROO: swamp a few miles N of San Miguel, Isla Cozumel (Richards 1937); near San Miguel, Isla Cozumel

(F. C. Baker 1945). SAN LUIS POTOSÍ: Catamas Lake, El Abra; falls of the Rio Valles, Cd. Valles; Tamosopo (F. C. Baker 1945). TAMAULIPAS: Tampico (F. C. Baker 1945). VERACRUZ: Quilate, near Misantla; Orizaba; Veracruz; Rio Tenoya, Veracruz (Strebel 1873). YUCATÁN: Ticul (Pilsbry 1891); aguado 14 km N, 2 km E of Merida; Aguado Yalal, near Merida; Piste (Bequaert & Clench 1936); Piste (F. C. Baker 1945); 0.5 mi. W of Progreso; irrigation cistern, 3 mi. N of Merida (Harry 1950).

***Biomphalaria orbicula* (Morelet 1849)**

*Planorbis orbiculus* Morelet 1849; Test. Noviss. I:17.- Fischer & Crosse 1880:70; pl. 32, figs. 9, 9a-c (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.- Hinkley 1920; Nautilus 34:38.- Richards 1937; Proc. Amer. Philos. Soc. 77:255.

*Planorbis* (*Menetus*) *orbiculus* Morelet. Von Martens 1899; Biol. Cent. Amer.:390-391.

*Planorbis* (*Tropicorbis*) *orbiculus* (Morelet). Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):66-67.

*Tropicorbis* (*Tropicorbis*) *orbiculus* (Morelet). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 390, 494; pl. 77, figs. 7-9 (shell); pl. 129, figs. 1-3, 4-7, 10-16 (shell).

*Tropicorbis orbiculus dunkeri* F. C. Baker 1945; Moll. Fam. Planorbidae:85; pl. 129, figs. 26-36 (shell).- Harry 1961; Malacologia 1:45 (a *nomen nudum*, holotype not designated).

Type Locality.—*Planorbis orbiculus*: La Palizada, Yucatán, on the frontier of Tabasco, México. *Tropicorbis orbiculus dunkeri*: not stated.

Distribution.—Guatemala and eastern México from Quintana Roo north to San Luis Potosi and Tamaulipas. GUATEMALA, Dept. Guatemala: ditch along railroad at Laguna, Lago Amatitlan (Hinkley 1920). CAMPECHE: Cd. Carmen; Laguna de Terminos. OAXACA: San Carlos (Von Martens 1899). QUINTANA ROO: swamp near San Gerbacio, Isla Cozumel (Richards 1937); near San Miguel, Isla Cozumel (F. C. Baker 1945). SAN LUIS POTOSÍ: drift at falls, Cd. Valles; Chamiai Creek, below Cd. Valles; Catamas Lake, El Abra (F. C. Baker 1945). TABASCO: Balacan, near San Juan Bautista (Von Martens 1899). TAMAULIPAS: pool near Tampico (F. C. Baker 1945). VERACRUZ: Veracruz; San Juan (Pilsbry 1891). YUCATÁN: La Palizada (Von Martens 1899). DISTRITO FEDERAL: near Ciudad México.

***Biomphalaria panamensis* Dunker 1848**

*Planorbis panamensis* Dunker 1848; Proc. Zool. Soc. Lond. 16:41.- Sowerby, in Reeve; Conch. Icon., 22, *Planorbis*: pl. 12, fig. 95.

*Planorbis* (*Gyraulus*) *panamensis* Dunker 1848. Von Martens 1899; Biol. Cent. Amer.:395.

Type Locality.—West Panamá, in a small stream.  
Distribution.—Known only from the type locality.

***Biomphalaria petenensis* (Morelet 1851)**

*Planorbis petenensis* Morelet 1851; Test. Noviss. II:15.

*Planorbis* (*Gyrorbis*) *petenensis* Morelet. Fischer & Crosse 1880; 74; pl. 33, figs. 5, 5a-c (shell).

*Planorbis* (*Gyraulus*) *petenensis* Morelet. Von Martens 1899; Biol. Cent. Amer.:393-394.

*Tropicorbis* (*Lateorbis*) *petenensis* (Morelet). F. C. Baker 1945; Moll. Fam. Planorbidae:85, 502, 518; pl. 133, figs. 1-3 (shell); pl. 141, figs. 2-4 (shell).

Type Locality.—Lago de Itza Petén, Dept. Petén, Guatemala.

Distribution.—COSTA RICA, Prov. San José: Rio Torres, near San José. Prov. Puntarens: Laguna between Lagarto and Boruca (Von Martens 1899). GUATEMALA, Dept. Petén: Lago Petén Itza; Lago de Petén, Remate (F. C. Baker 1945). OAXACA: Cacoprieto, isthmus of Tehuantepec (Von Martens 1899); Tehuantepec (F. C. Baker 1945).

***Biomphalaria retusus* (Morelet 1849)**

*Planorbis retusus* Morelet 1849; Test. Noviss. I:17.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.

*Planorbis* (*Gyrorbis*) *retusus* Morelet. Fischer & Crosse 1880:73; pl. 32, figs. 10-10c (shell).

*Planorbis* (*Gyraulus*) *retusus* Morelet. Von Martens 1899:393.

Type Locality.—Isla de Carmen, Campeche, México.

Distribution.—CAMPECHE: Isla de Carmen. YUCATÁN: Shkolac, between Merida and Valladolid (Pilsbry 1891).

***Biomphalaria straminea* (Dunker 1848)**

*Planorbis stramineus* Dunker 1848; Proc. Zool. Soc. Lond. 16:42.- Dunker 1850; in Martini & Chemnitz, Syst. Conch. Cab., Ed. 2, 1, *Planorbis*:42; pl. 5, figs. 7-9 (shell).

*Biomphalaria straminea* (Dunker). Paraense 2000; Malac. Rev. 33:12.

Type Locality.—South America.

Distribution.—COSTA RICA, Prov. Cartago: Rio Coris (Paraense 2000).

***Biomphalaria subprona* (Von Martens 1899)**

*Planorbis* (*Taphius*) *subpronus* Von Martens 1899; Biol. Cent. Amer.:396-397; pl. 21, fig. 15 (shell).

*Taphius sbpronus* (Von Martens). F. C. Baker 1945; Moll. Fam. Planorbidae:79, 498; pl. 131, figs. 36-40 (shell).- Bequaert 1957; Bull. Mus. Comp. Zool. 116:214-215.

*Biomphalaria subprona* (Von Martens). Paraense 1996; Mem. do Inst. Oswaldo Cruz, 91:187-190.- Paraense 2000; Malac. Rev. 33:12.

Type Locality.—Amatitlan, Tabasco [Guatemala].

Distribution.—COSTA RICA: Turrialba (F. C. Baker 1945). EL SALVADOR, Dept. Santa Ana: Lago de Coatepeque (Bequaert 1957). GUATEMALA, Dept. Guatemala: Lago de Amatitlan (Paraense 2000). CHIAPAS: Laguna Ocotol, 950 m alt. (Bequaert 1957).

***Biomphalaria "temascalensis" Rangel-Ruiz 1987***

*Biomphalaria temascalensis* Rangel-Ruiz 1987; Universidad y Ciencias, 4:25-34; pl. 1, figs. a-c (shell); pl. 2, figs. 1-4 (radula); pls. 3-4 (reproductive system).

Type Locality.—Estacion de Acuicultura Tropical de Temascal, Oaxaca, México (17-19° N, 95-97°40' W). Holotype not designated.

Distribution.—Known only from the type locality.



Taxonomy.—The name *Biomphalaria temascalensis* Rangel Ruíz 1987 is invalid, because the description does not include the designation of a holotype as required by ICZN Articles 16.4 and 62.4.

***Biomphalaria tepicensis* (Von Martens 1899)**

*Planorbis* (*Gyraulus*) *tepicensis* Von Martens 1899; Biol. Cent. Amer.:393; pl. 21, figs. 14 (shell).  
*Tropicobis tepicensis* (Von Martens). F. C. Baker 1945; Moll. fam. Planorbidae:85, 502; pl. 133, figs. 4–9 (shell).  
 Type Locality.—Tepic, “Jalisco” [Nayarit], México.  
 Distribution.—NAYARIT: Tepic. OAXACA: Tehuantepec (F. C. Baker 1945).

**Subfamily HELISOMATINAE F. C. Baker 1928**  
**Genus *Helisoma* Swainson 1840**

*Helisoma* Swainson 1840; Treatise on Malacology, VIII:337.- F. C. Baker 1945; Moll. Fam. Planorbidae:123–129.  
 Type Species.—*Planorbis bicarinatus* Say 1817 (= *Planorbis anceps* Menke 1830).  
 Distribution.—Throughout North America south to northern México.  
 Taxonomy.—Two subgenera are recognized (Burch 1980:198).

**Subgenus *Helisoma* Swainson 1840**

Distribution.—As for the genus.  
 Taxonomy.—A single species is recognized. Numerous subspecies and varieties have been proposed (Burch 1980:198, 274). Two subspecies are recognized currently. One occurs in México.

***Helisoma anceps anceps* (Menke 1830)**

*Planorbis bicarinatus* Say 1817; Nichole’s Encycl., 1<sup>st</sup> ed.: species No. 2, pl. 1, fig. 4 (not *Planorbis bicarinatus* Lamarck 1804).  
*Planorbis anceps* Menke 1830; Synopsis Methodica Molluscorum. 2nd Ed. 242  
*Planorbis antrosa* Conrad 1834; Amer. Jour. Sci., 25:343.  
*Helisoma anceps anceps* (Menke 1830). F. C. Baker 1945; Moll. Fam. Planorbidae:402–403.- Taylor 1966; Veliger 9:209.- Burch 1980; Walkerana 1:198, 274–275; fig. 714.  
 Type Locality.—Delaware River, Virginia.  
 Distribution.—Rio de Los Natadores, at El Cariño, 20 mi. E. of Cuatro Ciénegas (Taylor 1966). SONORA: mouth of the Rio Yaqui (F. C. Baker 1945),

**Genus *Planorbella* Haldeman 1842**

*Planorbella* Haldeman 1842; Monogr. NA freshwater Moll., Physidae:14.- Burch 1980; Walkerana 1:202.  
 Type Species.—*Planorbis campanulatus* Say 1821.  
 Distribution.—North America and the west Indies south to Peru.  
 Taxonomy.—Three subgenera are recognized. Two occur in the study area.

**Subgenus *Pierosoma* Dall 1905**

*Pierosoma* Dall 1905; Smithsonian Inst. Harriman Alaska Expedition

1899, Alaska Ser. 13:81, 85.

Type Species.—*Planorbis trivolvis* Say 1818.

Distribution.—North America south to Panamá and the West Indies.

Taxonomy.—Numerous species. Seven occur in the study area.

***Planorbella* (*Pierosoma*) *caloderma* (Pilsbry 1923)**

*Planorbis caloderma* Pilsbry. Hinkley 1920; Nautilus 34:46, 48 (*nomen nudum*).  
*Planorbis caloderma* Pilsbry 1923; Nautilus 36:143–144.-  
*Helisoma calodermum* (Pilsbry). F. C. Baker 1945; Moll. Fam. Planorbidae: pl. 115, figs. 2–4 (shell).  
 Type Locality.—Esmeralda, Dept. Jutiapa, Guatemala. Holotype and paratypes ANSP 45662.  
 Distribution.—GUATEMALA, Dept. Izabal: Jocolo (Hinkley 1920). Dept. Jutiapa: Esmeralda.

***Planorbella* (*Pierosoma*) *foveale foveale* (Menke 1830)**

*Planorbis fovealis* Menke 1930; Symp. Method. Mollusc.:37.  
*Helisoma foveale* (Menke). F. C. Baker 1945; Moll. Fam. Planorbidae:149, pl. 101, figs. 1–5 (shell); pl. 141, figs. 12–18 (shell).- Harry & Hubendick 1964; Göeborgs Kungl. Vetenskaps-och Vitterhets-samhälles handlingar, ser. 6, ser. B:35–40; fig. 33–37 (anatomy); figs. 73–77, 131–133 (shell).  
*Planorbis caribaeus* Orbigny 1841, in Sagra, Hist. Fis. Polit. y nat. de Cuba, Moluscos:193; pl. 13, figs. 17–19 (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.- Hinkley 1920; Nautilus 34:38, 48.  
*Planorbis* (*Helisoma*) *caribaeus* (Orbigny). Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):66.  
*Helisoma caribaeum* (Orbigny). van der Schalie 1940; Occ. Pap. Mus. Zool. Univ. Mich. (413):6–7.  
*Helisoma* (*Pieronoma*) *caribaeum caribaeum* (Orbigny). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 466, 434, 436, 438; pl. 99, fig. 31; pl. 100, figs. 1–17; pl. 101, fig. 15; pl. 115, fig. 1 (shell).- Bequaert 1957; Bull. Mus. Comp. Zool. 116:214.  
*Planorbis tumidus* Dunker 1850; in Martini & Chemnitz, Syst. Conch. Cab., Ed. 2, *Planorbis*:39; pl. 7, figs. 10–12 (shell).- Dall 1896; Proc. U. S. Nat. Mus. 19:369.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:322.  
*Planorbis ancylostomus* Crosse & Fisher 1879; Jour. de Conchyl. 27:341.- Fischer & Crosse 1880:63; pl. 32, figs. 5, 5a, 5b (shell).  
*Planorbis ancylostoma* var. *chiapensis* Fischer & Crosse 1886:63; pl. 34, figs. 5, 5a, 5b (shell).  
*Planorbis* (*Helisoma*) *caribaeus chiapensis* Fischer & Crosse. Von Martens 1893; Biol. Cent. Amer.:389.  
 Type Localities.—*Planorbis fovealis*: Jamaica (Pilsbry 1934). *Planorbis caribaeus*: Cuba. *Planorbis dunkeri*: not specified. *Planorbis ancylostomus*: Veracruz, Veracruz, México. *Planorbis ancylostoma* var. *chiapensis*: Chiapas, México.  
 Distribution.—COSTA RICA, Prov. Cartago: E of Cartago; 4 mi. SW of Cartago; San Isidro del Tejar (Pilsbry 1920). GUATEMALA, Naranjo (F. C. Baker 1945). Dept. Alta Verapaz: a small aguada ca. 8 km N of Samanzana; near Samac (van der Schalie 1940). Dept. Izabal: Jocolo (Hinkley 1920). Dept. Guatemala: Lago Amatitlan. CAMPECHE:

Aguado Yalic, near Chompoton (Bequaert & Clench 1936). CHIAPAS: Laguna Ocotol, 950 m alt.; Rio Amarillo at the Sumidero, near Las Casas (Bequaert 1957). SONORA: Rio San Bernardino; Rio Sonoyta (Dall 1896). VERACRUZ: Orizaba (Pilsbry 1891); Veracruz (F. C. Baker 1945). YUCATÁN: Shkolak (Pilsbry 1891).

Taxonomy.—The following subspecies has been proposed from the study area.

***Planorbella (Pierosoma) foviale guatemalense (Clessin 1889)***

*Planorbis guatemalensis* Clessin 1889; in Martini & Chemnitz, Syst. Conch. Cab., Ed. 2, *Planorbis*:209–210; pl. 32, fig. 7 (shell).

*Helisoma (Pierosoma) caribaicum guatemalense* (Clessin). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 434; pl. 99, figs. 32–36 (shell).

Type Locality.—Guatemala.

Distribution.—NICARAGUA (F. C. Baker 1945). GUATEMALA.

***Planorbella (Pierosoma) costaricensis (Preston 1907)***

*Planorbis costaricensis* Preston 1907; Ann. Mag. Nat. Hist. Ser. 7, 20:496–497; text-fig. 16 (shell).

*Helisoma (Pierosoma) costaricensis* (Preston). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 438; pl. 101, figs. 8–10 (shell).

Type Locality.—Catalina, Prov. Guanacaste, Costa Rica.

Distribution.—COSTA RICA, Prov. Guanacaste: Catalina (F. C. Baker 1945).

***Planorbella (Pierosoma) contrerasi (Pilsbry 1920)***

*Planorbis contrerasi* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:193; text-fig. 2 (shell).

*Helisoma (Pierosoma) contrerasi* (Pilsbry). F. C. Baker 1945; Moll. Fam. Planorbidae:140; pl. 102, figs. 2–4 (shell).

Type Locality.—Lago de Chapala, Jalisco, México.

Holotype ANSP 46193.

Distribution.—Known only from the type locality.

***Planorbella (Pierosoma) tenue (Dunker 1850)***

*Planorbis tenuis* Dunker 1850; Syst. Conch. Cab., Ed. 2, Limnaeacea:45; pl. 9, figs. 14–19 (shell); pl. 16, figs. 22–25 (shell).- Strebil 1872:42; pl. 5, figs. 21–26, a-c (shell).- Fischer & Crosse 1880:60; pl. 34, fig. 1 (shell).- Von Martens 1899; Biol. Cent. Amer.:381–386; pl. 21, figs. 1, 7, 7a (shell).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:777.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.

*Helisoma tenuis* (Dunker). Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):33.

*Helisoma (Pierosoma) tenue tenue* (Dunker). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 430; pl. 97, figs. 1–11 (shell).- Bequaert & Miller 1987:208.

*Planorbella (Pierosoma) tenue* (Dunker). J. B. Burch 1980; Walkerana:204; fig. 734 (shell).

*Planorbis mexicanus* Dunker 1850; in Martini & Chemnitz, Syst. Conch.-Cab., Ed. 2, *Planorbis*:45.

*Planorbis tumens* Carpenter 1857; Cat. Mazatlan shells:81.- Fischer & Crosse 1886:62; pl. 33, figs. 3, 3a (shell).- Clessin 1886; in Martini & Chemnitz, Syst. Conch. Cab., ed. 2; Limnaeiden:88; pl. 12, figs. 7–9 (shell).- Hanna 1923; Proc. Calif. Acad. Sci., ser. 4 12:516–517.

*Planorbis (Helisoma) tumens* Carpenter. Von Martens 1899:387.

*Helisoma tumens* (Carpenter). F. C. Baker 1945; Moll. Fam. Planorbidae:436; pl. 100, figs. 31–37 (shell).

*Planorbis tenuis* var. *juvenilis* Von Martens 1899; Biol. Cent. Amer.:384; pl. 21, fig. 4 (shell).

*Planorbis tenuis* var. *uhdei* Von Martens 1899; Biol. Cent. Amer.:385; pl. 21, fig. 2 (shell).

Type Localities.—*Planorbis tenuis*: ditches in the neighborhood of Ciudad México. *Planorbis mexicanus*: México. *Planorbis tumens*: Mazatlán, Sinaloa, México. *Planorbis tenuis* var. *juvenilis*: City of México. *Planorbis tenuis* var. *uhdei*: central Mexico.

Distribution.—GUATEMALA, Dept. Petén: Arroyo Subín, near Sanat Teresa (Goodrich & van der Schalie 1937). BAJA CALIFORNIA SUR: Mulege (Hanna 1923). DURANGO. DISTRITO FEDERAL: Ciudad México; Lago de Chalco (Pilsbry 1920). GUANAJUATO: Jaral (Von Martens 1899); Acambaro (Pilsbry 1903). JALISCO; Lago de Chapala (Von Martens 1899). MÉXICO: Tlapam (Pilsbry 1903); Toluca; sources of the Rio Lerma, near Toluca (F. C. Baker 1945). SINALOA: Mazatlán (Von Martens 1899). VERACRUZ: Córdoba; Orizaba; Jalapa (Von Martens 1899).

Taxonomy.—F. C. Baker (1945) recognized the following subspecies from the study area.

***Planorbella (Pierosoma) tenue boucardi (Fischer & Crosse 1880)***

*Planorbis tenuis* var. *boucardi* Fischer & Crosse 1880:61; pl. 32, figs. 3a, b (shell).- Von Martens 1899; Biol. Cent. Amer.:384.

*Helisoma tenue boucardi* (Fischer & Crosse). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 430; pl. 97, figs. 12–17 (shells).

Type Locality.—Environs of Ciudad México.

Distribution.—DISTRITO FEDERAL: known only from the environs of Ciudad México.

***Planorbella (Pierosoma) tenue chapalensis (Pilsbry 1920)***

*Planorbis chapalensis* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:192–193; fig. 1 (shell).

*Helisoma tenue chapalensis* (Pilsbry). F. C. Baker 1945; Moll. Fam. Planorbidae:149; 440; figs. 1, 5–10 (shell).

Type Locality.—Lago de Chapala, Jalisco, México.

Holotype ANSP 46194.

Distribution.—Known only from the type locality.

***Planorbella (Pierosoma) tenue exaggeratum (Von Martens 1899)***

*Planorbis tenuis* Philippi. Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:321–322; pl. 15, fig. 4 (shell).

*Planorbis tenuis* var. *exaggeratum* Von Martens 1899; Biol. Cent. Amer.:385.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:777.

*Helisoma tenue exaggeratum* (Von Martens). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 430; pl. 97; figs. 18–25 (shell).

Type Locality.—Lago de Patzcuaro, Michoacán, México.

Distribution.—Known only from the type locality.

***Planorbella (Pierosoma) tenue pertenuis (F. C. Baker 1940)***

*Planorbis tenuis* var. *applanatus* Von Martens 1899:384–385; pl.

21, fig. 3 (shell) (not *Planorbis applanatus* Thomae 1845).

*Helisoma tenuis pertenuis* F. C. Baker 1940; Nautilus 54:97 (replacement name for *Planorbis tenuis applanatus* Von Martens).

*Helisoma tenue applanatum* (Von Martens). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 430, 432; 434; pl. 97, figs. 26–28; pl. 98, figs. 1–8; pl. 99, figs. 1–3; pl. 101, fig. 16 (shell).

Type Locality.—Plateau of México.

Distribution.—CHIHUAHUA: Rio Lanos (F. C. Baker 1945). SONORA: Rio Yaqui, near Ciudad Obregon (F. C. Baker 1945). VERACRUZ: Orizaba (F. C. Baker 1945). BAJA CALIFORNIA NORTE: Vallecitos (F. C. Baker 1945).

***Planorbella (Pierosoma) tenue strebelianum* (Fischer & Crosse 1880)**

*Planorbis tenuis* var. *strebelianus* Fischer & Crosse 1880:63.

*Helisoma tenue strebelianum* (Fischer & Crosse). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 434; pl. 99, figs. 16–20, 25–30 (shell).

Type Locality.—Laguna de Los Cocos, Rio Tenoya and ditches in environs of Veracruz, México.

Distribution.—SAN LUIS POTOSÍ: Penasco, 5 mi. N of San Luis Potosi; Rio Coy (F. C. Baker 1945). Tamaulipas: Alta Mira (F. C. Baker 1945). VERACRUZ: environs of Veracruz.

***Planorbella (Pierosoma) trivolvis* (Say 1817)**

*Planorbis trivolvis* Say 1817; Nicholson's Encyclopedia, American Ed. 3: pl. 2, fig. 2 (shell).

*Planorbella (Pierosoma) trivolvis trivolvis* (Say). J. B. Burch 1980; Walkerana 1:205; figs. 735 (shell).

*Helisoma trivolvis* (Say). Paraense 2000; Malac. Rev. 33:2; text-figs. 1A (shell), 1B (kidney), 1C (reproductive anatomy).

Type Locality.—Lake Erie, North America.

Distribution.—Widely distributed in North America from the Atlantic coast westward to Missouri and northward to the Arctic Circle and Alaska. Records from México and Central America seem questionable. COSTA RICA, Prov. Cartago: Rio Coris (Paraense 2000). NICARAGUA, Dept. Grenada: Lake Nicaragua, Grenada (Paraense 2000). GUATEMALA, Dept. Alta Verapaz: Lago Petencito, near Cobán (Paraense 2000). BELIZE: Belize Dist.: Boston Village (Paraense 2000).

***Planorbella (Pierosoma) wyldi* (Tristram 1861)**

*Planorbis tumens* Carpenter. Fischer & Crosse 1880:62; pl. 32, figs. 4, 4a-c (shell)

*Planorbis wyldi* Tristram 1861; Proc. Zool. Soc. Lond. 29:232.

*Planorbis tenuis* var. *wyldi* Tristram. Fischer & Crosse 1880; 62; pl. 34, fig. 2 (shell).

*Planorbis (Helisoma) wyldi* Tristram. Von Martens 1899; Biol. Cent. Amer.:386–387; pl. 21, fig. 5 (shell).

*Helisoma (Pierosoma) wyldi* (Tristram). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 436; pl. 100, figs. 20–30.

*Planorbis salvini* Clessin 1884; in Martini & Chemnitz, Syst. Conch. Cab., Ed. 2, *Planorbis*:207–208; pl. 31, fig. 8 (shell).

*Helisoma wyldi salvini* (Clessin). F. C. Baker 1945; Moll. Fam. Planorbidae:149, 436; pl. 100, figs. 18–20 (shell).

Type Locality.—*Planorbis wyldi*: Lago de Dueñas, Dept. Sacatepéquez, Guatemala. *Planorbis salvini*: Guatemala.

Distribution.—Known in Central America from Costa Rica north to Guatemala. COSTA RICA, Prov. Limón: Rio Reventazón at Ujarras; Alta Coca valley near Talamanca. Prov. Puntarenas: along Rio Diquis, below Terraba (Von Martens 1899). NICARAGUA, Dept. Grenada: near Volcan Monbacho (Von Martens 1899); San Carlos (F. C. Baker 1945). EL SALVADOR, Dept. San Miguel: Lago de Olomega (F. C. Baker 1945). Dept. Santa Ana: Lago de Guija; Lajo de Metapan (F. C. Baker 1945). GUATEMALA, Dept. Alta Verapaz: Cobán; Dept. Guatemala: Aceituno; Naranjo. Dept. Sacatepéquez: Lago de Dueñas; Santiago Zamora (Von Martens 1899).

**Subgenus *Seminolina* Pilsbry 1934**

*Seminolina* Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:31.- F. C. Baker 1945; Moll. Fam. Planorbidae:129–134.

Type Species.—*Planorbis scalare* Jay 1839.

Distribution.—The natural distribution is confined to peninsular Florida. It has been introduced widely in other parts of the world.

Taxonomy.—Two species are recognized.

***Planorbella (Seminolina) duryi* (Wetherby 1879)**

*Planorbis duryi* Wetherby 1879; Jour. Cincinnati Soc. Nat. Hist. 2:99; fig. 4 (shell).

*Helisoma (Seminolina) duryi duryi* (Wetherby). Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 86:38–40; pl. 10, figs. 1–3 (shell).- F. C. Baker, 134, 442, 444; pl. 103, figs. 20–30 (shell); pl. 104, figs. 1–7 (shell).

*Planorbella duryi* (Wetherby). Burch 1980; Walkerana 1:204; figs. 718, 719 (shell).- Thompson 1984; Freshwater snail of Fla. Man. for Identify.:76–77; figs. 189–193.- Paraense 2000; Malac. Rev. 33:2, 4.

Type Locality.—The Florida Everglades, Florida.

Distribution.—Confined to south Florida in its natural distribution. Introduced widely elsewhere. COSTA RICA, Prov. Cartago: Rio Coris (Paraense 2000).

Taxonomy.—Pilsbry (1934) and F. C. Baker (1945) recognized six subspecies. Their status has not been investigated since then.

**Genus *Micromenetus* F. C. Baker 1945**

*Micromenetus* F. C. Baker 1945; Moll. Fam. Planorbidae:197–190.

Type Species.—*Planorbis dilatatus* Gould 1841.

Distribution.—Eastern North America; Bermuda.

Taxonomy.—Eight species are recognized. One occurs in the study area.

***Micromenetus dilatatus avus* (Pilsbry 1905)**

*Planorbis alabamensis* var. *avus* Pilsbry 1905; Nautilus 19:34.

*Promenetus (Micromenetus) alabamensis avus* Pilsbry. F. C. Baker 1945; Moll. Fam. Planorbidae:190; pl. 121, figs. 40, 41; pl. 123, fig. 1; pl. 140, fig. 25 (shell).

*Micromenetus dilatatus avus* (Pilsbry). Thompson 1983; Nautilus 97:68–69.- Thompson 1984; Freshwater Snails Fla., Man. for



Identification: 68; figs. 143–145 (shell).

*Promenetus minutus* Taylor 1954; Rev. Soc. Malac. Carlos de la Torre, 6:37–38.

Type Localities.—Pliocene Caloosahatchee Formation, Florida.

Distribution.—Known from South Florida, Jamaica, Haiti, and Panamá. PANAMÁ, Canal Zone: Allee Stream, Isla Barro Colorado (Taylor 1954).

#### Family PHYSIDAE Fischer & Crosse 1886

Distribution.—Europe, temperate Asia, North America, Meso-America, South America.

Taxonomy.—The family contains two subfamilies and 23 genera. In many cases species cannot be identified accurately by shell characters (Taylor 2003). The locality records listed below are taken from Taylor. Previous published records are omitted because of the chaotic taxonomic history of the family in México and Central America.

#### Subfamily APLEXINAE Starobogatov 1967

Taxonomy.—Taylor (2003) lists twelve genera.

Distribution.—Holarctic in distribution and extending into the tropical realm in South America.

#### Genus *Austrinauta* Taylor 2003.

*Austrinauta* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):43.

Type Species.—*Physa elata* Gould 1853.

Distribution.—Known only from Nayarit State, México.

Taxonomy.—One species.

#### *Austrinauta elatus* (Gould 1853)

*Physa elata* Gould 1853; Jour. Boston Soc. Nat. Hist. 6:379; pl. 14, fig. 4.

*Aplecta elata* (Gould). Fischer & Crosse 1870–1902; 2:92; pl. 32, fig. 2.

*Austrinauta elatus* (Gould). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):45–47; figs. 15 (map), 16–19 (anatomy).

Type Locality.—“Lower California”. Lectotype MCZ 169130 (Johnson 1964:71).

Distribution.—Known only from a single locality. NAYARIT: freshwater marsh beside Matachén-Santa Cruz road, at south end of Playa Matachén (21°29.6' N, 105°11.7' W).

#### Genus *Amecanauta* Taylor 2003

*Amecanauta* Taylor 2003; Rev. Bio. Trop., 51 (suppl.):72.

Type Species.—*Amecanauta jaliscoensis* Taylor 2003.

Distribution.—Nayarit and Jalisco, México.

Taxonomy.—A single species.

#### *Amecanauta jaliscoensis* Taylor 2003

*Amecanauta jaliscoensis* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):73–74; text-fig. 15 (map), text-figs. 49–52 (anatomy); pl. 1, fig. 3 (shell).

Type Locality.—Jalisco: roadside ditch on W side of hwy. 200, opposite entrance to “Modulo de Abasto” de

Puerto Vallarta, 2.2 km NE of entrance to airport (20° 41.48' N, 105° 13.95' W). Holotype CAS 114813.

Distribution.—Known only from the type locality.

#### Genus *Mexinauta* Taylor 2003

*Mexinauta* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):74–76.

Type Species.—*Physa nitens* Philippi 1841.

Distribution.—Texas, México, Guatemala, Nicaragua, Ecuador, Peru.

Taxonomy.—Eight species, seven of which occur in México and Central America.

#### *Mexinauta aurantia* (Carpenter 1857)

*Aplexa aurantia* Carpenter 1857; Cat. Mazatlan shells:179.

*Bulinus aurantius* (Carpenter). Binney 1865; Smiths. Misc. Coll. 7:97; figs. 166, 167.

*Stenophysa aurantia* (Carpenter). Taylor 1966; Veliger 9:111.

*Mexinauta aurantia* (Carpenter). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):77–80; text-fig. 53 (map); text-figs. 54–55 (anatomy); pl. 2, figs. 4–9 (shell).

Type Locality.—Mazatlán, Sinaloa, México. Syntype BMNH 815819.

Distribution.—Pacific coastal region of southern México and northwestern Costa Rica. JALISCO: marsh at Bahía Tenacatita, 1.4 km S of Mex. Hwy. 200 (19°18.3' N, 104°48.4' W). GUERRERO: near Acapulco; Llano Largo, 3 km NE Puerto Marques. COSTA RICA: Prov. Guanacaste; Parque Nacional Palo Verde, edge of marsh 100 m E of W end of airstrip (10°20.68' N, 85°20.60' W); other localities in immediate vicinity.

#### *Mexinauta gracilentus* (Fischer & Crosse 1886)

*Aplecta aurantia* var. *gracilentus* Fischer & Crosse 1886; 2:87; pl. 39, fig. 4 (shell).

*Mexinauta gracilentus* (Fischer & Crosse). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):76.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala. Holotype in MHNP.

Distribution.—Known only from the type locality.

#### *Mexinauta impluviatus* (Morelet 1849)

*Physa impluviata* Morelet 1849; Test. Noviss. I:18.

*Aplecta impluviata* (Morelet). Fischer & Crosse 1886:91; pl. 30, fig. 3 (shell); pl. 39, fig. 5 (shell).

*Mexinauta impluviatus* (Morelet). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):80–82; fig. 53 (map); figs. 56–57 (anatomy); pl. 3, figs. 9, 11–12 (shell).

Type Locality.—Ditches in Guatemala City, Guatemala. Syntypes in the BMNH (3 uncatalogued specimens).

Distribution.—CHIAPAS: pond at Pueblo Nuevo, Solistahuacán; San Cristobal de las Casas, 2200 m alt.; km 65, S of Tuxtla Gutierrez along road to Nueva Concordia, 2700 ft. alt.; 15 km S of Ocozocuahtla, along road to Villa Flores, 2800 ft. alt. GUATEMALA, Dept. Chimaltenango: Yepocapa, in fountain; Parque Nacional Los Aposentos, 2.5 km S of Chimaltenango; ditch near Parque Chimaltenango. Dept. Guatemala: Laguna El Naranjo, Finca El Naranjo,

ca. 5 km NW of Ciudad Guatemala, 1560 m alt.; environs of Guatemala City; Guatemala City. Dept. Sacatepéquez: Antigua; Laguneta Quilismate, between Santiago Zamora and Santa Catarina Barahona, 1460 m alt.; small stream entering Lago de Dueñas, above Santiago Zamora. Dept. Santa Rosa: Rio Taxisco, Taxisco. Dept. Zacapa; Zacapa.

***Mexinauta laetus* (Von Martens 1898)**

*Physa impluviata* var. *laeta* Von Martens 1898; Biol. Cent. Amer.:359; pl. 20, figs. 2–3 (shell).

*Mexinauta laetus* (Von Martens). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):76.

Type Locality.—Vera Paz, Guatemala. Lectotype ZMB 51234a (Kilias 1961).

Distribution.—Known only from the type locality.

***Mexinauta nicaraguana* (Morelet 1851)**

*Physa nicaraguana* Morelet 1851; 2:16.- Von Martens 1898; 366; pl. 20, figs. 4, 4a.

*Mexinauta nicaraguana* (Morelet). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):76.

Type Locality.—Lake Nicaragua, Nicaragua. Syntype BMNH 1893.2.4.610.

Distribution.—Known only from the type locality.

***Mexinauta nitens* (Philippi 1841)**

*Physa nitens* Philippi 1841, in Martini & Chemnitz, 32:5, pl. 1, figs. 1–2.

*Aplecta nitens* (Philippi). Fischer & Crosse 1876; 2:88; pl. 39, figs. 1–1b.

*Mexinauta nitens* (Philippi). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):82–85; fig. 53 (map); figs. 58–65 (anatomy); pl. 1, figs. 5–7 (shell).

*Bulinus berlandierianus* Binney 1865; Amer. Jour. Conch. 1:51; pl. 7, fig. 8 (shell).

*Aplecta nitens* var. *acutalis* Fischer & Crosse 1886; 2:88; pl. 39, figs. 2–2a.

*Aplecta nitens* var. *gigantea* Fischer & Crosse 1886; 2:89; pl. 39, figs. 3–3a.

Type Locality.—*Physa nitens*: “Mexiko”. *Bulinus berlandierianus*: Texas, in the vicinity of Matamoros, Tamaulipas, México.

Distribution.—Coastal lowlands along the Gulf of Mexico from the vicinity of Brownsville, Texas south to Campeche. TAMAULIPAS: Hacienda Acuña, 808 m alt. VERACRUZ: Charco de Buenos Aires; Misantla; Veracruz; Jalapa; Córdoba; Cerro de las Mesas, between Ignacio de la Llave and Piedras Negras; Cosamaloapan. TABASCO. Pasture pond at km 21.1, NW of Taxco, on road Nacajuco to Villahermosa; pond beside Mex. Hwy. 180, 1 km N of road to Ignacio Allende; 2.3 km NE of Playa Miramar; marsh about 1 km N of junction Tacotalpa-Tapijulpa road with road to Teapa; pond beside Jalapa-Tacolapa road 2 km S of road to Guanaj, N of Rancho Nuevo. CAMPECHE. Ditch beside Mex. Hwy. 180, 0.5 km E of Nuevo Progreso.

***Mexinauta princeps* (Phillipi 1846)**

*Physa princeps* Phillipi 1846; in Küster, Martini & Chemnitz, Syst. Conch.-Cab., ed. 2 (Limnaeaceen):66; pl. 1, fig. 11.

*Aplexa princeps* (Phillipi). Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):539.

*Stenophysa princeps* (Phillipi). Rehder 1966; Proc. Biol. Soc. Wash. 79:280.

*Mexinauta princeps* (Phillipi). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):86–88.; text-fig. 53 (map); text-figs. 66–67 (anatomy); pl. 2, figs. 1–3 (shell); pl. 3, fig. 13 (shell).

Type Locality.—Yucatán. Holotype ANSP 21184a (H. B. Baker 1964:155).

Distribution.—Yucatán Peninsula, from Yucatán and Quintana Roo, México through northern Guatemala and Belize (Taylor 2003). QUINTANA ROO: Marsh 0.5 km W of Puerto Morelos; Laguna de Cobá, Cobá, Rio Honda. YUCATÁN: 4 km S of Purto Progreso; Dzadz Cenote, ca. 1 km SW of Chichén Itzá. GUATEMALA, Dept. Petén: Aguada 0.5 km from La Libertad road to San Francisco; small dry aguada just SW of San Benito (opposite Flores on mainland). BELIZE: Corozal Dist.: Louisville Forest. Orange Walk Dist.: Orange Walk.

**Genus *Mayabina* Taylor 2003**

*Mayabina* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):88–89.

Type Species.—*Physa spiculata* Morelet 1849.

Distribution.—From Oaxaca and Veracruz, México, south to Costa Rica; Ecuador to northernmost Chile (Taylor 2003).

Taxonomy.—Taylor (2003) lists eleven species, ten of which occur in México and Central America.

***Mayabina bullula* (Crosse & Fischer 1882)**

*Aplecta bullula* Crosse & Fisher 1882; Jour. de Conchyl. 30:334.- Fischer & Crosse 1886, 2:91; figs. 6–6b.

*Mayabina bullula* (Crosse & Fischer). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):92–94; fig. 68 (map); figs. 70–75 (anatomy); pl. 3, figs. 1–3 (shell).

Type Locality.—Tuxpan, Veracruz, México. Holotype lost (Taylor 2003).

Distribution.—Known only from the vicinity of the type locality. VERACRUZ: Tuxpan; pool on W side of Mex. Hwy. 180, 8.8 km N of Rio Octopan (19°33.1' N, 96°23.6' W).

***Mayabina petenensis* Taylor 2003**

*Mayabina petenensis* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):96–97; fig. 69 (map); fig. 77 (anatomy), pl. 3, fig. 10 (shell).

Type Locality.—Guatemala, Dept. Petén, aguada at NE side of La Libertad (16°47.3' N, 90°06.49' W); 200 m alt.

Distribution.—Known only from the Dept. Petén, Guatemala. Taylor (2003) listed numerous localities from there.

***Mayabina pliculosa* (Von Martens 1898)**

*Physa fuliginea* var. *pliculosa* Von Martens; 1898; Biol. Cent. Amer.:361; pl. 20, figs. 11–12.

*Stenophysa pliculosa* (Von Martens). Tonn et al. 1964; Rev. Biol. Trop. 12:60.

*Mayabina pliculosa* (Von Martens). Taylor 2003; Rev. Biol. Trop. 51(suppl.):97–99; fig. 69 (map); figs. 78–79 (anatomy); pl. 4,

fig. 10–11 (shell).

Type Locality.—Rio Reventazón at Ujarrás, Prov. Cartago, Costa Rica.

Distribution.—Western Costa Rica from the Central Valley northwestward to the southern tip of the Nicoya Peninsula (Taylor 2003). COSTA RICA, Alajuela Sur Prov.: Sachi Sar. Prov. Cartago: Rio Turialba, Turialba; Turialba; Alto de Ochomogo; Aguas Calientes, near Cartago; Quebrada Barahona, 1380 m alt.; Juan Viñis. Prov. Guanacaste: ditch 3–4 km toward Hacienda La Taboga, from Cañas-Bebedero road Prov. Puntarenas: La Hacienda, 1 km SW of Concepción-Bebedero road (9°45.08' N, 85°00.44' W). Prov. San José: Pavas; Uruca; San José; Rio Torres, San José; Rio Torres; Ocloro.

### *Mayabina polita* Taylor 2003

*Aplecta cisternina* var. *abbreviata* Fischer & Crosse 1886; 2:95; pl. 30, fig. 9 (shell). (Not of Beck 1838.)

*Aplecta cisternina* var. *gracilis* Fischer & Crosse 1886; 2:95; pl. 30, figs. 10–10b (shell). (Not of Noulet 1854.)

*Aplexa spiculata* var. *gracilis* (Fischer & Crosse). Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):70; pl. 2, figs. 5–8 (shell).

*Aplecta cisternina* var. *minor* Fischer & Crosse 1886; 2:95; pl. 30, fig. 8 (shell). (Not of Beck 1838.)

*Mayabina polita* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):99–102; fig. 69 (map); figs. 40–84 (anatomy); pl. 5, figs. 1–2 (shell).

Type Localities.—*Aplecta abbreviata*: Mérida, Yucatán; holotype lost. *Aplecta gracilis*: vicinity of Mérida, Yucatán; holotype lost. *Mayabina polita*: pasture pool 50 m W of Rio Tulija, 1.5 km S of Mex. Hwy. 186 toward Zopo Norte (17°39.6' N, 92°24.7' W). Holotype CAS 114783.

Distribution.—Southeastern México, in Tabasco and northern Chiapas through the Yucatán Peninsula in eastern Campeche, Yucatán and Quintana Roo. Taylor (2003) provided numerous locality records.

### *Mayabina sanctijohannis* Taylor 2003

*Mayabina sanctijohannis* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):102–104; figs. 15, 19 (maps); fig. 85 (anatomy); pl. 3, figs. 5–6 (shell).

Type Locality.—Barra del Colorado, Prov. Limón, Costa Rica (10°46.37' N, 83°35.27' W). Holotype: CAS 114790.

Distribution.—COSTA RICA, Prov. Limón: Barra del Colorado; marsh on left bank of Rio Colorado.

### *Mayabina spiculata* (Morelet 1849)

*Physa spiculata* Morelet 1849, 1:18.- Von Martens 1898; Biol. Cent. Amer.:366.

*Aplecta spiculata* (Morelet). Fischer & Crosse 1886:93; pl. 27, fig. 13 (shell).

*Aplexa spiculata* (Morelet). Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):69; pl. 2, figs. 1–4.- Harry, 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):23.

*Physa (Aplexa) spiculata* Morelet. Branson & McCoy 1965; Univ. Colorado Stu., Ser. Biology, 13:12.

*Stenophysa spiculata* (Morelet). Rehder 1966; Proc. Biol. Soc. Wash. 79:280.

*Aplexa nitens* var. *spiculata* (Morelet). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:325.

*Physa cisternina* Morelet 1851, 2:15.

*Aplecta cisternina* (Morelet). Fischer & Crosse; 1886, 2:94; pl. 30, fig. 7 (shell).- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:325.

*Mayabina spiculata* (Morelet). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):104–107; fig. 68 (map); figs. 86–87 (anatomy); pl. 3, figs. 4, 7 (shell).

Type Locality.—Cd. Campeche, Campeche Types lost.

Distribution.—Yucatán Peninsula in eastern Campeche, Yucatán and Quintana Roo (Taylor 2003). CAMPECHE: Cd. Campeche; Pantel Aguada. Nr. Champoón; aguada 3.5 mi. S of Champotón; 26 km SE Chapotó; Colonia Lopez Mateos, 93 km E of Silvituc. QUINTANA ROO: San Gerbacio, Isla Cozumel; Ruinas Kuhulich; potreros at Tomás Garrido. YUCATÁN: cienaga 2 km SW of Progreso, Cerro Isla; south side of cienaga near Progreso; irrigation cistern ca. 5 km N of Mérida; charcos at Pemex plant, 4 km S of Puerto Progreso; Izamal; Cenote Shkolak, and Tekanto; Hatal Aguada, near Mérida; Yunku Aguada, near Yunku; Chichen-Itzá; aguada S of Libre Unión.

### *Mayabina tapanensis* (Crosse & Fischer 1882)

*Aplecta tapanensis* Crosse & Fischer 1882; Jour. de Conchyl. 29:334.

*Aplecta spiculata* var. *tapanensis* Fischer & Crosse 1886, 2:93; pl. 30, figs. 2–2b (shell).

*Physa tapanensis* (Crosse & Fischer). Von Martens 1898:367.

*Aplexa tapanensis guatemalensis* (Crosse & Fischer). Hinkley 1920; Nautilus 34:38.

*Mayabina tapanensis* (Crosse & Fischer). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):107–109.

Type Locality.—Near Tapaná [San Pedro Tapanatepec], Oaxaca, México (16°21' N, 94°12' W). Holotype lost (Taylor 2003).

Distribution.—Southeastern Oaxaca to southern Guatemala (Taylor 2003). OAXACA: San Pedro Tapanatepec, in northern part of town, in a marsh 100 m E of km post 90 on Mex. Hwy. 190. CHIAPAS: 65 km S of Tuxtla Gutierrez, along road to Nueva Concordia. GUATEMALA, Dept. Guatemala: pools along railroad across Laguna Amatitlán from Laguna Station. Dept. Sololá: San Buenaventura, 1 km NW of Panajachel, 1565 m alt.; Lago de Atitlán at mouth of Rio Catarina, 1.5 km NW of Panahachel.

### *Mayabina tempisquensis* Taylor 2003

*Mayabina tempisquensis* Taylor 2003; Rev. Biol. Trop. 51(suppl.):109–110; text-fig. 15, 68 (map); text-fig. 90 (anatomy); pl. 4, fig. 4 (shell).

Type Locality.—Parque Nacional Palo Verde, edge of marsh 100 m east of west end of airstrip, Prov. Guanacaste, Costa Rica (10°20.68' N, 85°20.6' W). Holotype CAS 146092.

Distribution.—COSTA RICA, Prov. Guanacaste: edge of marsh 100 m E of W end of airstrip, Parque Nacional Palo Verde; ornamental pool inside Hotel Las Espuelas, 2 km SE of La Libertad; Rio Cañas, 9 km S of Cartagena.



**Genus *Tropinauta* Taylor 2003**

*Tropinauta* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):110–111.

Type Species.—*Tropinauta sinusdulcensis* Taylor 2003.

Distribution.—Costa Rica.

Taxonomy.—A single species is currently recognized.

***Tropinauta sinusdulcensis* Taylor 2003**

*Tropinauta sinusdulcensis* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):111; figs. 91–94 (anatomy).

Type Locality.—A small stream in pasture 3 km SE of Gulfito, Prov. Puntarenas, Costa Rica (8°36.68' N, 83°08.48' W). Holotype CAS 146095.

Distribution.—Known only from the type locality.

**Subfamily PHYSINAE Fischer & Crosse 1886**

Taxonomy.—Taylor (2003) listed eleven genera.

Distribution.—Holarctic in distribution, extending into the neotropical realm in Middle America.

**Genus *Chiapaphysa* Taylor 2003**

*Chiapaphysa* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):167.

Type Species.—*Chiapaphysa grijalvae* Taylor 2003.

Distribution.—Chiapas, México, and Costa Rica.

Taxonomy.—Two species are included in the genus.

***Chiapaphysa grijalvae* Taylor 2003**

*Chiapaphysa grijalvae* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):168–170; fig. 165 (map); figs. 166–167 (anatomy); pl. 8, fig. 7 (shell).

Type Locality.—Rio Suchiapa, 2 km SE of Suchiapa, Chiapas (16°36.4' N, 93°05.0' W). Holotype CAS 114818.

Distribution.—Chiapas, in streams of both the Pacific Ocean and the Gulf of Mexico. CHIAPAS: Rio La Venta, Las Flores, Mex. Hwy. 190 18 km E of Cintalapa (16°41.6' N, 93°33.5' W); Rio Suchiapa, 2 km SE of Suchiapa (16°36.4' N, 93°05.0' W); Rio Santo Domingo, Puente Santo Domingo, 9 km S of Cupía (16°37.4' N, 92°59.8' W); Rio Santo Domingo, 2 km NE of Julián Grajales (16°30.0' N, 92°57.4' W); Rio Quemado, ca. 1 km SW of Vicente Guerrero (16°25.7' N, 92°43.5' W); Baños del Carmen on Rio Quemado, ca. 1 km from road to La Angostura (16°25.4' N, 92°43.0' W); Rio San Francisco Ocotol at Mex. Hwy. 200 (16°07.6' N, 93°47.7' W); Rio Los Amates, Villa Flores (16°14.3' N, 93°01.0' W); Rio Pando, 1.5 km S of Villa Flores (16°12.8' N, 93°16.1' W); Rio Ningunito 1 km SW of Revolución Mexicana (16°09.6' N, 93°04.8' W); Rio Custepeques 2 km SE of Independencia (16°04.6' N, 92°49.8' W); irrigation ditch 1.5 km WNW of Independencia (16°05.8' N, 92°51.7' W).

***Chiapaphysa pacifica* Taylor 2003**

*Chiapaphysa pacifica* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):170–172; fig. 165 (map); fig. 168 (anatomy); pl. 8, fig. 8 (shell).

Type Locality.—Rio Tenorito, Hacienda La Pacifica, Dept. Guanacaste, Costa Rica (10°29.02' N, 85°09.58' W).

Holotype CA 114784.

Distribution.—Known only from Costa Rica. COSTA RICA, Prov. Guanacaste: Rio Salina, 1 km NW of Soley (11°01.05' N, 85°40.46' W); Parque Nacional de Guanacaste, Quebrada Aserradero (10°53.82' N, 85°33.74' W); Parque Santa Rosa, Sendero Las Mesas (10°50.95' N, 85°36.65' W) Parque Nacional Santa Rosa, Sendero Los Patos (10°49.57' N, 85°37.84' W); Rio Tempesquito, Vado Esperanza (10°47.38' N, 85°33.11' W); Rio Cabuya; Rio Tenerito, Hacienda La Pácifica, at road to “Ecomuseo” (10°29.02' N, 95°09.58' W); Hacienda La Pácifica, ditch 0.9 km W of Lechería (10°28.19' N; 85°08.97' W); rivulet 1.65 km S of Parque Nacional Barra Honda headquarters (10°09.92' N, 85°22.84' W).

**Genus *Haitia* Clench & Aguayo 1932**

*Haitia* Clench & Aguayo 1932; Proc. New England Zoological Club 13:37.- Taylor 2003; Rev. Biol. Trop. 51 (suppl.):128.

Type Species.—*Physa elegans* Clench & Aguayo 1932.

Distribution.—Tropical and temperate North America, Central America, the West Indies, South America in Colombia, and along the Pacific slope from Peru to central Chile (Taylor 2003).

Taxonomy.—Taylor (2003) recognized fifteen species, five of which occur in México and Central America.

***Haitia lacustris* (Clessin 1886)**

*Physa lacustris* Clessin 1886; Syst. Conch. Cab., ed. 2, 338:334; pl. 48, fig. 9.

*Haitia lacustris* (Clessin). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):133.

Type Locality.—Lago de Coatepeque, Dept. Sanata Ana, El Salvador. Holotype BMNH 93.2.4.1370.

Distribution.—Known only from the type locality.

Taxonomy.—Possibly only an ecotype of *Haitia mexicana* (Taylor 2003).

***Haitia mexicana* (Philippi 1841)**

*Physa mexicana* Philippi 1841; in Küster, Martini & Chemnitz, Syst. Conch. Cab., ed. 2, (Limnaeaceen):5; pl. 1, figs. 3, 4 (shell).

*Haitia mexicana* (Philippi). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):140–146; text-figs. 136–139 (anatomy); pl. 7, figs. 1–15 (shell).

Taylor listed the following forty-two names as synonyms:

*Physa solida* Philippi 1841; in Küster, Martini & Chemnitz, Syst. Conch. Cab., ed. 2, (Limnaeaceen):6.

*Physa squalida* Morelet 1851; Test. Noviss. II:16.

*Physa humerosa* Gould 1855; Proc. Boston Soc. Nat. Hist. 5:128.

*Physa virgata* Gould 1855; Proc. Boston Soc. Nat. Hist. 5:128.

*Physa foshevi* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:114.

*Physa grosvenori* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:114.

*Physa halei* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:114.

*Physa tenuissima* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:114.

*Physa parva* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:115.

*Physa striata* Lea 1864; Proc. Acad. Nat. Sci. Phila. 16:115.

*Physa traski* Lea 1884; Proc. Acad. Nat. Sci. Phila. 16:115.

*Physa mexicana* var. *minor* Von Martens 1865; Malak. Blätt. 12:57.

*Physa mexicana* var. *ovslis* Von Martens 1865; Malak. Blätt. 12:58.

*Physa mexicana* var. *parva* Von Martens 1865; Malak. Blätt. 12:58.

*Physa mexicana* var. *minima* Von Martens 1865; Malak. Blätt. 12:58.  
*Physa sparsestriata* Tryon 1865; Amer. Jour. Conch. 1:224.  
*Physa distinguenda* Tryon 1865; Amer. Jour. Conch. 1:225.  
*Physa politissima* Tryon 1865; Amer. Jour. Conch. 1:226.  
*Physa dorbigniana* Lea 1867; Jour. Acad. Nat. Sci. Phila. 6:166.  
*Lymnaea ambigua* Pease 1870; Amer. Jour. Conch. 6:6.  
*Lymnaea compacta* Pease 1870; Amer. Jour. Conch. 6:6.  
*Physa mexicana minor* Strebel 1874:51.  
*Physa berendti* "Danker" Strebel 1874:55.  
*Physa boucardi* Crosse & Fischer 1882; Jour. de Conchyl. 29:334.  
*Physa strebeli* Crosse & Fischer 1882; Jour. de Conchyl., 29:335.  
*Physa tehuantepecensis* Crosse & Fischer 1882; Jour. de Conchyl. 29:335.  
*Physa mexicana* var. *acutissima* Fischer & Crosse 1886:100.  
*Physa mexicana* var. *conoidea* Fischer & Crosse 1886:100.  
*Physa mexicana* var. *plicata* Fischer & Crosse 1886:100.  
*Physa tolucensis* Fischer & Crosse 1886:100.  
*Physa intermedia* Fischer & Crosse 1886:104.  
*Physa polakowskii* Clessin 1886; in Martini & Chemnitz, Syst. Conch. Cab., *Physa*, 338:352.  
*Physa cupreonitens* Cockerell 1889; Jour. Conchol., 6:63.  
*Physa penicillata* Hemphill 1890; Cat. N. Amer. Shells:19.  
*Physa osculans rhyssa* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:401.  
*Physa rhomboidea* Crandall 1901; Nautilus 15:44.  
*Physa virgata mut. alba* Cockerell 1902; Jour. Malac., 9:138.  
*Physa cradalli* F. C. Baker 1906; Trans. Acad. Sci. St. Louis, 16:8.  
*Physa balteata* Preston 1907; Ann. & Mag. Nat. Hist. 20:497.  
*Physa bottimeri* Clench 1924; Nautilus 38:12.  
*Physa marci* F. C. Baker 1924; Nautilus 38:15.  
*Physa humerosa interioris* Pilsbry 1932; Nautilus 45:139.

Type Locality.—*Physa mexicana*: "México". Holotype: destroyed in SMF during 1939–1945 war.

Distribution.—Continuous from the Central Valley of California southward over the Mexican Plateau to Oaxaca and Tabasco, and south through Central America at least to Colombia; eastward through southern Nevada, central and southern Utah, Arizona and New Mexico across the southern Great Plains from Colorado to Illinois, Missouri and Louisiana. Patchy occurrences in Washington, Oregon and Idaho (Taylor 2003).

In México, recorded by Taylor (2003) from the states of Campeche, Colima, Distrito Federal, Guerrero, Michoacán, Oaxaca, and Tabasco. In Costa Rica, recorded from the Providencias Cartago, Heredia, Puntarenas, and San José.

#### ***Haitia moreleti* Taylor 2003**

*Haitia moreleti* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):146–147; fig. 15 (map); fig. 140 (anatomy), pl. 6, fig. 2 (shell).

Type Locality.—Marshy border of Lago de Petén-Itzá, Santa Elena, Dept. Petén, Guatemala. Holotype CAS 114821.

Distribution.—GUATEMALA: known only from the immediate vicinity of the type locality (Taylor 2003).

#### ***Haitia patzcuarensis* (Pilsbry 1891)**

*Physa osculans* var. *patzcuarensis* Pilsbry 1891a:9.—Pilsbry 1891b:323; pl. 15, fig. 5.

*Haitia patzcuarensis* (Pilsbry). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):149–150; text-fig. 143 (penial complex), text-fig. 144

(egg mass); pl. 6, fig. 1 (shell).

Type Locality.—Lago de Patzcuaro, Michoacán, México. Holotype ANSP 61629.

Distribution.—MICHOCAN: known only from Lago de Patzcuaro.

#### ***Haitia solidissima* (Pilsbry 1920)**

*Physa solidissima* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:219; pl. 11, fig. 8.

*Haitia solidissima* (Pilsbry). Taylor 2003; Rev. Biol. Trop. 51 (suppl.):135.

Type Locality.—Laguna de Chapala, Jalisco, México. Holotype ANSP 107482.

Distribution.—JALISCO: known only from Laguna de Chapala.

#### **Genus *Ultraphysella* Taylor 2003**

*Ultraphysella* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):191.

Type Species.—*Ultraphysella sinaloae* Taylor 2003.

Distribution.—Known from Sinaloa and Nayarit, northwestern México.

Taxonomy.—One species is known for the genus.

#### ***Ultraphysella sinaloae* Taylor 2003**

*Ultraphysella sinaloae* Taylor 2003; Rev. Biol. Trop. 51 (suppl.):192–195; fig. 15 (map); figs. 187–191 (anatomy); pl. 9, fig. 1 (shell).

Type Locality.—A pool at road 2.5 mi from Villa Unión toward Siqueiros, Sinaloa, México (23°13.4' N, 106°12.5' W). Holotype CAS 146096.

Distribution.—NAYARIT: Rio de Palillo, El Palillo (21°38.1' N, 105°08.4' W); pond beside Mex. Hwy. 68D, 0.7 km E of exit to San Pedro Lagunillas, 0.1 km E of km post 16 (21°12.3' N, 104°45.1' W). SINALOA: pool in culvert on road from Villa Unión to Siqueiro, 4.2 km from Mex. Hwy. 15 in Villa Unión (23°13.4' N, 106°12.5' W); stream at Mex. Hwy. 15, 4.2 km NW of Ricón Verde (22°55.7' N, 105°49.7' W); marshy pool beside Mex. Hwy. 15, 7 km S of Ojo Agua de Palmillas, and 41 km S of Escuinapa (22°33.6' N, 105°35.0' W).

#### **Superfamily ELLOBIOIDEA L. Pfeiffer 1854 [1822]**

##### **Family CARYCHIIDAE Jeffreys 1829**

##### **Genus *Carychium* Müller 1774**

*Carychium* Müller 1774; Verm. terr. et fluv. Hist. 2:125.

Type Species.—*Carychium minimum* Müller 1774.

Distribution.—Holarctic realm in general. Extending south to Java and the Philippine Islands in the Old World, and to Costa Rica and Jamaica in the New World.

Taxonomy.—Eleven species occur in North America. Two occur in the study area.

##### ***Carychium costaricensis* Von Martens 1898**

*Carychium costaricensis* Von Martens 1898; Biol. Cent. Amer.:253; pl. 19, figs. 17, 18 (shell).- Hinkley 1920; Nautilus 34:52.

Type Locality.—San José, Costa Rica.

Distribution.—COSTA RICA: type locality. GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920).

***Carychium mexicanum* Pilsbry 1891**

*Carychium exiguum mexicanum* Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:318–319; pl. 14, figs. 7, 8, 9 (shell).- Von Martens 1898; Biol. Cent. Amer.:352; pl. 19, figs. 15, 16 (shell).- Baker 1930a:2.- Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):30.- Pilsbry 1948; Land Moll. N. Amer., 2:1060; fig. 566c (shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.- Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval, García-Cubas & Reguero 1998:13.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.- Correa-Sandoval & Rodriguez 2005:59.

*Carychium mexicanum* Pilsbry. Hubricht 1985:6; map 14.

Type Locality.—Hills around Orizaba, Veracruz, 500 ft. above the town. Holotype ANSP 61628a (Baker 1964:193).

Distribution.—Widely distributed across the southern United States from Georgia and Florida west to Texas, and south to Guatemala. GUATEMALA (Goodrich & van der Schalie 1937). Dept. Escuintla: Costa Cuca (Von Martens 1898). Dept. Huehuetenango: Hacienda Helvetia, in upper Chalhuitz. Dept. Izabal: Chama. Dept. Petén: Tikal (Basch 1959). NUEVO LEÓN: Diente, near Monterrey (Pilsbry 1948); Santiago (Correa-Sandoval 1993); near Laguna de Sanchez, Parque Vitro (25°23'24" N, 100°12'57" W); km 66, road from Linares-san Roberto (24°45'22" N 100°02'18" N) (Correa-Sandoval & Rodriguez 2005). PUEBLA: near Necaxa, 2625–5500 ft. alt. (Baker 1930a). SAN LUÍS POTOSÍ: carr. Jalpan-Xilitla, 6 km SW of Xilitla, 830 m alt. (21°23'10" N, 99°03'56" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: Tampico; Ejida Santa Juana, W of Nuevo Padilla (24°02'17" N, 98°59'18" W) (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Córdoba, 2700 ft. alt. (Baker 1930a); Texolo (Pilsbry 1948).

**Genus *Coelostele* Benson 1864**

*Coelostele* Benson 1864; Ann. Mag. Nat. Hist. (3), 13:136.

Type Species.—*Coelostele scalaris* Benson 1864.

Distribution.—India, southern Arabia, Egypt, Syria and southern Spain; northeastern México.

Taxonomy.—Many species. The single Mexican species may be introduced.

***Coelostele tampicoensis* (Pilsbry 1907)**

*Spiraxis tampicoensis* Pilsbry 1907; Man. Conch 19:24; pl. 20, fig. 1 (shell).- Pilsbry 1907; Nautilus 21:28; pl. 3, fig. 5.- Hinkley 1907; Nautilus 21:77.

*Coelostele tampicoensis* (Pilsbry). Pilsbry 1908; Man. Conch. 19:346.- Correa-Sandoval, Gutierrez & Raza 1998:15.

Type Locality.—Tampico, Tamaulipas, México; in river drift. Holotype ANSP 93786a (Baker 1964:193).

Distribution.—SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: only from the type locality.

**SYSTELOMMATOPHORA**

**Superfamily VERONICELLOIDEA Gray 1840**

**Family VERONICELLIDAE Gray 1840**

Distribution.—Pantropical.

Taxonomy.—Approximately 300 species have been proposed, but many of these probably are synonyms (Thomé, Santos & Perdott 1997).

Some veronicellid slugs are readily distributed by human agency. They have been introduced into many places in tropical and subtropical regions, often with dire agricultural consequences because they feed upon newly emergent seedlings. Four species are native to the study area. Five others have been introduced.

**Genus *Belocaulus* Hoffmann 1925**

*Belocaulus* Hoffmann 1925; Jenaische Zeit. für Naturw. 61:198, 245.- Thomé 1975; Iheringia, Zool., 48; :11–12.

Type Species.—*Vaginula angustipes* Heynemann 1885.

Distribution.—Brazil, Paraguay and Argentina. Introduced elsewhere.

Taxonomy.—The genus includes two species.

***Belocaulus angustipes* (Heynemann 1885)**

*Vaginula angustipes* Heynemann 1885; Jahrb. Deut. Malakozool. Gesell. 12:275–277.- Simroth 1914; Mem. Soc. Neuchât. Sci. nat. 35:324–325; pl. 14, figs. 8–11.- Thomé 1969; Arch. für Moll. 99:334–335; pl. 7, figs. 7–9 (animal); text-figs. 5–7, 39 (reproductive anatomy).

*Belocaulus angustipes* (Heynemann).- Hoffmann 1925; Jenaische Zeit. für Naturw. 61:198.- Lopez-Pitone and Thomé 1981; Rev. Bras. Biol. 41:586–591.- Thomé 1993; Biociências, 1:70.- Thomé, Santos & Pedott 1997; Proc. Biol. Soc. Wash. 110:521. Type Locality.—Taquera, Rio Grande do Sul, Brazil. Lectotype SMF 194290 (Thomé 1969:334).

Distribution.—Argentina, Brazil, Paraguay, Colombia. Introduced into Honduras, Florida, Alabama, Louisiana and Texas. HONDURAS: no specific locality (Thomé et al. 1997).

**Genus *Diploselenodes* Thomé 1975**

*Diploselenodes* Thomé 1975; Iheringia, Zoologie (48):13–14.

Type Species.—*Vaginula bielanbergi* Semper 1885.

Distribution.—Chile, Brazil, Ecuador, Venezuela, Guayana, Lesser Antilles, Puerto Rico; Hispaniola, Central America. Introduced elsewhere.

Taxonomy.—Six species are recognized (Thomé 1975).

***Diploselenodes occidentalis* (Guilding 1825)**

*Onchidium occidentalis* Guilding 1825, Trans. Linn. Soc. 14:323; pl. 9, figs. 9–12.

*Vaginula occidentalis* (Guilding). Fischer 1871; Nouv. Arch. Mus. Hist. Nat. 7:164.

*Vaginula (Latipes) occidentalis* (Guilding). H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:174–177; pl. 5, figs. 18–20 (reproductive anatomy).

*Cylindrocaulus occidentalis* Hoffmann 1925; Jenaische Zeit. für Naturw. 61:144, 234.



*Diplosolenodes occidentalis* (Guilding).- Thomé 1975; Iheringia, Zoologie (48):14.- Thomé 1985; Rev. Bras. Zool. 2 (6):411–417.- Thomé 1993:71.- Thomé, Santos, & Pedott 1997; Proc. Biol. Soc. Wash. 110:522. - Pérez & López 2002:244–246; map.

Type Locality.—Puerto Rico.

Distribution.—Guayana, Venezuela, Colombia, Panamá, Costa Rica, El Salvador, Nicaragua, Honduras and Dominica. Introduced into Hawaii and Bahamas (Thomé, Santos & Pedott 1997:522). COSTA RICA, Prov. Puntarenas: Rio Surubres, Bonnefil Finca (Thomé et al. 1997). HONDURAS: Bantua [?] (Thomé et al. 1997). NICARAGUA, Pacific versant of the country (Pérez & López 2002). Dept. Rio San Juan (Pérez & López 2002). Dept. Masaya: Ticuantepe (Thomé et al. 1997). PANAMÁ, Prov. Panamá: Punta de Piña; Cd. Panamá. Canal Zone: Isla Flamenco (Thomé et al. 1997). EL SALVADOR (Thomé et al. 1997).

### *Diplosolenodes olivacea* (Stearns 1871)

*Veronicella olivacea* Stearns 1871; Conch. Mem. 8:1.

*Vaginulus (latipes) olivaceus* (Stearns). H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:177–178; pl. 5, figs. 15, 16, 17 (reproductive anatomy).

?*Cylindrocaulus olivaceus* (Stearns). Hoffmann 1925; Jenaische Zeit. für Naturw. 61:232; pl. 5, fig. 45d.

*Diplosolenodes olivacea* (Stearns).- Thomé 1975; Iheringia, Zoologie (48):14.- Thomé & Lopez-Pitoni 1976; Rev. Bras. Biol. 36:710–712.

Type Locality.—Nicaragua, Dept. León, Polvón (12°29' N, 87°00' W). (H. B. Baker 1925). Lectotype USNM 39160.

Distribution.—Known only from the type locality. COSTA RICA, Prov. Limón: Pacuarito (Hoffmann 1925).

Taxonomy.—This may be a synonym of *Diplosolenodes occidentalis* (Baker 1925c).

### Genus *Leidyula* H. B. Baker 1925

*Leidyula* H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:158.– Hoffmann 1927:211.- Pilsbry 1948; Land Moll. N. Amer. 2:1063.- Forcart 1967; Ann. Natal Mus. 18:251–252.- Thomé 1975; Iheringia, Zoologie (48):17–19.

Type Species.—*Vaginula moreleti* Fischer 1871.

Distribution.—Guatemala, México, Jamaica, Puerto Rico, Cuba, southeastern United States.

Taxonomy.—About twelve species are recognized.

### *Leidyula floridana* Leidy 1851

*Vaginulus floridanus* Leidy 1851; in Binney, Terrestrial air-breathing mollusks of the United States and the adjacent territories of North America:198, 251; pl. 4.

*Veronicella floridana* (Leidy). Binney 1878; Terr. Moll. N. Amer. 5:241; fig. 140, pl. 5, fig. p (jaw & radula).- H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:167; pl. 4, figs. 12–14 (reproductive anatomy).- Pilsbry 1948; Land Moll. N. Amer. 2:1063–1064; figs. 568a, 568b (animal); fig. 568c (reproductive anatomy).

*Leidyula floridana* (Leidy). Naranjo-Garcia, Thomé & Castillejo 2007; Rev. Mex. Biol. 78:42.

Type Locality.—Punta Rasa, Florida. Restricted to Meta-

Lee-Chee Key, Charlotte Harbour, Florida (Thomé 1989). Holotype USNM 180860.

Distribution.—CHIAPAS: at Rio Coatancito, Tapachula. NUEVO LEÓN: Hualahuises; Presa Los Magueyes, km 118, Cd. Victoria-Linares Hwy.; Cerro de la Silla, Guadalupe; Presa la Boca, Santiago; Las Adjuntas, Santiago. VERACRUZ: Poza Rica; Tlapacoyan (Naranjo-Garcia, Thomé & Castillejo 2007).

### *Leidyula moreleti* (Fischer 1871)

*Vaginula moreleti* Fischer 1871; Arch. Mus. Hist. Nat. 7:168–169, 175; pl.11, figs. 5, 6 (holotype).- Crosse & Fischer 1872; Jour. de Conchyl. 20:59.- Fischer & Crosse 1878; Miss. Sci. Mex. 1:682; pl. 24, fig. 14; pl. 29, figs. 6–14 (anatomy).- Bequaert & Clench 1936; Publ. Carnegie Inst. Wash., (457):66.

*Veronicella (Leidyula) moreleti* (Crosse & Fischer). Pilsbry 1919; Proc. Acad. Nat. Sci. Phila. 71:219.- H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:165–167; pl. 4, figs. 7–11 (anatomy).

*Leidyula moreleti* (Fischer). Thomé 1971; Iheringia, Zool. (40):32–34.- Thomé, Santos & Pedott 1997; Proc. Biol. Soc. Wash. 110:529.- Thomé 1993:71.- Correa-Sandoval, Garcia-Cubas & Reguero 1998; Acta Zool. Mex. (73):13.- Correa-Sandoval 2000; Acta Zool. Mex. (97):8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):235.- Naranjo-Garcia, Thomé & Catillejo 2007; Rev. Mex. Biod. 78:42–44.

*Vaginulus mexicanus* Strebel & Pfeffer 1882:130–131, 140–141, 145; pl. 19, figs. 1–19, 21, 23, 26–27 (anatomy).- Thomé 1969; Arch. Moll. 99:353–354; pl. 9, figs. 19–21 (animal); text-figs. 23–25, 46 (reproductive anatomy).

*Veronicella mexicana betheli* Cockerell 1913; Nautilus 27:1.

Type Localities.—*Vaginula moreleti*: Palenque, Chiapas, México. Holotype designated as pl. 11, figs. 5 and 6, in Fischer 1871 (Thomé 1971). *Vaginulus mexicanus*: México; lectotype SMF 194283 (Thomé 1969)

Distribution.—Colombia, Nicaragua, Honduras, Guatemala and México. Introduced into Florida and the West Indies (Thomé, Santos & Pedott 1997:529). GUATEMALA, Dept. Izabal: Jacola; Livingston (Pilsbry 1919; Baker 1925); Puerto Barios (Cockerell 1913). HONDURAS (Cockerell 1913).- NICARAGUA, Dept. León: Polvón. MÉXICO, CAMPECHE: Isla de Carmen; Cd. Campeche (Thompson 1967). CHIAPAS: Palenque (type locality). NAYARIT: Tepic (Baker 1925); Cacaprieto. OAXACA: Mecos; Tehuantepec, Cd. Valles (Baker 1925). SAN LUIS POTOSÍ: Cd. Valles (Hinkley 1907); Huichihuayán; Mecos; Tamazunchale (Thomé et al. 1997); km 5 on road Tamazunchale-El Taiman (21°14'23" N, 98°49'44" W); (Correa-Sandoval et al. 1998). TABASCO (Baker 1925). TAMAULIPAS: various localities in SE part of the state (Correa-Sandoval & Rodriguez 2002, 2005). VERACRUZ: Cuatotolapam (Baker 1925c); Las Tuxtlas Biological Station (Naranjo-Garcia et al. 2007); km. post 234, road from Tuxpan-Poza Rica (20°49'11" N, 97°30'00" W)(Correa-Sandoval 2000). YUCATÁN: Aguada 14 km N and 2 km E of Mérida; 1.6 km N of Mérida (Bequaert & Clench 1936); Mérida; X'makuil (Naranjo-Garcia et al. 2007).

### Genus *Phyllocaulis* Colosi 1922

*Phyllocaulis* Colosi 1922; Ann. Mus. Nac. Hist. Nat. Buenos Aires,

31:486.- Thomé 1975; Iheringia, Zool., (48):21–24.- Thomé 1976; Iheringia, Zool., 49:67–90.

Type Species.—By subsequent designation: *Phyllocaulus borellini* Colosi 1921 (H. B. Baker 1925) (= *Vaginulus soleiformis* Orbigny 1835).

Distribution.—Brazil, Uruguay, Argentina, Chile and Bolivia. Introduced elsewhere.

Taxonomy.—About twenty species are recognized (Thomé 1975, 1976). One had been introduced into western México, but it has not been found there since it was reported in 1925.

#### ***Phyllocaulis gayi* (Fischer 1871)**

*Vaginulus gayi* Fischer 1871; Arch. Mus. Hist. Nat. 7:172.

*Vaginulus (Phyllocolis) gayi* (Fischer). H. B. Baker 1925; Nautilus 39:15.

*Phyllocolis gayi* (Fischer). Thomé 1971; Iheringia, Zool., (4):27–29; pl. 1, figs. 4–6 (animal); text-figs. 1–3 18 (reproductive anatomy).- Naranjo-Garcia, Thomé & Castillejo 2007; Rev. Mex. Biod. 78:44–45.

Type Locality.—Valdivia, Chile. Lectotype in the Museum d'Historie Naturelle, Paris (Forcart 1952).

Distribution.—Southern Chile (Naranjo-Garcia, Thomé & Castillejo 2007). SINALOA: Mazatlán (Hoffmann 1925).

#### **Genus *Sarasinula* Grimpe & Hoffmann 1924**

*Sarasinula* Grimpe & Hoffmann 1924; Zool. Anz., 68:177.- Thomé 1975; Iheringia, Zool., (48):25–27.

Type Species.—By original designation: *Vaginulus plebeius* Fischer 1868.

Distribution.—Indo-Pacific region. Neotropical region: Brazil, Peru, Ecuador, Colombia, Venezuela, Lesser Antilles. Introduced elsewhere.

Taxonomy.—Twelve species are recorded from the neotropical region (Thomé 1975). Additional species occur in the Indo-Pacific region. Two species have been introduced into México and Central America.

#### ***Sarasinula dubia* (Semper 1885)**

*Vaginula dubia* Semper 1885; Landmollusken 7:296.- Thomé 1972:252–253.

*Sarasinula dubia* (Semper).- Thomé 1993; Biociências 1:71.- Thomé, Santos & Pedott 1997; Proc. Biol. Soc. Wash. 110:530.- Naranjo-Garcia, Thomé & Castillejo 2007; Rev. Mex. Biod. 78:46–47.

Type Locality.—St. Thomas, Virgin Islands. Lectotype ZMB 39057a (Naranjo-Garcia, Thomé & Casillejo 2007).

Distribution.—Brazil, Venezuela, Colombia, Honduras and México. Introduced into Texas, Florida, the West Indies and some Pacific Islands (Thomé et al. 1997). Its natural distribution in Central America and México is questionable. COSTA RICA, Prov. Puntarenas: Golfito. HONDURAS, Dept. Cortés: La Lima (Thomé et al. 1997). EL SALVADOR, Dept. La Libertad: Santa Telca. CHIAPAS: ca. 1 km E of Finca Custepec, E side of Rio Custec; 5 km E of Cañada Teopisca. COLIMA: Callejones (18°47'53" N, 103°38'29" W). JALISCO: El Grullo; Pueblo Careyes, km 54 on Fed.

Hwy. 200, Barra de Navidad–Puerto Vallara; Puerto Vallara. MORELOS: Tetecalita, 16.5 km S, 65. km E of Cuernavaca; 25 km W of Huamantla. OAXACA: 4 km NW of Tepantepec (16°23'54" N, 94°12'54" W). QUERÉTARO: Jalpan; Xilitla. SAN LUIS POTOSÍ: Cascada de Tamasopo, 4 km E of Tamasopo. SINALOA: Mazatlán. VERACRUZ: Cuitláhuac (all Mexican records from Naranjo-Garcia et al. 2007).

#### ***Sarasinula plebeia* (Fischer 1868)**

*Vaginulus prebeius* Fischer 1868; Jour. de Conchyl. 16:145.

*Sarasinula plebeia* (Fischer).- Andrews & Dundee 1987; Ceiba 28:163–172.- Thomé 1993; Biociências, 1:71.- Thomé, Santos & Pedott 1997; Proc. Biol. Soc. Wash. 110:530–531.- Naranjo-Garcia, Thomé & Catillejo 2007; Rev. Mex. Biod. 78:45.

Type Locality.—Nouméa, New Caledonia (Thomé 1971).

Distribution.—Native to Chile, Brazil, Venezuela, Colombia, Costa Rica, El Salvador, Honduras, Guatemala, and México. Introduced into Florida, Texas, the West Indies, Australia, Asia, and Africa (Thomé, Santos & Pedott 1997:530–531). COSTA RICA, Prov. Puntarenas: Golfito. EL SALVADOR, Dept. La Libertad: Santa Telca. HONDURAS: no specific locality. NICARAGUA: no specific locality. MÉXICO, VERACRUZ: Los Tuxtlas Biological Station (Naranjo-Garcia et al. 2007). YUCATÁN: Merida (Andrews & Dundee 1987).

#### **Genus *Veronicella* Blainville 1817**

*Veronicella* Blainville 1817; Journal de Physique, de Chimie, et d'Historie Naturelle..., 85 (12):437–444.- H. B. Baker 1925:158.- Thomé 1975; Iheringia, Zoologie (48):32–35.

Type Species.—*Veronicella laevis* Blainville 1817, by monotypy.

Distribution.—Native to Jamaica, Hispaniola, Cuba, Ecuador, and Chile. Introduced elsewhere.

Taxonomy.—Seven species are recognized (Thomé 1975, 1988).

#### ***Veronicella sloanei* (Cuvier 1816)**

*Onchidium sloanei* Cuvier 1816; Reg. An., II:411.

*Veronicella sloanei* (Cuvier).- H. B. Baker 1925; Proc. Acad. Nat. Sci. Phila. 77:163–165; pl. 3, figs. 5, 6.- Thomé 1988; Iheringia, Zool. (67):13–35.- Thomé 1993; Biociências, 1:70.- Thomé, Santos & Pedott 1997; Proc. Biol. Soc. Wash. 110:532.

*Leidyula sloanei* (Cuvier). Thomé 1975; Iheringia, Zool., (48):18.

Type Locality.—Jamaica.

Distribution.—Jamaica, Cayman Islands. Introduced into Barbados, Bahama Islands, Bermuda, Colombia (Isla de Providencia), Nicaragua, and Honduras (Thomé, Santos & Pedott 1997:532). HONDURAS: no specific locality given. NICARAGUA: Machuca.

#### **STYLOMMATOPHORA**

##### **Superfamily SUCCINEOIDEA Beck 1837**

##### **Family SUCCINEIDAE Beck 1837**

##### **Genus *Catinella* Pease 1870**

*Catinella* Pease 1870; Jour. de Conchyl. 18:97.

Type Species.—*Catinella rubida* Pease 1870.

Distribution.—Northern Europe, North America, Hawaii, and Samoa.

Taxonomy.—Three subgenera are recognized. One occurs in the study area.

#### **Subgenus *Mediappendix* Pilsbry 1948**

*Mediappendix* Pilsbry 1948; Land Moll. N. Amer. 2:843.

Type Species.—*Succinea campestris vagans* Pilsbry 1900.

Distribution.—North America, Europe, and temperate Asia..

Taxonomy.—Nine species are recognized. Two occur in México.

#### ***Catinella (Mediappendix) avara* (Say 1824)**

*Succinea avara* Say 1824; Major Long's Second Expedition Northwest Territory 2:260; pl. 15, fig. 6 (shell).- H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):4.- Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):65.- Pilsbry 1848; Land Moll. N. Amer. 2:837-840; figs. 455 a-k (shell).

*Catinella avara* (Say). Burch 1962:67.- Hubricht 1985:16; map 134.

*Succinea vermata* Say 1829; New Harmony Disseminator, 2:230.

*Quickella vermata* (Say). Hubricht 1958; Nautilus 72:60.

*Catinella vermata* (Say). Grimm 1960; Nautilus 74:12.- Hubricht

1985:16.

*Catinella texana* Hubricht 1961; Nautilus 75:61.

Type Locality.—Northwest territory. Holotype ANSP 59542.

Distribution.—Widespread across North America. CAMPECHE: Pantel Aguada, near Champoton (Bequaert & Clench 1936). MÉXICO: San Juan Teotihuacan (H. B. Baker 1930a). YUCATÁN: San Ignacio (H. B. Baker 1930a).

#### ***Catinella (Mediappendix) rehderi* Pilsbry 1948**

*Quickella rehderi* Pilsbry 1948; Land Mol. N. Amer., 2:845-847; fig. 457: b, fig. 457A: a-l (shell); fig. 456: D (reproductive anatomy).

*Catinella rehderi* (Pilsbry). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:128.

Type Locality.—5 miles west of Davenport, Lincoln Co., Washington. Holotype ANSP 147757a.

Distribution.—Washington and Montana south to Baja California Sur. BAJA CALIFORNIA NORTE: Isla Coronados; Tecate Valley, near U.S. border; 6.8 km S of San Misión, 150 m alt.; Punta Banda; stream bank W of Ensenada road ca. 15 km N of San Tomás; 0.8 km N San Vicente, 90 m alt.; San Telmo Mesa; 40 km N of El Rosario; Miller's Landing; 14 km E of Miller's Landing; 13 km S of Miller's Landing; mesa just S of Rancho Mezquital (Smith et al. 1990). BAJA CALIFORNIA SUR: Bajia San Bartolomé; 19 km SW of San Miguel Comodú; Bajia San Pedrito, 6.3 km SE of Todos Santos; 0.3 km SSE of San José del Cabo, on road to La Playa (Smith et al. 1990).

#### **Genus *Oxyloma* Westerlund 1885**

*Oxyloma* Westerlund 1885; Malak. Blätter. 3:48.- Pilsbry 1948; Land Moll. N. Amer. 2 (2) 775.

Type Species.—*Succinea duneri* Pfeiffer 1865.

Distribution.—Northern continents and South Africa.

Taxonomy.—Three subgenera are recognized. One occurs in México.

#### **Subgenus *Neoxyloma* Pilsbry 1948**

*Neoxyloma* Pilsbry 1948; Land Moll. N. Amer. 2:775.

Type Species.—*Succinea effuse* Pfeifer 1853.

Distribution.—North America.

Taxonomy.—About a dozen species are recognized. Two species and one subspecies occur in México.

#### ***Oxyloma (Neoxyloma) nuttalliana* Lea 1841**

*Succinea nuttalliana* Lea 1841; Proc. Amer. Philos. Soc. 2:32.

*Oxyloma nuttalliana* (Lea).- Pilsbry 1948; Land Moll. N. Amer. 2:794-795.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:129.

Type Locality.—Oregon.

Distribution.—BAJA CALIFORNIA SUR:19 km SW of San Miguel Comandú (Smith et al. 1990).

#### ***Oxyloma (Neoxyloma) tlalpamensis tlalpamensis* Pilsbry 1899**

*Succinea tlalpamensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:401.- Von Martens 1901; Biol. Cent. Amer.:647.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:776; pl. 48, figs. 4, 4a (shell).

Type Locality.—Near Tlalpam, State of México.

Lectotype ANSP 77207a (H. B. Baker 1963:215).

Distribution.—Known only from the type locality.

#### ***Oxyloma (Neoxyloma) tlalpamensis cuitseana* Pilsbry 1899**

*Succinea tlalpamensis cuitseana* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:401.- Von Martens 1901; Biol. Cent. Amer.:647.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:776

Type Locality.—Lago de Cuitseo, near Huango, Michoacán, México. Lectotype ANSP 77208a (H. B. Baker 1963:215).

Distribution.—Known only from the type locality.

#### **Genus *Succinea* Draparnaud 1801**

*Succinea* Draparnaud 1801; Tableau des Mollques terrestres et fluviatiles de la France:55.

Type Species.—*Helix putris* Linnaeus 1756.

Distribution.—The northern Hemisphere, North Africa, Australia, and some Pacific islands.

Taxonomy.—Five subgenera are recognized. Subgeneric assignment is based on anatomical data, which is lacking for the vast majority of Mexican and Central American species. Two species of known anatomy are so assigned. The rest are left provisionally in the subgenus *Succinea*.

#### **Subgenus *Calcisuccinea* Pilsbry 1948.**

*Calcisuccinea* Pilsbry 1948; Land Moll. N. Amer. 2:820.

Type Species.—*Succinea campestris* Say 1817.

Distribution.—North America.

Taxonomy.—About a dozen species are recognized.



Two species and three subspecies that occur in México are assigned to this subgenus.

***Succinea (Calcisuccinea) campestris* Say 1817**

*Succinea campestris* Say 1817; Jour. Acad. Nat. Sci. Phila. 1:281.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:318.

*Succinea (Calcisuccinea) campestris* Say. Pilsbry 1948; Land Moll. N. Amer. 2:826–828; fig. 448 (shell); figs. 449a (reproductive anatomy).

Type Locality.—Sea Islands of Georgia and Cumberland Island; Amelia Island, Florida.

Distribution.—Coastal areas of North Carolina, South Carolina, Georgia and Florida. MÉXICO, Distrito Federal: lago de Texcoco (Pilsbry 1901).

Remarks.—This species has not been recorded from México subsequent to Pilsbry (1891).

***Succinea (Calcisuccinea) luteola luteola* Gould 1848**

*Succinea luteola* Gould 1848; Boston Soc. Nat. Hist. 3:37.- Fischer & Crosse 1878; Miss. Sci. Mex. 1:658; pl. 27, figs. 2, 2a, 2b (shell).- Dall 1896; Proc. U. S. Nat. Mus. 19:365.- Von Martens 1898; Biol. Centr. Amer.:331.- Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):65.- Goodrich & van der Schalie 1937:31.- Pilsbry 1948; Land Moll. N. Amer. 1:828–830; fig. 448: B (reproductive anatomy); figs. 450: a-g (shell).- Branson, McCoy & Sisk 1964; Southwestern Natur. 9:104.- Correa-Sandoval, García-Cubas & Reguero 1898:14.- Correa-Sandoval 2000; Acta Zool. Mex. (79):8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Correa-Sandoval & Rodriguez 2005:59.

*Succinea texasiana* Pfeiffer 1848; Mon. helic. Vivent., 2:526.

Type Locality.—Galveston, Texas (Pilsbry 1948:830).

Distribution.—Widely distributed from Louisiana west to Arizona and south through much of México. GUATEMALA (Goodrich & van der Schalie 1937). CHIQUAHUA: Lago de Palomas (Dall 1896). GUERRERO: Venta de Zopilote (Von Martens 1898). NUEVO LEÓN: km 8 on road from Linares-San Roberto (24°48'54" N, 88°37'10" W); km 27 on road from Linares-Iturbide (24°44'43" N, 99°46'37" W); km 114, road from San Roberto-Matehuala (24°32'42" N, 100°16'40" W) (Correa-Sandoval & Rodriguez 2005). SAN LUIS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). SONORA: Rio Bavispa, 21 mi. S of Agua Prieta (Branson et al. 1964). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236). VERACRUZ: Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W); San Juan Cuajinampa (21°11'53" N, 97°30'00" W); El Bajío, carr. Naranjos- Tuxpan (20°57'17" N, 97°25'57" W); carr. Tuxpan- Poza Rica, km 234 (1 km al E) (20°49'11" N, 97°30'00" W); El Cedral, carr. Poza Rica-Tajín (20°29'11" N, 97°25'23" W); La Ordeña, Papantla (20°29'43" N, 97°18'27" W); Ruinas El Tajín (20°26'29" N, 97°22'30" W); La Guadalupe, carr. Papantla-Nautla, km 60 (20°22'42" N, 96°55'23" W) (Correa-Sandoval 2000). YUCATÁN: Progreso (Pilsbry 1891); Cerro Isla; Cienega, near Progreso (Bequaert & Clench 1936).

***Succinea (Calcisuccinea) luteola rudiusscula* Von Martens 1898**

*Succinea luteola rudiusscula* Von Martens 1898; Biol. Centr. Amer.:331, 334; pl. 19, fig. 3 (shell).

Type Locality.—Tehuacán, Puebla, México.

Distribution.—Known only from the type locality.

***Succinea (Calcisuccinea) luteola sonorensis* Fischer & Crosse 1878**

*Succinea lineata* var. *sonorensis* Fischer & Crosse 1878; Miss. Sci. Mex. 1:662; pl. 27, figs. 8, 8a, 8b (shell).

*Succinea luteola sonorensis* Fischer & Crosse. Bequaert & Miller 1973:155–156.

Type Locality.—Vicinity of Rio Yaqui, Sonora, México.

Distribution.—SONORA: 33 mi. W of Santa Ana; 1 mi. N of Santa Ana; 2 mi. N of Granados, on Rio Bavispa (Bequaert & Miller 1973).

***Succinea (Calcisuccinea) luteola subtilis* Von Martens 1898**

*Succinea luteola subtilis* Von Martens 1898; Biol. Centr. Amer.:331; pl. 19, fig. 3 (shell).- Hinkley 1907; Nautilus 21:78.

Type Locality.—Vera Cruz.

Distribution.—SAN LUIS POTOSÍ: Valles (Hinkley 1907). VERACRUZ: type locality.

**Subgenus *Succinea* Draparnaud 1801**

Taxonomy.—The following species are left in this subgenus, pending further study of their anatomies. Twenty-two species and three subspecies occur in the study area.

***Succinea (Succinea) ampulacea* Von Martens 1898**

*Succinea ampulacea* Von Martens 1898; Biol. Centr. Amer.:340; pl. 19, fig. 11 (shell).

Type Locality.—Ameca, Jalisco, México.

Distribution.—Known only from the type locality.

***Succinea (Succinea) brevis* Dunker 1850**

*Succinea brevis* Dunker 1850; in Pfeiffer, Malak. Blätt. 7:84.- Fischer & Crosse 1878; Miss. Sci. Mex. 1:65; pl. 26, figs. 14, 14a, 14b (shell) Von Martens 1898; Biol. Centr. Amer.:339; pl. 19, fig. 7 (shell).- Bequaert 1957; Bull. Mus. Comp. Zool. 116:225.

Type Locality.—Zimapan, Hidalgo, México.

Distribution.—CHIAPAS: El Real, 600 m alt. (Bequaert 1957). HIDALGO: Zimapan.

***Succinea (Succinea) californica* Crosse & Fischer 1890**

*Succinea californica* Crosse & Fischer 1878; Jour. de Conchyl. 26:63.- Fischer & Crosse, 1878:663; pl. 27, figs 9, 9a, 9b (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:841–842; fig. 457d (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:128.

Type Locality.—San Tomás, Baja California Norte, México.

Distribution.—BAJA CALIFORNIA NORTE: Santo Tomás; Santo Tomás Valley (Smith et al. 1990).

***Succinea (Succinea) carmenensis* Fischer & Crosse 1878**

*Succinea undulate* var. *carmenensis* Fischer & Crosse 1878; Miss. Sci. Mex. 1:658, 659; pl. 27, figs. 6, 6a (shell).- Von Martens 1898; Biol. Centr. Amer.:341.

*Succinea carmenensis* Fischer & Crosse. Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):537.- Richards 1937; Proc. Amer. Phil. Soc., 77:225, pl.4, fig. 5 (shell).- Goodrich & van der Schalie 1937:31.- Rehder 1966; Proc. Biol. Soc. Wash. 79:283.

Type Locality.—Isla de Carmen, Campeche, México.

Distribution.—GUATEMALA, Dept. Petén (Goodrich & van der Schalie 1937). CAMPECHE: Isla de Carmen. QUINTANA ROO: arid swamp a few mi. N of San Miguel, Isla Cozumel (Richards 1937); Tulum (Rehder 1966). YUCATÁN: Santa Ana, near Calcehtok; Chichen Itza (Bequaert & Clench 1933).

***Succinea (Succinea) clarionensis* Dall 1926**

*Succinea clarionensis* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:485–486; pl.35, fig. 2 (shell).

Type Locality.—Isla Clarión, Nayarit, México; 1040 ft. alt. Holotype CAS 2209.

Distribution.—Known only from the type locality.

***Succinea (Succinea) colorata* Fischer & Crosse 1878**

*Succinea colorata* Fischer & Crosse 1878; Miss. Sci. Mex. 1:657; pl. 27, figs. 5, 5a, 5b (shell).- Von Martens 1898; Biol. Centr. Amer.:336.

Type Locality.—Tabasco, México.

Distribution.—TABASCO: San Juan Bautista (Von Martens 1898).

***Succinea (Succinea) cordovana* Fischer & Crosse 1878**

*Succinea undulate* var. *cordovana* Fischer & Crosse 1878; Miss. Sci. Mex. 1:658; pl. 27, figs. 7, 7a.

*Succinea salleana* var. *cordovana* Von Martens 1898; Biol. Centr. Amer.:339.

Type Locality.—Córdoba, Veracruz, México.

Distribution.—Known only from the type locality.

***Succinea (Succinea) costaricensis* Von Martens 1898**

*Succinea costaricensis* Von Martens 1898; Biol. Centr. Amer.:338; pl. 19, fig. 6 (shell).- Villalobos, C., J. Monge-Najera, Z. Barrientos & J. Franco 1995; Rev. Biol. Trop. 43:181–186.

Type Locality.—Not specified.

Distribution.—COSTA RICA, Prov. San José: San José and at La Palma, 1161–1600 m alt. (Von Martens 1898). Prov. Puntarenas: Savana de Guacimo, in the valley of the Rio Brus; thermal springs of Djiri Durunia, valley of the Rio Diquis, 900 m alt. (Von Martens 1898).

***Succinea (Succinea) globispira* Von Martens 1898**

*Succinea globispira* Von Martens 1898; Sitzungs-Berichte der Gesellschaft naturforschenden Freude zu Berlin:158.- Von Martens 1901; Biol. Central Amer.:641; pl. 44, fig. 12 (shell).- Dall 1900; Proc. Acad. Nat. Sci. Phila. 52:97.

Type Locality.—Isla del Coco.

Distribution.—COSTA RICA: Isla del Coco (von Martens 1901).

***Succinea (Succinea) guadelupensis* Dall 1900**

*Succinea (rusticana* Gould var.) *guadelupensis* Dall 1900:102–103; pl. 8, fig. 12 (shell).

*Succinea guadelupensis* Dall.- Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:171–172.- Pilsbry 1948; Land Moll. N. Amer. 2:840; fig. 455: I (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:128.

Type Locality.—Isla Guadalupe, Baja California Norte, México. Holotype in the USNM.

Distribution.—BAJA CALIFORNIA NORTE: Known only from Isla Guadalupe (Smith et al. 1990).

***Succinea (Succinea) guatemalensis* Morelet 1849**

*Succinea guatemalensis* Morelet 1849; Test. Noviss. I:16.- Fischer & Crosse 1878:667; pl. 26, figs. 11, 11a (shell).- Von Martens 1898; Biol. Centr. Amer.:337; pl. 19, fig. 9 (shell).- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.- Pérez & López 2002:111–112, fig. (map).

Type Locality.—On banks of small streams, Cd. Guatemala, Guatemala.

Distribution.—COSTA RICA, Prov. Cartago: Turrialba (Von Martens 1898); Juan Viñas (Pilsbry 1920). Prov. Puntarenas: Turubares; Rio de las Cascadas, at the foot of the Great Fall, valley of the Rio Diquis (Von Martens 1898). NICARAGUA: Pacific versant, common (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Panzos (Von Martens 1898). Dept. Sacatepéquez: Antigua (Von Martens 1898).

***Succinea (Succinea) haustrellum* Rehder 1942**

*Succinea haustrellum* Rehder 1942; Jour. Wash. Acad. Sci. 33:350; fig. 19 (shell).

Type Locality.—Pedernal, Prov. Guanacaste, Costa Rica; 200 m. alt. Holotype USNM 536013.

Distribution.—COSTA RICA, Prov. San José: San José (Rehder 1942).

***Succinea (Succinea) hortulana* Morelet 1851**

*Succinea hortulana* Morelet 1851; Test. Noviss. II:14.- Fischer & Crosse 1878; Miss. Sci. Mex. 1:668; pl. 26, figs. 12, 12a (shell).- Von Martens 1898; Biol. Centr. Amer.:334–335.

Type Locality.—Adhering to wall in gardens, Suburbs of Cd. Guatemala, Guatemala.

Distribution.—GUATEMALA, Dept. Sacatepéquez: Antigua.

***Succinea (Succinea) lutosa* Pilsbry 1926**

*Succinea lutosa* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:102–103; fig. 26 (shell).

Type Locality.—Alhajuela, Canal Zone, Panamá. Holotype ANSP 141010a (H. B. Baker 1963:215).

Distribution.—PANAMÁ, Isla Taboga; Prov. Panamá: Cd. Panamá (Pilsbry 1926).

***Succinea (Succinea) mcgregori* Pilsbry 1898**

*Succinea mcgregori* Pilsbry 1898; Proc. Acad. Nat. Sci. Phila. 50:354; text-fig. (shell).- H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:215.

Type Locality.—Isla Clarión, Islas Revillagigedo, Nayarit, México. Lectotype 72770a (H. B. Baker 1963:215).

Distribution.—NAYARIT: known only from the type locality/

***Succinea (Succinea) panamensis* Pilsbry 1920**

*Succinea panamensis* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:218; pl. 11, fig. 4 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:103; text-fig. 27 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:351.

Type Locality.—Las Cascades, Canal Zone, Panamá. Holotype ANSP 48522a (H. B. Baker 1963:215)

Distribution.—PAMAMA, Canal Zone: Las Cascades (Pilsbry 1926).

***Succinea (Succinea) panucoensis* Pilsbry 1910**

*Succinea panucoensis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61:546; text-fig. 6 (shell). - H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:215.

Type Locality.—“Alligator” Lake, San Luis Potosí, México. Lectotype ANSP 99504a (H. B. Baker 1963:215).

Distribution.—SAN LUIS POTOSÍ: Pujal; Lago de Catamas (Pilsbry 1910). TAMAULIPAS: Tampico (Pilsbry 1910).

***Succinea (Succinea) pueblensis* Fischer & Crosse 1878**

*Succinea pueblensis* Fischer & Crosse 1878; Miss. Sci. Mex.:669; pl. 26, figs. 15–15c (shell).

Type Locality.—Neighborhood of Puebla [City], Puebla, México.

Distribution.—Known only from the type locality.

***Succinea (Succinea) recisa* Morelet 1851**

*Succinea recisa* Morelet 1851; Test. Noviss. II:14.- Fischer & Crosse, 654; pl. 26, figs. 13, 13a.- Tate 1859; Amer. Jour. Conch. 5:158.- Von Martens 1898; Biol. Centr. Amer.:339–340.- Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:503.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.- Richards 1938; Proc. Amer. Philo. Soc., 79:173.- Pérez & López 2002:113–114, map.

Type Locality.—Under bark of trees, around Lago de Izabal, Dept. Izabal, Guatemala.

Distribution.—PANAMÁ (Tate 1859). Canal Zone: Las Cascades (Pilsbry 1910). COSTA RICA, Prov. Cartago: Juan Viñas (Pilsbry 1920). NICARAGUA, Pacific versant, common (Pérez & López 2002). Dept. Matagalpa: Matagalpa (Von Martens). Dept. Rio San Juan: near the Rio San Juan (Von Martens 1898). Region Autonoma Atlantico Sur: Isla del Maíz (Richards 1939). HONDURAS, Dept. Islas de la Bahía: Isla de Roatán, between Coxen Hole and French Harbor; West End (Richards 1938). GUATEMALA, Dept. Sacatepéquez: Antigua (Von Martens 1898).

***Succinea (Succinea) rusticana* Gould 1846**

*Succinea rusticana* Gould 1846; Proc. Boston Soc. Nat. Hist.

2:187.- Pilsbry, Land Moll. N. Amer. 2:824–825; fig. 446a-d (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:128.

Type Locality.—Oregon.

Distribution.—Pacific coast region from Alaska south to Baja California Norte (Roth & Sadeghian 2006). BAJA CALIFORNIA NORTE: Ojos Negros, in a slow stream through meadows (Smith et al. 1990). BAJA CALIFORNIA SUR: Sierra Laguna (Smith et al. 1990).

***Succinea (Succinea) socorroensis* Dall 1926**

*Succinea socorroensis* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:486; pl. 35, fig. 1 (shell)

Type Locality.—On the north slope of Cerro Evermann, Isla Socorro, Nayarit, México; 2800 ft. alt. Holotype CAS 2210.

Distribution.—Known only from the type locality.

***Succinea (Succinea) undulate undulata* Say 1829**

*Succinea undulata* Say 1829; New Harmony Disseminator of Useful Knowledge 2:230.- Fischer & Crosse 1878; Miss. Sci. Mex. 1:656; pl. 27, figs. 4, 4a, 4b (shell).- Von Martens 1898; Biol. Centr. Amer.:335–336.

Type Locality.—México.

Distribution.—GUANAJUATO: Irapuato (Von Martens 1898). JALISCO: Sayula (Von Martens 1898). MÉXICO.

***Succinea (Succinea) undulata morchi* Dunker 1889**

*Succinea undulata morchi* Dunker 1889, in Paetel, Catalog Conchyl. Sammlung., 2:366.- Von Martens 1898; Biol. Centr. Amer.:336; pl. 19, fig. 8 (shell).

Type Locality.—Zimapan, Hidalgo, México.

Distribution.—Known only from the type locality.

***Succinea (Succinea) virgata virgata* Von Martens 1865**

*Succinea virgata* Von Martens 1865; Malak. Blätt. 12:50; pl. 1, figs. 6, 7 (shell).- Von Martens 1898; Biol. Centr. Amer.:334; pl. 19, fig. 4 (shell).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:776.

Type Locality.—Veracruz, México.

Distribution.—OAXACA. PUEBLA: Paso de Macho; Tehuacan (Von Martens 1898). VERACRUZ: Sierra de Atoyac (Von Martens 1898); Texolo (Pilsbry 1904).

***Succinea (Succinea) virgata hogeana* Von Martens 1898**

*Succinea virgata hogeana* Von Martens 1898; Biol. Centr. Amer.:334; pl. 19, fig. 5 (shell).

Type Locality.—Oaxaca, México.

Distribution.—Known only from the type locality.

***Succinea (Succinea) virgata microspira* Von Martens 1898**

*Succinea virgata* var.  $\beta$  Fischer & Crosse, 1878; Miss. Sci. Mex. 1:659; pl. 27, figs. 3, 3a, 3b (shell).

*Succinea virgata microspira* Fischer & Crosse, Von Martens 1898; Biol. Centr. Amer.:334.- H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):5.

Type Locality.—Puebla, México.

Distribution.—PUEBLA: Necaxa (H. B. Baker 1930a).



**Superfamily ACHATINELLOIDEA Gulick 1873**  
**Family TORNATELLINIDAE Cooke & Kondo 1961**  
**Genus Tornatellinides Pilsbry 1910**

*Tornatellinides* Pilsbry 1910; Nautilus 23:123.

Type Species.—*Tornatellina simplex* Pease.

Distribution.—Japan, Formosa, Polynesian Islands, Australia, Hawaii, Galapagos island, Islas Revillagigedo.

Taxonomy.—Two subgenera are recognized. The typical subgenus occurs on the Islas Revillagigedo off the Pacific Coast of Nayarit. The genus contains numerous species. Two species occur in the study area.

***Tornatellides mexicana* Dall 1926**

*Tornatellides mexicana* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:484–485; pl. 35, fig. 6 (shell).

Type Locality.—On the south slope of Mt. Evermann, Isla Socorro, Islas Revillagigedo, Nayarit, México; 2000–2800 ft. alt. Holotype CAS 2207.

Distribution.—NAYARIT: known only from the type locality on Isla Socorro.

***Tornatellides clarionensis* Dall 1926**

*Tornatellides clarionensis* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:485; pl. 35, fig. 9 (shell).

Type Locality.—Isla Clarión, Islas Revillagigedo, Nayarit, México; 1040 ft. alt. Holotype CAS 2209.

Distribution.—NAYARIT: known only from the type locality on Isla Clarión.

**Superfamily COCHLICOPIDEA Pilsbry 1900**  
**Family COCHLICOPIDAE Pilsbry 1900**  
**Genus Cochlicopa Férussac 1821**

*Cochlicopa* Férussac 1821; Tableaux Systematiques des Animaux Mollusques:24.

*Cionella* Jeffreys 1829; Trans. Linn. Soc. London 16:347. Pilsbry 1948; Land Moll. N. Amer. 2:1045–1047.

Type Species.—*Helix lubrica* Müller 1774.

Distribution.—Holarctic in occurrence.

Taxonomy.—Four species are recognized in North America (Hubricht 1985:6). One occurs in México.

***Cochlicopa lubrica* (Müller 1774)**

*Helix lubrica* Müller 1774; Verm. Hist.:104.

*Cochlicopa lubrica* (Müller). Pilsbry & Johnson 1898; Nautilus 11:127.- Pilsbry 1908; Man. Conch. 19:312.- Hubricht 1985:6; map 24.

*Cionella lubrica* (Müller). Pilsbry 1948; Land Moll. N. Amer. 2:1047–1049; figs. 560a, 560b (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:165.

Type Locality.—Denmark.

Distribution.—Holarctic realm; widespread in North America (Hubricht 1985). CHIQUAHUA: about 8–9 km W of Colonia Juarez; talus of cliff on the Rio Piedras Verdes, about 3.6 km below Pacheco, 5900 ft. alt.; Sierra de la Breña, 17.5 km from Pearson, on road to Pacheco, 7000 ft. alt. (Pilsbry 1953). NUEVO LEÓN: near the Hacienda Pablillo (Pilsbry 1953).

**Superfamily PUPILLOIDEA Turton 1831**  
**Family STROBILOPSIDAE Wenz 1915**  
**Genus Strobilops Pilsbry 1893**

*Strobila* Morse 1856; Jour. Portland Soc. Nat. Hist. 1:26 (not *Strobila* Sars 1835; not *Strobila* Sodoffsky 1837).

*Strobilops* Pilsbry 1893; Proc. Acad. Nat. Sci. Phila. 44:403 (substitute name for *Strobila* Morse).- Pilsbry 1927; Man. Conch. 28:12, 56–58.- Zilch 1959:177.

Type Species.—*Helix labyrinthica* Say 1817.

Distribution.—North America south to Brazil, Islas Galápagos, Korea, China and Japan.

Taxonomy.—Five subgenera are recognized. Two subgenera, *Strobilops* s. s., and *Discostrobilops*, occur in the study area. A third subgenus from the Cayman Islands, *Coelostrobilops*, is included in this list because of its geographic proximity to Central America.

**Subgenus *Strobilops* Pilsbry 1893**

Distribution.—North America, México, Central America, south to Brazil.

Taxonomy.—Twelve species are recognized. Seven species occur in the study area.

***Strobilops (Strobilops) aenea mexicana* Pilsbry 1927**

*Strobilops aenea mexicana* Pilsbry 1927; Man. Conch. 28; 32–33; pl. 5, figs. 9–13 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:165.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):14.

Type Locality.—Diente, near Monterey, Nuevo León, México. Holotype ANSP 77194a.

Distribution.—NUEVO LEÓN: Diente; Monterey; along the Rio Maurisco, ca. 25 km S of Monterey (Pilsbry 1953). PUEBLA: Necaxa (Pilsbry 1927). SAN LUIS POTOSÍ: 6 km NW of Xilitla; 830 m alt. (21°23'10" N, 99°03'56" W); Las Pozas; 580 m alt. (21°24'23" N, 99°00'00" W); 0.3 km NW of Las Pozas; 600 m alt. (21°24'38" N, 99°00'15" W) (Correa-Sandoval et al. 1998).

***Strobilops (Strobilops) californica* Miller & Christensen 1980**

*Strobilops californica* Miller & Christensen 1980; Proc. Biol. Soc. Wash. 93:593–596; figs. 1a-c (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:111; fig. 15 (map).

Type Locality.—La Laguna, Sierra de la Victoria, along slope above creek immediately behind La Laguna shelter, Baja California Sur, México; 6500 ft. alt. Holotype USNM 799595.

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) hannai* Pilsbry 1931**

*Strobilops hannai* Pilsbry 1931; Man. Conch. 28:59–60; pl. 16, figs. 3, 3a, 5 (shell).

Type Locality.—Isla Socorro, Islas Revillagigedo, Nayarit, México. Holotype ANSP 256587a.

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) piratica* Pilsbry 1930**

*Strobilops piratica* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82: 257; pl. 19, figs. 9–11 (shell).- Pilsbry 1931; Man. Conch. 28:58–59; pl. 13, figs. 8, 9, 10, 11 (shell).

Type Locality.—On the summit of the ridge north of High Peak, Isla de Providencia, Colombia. Holotype ANSP 150860.

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) salvini* (Tristram 1863)**

*Helix salvini* Tristram 1863; Proc. Zool. Soc. Lond. 31:411.

*Strobila salvini* (Tristram). Von Martens 1892; Biol. Cent. Amer.:174; pl. 10, figs. 1–1c (shell).

*Strobilops salvini* (Tristram). Pilsbry 1927; Man. Conch. 28:37–39; pl. 4, figs. 1 (shell).

Type Locality.—Mountain forests of northern Guatemala, [Dept. Alta Verapaz].

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) strebeli strebeli* (Pfeiffer 1862)**

*Helix strebeli* Pfeiffer 1862; Malak. Blätt. 8:31; pl. 1, figs. 5–8 (shell).

*Strobilops strebeli* (Pfeiffer). Pilsbry 1927; Man. Conch. 28:33–34; pl. 5, figs. 1–4 (shell).

*Strobila labyrinthica* (Say). Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:43; pl. 4, fig. 6 (shell).- Von Martens 1892; Biol. Cent. Amer.:173.

Type Locality.—Mirador, Veracruz, México.

Distribution.—VERACRUZ: Mirador; environs of Veracruz (Strebel 1880).

***Strobilops (Strobilops) strebeli guatemalensis* Hinkley 1920**

*Strobilops strebeli guatemalensis* Hinkley 1920; Nautilus 34:52.- Pilsbry 1927; Man. Conch. 28:34–35, 60; pl. 5, figs. 5, 6, 7, 8 (shell).

Type Locality.—In beach debris of Lago de Izabal, Jocolo, Dept. Izabal, Guatemala. Holotype ANSP 9272a.

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) veracruzensis veracruzensis* Pilsbry 1927**

*Strobila labyrinthica* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:44; pl. 4, fig. 6 (shell) (not *Helix labyrinthica* Say 1817).

*Strobilops veracruzensis* Pilsbry 1927; Man. Conch. 28:35–36; pl. 4, fig. 6 (shell); pl. 9, figs. 1, 2, 3 (shell) (new name for *Helix labyrinthica* Strebel).

Type Locality.—Neighborhood of Veracruz, México.

Distribution.—Known only from the type locality.

***Strobilops (Strobilops) veracruzensis crossei* Pilsbry 1927**

*Helix strebeli* Pfeiffer. Fischer & Crosse 1872:267; pl. 12, figs. 7a, 7b (shell) (not *Helix strebeli* Pfeiffer 1862).

*Strobilops veracruzensis crossei* Pilsbry 1927; Man. Conch. 28:36–37; pl. 9, figs. 4, 4a (shell) (new name for *Helix strebeli* Fischer & Crosse).

Type Locality.—Mirador, Veracruz, México.

Distribution.—Known only from the type locality.

**Subgenus *Coelostrobilops* Pilsbry 1931**

*Coelostrobilops* Pilsbry 1931; Man. Conch. 28; 60.

Type Species.—*Strobilops wenziana* Pilsbry 1930.

Distribution.—Grand Cayman Island.

Taxonomy.—A single species is recognized.

***Strobilops (Coelostrobilops) wenziana* Pilsbry 1930**

*Strobilops wenziana* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:238; pl. 19, figs. 1–7 (shell).- Pilsbry 1931; Man. Conch. 28:60–62; pl. 13, figs. 1–7 (shell).

Type Locality.—About midway between North Sound and Red Bay, Grand Cayman Island. Holotype ANSP 150861.

Distribution.—Known only from the type locality.

**Subgenus *Discostrabilops* Pilsbry 1927**

*Discostrabilops* Pilsbry 1927; Man. Conch. 28:18, 46.- Pilsbry 1948; Land Moll. N. Amer. 2:865.- Morrison 1953; Nautilus 65:55.

Type Species.—*Helix hubbardi* A. D. Brown 1861.

Distribution.—Gulf Coastal Plain from México northeast to Georgia and Florida; also Bermuda, Cuba, Jamaica, and the Bahamas Islands; Northwest México, Sonora (?).

Taxonomy.—Three extant species are recognized. Two occur in México.

***Strobilops (Discostrabilops) hubbardi* (A. D. Brown 1861)**

*Helix hubbardi* A. D. Brown 1861; Proc. Acad. Nat. Sci. Phila.:333; text-fig. (shell).

*Strobilops (Discostrabilops) hubbardi* (Brown). Pilsbry 1927; Man. Conch. 28:47–48; pl. 7, figs. 1, 2, 3 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:865–868; figs. 1–9 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.

*Helix vendryesiana* Gloyne 1872; Jour. de Conchyl. 19:333.

*Strobilops hubbardi* (Gloyne). Gulick 1904; Proc. Acad. Nat. Sci. Phila. 56:413.- Hinkley 1907; Nautilus 21:76.- Pilsbry 1948; Land Mollusca of North America 2:865–868; figs. 468, 1–9 (shell).

*Strobilops hubbardi vendryesiana* (Gloyne). Pilsbry 1931; Man. Conch. 28:48–50; 7, figs. 4–12 (shell); pl. 8, figs. 1–9 (shell).

*Strobilops hubbardi stevensoni* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:404.

Type Localities.—*Helix hubbardi*: Indianola, Calhoun Co., Texas; holotype ANSP 124. *Helix vendryesiana*: Jamaica. *Strobilops hubbardi stevensoni*: mangrove swamp, Biscayne Bay near State Agricultural Station, Miami, Florida.

Distribution.—The Gulf Coastal Plain from northeastern México to Florida and Georgia; Jamaica, Cuba, Bimini Island and Bermuda. SAN LUÍS POTOSÍ: Valles (Pilsbry 1931); km 48 on road from Cd. Valles to Agua Buena; 900 m alt. (21°52'55" N, 99°22'06" W); Cascadas de Tamasopo; 430 m alt. (21°56'05" N, 99°25'00" W); Las Abritas, 5 km E of El Naranjo; 840 m alt. (22°33'24" N, 99°22'22" W); 6 km. SW of Xilitla; 830 m alt. (21°23'10" N, 99°03'56" W); Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: river drift, Tampico

(Hinkley 1907); near Gomez Farias (23°00'00" N, 99°09'18" W); Salto El Tigre, Santa Engracia (23°58'51" N, 99°16'53" W) (Correa-Sandoval & Rodriguez 2002).

***Strobilops (Discostrobilops) sinaloa* Morrison 1953**

*Strobilops (Discostrobilops) sinaloa*, Morrison 1953; Nautilus 67: 54–55; pl. 2, figs. 4, 5, 6 (shell).- Miller & Christensen 1980; Proc. Biol. Soc. Wash. 93:595.

Type Locality.—Sinaloa (?). Holotype USNM 592719.

Distribution.—Known only from the type locality. It is questionable about whether this species actually came from Sinaloa (Morrison 1953).

**Family VALLONIIDAE Morse 1864**

**Genus *Vallonia* Risso 1820**

*Vallonia* Risso 1820; Hist. Nat. Eur. Merid., 4:101.- Pilsbry 1948; Land Moll. N. Amer. 2:1019–1023.

Type Species.—*Vallonia rosalia* Risso 1826 (= *Helix costata* Müller 1774).

Distribution.—North America, Europe and North Africa, northern and central Asia, Japan.

Taxonomy.—Twenty-five species are recognized (Pilsbry 1948). One occurs naturally in México.

***Vallonia gracilicostata* Reinhardt 1883**

*Vallonia gracilicostata* Reinhardt 1883; Sitzung-Ber. Ges. Naturforsch. Freude Berlin:42.- Pilsbry 1948; Land Moll.N. A., 2 (2):1028–1031; figs. 549 (shell).

Type Locality.—North Dakota, Little Missouri River.

Distribution.—Rocky Mountains, northwest, south and northeastern United States, northeastern México. NUEVO LEÓN: Iturbide (Correa-Sandoval 1999).

***Vallonia perspeciva* Sterki 1892**

*Vallonia perspeciva* Sterki 1892; Nautilus 6:77.- Sterki 1893; in Pilsbry, Man. Conch. 8:257; pl. 33, figs. 39–45 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1033–1034; fig. 553 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:165.

Type Locality.—Woodville, Jackson Co., Alabama.

Distribution.—Widespread across temperate North America, barely entering northern México. CHIHUAHUA: Sierra de la Breña, 11 mi. from Pearson, on road to Pacheco, 7000 ft. alt.; in cliff talus along the Rio Piedras Verdes, 8–9 km W of Colonia Juarez; on the Rio Piedras Verdes, ¾ km E of Pacheco (Pilsbry 1953).

**Family VERTIGINIDAE Stimpson 1851**

Taxonomy.—Fifty-one species and nine subspecies occur in the study area.

**Subfamily TRUNCATELLININAE Steenberg 1925**

**Genus *Columella* Westerlund 1878**

*Edentulina* Clessin 1876 (not *Edentulina* Pfeiffer 1855).

*Columella* Westerlund 1878; Fauna Europaea... 2:193.- Pilsbry 1926; Man. Conch. 27:232—233.

*Sphaeradium* Westerlund 1887; Fauna Palearctischen Region

Binnenconchylien 3:125 (not *Sphaeradium* as limited by Von Martens 1860).

Type Species.—*Pupa edentula* Draparnaud 1805.

Distribution.—The Palearctic region; North America as far south as Nicaragua, Hawaii.

Taxonomy.—About ten species are recognized. Four occur in North America and Central America. One is known from the study area.

***Columella polvonense* (Pilsbry 1894)**

*Pupa polvonense* Pilsbry 1894; Proc. Acad. Nat. Sci. Phila. 46:31; pl. 1, fig. 11.

*Sphaeradium polvonense* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:769.

*Columella polvonensis* (Pilsbry). Pilsbry 1926; Man. Conch. 27:246; pl. 31, fig. 9 (shell).

Type Locality.—Polvón, Dept. Chinandega, Nicaragua. Holotype ANSP 5096.

Distribution.—Known only from the type locality.

**Subfamily PUPILLINAE Turton 1831**

**Genus *Chaenaxis* Pilsbry & Ferriss 1906**

*Chaenaxis* Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:145.- Pilsbry 1916; Man. Conch. 24:1.- Pilsbry 1948; Land Moll. N. Amer. 2:916.- Bequaert & Miller 1973:172.

Type Species.—*Bifidaria tuba* Pilsbry & Ferriss 1906.

Distribution.—Arizona, Sonora.

Taxonomy.—A single species is recognized.

***Chaenaxis tuba* (Pilsbry & Ferriss 1906)**

*Bifidaria tuba* Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:145; fig. 6 (shell).

*Chaenaxis tuba* (Pilsbry & Ferriss). Pilsbry 1916; Man. Conch. 24:2; pl. 9, figs. 1, 2, 3 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:917–919; figs. 496; figs. 497:1, 2, 3 (shell).- Branson, McCoy & Sisk 1964; Southwestern Natur. 9:104.- Bequaert & Miller 1973:172–176.- Naranjo-Garcia 1991:168.

*Bifidaria tuba intuscostata* Clapp 1908; Nautilus 22:76, 96; pl. 7, figs. 1–11 (shell).

*Chaenaxis intuscostata* (Clapp). Pilsbry 1916; Man. Conch. 24:3; pl. 9, figs. 6–9 (shell).

*Chaenaxis intuscostata* form *brevicostata* Pilsbry 1916; Man. Conch. 24:4; pl. 6, figs. 4, 5 (shell).

*Chaenaxis sonorensis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:163–164; pl. 9, figs. 8, 8a (shell).

Type Localities.—*Bifidaria tuba*: drift debris of the San Pedro River, one mile east of Benson, Arizona; holotype ANSP 87062. *Bifidaria tuba intuscostata*: foothills of the Plomos Range, about 8 miles east of Quartzite, Yuma County, Arizona; holotype Carnegie Museum 5769. *Chaenaxis intuscostata* form *brevicostata*: Tempe, Arizona; holotype ANSP 48527. *Chaenaxis sonorensis*: lower slopes of hills on south side of the Rio Sonora, about 0.75 km south of Hermosillo, Sonora, México; 900 ft. alt. Holotype ANSP 167627.

Distribution.—SONORA: drift of the Rio Magdalena, Magdalena; northern foothills of Cerro Zapoxa, E of Cd. Obregon (Pilsbry 1953); drift of Rio de Bavispe, 21 mi. E



of Agua Prieta Sierra (ca. 31° N, 109°20' W) (Branson et al. 1964); Cochor, near Guaymas (ca. 28° N, 110°50' W); Sierra de Magdalena, N of Magdalena, 3650 ft. alt. (ca. 30°45' N, 111° W); Sierra del Santo Niño, N of Mina del Milagro, on road to Sahuaripa, 5000 ft. alt. (29° N, 109°30' W); drift of Rio Sonoyta, Sonoyta, 1500 ft. alt. (31°30' N, 112°50' W) (Bequaert & Miller 1973); Batamote (28°57'10" N, 109°32' W); Cerro La Mona, 21 km E of Manzanillo (29°02'54" N, 110°39'23" W); Sierra El Viejo (30°24.1' N, 112°22.5' W); Rancho Tres Marias, W of Alamo (27°06'57" N, 109°09'18" W); Cerro Prieto, ca. 1.5 km W of Ejido 18 de Agosto (31°14.5' N, 109°16.2' W); Sierra El Pinito, ca. 12.8 km W of Aribabi (30°52'20" N, 110°43'10" W); Arroyo El Oro, ca. 0.3 km from Cerro de Oro on road to Rayon (29°36.8' N, 110°36.8' W); Sierra El Viejo (30°18.7' N, 112°20.2' W) (Naranjo-Garcia 1991).

### Genus *Pupilla* Leach 1828

*Pupilla* Leach, in Fleming 1828; British Animals:268.- Pilsbry 1921; Man. Conch. 26:152.

Type Species.—*Pupa marginata* Draparnaud 1801 (= *Pupa muscorum* Linnaeus 1758).

Distribution.—Temperate North America, Europe, Africa, Asia and Australia.

Taxonomy.—Five subgenera are recognized. Two occur in the study area.

#### Subgenus *Pupilla* Leach 1828

Distribution.—Temperate North America, Europe, Africa, Asia and Australia.

Taxonomy.—About thirty species are recognized. One species occurs in the study area.

#### *Pupilla (Pupilla) hebes* (Ancey 1881)

*Pupa hebes* Ancey 1881; Le naturaliste 3:389.

*Pupilla hebes* (Ancey). Pilsbry & Ferriss 1911; Proc. Acad. Nat. Sci. Phila. 63:197.

*Pupilla (Pupilla) hebes* (Ancey). Pilsbry 1921; Man. Conch. 26:164–167; pl. 18., figs. 1–4 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:936–939; figs. 503:1–4 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:164.- Bequaert & Miller 1973:180–181.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:107.

*Pupa arizonensis* Gabb, in Binney 1885; Man. Amer. land shells:173.

*Pupilla muscorum idahoensis* Henderson & Daniels 1917; Proc. Acad. Nat. Sci. Phila. 69:57.

*Pipilla hebes nefas* Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:135.

Type Locality.—*Pupa hebes*: White Pine, White Pine Co., Nevada.

Distribution.—Washington, Idaho and Wyoming south to New Mexico and Arizona, and extreme northwestern México. BAJA CALIFORNIA NORTE: Sierra San Pedro Martir 2.2 mi. below astronomical observatory, 2700–2800 m alt.; rockslide in a ravine 1.3 km below astronomical observatory, 2700–2800 m alt. (Smith et al. 1990). CHIHUAHUA: Sierra de la Breña, 17.5 km from Peason on road to Pacheco, 7000

ft. alt.; along the Rio Piedras Verdes, 3.5 km below Pacheco (Pilsbry 1953).

### Subgenus *Striopupilla* Pilsbry 1921

*Striopupilla* Pilsbry 1921; Man. Conch. 26:153.

Type Species.—*Pupa sterkiana* Pilsbry 1890.

Distribution.—Baja California Norte, México.

Taxonomy.—Three species are recognized, all in the study area.

#### *Pupilla (Stiopupilla) goniodon* Pilsbry 1927

*Pupilla goniodon* Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:172; pl. 7, fig. 3 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:107–108.

Type Locality.—Northwest Anchorage, Isla Guadalupe, Baja California Norte, México. Holotype CAS 2574.

Distribution.—BAJA CALIFORNIA NORTE: Isla Guadalupe; Isla San Benito del Oeste (Smith et al. 1990).

#### *Pupilla (Stiopupilla) guadalupensis* Pilsbry 1927

*Pupilla guadalupensis* Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:173–174; pl. 7, figs. 1, 2 (shell).

*Pupilla (Stiopupilla) guadalupensis* Pilsbry.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:108.

Type Locality.—1000 feet above Northeast Anchorage, Isla Guadalupe, Baja California Norte, México. Holotype CAS 2575.

Distribution.—BAJA CALIFORNIA NORTE: known only from Isla Guadalupe (Smith et al. 1990).

#### *Pupilla (Stiopupilla) sterkiana* (Pilsbry 1890)

*Pupa sterkiana* Pilsbry 1890; Proc. Acad. Nat. Sci. Phila. 41:411; pl. 2, figs. 2, 3 (shell).

*Pupilla (Stiopupilla) sterkiana* (Pilsbry). Pilsbry 1921; Man. Conch. 26:156; pl. 19, figs. 16, 17. - Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:202.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:107.

Type Locality.—San Ramon, Baja California Norte, México. Lectotype ANSP 60466a (Baker 1963:202).

Distribution.—BAJA CALIFORNIA NORTE: San Ramon; along ocean beach N and S of Bahia San Quintin; W coast of San Quintin Peninsula, W of Winton Hill; Ensenada (Smith et al. 1990).

### Subfamily NEASOPUPINAE Steenberg 1925

Distribution.—Madeira, South Africa, Australia, Oceania, southern North America south to Brazil.

Taxonomy.—Seven genera are recognized. Four genera occur in the study area.

#### Genus *Bothriopupa* Pilsbry 1898

*Bothriopupa* Pilsbry 1898; Nautilus 11:119.- Pilsbry 1917; Man. Conch. 24:235.- Pilsbry 1948; Land Moll. N. Amer. 2:1010–1011.

Type Species.—*Pupa variolosa* Gould 1848.

Distribution.—Northern South America, Florida, the

Greater Antilles and Guatemala.

Taxonomy.—About eight species are recognized. Five are recorded from the study area.

***Bothriopupa breviconus* Pilsbry 1917**

*Bothriopupa breviconus* Pilsbry 1917; Man. Conch. 24:230; pl. 28, figs. 9, 10 (shell).- Hinkley 1920; Nautilus 34:44.

Type Locality.—Mountains west of Livingston, Dept. Izabal, Guatemala. Holotype ANSP 107534.

Distribution.—GUATEMALA, Dept. Izabal: mountains of Rio Cavech, back of Cavech Village (Hinkley 1920).

***Bothriopupa conoidea* (Pfeiffer 1853)**

*Pupa conoidea* Pfeiffer 1853; Monographia heliciorum Viventium, 3:533.

*Bothriopupa conoidea* (Pfeiffer). Pilsbry 1917; Man. Conch. 24:231–232; pl. 28, figs. 7, 8, 11 (shell).- Pérez & López 2002:96–97, text-fig. (distribution map).

Type Locality.—Demerara.

Distribution.—Northern South America and Nicaragua. NICARAGUA: common along the Pacific Versant (Pérez & López 2002).

***Bothriopupa leucodon* (Morelet 1851)**

*Pupa leucodon* Morelet 1851; Test. Noviss. 2:13.- Fischer & Crosse 1873; Miss. Sci. Mex. et L'Amér. Cent.:311; pl. 14, figs. 2a, 2b (shell).

*Bothriopupa leucodon* (Morelet). Pilsbry 1917; Man. Conch. 24:232; pl. 29, figs. 1, 4 (shell).- Goodrich & van der Schalie 1937:30.

Type Locality.—Salama, Dept. Baja Verapaz, Guatemala.

Distribution.—GUATEMALA: known only from the type locality; no precise locality (Goodrich & van der Schalie 1937).

***Bothriopupa tenuidens* (C. B. Adams 1841)**

*Pupa tenuidens* C. B. Adams 1841; Proc. Bost. Soc. Nat. Hist. 1845:15.- Jacobson & Boss 1973; Occ. Pap. on Moll., 9:500; pl. 82, fig. 10 (lectotype).

*Bothriopupa tenuidens* (C. B. Adams). Pilsbry 1917; Man. Conch. 24:229–230; pl. 29, figs. 5–7, 11–13 (shell).- Thompson & López 1996:49.- Pérez & López 2002:98–100; text-fig. (distribution map).

Type Locality.—Jamaica. Lectotype MCZ 270000 (Jacobson & Boss 1973:500).

Distribution.—Jamaica, Puerto Rico, Cuba, Venezuela and Nicaragua. NICARAGUA, Dept. Managua: Lago de Xiloa (12°14' N, 86°20' W) (Thompson & López 1996); common along the Pacific Versant (Pérez & López 2002).

***Bothriopupa variolosa* (Gould 1848)**

*Pupa variolosa* Gould 1848; Proc. Bos. Soc. Nat. Hist. 3:40.

*Bothriopupa variolosa* (Gould). Pilsbry 1917; Man. Conch. 24:230; pl. 29, figs. 2, 3 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1011–1012; figs. 539 (shell).- Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):65.

Type Locality.—Florida.

Distribution.—Recorded from Florida and Yucatán. YUCATÁN: Chotch Cenote, 2 mi. NE of Piste (Bequaert & Clench 1936).

**Genus *Pupisoma* Stoliczka 1873**

*Pupisoma* Stoliczka 1873; Jour. Asiatic Soc. Bengal, 42:32.- Pilsbry 1920; Man. Conch. 26:19.- Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:223 (anatomy).- Pilsbry 1948; Land Moll. N. Amer. 2:1006.

Type Species.—*Pupisoma lignicola* Stoliczka 1873.

Distribution.—Burma, India, South Africa, Japan, Sri Lanka, Penang, India, Indonesia, Australia, New Caledonia, Abyssinia, Gulf coastal area of the United States south to southern Brazil.

Taxonomy.—Five subgenera are recognized (Zilch 1959). One occurs in the study area.

**Subgenus *Ptychopatula* Pilsbry 1889**

*Ptychopatula* Pilsbry 1889; Proc. Acad. Nat. Sci. Phila. 41:191.- Pilsbry 1889; Nautilus 3:62.- Zilch, 159:173.

Type Species.—*Helix caeca* Guppy 1868 (= *Pupisoma dioscoricola* (C. B. Adams 1845)).

Distribution.—Tropical and subtropical Africa, Asia, Australia and the Americas.

Taxonomy.—Numerous species. Six species and two subspecies occur in the study area.

***Pupisoma* (*Ptychopatula*) *bailyi* Pilsbry 1934**

*Pupisoma* (*Ptychopatula*) *bailyi* Pilsbry 1934; Man. Conch. 28:116; pl. 24, fig. 15 (shell).

Type Locality.—Cuernovaca, Moreles [Morelos]. Holotype ANSP 156099.

Distribution.—Known only from the type locality.

***Pupisoma* (*Ptychopatula*) *comicolense* H. B. Baker 1927**

*Pupisoma comicolense* Baker 1927a; Proc. Acad. Nat. Sci. Phila. 79:224–226; pl. 15, fig. 4, 7 (reproductive anatomy), fig. 5 (pallial organs), fig. 6 (radula); shell not described.- H. B. Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):3–4; pl. 7, figs. 1, 2 (shell).- Pilsbry 1928; Nautilus 41:144.- Pilsbry 1934; Man. Conch. 28:115–116; pl. 15, fig. 6 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1006; figs. 537; a (radula), c, d (reproductive anatomy), fig. e (pallial organs).

Type Locality.—Near Necaxa, Puebla, México. Holotype UMMZ 159752.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality (H. B. Baker 1930a).

***Pupisoma* (*Ptychopatula*) *dioscoricola dioscoricola* (C. B. Adams 1845)**

*Helix dioscoricola* C. B. Adams 1845; Proc. Boston Soc. Nat. Hist. 2:16.- Jacobson & Boss 1963; Occ Baker 1963; Proc. Acad. Nat. Si. Phils., 115:201. Pap. On Moll., 9:346, 516; pl. 90, fig. 11 (lectotype).

*Helix punctum* Morelet 1851; Test. Noviss. II:9.

*Helix caeca* Guppy 1868; Proc. Sci. Assos. Trinidad:241.- Fischer & Crosse 1872:228; pl. 12, figs. 1a, 1b (shell).

*Pupisoma dioscoricola* (Adams). Pilsbry 1920; Man. Conch. 26:36–39; pl. 4, figs. 1–5 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:133.- Pilsbry 1948; Land Moll. N. Amer. 2:1007–1008; figs. 538:1–5 (shell).- Thompson 1967; Bull. Fla. St. Mus. 11:232.- Thompson & López 1996; Amer. Malac. Bull., 13:49.- Pérez & López 2002:100–102, text-fig. (distribution map).

Type Localities.—*Helix dioscoricola*: Dublin Castle, Graywick, Jamaica; lectotype MCZ 275929 (Jacobson & Boss 1973:516). *Helix punctum*: Merida, Yucatán, México. *Helix caeca*: Trinidad.

Distribution.—Florida and southern Texas to Brazil, Islas Galápagos. PANAMÁ, Prov. Panamá: Juan Mina (Pilsbry 1926). NICARAGUA, Dept. Managua: Lago de Xiloa (12°14' N, 86°20' W) (Thompson & López 1996); common along the Pacific versant (Pérez & López 2002). CAMPECHE: 11.4 mi. E of Cayal; Cd. de Carmen (Thompson 1967). QUINTANA ROO: 7.1 mi. NNW of Xiatil (Thompson 1967). TABASCO: Cardenas (Thompson 1967). YUCATÁN: Tikul; 0.8 mi. NE of Becanchen (Thompson 1967).

#### ***Pupisoma (Ptychopatala) dioscoricola insigne* Pilsbry 1920**

*Pupisoma dioscoricola insigne* Pilsbry 1920; Man. Conch. 26:39–40; pl. 4; fig. 6, 7, 8 (shell).- Baker 1923a; 3.- Baker 1925a:2.- Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):2.- Bequaert & Clench 1936; Pub. Canegie Inst. Wash. (457):65.- Pilsbry 1948; Land Moll. N. Amer. 2:1008; figs. 538:6, 7, 8 (shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval et al. 1998:14.- Correa-Sandoval 2000; Acta Zool. Mex. (79) 8.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (80):235.- Correa-Sandoval & Rodriguez 2005; Acta Zool. Mex. 21:59.

Type Locality.—Brownsville, Texas. Holotype ANSP 109013.

Distribution.—Eastern México south to Venezuela. GUATEMALA, Dept. Petén: Tikal (Basch 1956). NUEVO LEÓN: numerous localities in eastern region of the state (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities in the southern part of the state (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve, (Correa-Sandoval & Rodriguez 2005); numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2005). PUEBLA: Necaxa (Baker 1930a). SAN LUIS POTOSÍ: Rio Valles falls; Rio Ganina; Rio Choy Cave (Pilsbry 1920). VERACRUZ: Coatotolapan (Baker 1923a); Hwy. Tuxpan-Poza Rica km. 234 (20°49'11" N, 97°30'00" W) (Correa-Sandoval 2000). YUCATÁN: Izamal (Pilsbry 1920); Santa Ana Cenote, Villadolid (Bequaert & Clench 1936).

#### ***Pupisoma (Ptychopatala) mediamericanum* Pilsbry 1920**

*Pupisoma mediamericanum* Pilsbry 1920; Man. Conch. 26:42–43; pl. 4, figs. 16, 17 (shell).- Baker 1927a; Proc. Acad. Nat. Sci. Phila. 79:223–224; pl. 15, fig. 1 (reproductive anatomy), fig. 2 (pallial organs), fig. 3 (jaw).- Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):4.- Pilsbry 1948; Land Moll. N. Amer. 2:1009; figs. 538:16, 17 (shell).

Type Locality.—Chama, Dept. Alta Verapaz, Guatemala.

Holotype and paratypes ANSP 28270; syntypes ANSP 45727.

Distribution.—GUATEMALA; only from the type locality. PUEBLA: Necaxa (Baker 1927a). VERACRUZ: 500 ft. above Orizaba (Pilsbry 1920); Peñuela; Sumidero, 2625–3400 ft. alt. (Baker 1930a).

#### ***Pupisoma (Ptychopatala) michoacanensis* Pilsbry 1920**

*Pupisoma michoacanensis* Pilsbry 1920; Man. Conch. 26:40; pl. 4, fig. 12.- Pilsbry 1948; Land Moll. N. Amer. 2:1009; fig. 538:12 (shell).

Type Locality.—Morelia, Michoacán, México. Holotype ANSP 77119.

Distribution.—Known only from the type locality.

#### ***Pupisoma (Ptychopatala) minus* Pilsbry 1920**

*Pupisoma minus* Pilsbry 1920; Man. Conch. 26:40–41; pl. 4, figs. 9, 11 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1009–1010; figs. 538:9–11.- Naranjo-Garcia 1991; Amer. Malac. Bull., 8:168.- Correa-Sandoval et al. 1998; Acta Zool. Mex. 73:14.- Pérez & López 2002:103–104; text-fig. (distribution map).- Correa-Sandoval & Rodriguez 2005; Acta Zool. Mex. 21:59.

Type Locality.—Snapper Creek, south of Coconut Grove, Dade County, Florida. Holotype ANSP 113390.

Distribution.—NICARAGUA, Dept. Boaco; Dept. Chinandega; Dept. Rivas (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Chama (Pilsbry 1920). NUEVO LEÓN: Parque Vitro, near Laguna de Sanchez (25°23'24" N, 100°12'57" W) (Correa-Sandoval & Salazar 2005). SAN LUIS POTOSÍ: numerous localities in the eastern region of the state (Correa-Sandoval et al. 1998). SONORA: Cerro de Oro, 0.25 mi. from Cerro de Oro, on road to Rayon, 600 m alt. (29°36.8'N, 110°37.8' W) (Naranjo-Garcia 1991).

#### **Genus *Nesopupa* Pilsbry 1900**

*Nesopupa* Pilsbry 1900; Proc. Acad. Nat. Sci. Phila. 52:432.- Pilsbry & Cooke, in Pilsbry 1920; Man. Conch. 25:274.

Type Species.—*Pupa tantilla* Gould 1847.

Distribution.—Pacific Islands, Oriental and Ethiopian regions, St. Helena Island.

Taxonomy.—Eleven subgenera are recognized. One subgenus occurs in the study area.

#### **Subgenus *Cocopupa* Pilsbry & Cooke 1920**

*Cocopupa* Pilsbry & Cooke 1920; Man. Conch. 25:323.

Type Species.—*Vertigo cocosensis* Dall 1900.

Distribution.—Isla del Coco, Costa Rica.

Taxonomy.—A single species is known.

#### ***Nesopupa (Cocopupa) cocosensis* (Dall 1900)**

*Vertigo cocosensis* Dall 1900; Proc. Acad. Nat. Sci. Phila. 52:98, pl. 8, fig. 13 (shell).

*Nesopupa (Cocopupa) cocosensis* (Dall). Pilsbry & Cooke, in Pilsbry 1920; Man. Conch. 25:323–324; pl. 30, figs. 10, 11 (shell).

Type Locality.—Isla del Coco, Costa Rica.

Distribution.—Known only from the type locality.



**Genus *Sterkia* Pilsbry 1898**

*Sterkia* Pilsbry 1898; Nautilus 11:119.- Pilsbry 1920; Man. Conch. 26:49.- Pilsbry 1948; Land Moll. N. Amer. 2:1012–1013.

Type Species.—*Pupa calamitosa* Pilsbry 1889.

Distribution.—California south to Baja California Sur; northern South America, Guatemala, the West Indies and south Florida.

Taxonomy.—Two subgenera are recognized. The genus includes six species, all of which occur in the study area.

**Subgenus *Sterkia* Pilsbry 1898**

Distribution.—Southern California and Baja California Norte.

Taxonomy.—Two species are recognized. Both occur in Baja California Norte.

***Sterkia (Sterkia) calamitosa calamitosa (Pilsbry 1889)***

*Pupa calamitosa* Pilsbry 1889; Nautilus 3:61; pl. 1, fig. 7 (shell).- Pilsbry 1890; Proc. Acad. Nat. Sci. Phila. 41:411; pl. 12, fig. 16 (shell).

*Sterkia calamitosa* (Pilsbry). Pilsbry 1920; Man. Conch. 26:57; pl. 7, figs. 1–4 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1013–1014; figs. 540:1–4 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:110, fig. 14 (distribution map).

Type Locality.—Near the mouth of the Rio San Tomas. Holotype ANSP 11602.

Distribution.—BAJA CALIFORNIA NORTE: Ensenada de Todos Santos (Pilsbry 1948); hills W of Bahia San Quintin (Smith et al. 1990).

***Sterkia (Sterkia) calamitosa martiniana Pilsbry 1927***

*Sterkia (Sterkia) calamitosa martiniana* Pilsbry 1927; Proc. Calif. Acad. Sci. (4):16:186; pl. 12, fig. 2 (shell).- Pilsbry 1934; Man. Conch. 28:110; pl. 15, fig. 4 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:1014.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:110, fig. 14 (distribution map).

Type Locality.—Isla San Martin, Baja California Norte, México.

Distribution.—BAJA CALIFORNIA NORTE: Isla San Martin.

***Sterkia (Sterkia) hemphilli (Sterki 1890)***

*Pupa hemphilli* Sterki 1890; Nautilus 4:27, 39; pl. 1, fig. 6 (shell).

*Sterkia (Sterkia) hemphilli* (Sterki). Pilsbry 1920; Man. Conch. 26:55; pl. 7, figs. 5–8, 11, 12 (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. (4):16:187.- Pilsbry 1948; Land Moll. N. Amer. 2:1013; figs. 540:5–8, 11, 12 (shell).

Type Locality.—Banks of the Rio San Tomas, Baja California Norte, México. Holotype Carnegie Museum 62.20384.

Distribution.—Southern California south to Baja California Norte. BAJA CALIFORNIA NORTE: Ensenada de Todos Santos; W shore of Bahia san Quintin; Punta Abrejos (Smith et al. 1990).

**Subgenus *Metasterkia* Pilsbry 1920**

*Metasterkia* Pilsbry 1920; Man. Conch. 26:50.- Pilsbry 1948; Land

Moll. N. Amer. 2:1014.

Type Species.—*Sterkia antillensis* Pilsbry 1920.

Distribution.—Northern South America, the West Indies, Florida, Guatemala and Baja California Norte.

Taxonomy.—Four species are recognized. All occur in the study area.

***Sterkia (Metasterkia) antillensis Pilsbry 1920***

*Sterkia (Metasterkia) antillensis* Pilsbry 1920; Man. Conch. 26:53–54; pl. 6, figs. 8–11 (shell).- Pérez & López 2002:105–107; pl. 15 (shell); text-fig. (distribution map).

Type Locality.—El Abra, Viñales Prov., Cuba.

Distribution.—Cuba, Jamaica, Venezuela and Nicaragua. NICARAGUA, common along the Pacific versant (Pérez & López 2002).

***Sterkia (Metasterkia) bakeri Pilsbry 1921***

*Sterkia bakeri* Pilsbry 1921; Man. Conch. 26:236; pl. 24, figs. 1, 2, 3 (shell).- Baker 1923a:3.- Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:200.

Type Locality.—Hacienda de Coatotolapan, between the Rio San Juan and its tributary the Arroyo Hueyapan, Canton de Acayucan, Veracruz, México. Lectotype ANSP 141375 (H. B. Baker 1963:200).

Distribution.—Known only from the type locality.

***Sterkia (Metasterkia) eyriesii eyriesii (Drouet 1859)***

*Pupa eyriesii* Drouet 1859; Essai sur les mollusques terrestres et fluviatiles de la Guyane Française:71; pl. 2, figs. 16a, 17 (shell).

*Sterkia (Metasterkia) eyriesii eyriesii* (Drouet). Pilsbry 1920; Man. Conch. 26:61–62; pl. 6, figs. 1, 2, 4, 5 (shell).- Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):30.- Pilsbry 1948; Land Moll. N. Amer. 2:1018; fig. 542:1, 2, 4, 5 (shell).

Type Locality.—Ilet-la-Mère, Guyana.

Distribution.—French Guyana, Surinam, Trinidad and Guatemala. GUATEMALA, no precise locality (Goodrich & van der Schalie 1937). Dept. Alta Verapaz: Chamá (Pilsbry 1920).

Taxonomy.—Two subspecies are recognized. *Sterkia eyriesii rhoadsi* Pilsbry 1920, occurs in Florida.

***Sterkia (Metasterkia) clementina (Sterki 1890)***

*Pupa clementina* Sterki 1890; Nautilus 4:44; pl. 1, fig. 1 (shell).

*Bifidaria clementina oldroydi* Vanatta 1916; Nautilus 30:48.

*Sterkia clementina* (Sterki). Pilsbry 1920; Man. Conch. 26:54; pl. 7, figs. 9, 10, 13 (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:176.- Pilsbry 1948; Land Moll. N. Amer. 2:1014, 1016; figs. 540:9, 10, 13 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:110.

Type Locality.—Northeast Anchorage, Isla Guadalupe, Baja California Norte, México. Holotype Carnegie Museum 62.20392.

Distribution.—BAJA CALIFORNIA NORTE: Northeast Anchorage, Isla Guadalupe.

**Subfamily PUPOIDINAE Iredale 1940**

Distribution.—Europe, Africa, Asia, Australia, Hawaii

and North America

Taxonomy.—Three extant genera are recognized.

### Genus *Pupoides* Pfeiffer 1854

*Pupoides* Pfeiffer 1854; Malacologische Blätter, 1:102.- Pilsbry 1921; Man. Conch. 26:108, 138.- Pilsbry 1948; Land Moll. N. Amer. 2:921–922.

*Leucochila* Von Martens 1860; Die Heliceen:205.

*Leucochiloides* Pfeiffer 1878; Nomencl. Helic. Viv.:292.

Type Species.—*Pupoides*: *Bulimus nitidulus* Pfeiffer 1839. *Leucochila*: *Cyclostoma marginata* Say 1821. *Leucochiloides*: *Bulimus lardeus* Pfeiffer 1852.

Distribution.—All continents.

Taxonomy.—Four subgenera are recognized. Two subgenera occur in the study area. Three species occur in the study area.

### Subgenus *Pupoides* Pfeiffer 1854

Distribution.—North America, northern Asia, Europe, and North Africa.

Taxonomy.—A large number of species have been named. Seven occur in North America, two of which are found in the study area.

### *Pupoides (Pupoides) albilabris* (C. B. Adams 1841)

*Cyclostoma marginata* Say 1821; Jour. Acad. Nat. Sci. Phila. 2:172 (not *Cyclostoma marginatus* G. Fischer 1807).

*Pupoides maeriginatus* Pilsbry & Vanatta 1900; Proc. Acad. Nat. Sci. Phila. 52:586.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:766.- Pilsbry 1921; Man. Conch. 26:111; pl. 12, figs. 1–7 (shell).

*Pupa fallax* “Say” Gould 1843; Boston Jour. Nat. Hist. 4:357.

*Pupa albilabris* C. B. Adams 1841; Amer. Jour. Sci., 40:271. (new name for *Cyclostoma marginata* Say).

*Pupoides albilabris* (C. B. Adams 1841). Pilsbry 1948; Land Moll. N. Amer. 2:921–923; figs. 499:1–7. (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:164.- Bequaert & Miller 1973:78–79, 176–177.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:108; fig. 12 (map).- Naranjo-Garcia 1991:168.

Type Locality.—“Upper Missouri”.

Distribution.—Widely distributed in North America. BAJA CALIFORNIA NORTE: Isla Angel de la Guardia; Isla San Lorenzo (Smith et al. 1990). BAJA CALIFORNIA SUR: numerous localities (Smith et al. 1990). SINALOA: Rio Fuerte, San Blas (Pilsbry 1953). SONORA: Rio Mayo, at Navajo; Rio Yaqui, 11 mi. N of Cajeme; Cerro Zaporxa, E of Cameje; Arroyo San Rafael, San Bernardo (Pilsbry 1953); N end of Sierra El Viejo, 550 m alt. (30°25.41' N, 112°22.5' W); SW part of Sierra El Viejo, 500 m alt. (30°23.8' N, 112°36.6' W); Arroyo Cerro de Oro, ca. 0.25 mi. from Cerro de Oro, on road to Rayon, 600 m alt. (29°36.8' N, 110°37.8' W) (Naranjo-Garcia 1991). CHIHUAHUA: Presa Chihuahua, 7 mi. from Cd. Chihuahua (Bequaert & Miller 1973). NUEVO LEÓN: Topo Chico, near Monterey (Pilsbry 1904). TAMAULIPAS: Tampico (Pilsbry 1948); drift of Rio Purificación, 24 mi. W of Padilla (Bequaert & Miller 1973).

### *Pupoides (Pupoides) catalinensis* Hanna 1923

*Pupoides catalinensis* Hanna 1923; Proc. Calif. Acad. Sci. (4) 12:514; pl. 10, figs. 1–4 (shell).- Pilsbry 1926; Man. Conch. 27:249–250; text-fig. 17 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:108; map fig. 12.

Type Locality.—Isla Santa Catalina, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla Santa Catalina (Smith et al. 1990).

### Subgenus *Ischnopupoides* Pilsbry 1926

*Ischnopupoides* Pilsbry 1926; Man. Conch. 27:250.- Pilsbry 1948; Land Moll. N. Amer. 2:924.

Type Species.—*Bulimus cordatus* Pfeiffer 1856.

Distribution.—SW United States, western México, and Bolivia.

Taxonomy.—Three species are recognized. One occurs in the study area.

### *Pupoides (Ischnopupoides) cordatus* (Pfeiffer 1856)

*Bulimus cordatus* Pfeiffer 1856; Malak. Blätter 3:46.

*Pupa cordata* (Pfeiffer). Binney & Bland, Land and Freshwater Shells of North America 1:241; fig. 418 (shell).

*Pupoides (Pupoides) cordatus* (Pfeiffer). Von Martens; 1893:330.- Pilsbry 1921; Man. Conch. 26:119–120; pl. 11, figs. 14, 15 (shell).

Type Locality.—Mazatlán, Sinaloa, México.

Distribution.—Known only from the type locality.

### Subfamily GASTROCOPTINAE Pilsbry 1918

Distribution.—Australia, Africa, North and South America, Asia, Sri Lanka, the Philippines, and Oceania.

Taxonomy.—A single extant genus, *Gastrocopta*, is recognized. Two South American genera are referred questionably to the subfamily.

### Genus *Gastrocopta* Wollaston 1878

*Gastrocopta* Wollaston 1878; Testacea Atlantica ...:515.- Pilsbry 1916; Man. Conch. 24:6–12.

*Leucochilus* Boettger 1881; Conchologische Mittheilungen, 1:64 (not *Leucochila* Von Martens 1860).

*Bifidaria* Sterki, in Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:315. *Eubifidaria* Sterki 1893; Nautilus 6:101.

Type Species.—*Gastrocopta*: *Pupa acarus* Benson 1856. *Leucochilus*: *Pupa armifera* Say 1821. *Bifidaria*: *Pupa servilis* Gould 1843. *Eubifidaria*: “*Pupa hordeacea* Gabb” of Sterki, = *Bifidaria cristata* Pilsbry & Vanatta 1900.

Distribution.—Worldwide.

Taxonomy.—Nine subgenera are recognized (Zilch 1959:160–162).

### Subgenus *Gastrocopta* Wollaston 1878

Distribution.—Tropical and warm portions of America, Africa, Mascarene Island, Sri Lanka and the Philippines.

Taxonomy.—Numerous species. Four occur in the study area.

***Gastrocopta (Gastrocopta) cristata (Pilsbry & Vanatta 1900)***

*Bifidaria procera cristata* Pilsbry & Vanatta 1900; Proc. Acad. Nat. Sci. Phila. 52:595; pl. 22, figs. 4, 5 (shell).

*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta). Pilsbry 1916; Man. Conch. 24:68–69; pl. 13, figs. 6, 8–12 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:911, 913; figs. 493:6, 8–12.- Branson, McCoy & Sisk 1964; S.W. Nat., 9:104.- Bequaert & Miller 1973:169–170.

Type Locality.—Camp Verde, Yavapai County, Arizona; 3200 ft. Alt. (Bequaert & Miller 1973).

Distribution.—Nebraska, Kansas, Oklahoma, west Texas, New Mexico and Arizona and adjacent NW México. BAJA CALIFORNIA NORTE. SONORA: drift of Rio Bevispe, 21 mi. S of Agua Prieta; drift of Rio Yaqui, 4 mi. N of Cd. Obregon (Branson et al. 1964); drift of Rio Sonoyta, Sonoyta (Bequaert & Miller 1973).

***Gastrocopta (Gastrocopta) pellucida hordeacella (Pilsbry 1890)***

*Pupa hordeacella* Pilsbry 1890; Proc. Acad. Nat. Sci. Phila. 44; pl. 1, figs. f-k (shell).- Hinkley 1907; Nautilus 21:78.

*Bifidaria pellucida hordeacella* (Pilsbry). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:766.

*Gastrocopta pellucida hordeacella* (Pilsbry).- Pilsbry 1916; Man. Conch. 24:78–80; pl. 17, figs. 1–4; pl. 16 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:913–915; figs. 494: a-d; figs. 495 (Shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.

*Bifidaria hordeacella parvidens* Sterki 1899; Nautilus 12:128.

*Gastrocopta pellucida parvidens* (Sterki). Pilsbry 1948; Land Moll. N. Amer. 2:916; fig. 494: c).- Hanna 1923; Proc. Calif. Acad. Sci. (4) 13:515.

*Pupa pellucida* Pfeiffer 1841. Fischer & Crosse 1873; Miss. Sci. Mex. I:311.- Strebel 1880:91.- Von Martens 1898:328 (in part).

*Gastrocopta pellucida* (Pfeiffer). Hinkley 1920; Nautilus 34:52.- Rehder 1966; Proc. Biol. Soc. Wash. 79:383.- Thompson 1967; Bull. Fla. St. Mus. 11:231.- Bequaert & Miller 1973:79–81.- Naranjo-Garcia 1991; Amer. Malac. Bull., 8:167–168.- Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex., (73):134.- Correa-Sandoval 2000; Acta Zool. Mex. (79):8.- Correa-Sandoval, & Castro 2002; Acta Zool. Mex. (86):235.- Thompson & López 1996; Amer. Malac. Bull., 13:49.- Pérez & López 2002:88–91; (distribution map in Nicaragua).- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. 21:59.

Type Localities.—*Pupa pellucida*: Cuba (Pilsbry 1916).

*Pupa hordeacella*: New Braunfels, Texas; holotype and paratypes ANSP 60460. *Bifidaria hordeacella parvidens*: around Jerome, Yavapai County, Arizona; syntypes in the Carnegie Museum.

Distribution.—Widely distributed in the West Indies, México, and Guatemala. Bequaert and Miller (1973) stated that the species apparently has a continuous distribution over México. NICARAGUA, Dept. Managua: Lago de Xilola (12°14' N, 86°20' W) (Thompson & López 1996); abundant records from the Pacific versant (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920).

Dept. Baja Verapaz: Salama. Dept. Guatemala: Barranca de Villalobos, near Cd. Guatemala. Dept. Petén: Tikal (Basch 1959). Dept. Sacatepéquez: Antigua, 4500 ft. alt. (Von Martens 1898). BAJA CALIFORNIA SUR: numerous localities (Smith et al. 1990). CAMPECHE: 7.1 mi. SW of Cd. Camoche; 8.1 mi. SW of Champoton (Thompson 1967). NUEVO LEÓN: numerous records for southern part of state (Correa-Sandoval & Salazar 2005). QUINTANA ROO: Tulum (Rehder 1966). SAN LUIS POTOSÍ: Cd. Valles (Pilsbry 1916); numerous localities (Correa-Sandoval et al. 1998). SONORA: numerous localities (Naranjo-Garcia 1991). TABASCO: San Juan Bautista (Von Martens 1898). TAMAULIPAS: Cd. Victoria (Pilsbry 1916); Tampico (Hinkley 1907); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). YUCATÁN: Sisal; Merida (Fischer & Crosse 1873); 1.0 mi. SSE of Telchac; 0.8 mi. NE of Becanchen (Thompson 1963). VERACRUZ: Antigua (Pilsbry 1916); Veracruz (Strebel 1880); Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W) Carr. 1 km NE of Tuxpan, km 234 (20°49'11" N, 97°30'00" W) (Correa-Sandoval 1999).

Taxonomy.—Recognition of *Gastrocopta pellucida hordeacella* (Pilsbry 1890) as a valid subspecies is controversial. Bequaert and Miller (1973) synonymized both *hordeacella* and *parvidens* with *Gastrocopta pellucida pellucida* (Pfeiffer 1841). Later, Smith et al. (1990) resurrected *hordeacella* as a distinct subspecies. *Bifidaria hordeacella parvidens* (Clapp 1899) is a synonym of *hordeacella*. I follow these authors by assigning all mainland populations to *hordeacella*.

***Gastrocopta (Gastrocopta) riograndensis (Pilsbry & Vanatta 1900)***

*Bifidaria riograndensis* Pilsbry & Vanatta 1900; Proc. Acad. Nat. Sci. Phila. 52:596.

*Gastrocopta (Gastrocopta) riograndensis* (Pilsbry & Vanatta). Pilsbry 1916; Man. Conch. 24:69–70; pl. 12, figs. 9, 10 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:914; figs. 492:9, 10 (shell).- Thompson 1967; Bull. Fla. St. Mus. 11:231.- Neck 1980; Veliger 23:180–182.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:106.

*Bifidaria procera* (Gould). Hinkley 1907; Nautilus 21:77.

Type Locality.—Lower Rio Grande valley, river drift at Hidalgo, Hidalgo Co., Texas. Holotype ANSP 60137.

Distribution.—Southwest Texas, northern México. BAJA CALIFORNIA SUR: Juncalito (Smith et al. 1990). CAMPECHE: 8.1 mi. SW of Champoton (Thompson 1967). SAN LUIS POTOSÍ: falls below Cd. Valles; canyon below Los Canoas (Pilsbry 1916). TAMAULIPAS: Rio Panuco Valley, Tampico (Hinkley 1907; Pilsbry 1916). YUCATÁN: 1.0 mi. SSE of Puerto Techac (Thompson 1967).

Taxonomy.—The identity of specimens from Baja California Sur is uncertain (Smith et al. 1990).

***Gastrocopta (Gastrocopta) servilis (Gould 1843)***

*Pupa servilis* Gould 1843; Boston Jour. Nat. Hist. 4:356; pl. 16, fig.



14 (shell).

*Pupa pellucida* Pfeiffer (*in part*). Strebel 1880:91; pl. 4, fig. 19; pl. 15, fig. 10 (shell).- Von Martens 1893; Biol. Cent. Amer.:328.

*Gastrocopta (Gastrocopta) servilis* (Gould). Pilsbry 1916; Man. Conch. 24:70–74; pl. 14, figs. 4, 5, 6, 7 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:133.- Rehder 1966; Proc. Biol. Soc. Wash. 79:283.- Thompson 1967; Bull. Fla. St. Mus. 11:231.- Thompson & López 1996; Amer. Malac. Bull. 13:48.- Pérez & López 2002:93–95 (text-fig. distribution map).

Type Locality.—Matanzas, Cuba.

Distribution.—Generally distributed throughout the West Indies, including Bermuda; scattered records in Central America and México. PANAMÁ, Canal Zone: Isla Barro Colorado. Prov. Panamá: Juan Mina (Pilsbry 1926). NICARAGUA: Bluefields; abundant along the Pacific versant (Pérez & López 2002). GUATEMALA, Dept. Sacatepéquez: Antigua. Dept. Baja Verapaz: Salama. Dept. Guatemala: Barranca de Villalobos, near Cd. Guatemala. CAMPECHE: Isla de Carmen (Pilsbry 1916). MORELOS: Yauhtepec. QUINTANA ROO: Tulum (Rehder 1966). VERACRUZ: Veracruz, on the beach (Strebel 1880). YUCATÁN: Merida (Pilsbry 1916).

#### Subgenus *Albinula* Sterki 1892

*Albinula* Sterki 1892; Nautilus 6:101.- Pilsbry 1916; Man. Conch. 24:13–14.- Pilsbry 1948; Land Moll. N. Amer. 2:874.

Type Species.—*Pupa contracta* Say 1822.

Distribution.—Eastern North America.

Taxonomy.—Six species are recognized. One occurs in the study area.

#### *Gastrocopta (Albinula) contracta contracta* (Say 1822)

*Pupa contracta* Say 1822; Jour. Acad. Nat. Sci. Phila. 2:374.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:315.

*Bifidaria contracta* (Say). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:766.- Hinkley 1907; Nautilus 21:78.

*Gastrocopta (Albinula) contracta contracta* (Say). Pilsbry 1916; Man. Conch. 24:22–23; pl. 2, figs. 9–12 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:880–881; figs. 474:9–12.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:161.- Correa-Sandoval, García-Cubas & Reguero 1998:14.

Type Locality.—Occoquan, Virginia.

Distribution.—Eastern North America from Ontario west to Manitoba and south to Florida and Veracruz; Cuba and Jamaica. MORELOS: Yauhtepec (Pilsbry 1891, 1904). NAYARIT: drift debris of Rio Fuerte, San Blas (Pilsbry 1953). NUEVO LEÓN: on Rio Mauricio, ca. 25 km S of Monterey (Pilsbry 1953). SAN LUÍS POTOSÍ: Cascadas de Tamasopo, 430 m alt. (21°56'05" N, 99°25'00" W); Carr. Tamuín-San Vicente, 3 km after x-sec. to El Chote, 80 m alt. (21°52'51" N, 98°40'31" W); Río Coy, carr. to Cd. Valles, 170 m alt. (21°45'36" N, 98°57'22" W); 15.5 km NE of Tamazunchale, 140 m alt. (21°12'26" N, 98°53'25" W); Río Moctezuma, Tamazunchale (21°15'21" N, 98°48'56" W) (Correa-Sandoval et al. 1998). SONORA: Arroyo San Rafael, San Bernardo (Pilsbry 1953). TAMAULIPAS: Tampico (Hinkley 1907). VERACRUZ: Texolo; near Orizaba (Pilsbry 1904).

#### Subgenus *Geminidens* Pilsbry 1930

*Geminidens* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:351.- Zilch 1959:160.

Type Species.—*Bothriopupa geminidens* Pilsbry 1917.

Distribution.—Venezuela, Trinidad, and Panamá.

Taxonomy.—The subgenus includes a single species.

#### *Gastrocopta (Geminidens) geminidens* (Pilsbry 1917)

*Bothriopupa geminidens* Pilsbry 1917; Man. Conch. 24:228–229; pl. 28, figs. 12, 13, 14 (shell).- Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:201.

*Gastrocopta geminidens* (Pilsbry). Pilsbry 1926; Man. Conch. 27:228.

*Gastrocopta (Geminidens) geminidens* (Pilsbry). Pilsbry 1930; Proc. Acad. Nat. Sci., Phila., 80:351.- Haas 1960:13.- Thompson & López 1996:49.- Pérez & López 2002:83–88; distribution map.

Type Locality.—Cariacuita, [Estado Sucre], Venezuela.

Holotype ANSP 105200a (Baker 1963:201).

Distribution.—Known from Panamá, Venezuela, Margarita Island and Trinidad. PANAMÁ, Prov. Panamá: Old Panamá City (Pilsbry 1930). COSTA RICA: Dept. Guanacaste (Pérez & López 2002). NICARAGUA, Dept. Managua: Lago de Xilola (12°14' N, 86°20' W) (Thompson & López 1996); Dept. Chontales; Dept. Masaya; Dept. San Juan del Rio (Pérez & López 2002).

#### Subgenus *Immersidens* Pilsbry & Vanatta 1900

*Immersidens* Pilsbry & Vanatta 1900; Proc. Acad. Nat. Sci. Phila. 52:606.

Type Species.—*Bifidaria ashmuni* 1898.

Distribution.—Central Plateau of North America south to Brazil and Argentina.

Taxonomy.—The subgenus contains numerous species. Seven species and one subspecies occur in the study area.

#### *Gastrocopta (Immersidens) allyni* Roth & Christensen 1984

*Gastrocopta (Immersidens) allyni* Roth & Christensen 1984; Proc. Biol. Soc. Wash. 97:245–250; figs. 1, 2 (shell), fig. 3 (distribution map).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:106; fig. 10 (distribution map).

Type Locality.—In drift, arroyo 24 km south of La Paz, Baja California Sur, México. Holotype CAS 32993.

Distribution.—BAJA CALIFORNIA SUR: southern tip of peninsula, numerous locality records (Smith et al. 1990).

#### *Gastrocopta (Immersidens) ashmuni* (Sterki 1898)

*Bifidaria ashmuni* Sterki 1898; Nautilus 12:90.- Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:144.

*Gastrocopta (Immersidens) ashmuni* (Sterki). Pilsbry 1916; Man. Conch. 24:41–44; pl. 6, figs. 5, 6, 7; text-figs. 13a-c (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:896–898; figs. 483:5–7; figs. 484a-c (shell). Branson, McCoy & Sisk 1964:104.- Bequaert & Miller 1973:159–163.- Naranjo-García 1991:166–167.- Correa-Sandoval & Rodriguez 2005:59.

Type Locality.—Santa Rita Mountains, on east slope of range, 20 miles west of Crittenden, Santa Cruz County, Arizona (Bequaert & Miller 1973:159).

Distribution.—CHIHUAHUA: Rio Piedras Verdes, ca. 9 km above Colonia Juarez (ca. 30°15' N, 108° W) (Pilsbry 1953); Presa Chihuahua, 7 mi. S of Cd. Chihuahua, 4800 ft. alt. (28°35' N, 106°05' W). NUEVO LEÓN: km 66, road from Linares to San Roberto (24°45'22" N, 100°02'18" W); road from Linares to Dr. Arroyo (24°31'05" N, 99°58'55" W) (Correa-Sandoval & Rodriguez 2005). SONORA: Rio Nacozari, 7 mi. S of Nacozari (Branson et al 1964); near Nacozari, 3550–4200 ft. alt.; Nogales; Sierra de Santo Niño, N of Mina El Milagro, on road to Sahuaiipa, 4000 t. alt. (ca. 29° N, 109°30' W); near Magdalena, 3650–4250 ft. alt. (ca. 30°5' N, 111° W); near Zocoziari, 3550–4000 ft. alt. (ca. 30° N, 110° W); Rancho Pinos Altos, Sierra Nacori, 5800 ft. alt. (29°45'N, 108°30'W) (Bequaert & Miller 1973); Sierra Las Minitas, 1400 m alt. (31°11.1' N, 109°04.7' W); slope above arroyo, along Rayon-Cerro de Oro road, ca. 4.2 mi. from Cerro de Oro (29°38.9' N, 110°36.6' W); S edge of Sierra El Pinito, ca. 10.1 km W of Aribabi (30°52.7' N, 110°42.7' W); Sierra Batamote, Mina El Milagro (29°57'10" N, 109°32' W); SW end of Sierra Los Embudos (31°11.8' N, 109°05.2' W) (Naranjo-Garcia 1991).

***Gastrocopta (Immersidens) cochisensis* (Pilsbry & Ferriss 1910)**

*Bifidaria cochisensis* Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:139; figs. 32, 33 (shell).

*Gastrocopta (Immersidens) cochisensis* (Pilsbry & Ferriss). Pilsbry 1916; Man. Conch. 24:44–46; pl. 6, figs. 1–4, 8 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:899–900; figs. 483:1–4, 8; fig. 486 (shell).- Bequaert & Miller 1973:163–164.

Type Locality.—Tanner Canyon [now Garden Canyon], Huachuca Mountains, Arizona. Holotype and paratypes ANSP 97444.

Distribution.—CHIHUAHUA: Rio Piedras Verdes, below Pacheco, 5900 ft. alt.; Sierra de la Breña, ca. 17.5 mi. from Mata Ortiz, on road to Pacheco, 7000 ft. alt. (Pilsbry 1953). SINALOA: Rio Fuerte, San Blas (Pilsbry 1953). SONORA: arroyo, 8 km S of Guaymas (Pilsbry 1953).

***Gastrocopta (Immersidens) dalliana dalliana* (Sterki 1898)**

*Bifidaria dalliana* Sterki 1898; Nautilus 12:91.

*Gastrocopta dalliana* (Sterki). Pilsbry 1916; Man. Conch. 24:49; pl. 8, figs. 10, 11 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:901–902; fig. 488 (shell).

*Gastrocopta (Immersidens) dalliana dalliana* (Sterki). Branson, McCoy & Sisk 1964:104.- Bequaert & Miller 1973:165–167.- Naranjo-Garcia 191:167.

*Gastrocopta dalliana media* Pilsbry 1916; Man. Conch. 24:50; pl. 8, figs. 10–11 (shell).

Type Localities.—*Bifidaria dalliana*: Ephraim Canyon, Nogales, Santa Cruz County, Arizona; 3800 ft. alt. (Bequaert & Miller 1973). *Gastrocopta dalliana media*: Montezuma Wells, near Rimrock, Yavapai County, Arizona; holotype ANSP 82918.

Distribution.—CHIHUAHUA: cliff talus on N side of Rio Piedras Verdes, 8–9 km above Colonia Juarez, 5900 ft. alt. (ca. 30°10' N, 108°10' W) (Pilsbry 1953). SONORA:

spring-fed march 60 mi. S of Nogales; San Carlos bay, 10 mi. N of Guaymas; S end of Sierra Purico, 6300 ft. alt. (ca. 30°31' N, 109°45' W), mountain 5 mi. S of Magdalena, 4250 ft. alt.; NW side of Rio Nacozari, 4200 ft. alt. (ca. 30°35' N, 111° W) (Bequaert & Miller 1973); S edge of Sierra El Pinito, ca. 10.1 km W of Aribabi (30°52.7' N, 110°42.7' W); N end of range, Sierra El Viejo, 550 m alt. (30°24.1' N 112°22.5' W); Rancho Tres Marias, W of Alamo 27°06'56" N, 109°09'18" W); N end of Sierra El Viejo, 500 m alt. (30°23.8' N, 112°23.6' W) (Naranjo-Garcia 1991).

***Gastrocopta (Immersidens) dalliana bilamellata* (Sterki & Clapp 1909)**

*Bifidaria bilamellata* Sterki & Clapp 1909; Nautilus 22 126; pl. 8, fig. 7.- Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:143; fig. 36b.

*Gastrocopta bilamellata* (Sterki & Clapp). Pilsbry 1916; Man. Conch. 24:51–52; pl. 8, figs. 1–4; text-fig. 18 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:903; fig. 489, figs. 490:1–4 (shell).

*Gastrocopta (Immersidens) dalliana bilamellata* (Sterki & Clapp). Bequaert & Miller 1973:168–169.- Naranjo-Garcia 1991:167.

Type Locality.—Foothills of Plomosa Range, about 8 miles east of Quartzite, Yuma County, Arizona. Holotype in the Clapp Collection, Carnegie Museum.

Distribution.—Southwest Arizona and northwest Sonora. SONORA: S side of Rio Sonora, near Hermosillo, 900 ft. alt. (ca. 29° N, 111° W); Arroya San Rafael, San Bernardo, 900 ft. alt. (ca. 27°25' N, 108°54' W); north foothills of Cerro Zaporxa, E of Obregon (ca. 28° N, 109° W); drift in wash W of Pinacate Peak, ca. 45 mi. NW of Sonoyta, 1200 ft. alt. (ca. 31°50' N, 112°50' W); drift in Rio Sonoyta, Sonoyta, 1500 ft. alt. (ca. 31°50' N, 112°50' W) (Bequaert & Miller 1973); Cerro El Oro (29°36.8' N, 110°37.8' W); SW end of Sierra Los Embudos (31°11,8' N, 109°05.2' W) (Naranjo-Garcia 1991).

***Gastrocopta (Immersidens) gularis* Thompson & López 1996**

*Gastrocopta (Immersidens) gularis* Thompson & López 1996; Amer. Malacological Bulletin, 13:47–53; figs. 5–8, 15–19, 21, 25 (shell).- Pérez & López 2002:86–88; (text-fig, distribution map).

Type Locality.—Lago de Xilola, Dept. Managua, Nicaragua (12°14' N, 86°20' W). Holotype UF 247775.

Distribution.—COSTA RICA, Prov. Guanacaste: Parque Nacional Santa Rosa, banks of the Rio Nisparal (10°48'33" N, 85°39'25" W); 2.5 km N of Estacion Argelia (10°47'50" N, 85°39'15" W); Sendero Guayacan (10°21'02" N, 85°21'08" W) (Thompson & López 1996). NICARAGUA, Dept. Boaco: Las Canoas (13°13'06" N, 85°52'50" W). Dept. Leon: Lago Asososca (12°26' N, 86°40' W). Dept. Managua: Platanal (12°27'15" N, 86°05'34" W); Tamarindo (12°29'30" N, 86°05'25" W). Masaya Dept.: Lago Apoyo (11°55' N, 86°03' W). Dept. Matagalpa: Dario (12°43' N, 86°12' N) (Thompson & López 1996). Dept. Chontales; Dept. Masaya; Dept. San Juan del Rio (Pérez & López 2002).

***Gastrocopta (Immersidens) prototypus* (Pilsbry 1899)**

*Bifidaria prototypus* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila.

51:400.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:766; pl.50, figs 7, 7a.- Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:142, fig. 35.- Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:202.

*Gastrocopta (Immersidens) prototypus* (Pilsbry). Pilsbry 1916; Man. Conch. 24:47–48; pl. 7, figs. 1–5 (shell).

*Gastrocopta (Immersidens) prototypus prototypus* (Pilsbry). Bequaert & Miller 1973:164–165.

*Bifidaria cochisensis oligobasodon* Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:141; figs. 34a-c (shell).

*Gastrocopta (Immersidens) prototypus basidentata* Pilsbry 1916; Man. Conch. 24:48; pl. 7, figs. 6, 7 (shell).

Type Localities.—*Bifidaria prototypus*: Huingo, near Lago de Cuitzco, 40 km NW of Morelia, Michoacan (Bequaert & Miller 1973); Lectotype ANSP 77201a (Baker 1963:202). *Bifidaria cochisensis oligobasodon*; Ash canyon, SE slope of Huachuca Mountains, Cochis County, Arizona, 5000 ft. alt. (Bequaert & Miller 1973:165). *Gastrocopta prototypus basidentata*: Guatemala City, Guatemala.

Distribution.—Arizona and widely scattered localities south to Guatemala. GUATEMALA, Dept. Guatemala: Cd. Guatemala. JALISCO: Guadalajara (Pilsbry 1916). MICHOACAN: Huingo.

#### ***Gastrocopta (Immersidens) rixfordi* Hanna 1923**

*Gastrocopta rixfordi* Hanna 1923; Proc. Calif. Acad. Sci. (4) 13:515–516; pl. 10, figs. 5–8 (shell).

*Gastrocopta (Immersidens) rixfordi* Hanna. Pilsbry 1926; Man. Conch. 27:207–208; text-fig. 9 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:106–107; fig. 11 (distribution map).

*Gastrocopta dalliana dalliana* (Sterki). Bequaert & Miller 1973:167 (in part; Baja California Sur records).

Type Locality.—Isla Monserrat, Gulf of California, Baja California Sur, México. Holotype CAS 1094.

Distribution.—BAJA CALIFORNIA SUR: numerous locality records (Smith et al. 1990).

#### **Subgenus *Privatula* Sterki 1893**

*Privatula* Sterki 193; Nautilus 6:101.- Pilsbry 1948; Land Moll. N. Amer. 2:893–894.

Type Species.—*Odostomia corticaria* Say 1816.

Distribution.—Eastern North America from Maine and Ontario west to Minnesota and south to Florida and Louisiana; northeastern México.

Taxonomy.—A single species is recognized.

#### ***Gastrocopta (Privatula) corticaria* (Say 1816)**

*Odostomia corticaria* Say 1816; Nicholson's American Edition British Encyclopedia 2: pl. 4, fig. 5 (shell).

*Gastrocopta (Privatula) corticaria* (Say). Pilsbry 1916; Man. Conch. 24:52–53; pl. 10, figs. 1–4 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:894; figs. 480:1–4 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998:14.

Type Locality.—Philadelphia, Pennsylvania. Neotype ANSP 64524a (Pilsbry 1948).

Distribution.—SAN LUÍS POTOSÍ: km 82, on road from Río Verde-Cd. Valles, 1420 m alt. (21°53'54" N, 99°35'00"

W); km 140 on road from Cd. del Maíz-Antigua Morelos, 1320 m alt. (22°28'02" N, 99°28'25" W); Las Abritas, 5 km E of El Naranjo, 840 m alt. (22°33'24" N, 99°22'22" W). (Correa-Sandoval et al. 1998).

#### **Subgenus *Vertigopsis* Sterki 1893**

*Vertigopsis* Sterki 1893; Nautilus 6:101.- Pilsbry 1948; Land Moll. N. Amer. 2:886.

Type Species.—*Pupa curvidens* Gould (= *Vertigo pentodon* Say 1821).

Distribution.—Eastern North America west to Alberta, Canada and Arizona, and south to Nicaragua.

Taxonomy.—The subgenus includes four species. Two occur in the study area.

#### ***Gastrocopta (Vertigopsis) pentodon* (Say 1821)**

*Vertigo pentodon* Say 1821; Jour. Acad. Nat. Sci. Phila. 2:376.

*Gastrocopta (Vertigopsis) pentodon* (Say). Pilsbry 1916; Man. Conch. 24:28–31; pl. 3, figs 2, 3, 5–8; pl. 4; pl. 5, figs. 28–41 (shell).- Hinkley 1920; Nautilus 34:39, 48, 52.- Baker 1930a:5.- Goodrich & van der Schalie 1937:30.- Pilsbry 1948; Land Moll. N. Amer. 2:886–889; figs. 477:2, 3, 5–8 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:161.- Bequaert & Miller 1973:88–90, 157–158.- Pérez & López 2002:91–92.- Correa-Sandoval & Rodriguez 2005:59.

*Bifidaria curvidens* (Gould). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:766.

Type Locality.—Pennsylvania.

Distribution.—NICARAGUA, Dept. Jinotega; Dept. Leon; Dept. Matagalpa (Pérez & López 2002). GUATEMALA, no precise locality (Goodrich & van der Schalie 1937). Dept. Alta Verapaz: Chama. Dept. Izabal: Jocolo; Quirigua (Hinkley 1920). CHIHUAHUA: talus of cliffs on Rio Piedras Verdes, ca. 4.5 km below Pacheco (Pilsbry 1953). NUEVO LEÓN: on Rio Maurisco; near the Hacienda Pablillo, above Galeana, 7800 ft. alt. (Pilsbry 1953); drift of the Rio Purificación, 24 mi. N of Padillo (Bequaert & Miller 1973); 0.5 km. W of El Salto (23°56'53" N, 99°45'59" W) (Correa-Sandoval & Salazar 2005). PUEBLA: Necaxa (Baker 1930a). SAN LUÍS POTOSÍ: bluffs N of San Dieguito (Pilsbry 1916). TAMAULIPAS: canyon 4 mi. W of Cd. Victoria (Pilsbry 1904 1916).

Taxonomy.—Synonyms that apply to populations outside of the study area are: *Pupa curvidens* Gould 1841, *Pupa cincinnatiensis* Judge 1878, *Pupa floridana* Dall 1885, *Pupa montanella* Cocherell 1889 and *Pupa curvidens* var. *gracilis* Sterki 1890 (Pilsbry 1948); and *Pupa tappaniana* C. B. Adams 1842 (Bequaert & Miller 1973).

#### ***Gastrocopta (Vertigopsis) pilsbryana* (Sterki 1890)**

*Pupa pilsbryana* Sterki 1890; Nautilus 3:123.

*Gastrocopta pilsbryana* (Sterki). Pilsbry 1916; Man. Conch. 24:36–38; pl. 3, figs. 10, 11, 12 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:890–891; figs. 477:10–1, fig. 478 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:161.- Branson, McCoy & Sisk 1964; Southwestern Natur. 9:104. Bequaert & Miller 1973:158–159.



*Gastrocopta soneri* Chamberlin & Jones 1929; Bull. Univ. Utah 19:83; fig. 32 (shell).

*Gastrocopta pilsbryana amissidens* Pilsbry 1934; Man. Conch. 28:112; pl. 24, figs. 5, 6 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:891-893; figs. 478 (shell).

Type Localities.—*Pupa pilsbryana*: from the Colorado River, Arizona; holotype Carnegie Museum 62.20382. *Gastrocopta stoneri*: Cedar City, Utah. *Gastrocopta pilsbryana amissidens*: San Francisco Mountains, Arizona; holotype ANSP 161437.

Distribution.—Utah, Arizona, New Mexico and trans-Pecos Texas south to northern México. CHIHUAHUA: Sierra la Breña, ca. 17.7 km by road from Pearson, on road to Pacheco, ca. 7000 ft. alt.; along Rio Piedras Verdes, 4.5 km below Pacheco, 5900 ft. alt. (Pilsbry 1953). SONORA: (Branson et al. 1964). TAMAULIPAS: (Bequaert & Miller 1973).

### Subfamily VERTIGININAE Stimpson 1851

Type Genus.—*Vertigo* Müller 1774.

Taxonomy.—A single extant genus is recognized (Zilch 1959:148-149).

#### Genus *Vertigo* Müller 1774

Type Species.—*Vertigo pusilla* Müller 1774.

Distribution.—Practically the entire Holarctic Realm from sea level to 10,000 feet altitude (Pilsbry 1948).

Taxonomy.—Five subgenera are recognized. Three occur in the study area.

#### Subgenus *Vertigo* Müller 1774

Distribution.—As for the genus.

Taxonomy.—About 80 species are recognized. Three species and three subspecies occur in the study area.

#### *Vertigo (Vertigo) berryi* Pilsbry 1919

*Vertigo berryi* Pilsbry 1919; Man. Conch. 25:89; pl. 6, figs. 10, 13 (shell).

*Vertigo (Vertigo) berryi* Pilsbry. Pilsbry 1948; Land Moll. N. Amer. 2:955; fig. 513:10, 13 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:108-109; fig. 13 (map).

Type Locality.—Mill Creek canyon, San Bernardino Mountains, California; 4600 ft. alt. Holotype ANSP 105166.

Distribution.—California and Nevada south to Baja California Norte. BAJA CALIFORNIA NORTE: Valle Trinidad (Pilsbry 1948).

#### *Vertigo (Vertigo) gouldi arizonensis* Pilsbry & Vanatta 1900

*Vertigo coloradoensis arizonensis* Pilsbry & Vanatta 1900; Proc. Acad. Nat. Sci. Phila. 52:601; pl. 23, fig. 9 (shell).

*Vertigo (Vertigo) coloradoensis arizonensis* Pilsbry & Vanatta. Pilsbry 1919; Man. Conch. 25:117; pl. 12, figs. 14, 16 (shell).

*Vertigo (Vertigo) gouldi arizonensis* Pilsbry & Vanatta. Pilsbry 1948; Land Moll. N. Amer. 2:975-976; fig. 518:14, 16 (shell).- Bequaert & Miller 1973:186-187.

Type Locality.—Top of Mingus Mountain, Yavapai Co.,

Arizona, 7600 ft. alt. Holotype ANSP 119010.

Distribution.—CHIHUAHUA: Sierra de la Breña, ca. 16 mi. SW of Colonia Juarez (Bequaert & Miller 1973).

#### *Vertigo (Vertigo) gouldi coloradoensis* (Cockerell 1891)

*Pupa coloradoensis* Cockerell 1891; British Naturalist:100.

*Vertigo coloradoensis* (Cockerell). Sterki 1892; Nautilus 6:5.- Pilsbry 1919; Man. Conch. 25:115.

*Vertigo (Vertigo) gouldi coloradoensis* (Cockerell). Pilsbry 1948; Land Moll. N. Amer. 2:974; fig. 518:13; fig. 522 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:164.- Bequaert & Miller 1973:184-185.

Type Locality.—Near Swift Creek, Custer Co., Colorado.

Distribution.—Colorado, Utah and Arizona south to northwestern México. CHIHUAHUA: along the Rio Piedras Verdes, 4.6 km from Pearson, 5900 ft. alt. (Pilsbry 1953).

#### *Vertigo (Vertigo) gouldi inserta* Pilsbry 1919

*Vertigo coloradoensis inserta* Pilsbry 1919; Man. Conch. 25; 118; pl. 12, figs. 10, 11 (shell).

*Vertigo (Vertigo) gouldi inserta* Pilsbry. Pilsbry 1948; Land Moll. N. Amer. 2:976; fig. 10, 12 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:164.- Bequaert & Miller 1973:187.

Type Locality.—Bear Wallow, Santa Catalina Mountains, Pima Co., Arizona. Holotype ANSP 109559.

Distribution.—CHIHUAHUA: Sierra de la Breña, ca. 16 mi. SW of Colonia Juarez (Bequaert & Miller 1973).

#### *Vertigo (Vertigo) ovata* Say 1822

*Vertigo ovata* Say 1822 Jour. Acad. Nat. Sci. Phila. 2:375.

*Vertigo (Vertigo) ovata* (Say). Pilsbry 1919; Man. Conch. 25:83-88.- Pilsbry 1948; Land Moll. N. Amer. 2:953; figs. 513:1-3, 4, 7 (shell).- Bequaert & Miller 1973:183.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:109; fig. 13 (map).- Correa-Sandoval et al. 1998:14.

*Pupa ovata* (Say). Von Martens 1898; Biol. Cent. Amer.:327.

Type Locality.—Philadelphia, Pennsylvania.

Distribution.—Widespread in North America and the West Indies. BAJA CALIFORNIA NORTE: On road to La Playa, 0.3 km SSE of San José del Cabo; Sierra Laguna (Smith et al. 1990). SONORA: drift of Rio Sonoyta, at Sonoyta, 5 mi. S of the Arizona border (Bequaert & Miller 1973). VERACRUZ: Veracruz (Von Martens 1898; Pilsbry 1919, questions this record). SAN LUÍS POTOSÍ: Hwy. San Vicente-El Higo, km 5 (21°43'54" N, 98°32'37" W).

#### Subgenus *Alloptyx* Pilsbry 1953

*Alloptyx* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:164.

Type Species.—*Vertigo hinkleyi* Pilsbry 1921.

Distribution.—Arizona and Chihuahua.

Taxonomy.—A single species is recognized.

#### *Vertigo (Alloptyx) hinkleyi* Pilsbry 1921

*Vertigo hinkleyi* Pilsbry 1921; Man. Conch. 26:234; pl. 6, figs. 12-16 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:945; fig. 542:12-16 (shell).

*Vertigo (Alloptyx) hinkleyi* Pilsbry. Pilsbry 1953; Proc. Acad. Nat.

Sci. Phila. 105:164–165.

Type Locality.—Cave Canyon near the reservoir, Huachuca Mountains, Arizona. Holotype ANSP 46263.

Distribution.—CHIHUAHUA; Sierra de la Brea on the road to Pacheco, 17.5 km from Pearson, 7000 ft. alt. (Pilsbry 1953)

#### Subgenus *Angustula* Sterki 1888

*Angustula* Sterki 1888; Proc. U. S. National Museum, 11:378.- Pilsbry 1919; Man. Conch. 25:145.- Pilsbry 1948; Land Moll. N. Amer. 2:944.

Type Species.—*Pupa milium* Gould 1840.

Distribution.—Eastern North America, west to South Dakota, Colorado and Arizona, Jamaica, Hispaniola and Bermuda.

Taxonomy.—Two species are recognized. One occurs in the study area.

#### *Vertigo (Angustula) milium* (A. A. Gould 1840)

*Pupa milium* Gould 1840; Boston Journal of Natural History, 3:402. *Vertigo milium* (Gould). Binney 1878; Terr. Moll., 5:215; pl. 71, fig. 1.- Hinkley 1907; Nautilus 21:77.- Pilsbry, Man. Conch. 25:146–149; pl. 13, figs. 1–7 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:944–945; figs. 509a-e (shell).- Pérez & López 2002:108–106; pl. 15 (shell); text-fig (distribution map).

Type Locality.—Oak Island, Chelsea, near Boston, Massachusetts.

Distribution.—Eastern North America, west to South Dakota, Colorado and Arizona, Jamaica and Hispaniola (Pilsbry 1948). NICARAGUA: “common in the hilly northern central part of the country” (Pérez & López 2002). TAMAULIPAS: Tampico (Hinkley 1907).

#### Genus *Nearctula* Sterki 1892

*Nearctula* Sterki 1892; Nautilus 8:5.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:109.

Type Species.—*Pupa californica* Rowell, 1861 = *Pupa rowelli* Newcomb 1860 (Smith et al. 1990).

Distribution.—San Francisco, California south to Bahia San Quintin, Baja California Norte.

Taxonomy.—The genus includes two species and several subspecies. Two species and three subspecies occur in the study area.

#### *Nearctula rowelli diegoensis* (Sterki 1890)

*Pupa californica* var. *diegoensis* Sterki 1890; Nautilus 4:18.

*Vertigo californica diegoensis* (Sterki). Pilsbry 1918; Man. Conch. 25:141; pl. 9, fig. 8 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:996–998; figs. 533:8, 11 (shell).

*Nearctula rowelli diegoensis* (Sterki). Smith, Miller, Christensen & Roth 1990:109; fig. 13 (map).

Type Locality.—False Bay near Asher Station, San Diego, California.

Distribution.—BAJA CALIFORNIA NORTE: San Ramon; Isla San Martin (Pilsbry 1948); Bahia Todos Santos; near Bahia San Quintin; W shore of Bahia San Quintin; hills W of Bahia San Quintin (Smith et al. 1990).

#### *Nearctula rowelli catalinaria* (Sterki, 1890)

*Vertigo californica catalinaria* Sterki 1890; Nautilus 4:8.- Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:174; pl. 7, fig. 5 (shell).- Pilsbry 1934; Man. Conch. 28:97; pl. 15, fig. 8 (shell).

*Nearctula rowelli catalinaria* (Sterki). Smith, Miller, Christensen & Roth 1990:109; fig. 13 (map).

Type Locality.—Santa Catalina Island, Channel Islands, California.

Distribution.—California Channel Islands south along the coast to northern Baja California Norte. BAJA CALIFORNIA NORTE: Isla Guadalupe, about 1000 ft above the landing at Northeast Anchorage; ca. 2 mi. N of S end of island on E side; Sierra San Pedro Martir, along road to astronomical observatory area, 2700 m alt. (Smith et al. 1990).

#### *Nearctula rowelli guadalupensis* (Pilsbry 1927)

*Vertigo californica guadalupensis* Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:175; pl. 7, fig. 4 (shell).- Pilsbry 1934; Man. Conch. 28:97; pl. 15, fig. 7 (shell).

*Nearctula rowelli guadalupensis* (Pilsbry). Smith, Miller, Christensen & Roth 1990:109.

Type Locality.—Isla Guadalupe, Baja California Norte, México. Holotype CAS 2582.

Distribution.—Known only from the type locality.

#### *Nearctula degeneris* (Pilsbry 1927)

*Vertigo degeneris* Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 16:175; pl. 7, fig. 6 (shell).- Pilsbry 1934; Man. Conch. 28:98; pl. 15, fig. 9 (shell).

*Nearctula degeneris* (Pilsbry). Smith, Miller, Christensen & Roth 1990:110.

Type Locality.—About 1000 feet above the landing at Northeast Anchorage, Isla Guadalupe, Baja California Norte, México. Holotype CAS 2583.

Distribution.—Known only from the type locality.

#### Superfamily ORTHALICOIDEA Albers 1860

##### Family ORTHALICIDAE Albers 1860

##### Subfamily ORTHALICINAE Albers 1960

Distribution.—Tropical South America, the West Indies, south Florida, Central America, and México.

Taxonomy.—The nomenclature employed in this study follows Breure and Schouten (1985). Six genera are recognized in the subfamily Orthalicinae. One occurs in Central America and México.

#### Genus *Orthalicus* Beck 1837

*Orthalicus* Beck 1837. Von Martens 1893; Biol. Cent. Amer.:179–182.- Rehder 1945; Nautilus 59:29–31.- Richardson 1993:97–117.

*Oxystyla* Schluter 1838.- Pilsbry 1899; Man. Conch. 12:101–105.

*Zebra* Shuttleworth 1858.

Type Species.—*Buccinum zebra* Müller 1774 (Rehder 1945).

Distribution.—From Bolivia and Brazil north to México, the West Indies, and south Florida. Within the Central American-Mexican region the genus generally occurs below

1500 m altitude. *Orthalicus* occurs in México at lower elevations along the east coast from southeastern Tamaulipas south to Isthmus of Tehuantepec, northern Chiapas, the Yucatán Peninsula and the Petén region of Guatemala. On the west coast, the genus occurs from central Sinaloa southeast to Chiapas and Guatemala, but it occurs at higher elevations than on the east coast. *Orthalicus* continues south through Central America, generally at less than 1000 m altitude.

Taxonomy.—Strebel (1909) monographed the Orthalicinae. He described numerous species and subspecies, many of which were based on specimens from undocumented localities. In several instances he ignored nomenclatural priorities, used the same subspecific name for variations within different species, and employed unconventional taxonomic nomenclature. In many instances he divided single specimen lots into varieties, subspecies and even species. In other instances he placed under a given species name superficially similar appearing specimens from very widely separated localities. These actions caused many taxonomic problems, and a major review of the genus is needed. Tentatively, twenty-seven species plus twelve subspecies of *Orthalicus* are recognized in this study. Richardson (1993) provided a list of references for the species.

#### ***Orthalicus boucardi* Pfeiffer 1860**

*Orthalicus boucardi* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:138; pl. 51, fig. 7.- Fischer & Crosse 1875; Miss. Sci. Mex.:451; pl. 18, figs. 3, 3a, 3b.- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:40–41; pl. 1, fig. 1, 2a-g.- Von Martens 1893; Biol. Cent. Amer.:187; pl. 11, figs. 4, 5, 11.- Richardson 1993:98–99.

*Orthalicus boucardi-ponderosus* Strebel 1882:39; pl. 1, figs. 4a, 4b (shell). (TL: Tehuantepec).

*Orthalicus ponderosus-boucardi* Strebel 1882; 39; pl. 1, figs. 3a, 3b. (TL: Tehuantepec).

*Oxystyla longa* var. *boucardi* (Pfeiffer). Pilsbry 1899; Man. Conch. 12:127–128; pl. 20, figs. 20–26, 29 (shell).

*Oxystyla longa* var. *strebeli* Pilsbry 1899; Man. Conch. 12:128; pl. 22, figs. 7–9.

*Zebra boucardi* (Pfeiffer). Strebel 1909; Rev. Unterfam. Orthalicinen:72–76; pl. 14, figs. 210, 216, 219, 223 (shell).

*Zebra boucardi* heteromorph *melanocheila* Strebel 1909; Rev. Unterfam. Orthalicinen:74; pl. 14, figs. 217, 218.

*Zebra boucardi* heterom. *xanthus* Strebel 1909; Rev. Unterfam. Orthalicinen:74.

*Zebra boucardi* heterom. *albinus* Strebel 1909; Rev. Unterfam. Orthalicinen:74. (TL: Cerro Negro, near Santa Efigenia, Tehuantepec, Oaxaca).

*Zebra boucardi* form *adustus* Strebel 1909; Rev. Unterfam. Orthalicinen:74; pl. 14, fig. 228.

*Zebra boucardi* form *zebriola* Strebel 1909; Rev. Unterfam. Orthalicinen:75; pl. 14, figs. 229, 230.

*Zebra boucardi* form *zoniferus* Strebel 1909; Rev. Unterfam. Orthalicinen:75; pl. 14, figs. 224, 225. (TL: Tehuantepec).

Type Localities.—As indicated above with TL.

Distribution.—MICHOCÁN: no specific locality (Strebel 1909). OAXACA: Villa Alta; Tehuantepec; Cerro Negro, Tehuantepec; Sierra de Betaza (17.25° N, 96.15° W)

(Von Martens 1893).

#### ***Orthalicus decolor* Strebel 1882**

*Orthalicus decolor* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:37; pl. 7, figs. 2–4.- Richardson 1993:100.

*Oxystyla decolor* (Strebel). Pilsbry 1899; Man. Conch. 12:131–132; pl. 54, figs. 43–47.

*Zebra mars* form *decolor* (Strebel). Strebel 1909; Rev. Unterfam. Orthalicinen:62; pl. 11, figs. 167.

Type Locality.—Not stated.

Distribution.—Unknown.

Remarks.—It is doubtful if this taxon is part of the México-Central American fauna. Strebel (1909) noted its similarity to *Orthalicus mars* (Pfeiffer 1861), an Ecuadorian species

#### ***Orthalicus delphinus* (Strebel 1909)**

*Zebra delphinus* Strebel 1909; Rev. Unterfam. Orthalicinen:30–31.

*Orthalicus delphinus* (Strebel). Jacobson 1958; Amer. Mus. Nov. (1899):11–12.- Richardson 1993:100–101.

*Zebra delphinus* form *nebulosus* Strebel 1909; Rev. Unterfam. Orthalicinen:31; pl. 2, fig. 47 (shell).

*Oxystyla delphinus* form *nebulosa* (Strebel). Dall 1926; Proc. Calif. Acad. Sci. (4) 15:473–474.

*Zebra delphinus* form *pumilio* Strebel 1909; Rev. Unterfam. Orthalicinen:33–34.

*Oxystyla delphinus* form *nesiotica* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:474–475; pl. 35, fig. 3 (shell).

Type Localities.—*Zebra delphinus*: not given. *Zebra delphinus* form *nebulosus*: Mazatlán, Sinaloa, México. *Zebra delphinus* form *pumilio*: Mazatlán, Sinaloa, México. *Oxystyla delphinus* form *nesiotica*: Isla María Madre, Islas Marias, Nayarit, México. Holotype CAS 2194.

Distribution.—NAYARIT: Isla María Magdalena (Dall 1926; Jacobson 1958). SINALOA: Mazatlán (Strebel 1909).

#### ***Orthalicus elegans* Rolle 1895**

*Orthalicus elegans* Rolle 1895; Nachr. Deutsch. Malak. Gesell. 32:131.- Neubert & Janssen 2004; Arch. für Moll. 133:236; pl. 23, fig. 280 (shell).

*Orthalicus princeps elegans* Rolle. Von Martens 1901; Biol., Cent. Amer.:629; pl. 44, fig. 12.- Richardson 1993:110.

*Oxystyla princeps* var. *elegans* (Rolle). Pilsbry 1899; Man. Conch. 12:117–18.- Pilsbry 1902; Man. Conch. 14:164; pl. 24, fig. 12 (shell).

*Zebra elegans* (Rolle). Strebel 1909; Rev. Unterfam. Orthalicinen:38–39; pl. 4, figs. 66, 67.

*Orth.[alicus] colimensis* Rolle 1895; Nachr. Deutsch. Malak. Gesell. 32:131.

Type Locality.—Colima, México. Holotype in the ZMB. Distribution.—COLIMA: specific locality unknown.

#### ***Orthalicus ferussaci ferussaci* Von Martens 1863**

*Orthalicus ferussaci* Von Martens 1863; Monatsber. Akad. Wissen. Berlin 1863:542.- Fischer & Crosse 1875; Miss. Sci. Mex.:447.- Von Martens 1893; Biol. Cent. Amer.:184; pl. 10, figs. 8–10 (shell).- Breure & Schouten 1985; Zool. Meded. Uitg. d. Rijksmus. Nat. Hist. Leiden 51:29; text-fig. 16 (reproductive anatomy).- Richardson 1993:101.- Pérez & Lopéz 2002:223–224.



*Oxystyla ferussaci* (Von Martens). Pilsbry 1899; Man. Conch. 12:119–120; pl. 17, figs. 13–17 (shell).

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—COSTA RICA, Prov. Guanacaste: Guanacaste; Salinas Bay. GUATEMALA, Dept. Alta Verapaz: Panzos; San Geronimo. Dept. Zacapa: Zacapa. NICARAGUA, Dept. Chontales: Acoyapa (Pilsbry 1899). MICHOACÁN: El Espinal (Breure & Schouten 1985). OAXACA: Tehuantepec. YUCATÁN: Shkolak (Pilsbry 1899).

***Orthalicus ferussaci tricinctus* Von Martens 1893**

*Orthalicus melanocheilus* (Valenciennes). Fischer & Crosse 1875; Miss. Sci. Mex.:458 (in part); pl. 18, figs. 5, 5a (shell).

*Orthalicus ferussaci* var. *tricinctus* Von Martens 1893; Biol. Cent. Amer.:185; pl. 11, fig. 8 (shell).

*Oxystyla ferussaci* var. *tricincta* (Von Martens). Pilsbry 1899; Man. Conch. 12:120–121; pl. 18, figs. 4–6; pl. 17, fig. 18 (shell).

*Orthalicus maracaibensis tricinctus* Von Martens. Richardson 1993:106.

Type Locality.—Not specified.

Distribution.—COSTA RICA, Prov. Guanacaste: Quebrada Vijigual, Rio Saveroy Valley, 150 m alt.; El Pozo, 50 m alt. Prov. Puntarenas: Boruco, 450 m alt.; Terraba, 250–270 m alt.; Alto de Mano Tigre, 690 m alt. NICARAGUA: no specific locality (Pilsbry 1899).

***Orthalicus hackeri* (Strebel 1909)**

*Zebra hackeri* Strebel 1909; Rev. Unterfam. Orthalicinen:50; pl. 7, figs. 104, 107, 109, 110, 111 (shell).

*Orthalicus hackeri* (Strebel). Richardson 1993:103.

Type Locality.—Tepic, Nayarit, México.

Distribution.—Known only from the type locality.

***Orthalicus leucocheilus* Crosse & Fischer 1869**

*Orthalicus leucocheilus* Crosse & Fischer 1869; Journ. De Conchyl. 17:423.- Fischer & Crosse 1875; Miss. Sci. Mex.:459; pl. 18, figs. 7, 7a (shell).- Richardson 1993:103.

*Oxystyla leucocheila* (Fischer & Crosse). Pilsbry 1899; Man. Conch. 12:129–130; pl. 21, figs. 37–39 (shell).

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Orthalicus livens* Shuttleworth 1856**

*Orthalicus livens* Shuttleworth 1856; Notitiae Malacologicae 1:64; pl. 3, fig. 8.- Fischer & Crosse 1872:453, 455; pl. 18, figs. 6, 6a (shell).- Von Martens 1893; Biol. Cent. Amer.:189.- Richardson 1993:103.- Neubert & Gosteli 2005; Contr. Nat. Hist. 5:23; pl. 20, fig. 2.

*Oxystyla livens* (Shuttleworth). Pilsbry 1899; Man. Conch. 12:118–119; pl. 23, fig. 15 (shell).

*Zebra livens* (Shuttleworth). Strebel 1909; Rev. Unterfam. Orthalicinen:42–43; pl. 5, figs. 73–73 (shell).

Type Locality.—México, probably near Veracruz. Syntypes: MHNN/2 (Neubert & Gosteli 2005:pl. 20, fig. 2).

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán (Strebel 1909). VERACRUZ: exact locality unknown.

Remarks.—Beck (1837) is often credited as the author

of the name *Orthalicus livens*, but he only listed the name. Shuttleworth first described the species (Neubert & Gosteli 2005).

***Orthalicus lividus* Von Martens 1863**

*Orthalicus lividus* Von Martens 1863; Monatsber. Akad. Wiss. Berlin 1863:542.- Fischer & Crosse 1875; Miss. Sci. Mex.:448.- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:29–31; pl. 1, fig. 8; pl. 4, fig. 6; pl. 11, fig. 18 (shell).- Von Martens 1893; Biol. Cent. Amer.:186; pl. 10, figs. 11, 11a (shell).- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):8.

*Oxystyla livida* (Von Martens). Pilsbry 1899; Man. Conch. 12:124–125; pl. 19, fig. 18 19 (shell).

*Zebra lividus* (Von Martens) Strebel; 1909:48–49; pl. 7, figs. 101–106 (shell).

Type Locality.—Volcán Jorullo, Michoacán, México.

Distribution.—MICHOACÁN: N slope of Volcán Jorullo, 2700–4200 ft. alt. (Solem 1959). SINALOA: Mazatlán (Pilsbry 1899).

***Orthalicus longus* Pfeiffer 1856**

*Orthalicus longus* Pfeiffer 1856; Malak. Blätt. 12:39.- Fischer & Crosse 1875; Miss. Sci. Mex.:450–451; pl. 18, fig. 4 (shell).- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:43; pl. 6, figs. 1b, 1c (shell).- Von Martens 1893; Biol. Cent. Amer.:189.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):6.

*Oxystyla longa* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:126–129; pl. 20, figs. 20–26, 29; pl. 21, figs. 33–36; pl. 22; pl. 23, figs. 16–18 (shell).

*Zebra longa* (Pfeiffer). Strebel 1909; Rev. Unterfam. Orthalicinen:68–69; pl. 13, figs. 190 192 (shell).

Type Locality.—Unknown.

Distribution.—MICHOACÁN: Ario. MORELOS: Cuernavaca. OAXACA: Santa [Salina] Cruz Bay; San Geronimo; Tehuantepec; 10 mi. W of Tehuantepec; 20 mi. W of Tehuantepec. Solem (1959) listed San Geronimo, of which there are two such places in Oaxaca.

***Orthalicus macluræ* Von Martens 1893**

*Orthalicus macluræ* Von Martens 1893; Biol. Cent. Amer.:188; pl. 11, figs. 1–3 (shell).

*Oxystyla macluræ* (Von Martens). Pilsbry 1899; Man. Conch. 12:125; pl. 21, figs. 40–42 (shell).

*Zebra macluræ* (Von Martens). Strebel 1909; Rev. Unterfam. Orthalicinen:69–71; pl. 13, figs. 193, 203.

*Zebra macluræ* form *turrita* Strebel 1909; Rev. Unterfam. Orthalicinen:71; pl. 13, figs. 204, 205.

Type Localities.—*Orthalicus macluræ*: Cacao, Golfo de Fonseca, Nicaragua [Cacao, Dept. Choluteca, Honduras ?]. *Zebra macluræ* form *turrita*: unknown.

Distribution.—Known only from the type locality. COLIMA (Strebel 1909). Nayarit: Islas Marias (Strebel 1909). OAXACA: Tehuantepec (Strebel 1909). TRINIDAD (Strebel 1909).

Remarks.—See remarks under *Orthalicus quagus*.

***Orthalicus maculiferus* (Strebel 1909)**

*Zebra maculiferus* Strebel 1909; Rev. Unterfam. Orthalicinen:30;

pl. 3, fig. 38 (shell).

*Orthalicus maculiferus* (Strebel). Richardson 193:105.

Type Locality.—Not stated.

Distribution.—Unknown.

***Orthalicus melanocheilus melanocheilus* (Valenciennes 1833)**

*Bulimus melanocheilus* Valenciennes 1833:246; pl. 55, figs. 3a, 3b.

*Orthalicus melanocheilus* (Valenciennes). Von Martens 1865; Malak. Blätt. 12:45, 70.- Von Martens 1893; Biol. Cent. Amer.:181 190; pl. 11, figs. 6, 7, 7a.- Rolle 1895:130.- Breure & Schouten 1985; Zool. Meded. Uitg. d. Rijksmus. Nat. Hist. Leiden 51:32; text-fig. 18 (reproductive anatomy).

*Oxystyla melanocheilus* (Valenciennes). Pilsbry 1899; Man. Conch. 12:122–123; pl. 18, figs. 1–3.- McGinty 1939; Nautilus 53:6.

*Orthalicus zebra* (Müller). Binney & Bland 1869; Land & Freshwater shells N. Amer.:217; text-fig. 371, text-fig. 367 (jaw).

Type Locality.—Arbitrarily restricted to northwestern México by Von Martens (1865).

Distribution.—COLIMA: no specific locality (Rolle 1895). GUERRERO:17 mi. SW of Acapulco (McGinty 1939); 19.3 mi. W of San Marcos, 300 ft. alt. (Breure & Schouten 1985). NAYARIT: Islas Mariás (Pilsbry 1899). SINALOA: Mazatlán (Pilsbry 1899).

***Orthalicus melanocheilus mariae* (McGinty 1939)**

*Oxystyla melanocheilus mariae* McGinty 1939; Nautilus 53:6; pl. 2, fig. 6 (shell).

Type Locality.—Puerto Marquez, near Acapulco, Guerrero, México. Holotype ANSP 174048.

Distribution.—Known only from the type locality.

***Orthalicus muelleri* (Strebel 1909)**

*Orthalicus zebra* (Müller). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:24; pl. 11, fig. 20 (shell).

*Zebra muelleri* Strebel 1909; Rev. Unterfam. Orthalicinen:46.

*Orthalicus muelleri* (Strebel). Richardson 1993:107.

Type Locality.—Mazatlán, Sinaloa, México. [Mazatlán, Guerrero?].

Distribution.—Known only from the type locality.

***Orthalicus nobilis* Rolle 1895**

*Orth.[alicus] nobilis* Rolle 1895; Nachr. Deut. malak. Gesell. 27:131.- Richardson 1993:107.

*Orthalicus zoniferus* var. *nobilis* Rolle. Von Martens 1901; Biol. Cent. Amer.: pl. 46, fig. 16 (shell).

*Oxystyla nobilis* (Rolle). Pilsbry 1899; Man. Conch. 12:124.

*Oxystyla zoniferus* var. *nobilis* (Rolle). Pilsbry 1902; Man. Conch. 14: pl. 24, fig. 13 (shell).

*Zebra nobilis* (Rolle). Strebel 1909; Rev. Unterfam. Orthalicinen:39–40; pl. 5, figs. 68, 69 (shell).

Type Locality.—Colima, México.

Distribution.—COLIMA: not known from a specific locality.

***Orthalicus pallidus* (Strebel 1909)**

*Zebra pallida* Strebel 1909; Rev. Unterfam. Orthalicinen:40; pl. 5, figs. 70–71.- Neubert & Janssen 2004; Arch. für Moll. 133:237; pl. 23, fig. 281 (holotype).

*Orthalicus nobilis pallidus* (Strebel). Richardson 1993:107.

Type Locality.—Colima, México. Holotype SMF 26849.

Distribution.—Known only from the type locality.

***Orthalicus ponderosus ponderosus* Strebel 1882**

*Orthalicus ponderosus* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:35–36; pl. 7, figs. 1, 5–8.- Von Martens 1893; Biol. Cent. Amer.:190; pl. 11, figs. 10, 10a.- Rolle 1895; Nachr. Deut. malak. Gesell. 32:130.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):7.- Richardson 1993:108–109.

*Oxystyla ponderosa* (Strebel). Pilsbry 1899; Man. Conch. 12:130–131; pl. 19, figs. 14–17.- McGinty 1939; Nautilus 53:4–5; pl. 2, fig. 1 (shell).

*Orthalicus boucardi-ponderosus* Strebel 1882; 39; pl. 1, figs. 4a, 4b.

*Orthalicus ponderosus-boucardi* Strebel 1882:132.

*Orthalicus lividus-princeps* Strebel 1882:31; pl. 1, fig. 6.

*Zebra mars* (Pfeiffer). Strebel 1909; Rev. Unterfam. Orthalicinen:59–61; pl. 11, figs. 170–172.

*Zebra miles* Strebel 1909; Rev. Unterfam. Orthalicinen:64–65; pl. 12, figs. 183–184. (TL:25 miles NE of Acapulco, Guerrero).

Type Locality.—Not stated.

Distribution.—COLIMA: Culata, near Manzanillo; Colima. GUERRERO: Dos Arroyos, 25 mi. NE of Acapulco, 1000 ft. alt. (Pilsbry 1899); vicinity of Acapulco (McGinty 1939). MICHOACÁN: Sierra de Coalcoman, trail from Pomare to Maruata, 700 ft. alt.; Sierra de Coalcoman, trail from Los Pozos to Ranch Quemado, 4500 ft. alt. (Solem 1959). NAYARIT: San Blas; Tepic. OAXACA: Tehuantepec (Pilsbry 1899).

Remarks.—Apparently Strebel took the species name *Zebra miles* from the type locality of “25 miles NE of Acapulco, Guerrero”.

***Orthalicus ponderosus albatu* (McGinty 1939)**

*Oxystyla ponderosa albatu* McGinty 1939; Nautilus 53:5–6; pl. 2, fig. 4 (shell).- Richardson 1993:97.

Type Locality.—Vicinity of Acapulco, Guerrero, México. Holotype ANSP 174049.

Distribution.—Known only from the type locality.

***Orthalicus ponderosus balesi* (McGinty 1939)**

*Oxystyla ponderosa balesi* McGinty 1939; Nautilus 53:5; pl. 2, fig. 2 (shell).- Richardson 1993:97.

Type Locality.—Puerto Marquez, near Acapulco, México. Holotype ANSP 174046.

Distribution.—Known only from the type locality.

***Orthalicus princeps princeps* (Broderip 1833)**

*Bulimus princeps* Broderip 1833.

*Oxystyla princeps* (Broderip). Pilsbry 1899; Man. Conch. 12:113–115; pl. 16, figs. 1–9.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:87–88; fig. 18 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:341–342; pl. 28, figs. 1–9.- Richards 1937 253.- Richards 1939; Proc. Amer. Philos. Soc. 81:33.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):10.

*Orthalicus princeps* (Broderip). Von Martens 1893; Biol. Cent. Amer.:182–183; pl. 10, figs. 3, 3a, 3b, 4–6 (shell).- van der Schalie 1940:5.- Solem 1959; Occ. Pap. Mus. Zool. Univ.

Mich. (611):7.- Rehder 1966; Proc. Biol. Soc. Wash. 79:287–288.- Thompson 1967; Bull. Fla. St. Mus. 11:244.- Breure & Schouten 1985; Zool. Meded. Uitg. d. Rijksmus. Nat. Hist. Leiden 51:32; text-fig. 18 (reproductive anatomy).- Richardson 1993:109–111.- Pérez & Lopéz 2002:225–227.-

*O. [rthalicus] princeps* var. *crassiuscula* Strebel 1909; Rev. Unterfam. Orthalicinen:23.

Type Locality.—*Bulimus princeps*: Conchagua, Dept. La Unión, El Salvador.

Distribution.—Widely distributed from Sinaloa along the west coast and from southeastern Tamaulipas along the east coast of México south to Panamá. COSTA RICA, Prov. Guanacaste: Guanacaste (Pilsbry 1899). GUATEMALA, Dept. Alta Verapaz: Cahabon; Cobán; Senahu; Panzos (Pilsbry 1899); Chamá (van der Schalie 1940). Dept. Petén: Tikal National Park (Basch 1959). Dept. El Progreso: San Agustín (Pilsbry 1899). Dept. Quetzaltenango: Cerro Zunil (Pilsbry 1899). Dept. Retalhuleu: Retalhuleu; San Francisco Miramar; Capetillo; El Reposo (Pilsbry 1899). Dept. Suchitepequez: Mazatenango (Pilsbry 1899). NICARAGUA: Isla del Maíz (Richards 1939); commonly distributed along the Pacific Versant (Pérez & Lopéz 2002). PANAMÁ, Canal Zone: Isla Barro Colorado; between Tabernillo and San Pablo. Prov. Chiriquí: Bugaba; Quipo (Pilsbry 1926). EL SALVADOR, Dept. La Unión: Conchagua (Pilsbry 1899). CAMPECHE: several localities (Thompson 1967). CHIAPAS: Monte Libano, 600 m alt.; Monte Libano to El Censo, 600–700 m alt.; San Lorenzo, midway between Ocosingo and El Real (Bequaert 1957); Escuintla (Solem 1959). COLIMA: Colima. NAYARIT: Tepic (Pilsbry 1899); Islas Mariás (Dall 1926) (this record may be based on misidentifications of *Orthalicus delphinus* (Jacobson 1958:12)). OAXACA: Panistlahuaca; Ixstapa; Cerro de Acatepec, near Tuletepec (Pilsbry 1899); 3.4 mi. WNW Zanatepec, ca. 275 ft. alt. (Breure & Schouten 1985). QUINTANA ROO: Isla Cozumel (Richards 1937; Rehder 1966). SAN LUIS POTOSÍ: Agua Buena (21°57'33" N, 99°22'37" W, 440 m alt.); Las Cascadas, Tamasopa (21°56'05" N, 99°25'00" W); Jalpilla (21°23'39" N, 98°52'37" W) (Correa et al. 1998). SINALOA: Mazatlán; Presidio de Mazatlán (Pilsbry 1899). TAMAULIPAS: localities in the southeastern part of the state. (Correa & Catstro 2002). VERACRUZ: Papantla; Misantla; Playa Vicente; Coatepec, above Jalapa; Almolonga, below Jalapa; Mirador; Córdoba; Atoyac; Veracruz (Pilsbry 1899), Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W); San Juan Cuajinampa (21°11'53" N, 97°30'00" W); El Bajío, Carr. Naranjos-Tuxpan (20°57'17"N, 97°25'57" W); Carr. Tuxpan-Poza Rica, km 234 (20°49'11" N, 97°30'00" W); La Ordeña, Papantla (20°29'43"N, 97°18'27" W) (Correa 1999). YUCATÁN: Merida; Tabi; Shkolak; Tekanto; Ticul; Silam (Pilsbry 1899); Chichen Itza (Bequaert & Clench 1936).

#### ***Orthalicus princeps crossei* Von Martens 1893**

*Orthalicus zoniferus crossei* Von Martens 1893; Biol. Cent. Amer.:186.- Haas & Solem 1960; Nautilus 73:131.

*Oxystyla princeps crossei* (Von Martens). Pilsbry 1899; Man. Conch.

12:116; pl. 17, fig. 12. - Richardson 1993:110.

Type Locality.—Belize.

Distribution.—BELIZE: Rio Frio Cave, Double Fall (Haas & Solem 1960).

#### ***Orthalicus princeps deceptor* (Pilsbry 1899)**

*Orthalicus obductus* Shuttleworth. Fischer & Crosse; 1875:456 (exclusive of South American references and localities).- Von Martens 1893; Biol. Cent. Amer.:187 (exclusive of South American references and localities).

*Zebra obductus* (Shuttleworth). Strebel 1909; Rev. Unterfam. Orthalicinen:34; pl. 3, figs. 4a, 4b, 7b, 7c (shell) (exclusive of South American references and localities).

*Oxystyla princeps* var. *deceptor* Pilsbry 1899; Man. Conch. 12:116–117; pl. 24, figs. 19–24 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:341.

*Orthalicus princeps deceptor* (Pilsbry). Richardson 1993:110.

Type Locality.—Polvón, Dept. León, Nicaragua. Lctotypa ANSP 5099a (H. B. Baker 1963:227).

Distribution.—BELIZE: Belize. GUATEMALA, Dept. Alta Verapaz: Cobán; San Geronimo. NICARAGUA, Dept. Leon: Polvón. PANAMÁ: islands in Panamá Bay.

#### ***Orthalicus princeps fischeri* Von Martens 1893**

*Orthalicus princeps* var. *fischeri* Von Martens 1893; Biol. Cent. Amer.:183; pl. 10, fig. 7 (shell).

*Oxystyla princeps fischeri* (Von Martens). Pilsbry 1899; Man. Conch. 12:116; pl. 16, fig. 9 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:342.

*Orthalicus princeps fischeri* (Von Martens). Richardson 1993:110.

Type Locality.—El Reposo and San Isidro, Dept. Suchitepequez, Guatemala.

Distribution.—Known only from the type locality.

#### ***Orthalicus princeps perlongus* (Pilsbry 1899)**

*Oxystyla princeps* var. *perlonga* Pilsbry 1899; Man. Conch. 12:117; pl. 24, fig. 25.

*Orthalicus princeps perlongus* (Pilsbry). Richardson 1993:110.

Type Locality.—Panamá.

Distribution.—PANAMÁ: exact locality unknown.

#### ***Orthalicus princeps trifractus* (Pilsbry 1899)**

*Oxystyla princeps* var. *trifracta* Pilsbry 1899; Man. Conch. 12:115; pl. 17, figs. 10, 11 (shell).

Type Locality.—El Salvador. Lectotype ANSP 28080 (H. Baker 1963:231).

Distribution.—Known only from the type locality.

#### ***Orthalicus pseudolongus* (Strebel 1909)**

*Zebra pseudo-longus* Strebel 1909; Rev. Unterfam. Orthalicinen:71–72; pl. 14, figs. 208, 209 (shell).

Type Locality.—Unknown.

Distribution.—Unknown

#### ***Orthalicus quagus* (Strebel 1909)**

*Zebra quaga* Strebel 1909; Rev. Unterfam. Orthalicinen:41; pl. 6, figs. 92–94, 96 (shell).



*Zebra quaga* form *turrita* Strebel 1909; Rev. Unterfam. Orthalicinen:42; pl. 5, fig. 78 (shell).

*Zebra livens* form *aberrans* Strebel 1909; Rev. Unterfam. Orthalicinen:43–44; pl. 5, figs. 74–77 (shell), figs. 70–80 (shell).- Neubert & Janssen 2004; Arch. für Moll. 133:236; pl. 23, fig. 282 (syntype).

*Orthalicus quaga* (Strebel). Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):8; pl. 2, fig. 19 (shell).- Richardson 1993:112.

Type Localities.—*Zebra quaga*: not given. *Zebra quaga* form *turrita*: Colima, México. *Zebra livens* form *aberrans*: Colima; syntype SMF 25454 (Neubert & Janssen 2004).

Distribution.—COLIMA: (Strebel). MICHOACÁN: Cerro de Guzman, near Coalcoman (Solem 1959).

Remarks.—The name *Zebra quaga* form *turrits* (Strebel 1909) is a different taxon than *Zebra machurae* form *turrita* (Strebel 1909) or *Zebra sphinx* form *turrita* (Strebel 1909:68).

#### ***Orthalicus richardsoni* (Strebel 1909)**

*Zebra richardsoni* Strebel 1909; Rev. Unterfam. Orthalicinen:36–37; pl. 4, figs. 60, 61, 62 (shell).

*Orthalicus richardsoni* (Strebel). Richardson 1993:113.

Type Locality.—Tepic, Nayarit, México.

Distribution.—Known only from the type locality.

#### ***Orthalicus selectus* (Strebel 1909)**

*Zebra selectus* Strebel 1909; Rev. Unterfam. Orthalicinen:37–38; pl. 4, figs. 54, 58, 63 (shell).

*Orthalicus selectus* (Strebel). Richardson 1993:113.

Type Locality.—Trinidad.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán (Strebel 1909).

Remarks.—The inclusion of this taxon in the Central American fauna is questionable.

#### ***Orthalicus sphinx sphinx* (Strebel 1909)**

*Zebra sphinx* Strebel 1909; Rev. Unterfam. Orthalicinen:66–67; pl. 12, figs. 181–185.

*Orthalicus sphinx* (Strebel 1909).- Richardson 1993:113.

Type Locality.—Tepic, Nayarit, México.

Distribution.—Known only from the type locality.

#### ***Orthalicus sphinx latistriatus* (Strebel 1909)**

*Zebra sphinx* form *latistriata* Strebel 1909; Rev. Unterfam. Orthalicinen:67; pl. 12, figs. 177, 178.

*Orthalicus sphinx latistriatus* (Strebel). Richardson 1993:113.

Type Locality.—Not stated.

Distribution.—Unknown.

#### ***Orthalicus sphinx turrita* (Strebel 1909)**

*Zebra sphinx* form *turrita* Strebel 1909; Rev. Unterfam. Orthalicinen:67.

*Orthalicus sphinx turrita* (Strebel). Richardson 1993:113.

Type Locality.—An island above San Blas, Nayarit, México.

Distribution.—Known only from the type locality.

Remarks.—See remarks under *Orthalicus quagus*.

#### ***Orthalicus tepicensis tepicensis* (Strebel 1909)**

*Zebra tepicensis* Strebel 1909; Rev. Unterfam. Orthalicinen:45; pl. 6, figs. 97, 98 (shell).

*Orthalicus tepicensis* (Strebel). Richardson 1993:113.

Type Locality.—Tepic, Nayarit, México.

Distribution.—Known only from the type locality.

#### ***Orthalicus tepicensis rollei* (Strebel 1909)**

*Zebra tepicensis* form *rollei* Strebel 1909; Rev. Unterfam. Orthalicinen:45; pl. 6, figs. 95, 99, 100 (shell).

*Orthalicus tepicensis rollei* (Strebel). Richardson 1993:113.

Type Locality.—Colima, México.

Distribution.—Known only from the type locality.

#### ***Orthalicus torrei* (McGinty 1939)**

*Oxystyla torrei* McGinty 1939; Nautilus 52:93–94. McGinty 1939; Nautilus 53: pl. 2, fig. 7 (shell).

Type Locality.—Vicinity of Acapulco, Guerrero, México. Holotype ANSP 173342.

Distribution.—Known only from the type locality.

#### ***Orthalicus uhdeanus* Von Martens 1893**

*Orthalicus livens* var. *uhdeanus* Von Martens 1893; Biol. Cent. Amer.:189.

*Oxystyla livens* var. *uhdeanus* (Von Martens). Pilsbry 1899; Man. Conch. 12:129; pl. 23, figs. 16–16; pl. 22, figs. 3–4.

*Zebra uhdeanus* (Von Martens). Strebel 1909; Rev. Unterfam. Orthalicinen:63; pl. 10, figs. 158, 161, 162.

Type Locality.—Michoacán, México.

Distribution.—GUERRERO: Acapulco (Strebel 1909). MICHOACÁN: not known from a specific locality (Von Martens 1893).

#### ***Orthalicus zoniferus* Strebel 1882**

*Orthalicus zoniferus* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:28–29; pl. 1, figs. 7a, 7b (shell).- Von Martens 1893; Biol. Cent. Amer.:186; pl. 10, figs. 12, 13.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):7–8.- Breure & Schouten 1985; Zool. Meded. Uitg. d. Rijksmus. Nat. Hist. Leiden 51:35; text-fig. 21 (reproductive anatomy).

*Oxystyla zonifera* (Strebel). Pilsbry 1899; Man. Conch. 12:124–125; pl. 23, figs. 10–14 (shell).

*Zebra zoniferus* (Strebel). Strebel 1909; Rev. Unterfam. Orthalicinen:51–56; pl. 8, figs. 112–115, 118–119 (shell).

Type Locality.—Iguala, Guerrero, México.

Distribution.—COLIMA: no specific locality (Rolle 1895) GUERRERO: Iguala; Rancho del Plataniillo, near Iguala; Chilpancingo; Venta de Zopilote; Monte Pelegrina, N of Acapulco (Pilsbry 1899); Laguna Coyuca (Solem 1959). JALISCO: hill 1.0 mi. NW of Zapotiltic (Breure & Schouten 1985). MICHOACÁN: Tafetan (19°25' N, 100°51' W); between Tzitzio and Heutamo; 1.2 mi. S of Charapendaro [Charapandiro] (19°15' N, 101°58' W) (Solem 1959). OAXACA: no specific locality (Von Martens 1893).

#### **Subfamily BULIMULINAE Tryon 1867**

Distribution.—Tropical and subtropical Americas, South

Pacific Islands, and southern Australia.

Taxonomy.—Numerous genera and species. The taxonomy used here follows Breure (1978, 1979). Richardson (1995) provided a bibliography of the species. The study area is inhabited by 132 species and 53 subspecies.

### Genus *Plekocheilus* Guilding 1828

Type Species.—*Voluta aurisseleni* Born 1780.

Distribution.—Widely distributed in South America.

Taxonomy.—Five subgenera are recognized (Breure 1979). One enters the southeastern most region of Panamá.

#### Subgenus *Eudolichotis* Pilsbry 1896

Type Species.—*Bulimus distortus* Bruguière 1789.

Distribution.—Northern areas of Colombia, Venezuela, Guayana, Surinam, French Guayana, Trinidad, Grenada, and Pará, Brazil. Southeastern Panamá.

Taxonomy.—About a dozen species are recognized. A single species occurs in the study area.

#### *Plekocheilus (Eudolichotis) distorta panamensis* (Pilsbry 1910)

*Auris distorta panamensis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:507–508; pl. 37, figs. 8–9.

Type Locality.—Between Tabernillo and San Pablo, Panamá. Holotype ANSP 101314.

Distribution.—Known only from the type locality.

### Genus *Berendtia* Crosse & Fischer 1869

*Berendtia* Crosse & Fischer 1869; Jour. de Conchyl. 17:191.- Christensen & Miller 1975:44–46.- Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):77–78.

Type Species.—*Clausilia (Balea ?) taylori* Pfeiffer 1861.

Distribution.—Central Baja California Sur, México.

Taxonomy.—The genus is monotypic.

#### *Berendtia taylori* (Pfeiffer 1861)

*Clausilia (Balea ?) taylori* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:27; pl. 2, fig. 7.

*Berendtia taylori* (Pfeiffer). Crosse & Fischer 1870; Jour. de Conchyl. 18:15; pl. 5, figs. 11–13.- Fischer & Crosse 1875; Miss. Sci. Mex.:304–306; pl. 14, figs. 1, 1a, 1b (shell); pl. 16, fig. 1 (jaw), fig. 2, 3 (radula), fig. 4 (nervous system).- Pilsbry 1903; Man. Conch. 15:57; pl. 18, figs. 30–36 (shell).- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:506; pl. 8, fig. 10 (shell).- Christensen & Miller 1975; Nautilus 89:44–46; text-fig. 1 (reproductive anatomy), fig. 5 (shell).- Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):159; figs. 261 (reproductive anatomy).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:124–125; text-fig. 27 (map).

*Cylindrella (Urocoptis) newcombiana* Gabb 1868; Amer. Jour. Conch. 3:237; pl. 16, fig. 3 (shell).

Type Locality.—*Clausilia (Balea ?) taylori*: unknown.

*Cylindrella newcombiana*: Lower California, especially above Moleje [Molegé].

Distribution.—BAJA CALIFORNIA SUR: restricted to the Sierra de la Giganta. Smith et al. (1990) listed numerous

localities within this range.

### Genus *Bulimulus* Leach 1814

Type Species.—*Helix exilis* Gmelin 1791

Distribution.—South America from Argentina and Paraguay north to the Greater Antilles and southeastern México.

Taxonomy.—Breure (1979) listed about 100 species and subspecies names that have been proposed in the genus. Seven species and three subspecies are recognized in México and Central America.

#### *Bulimulus coriaceus* (Pfeiffer 1856)

*Bulimus coriaceus* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:318.

*Bulimulus coriaceus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:552; pl. 21, figs. 7, 7a (shell).- Von Martens 1893; Biol. Cent. Amer.:248.- Pilsbry 189; Man. Conch. 11:51–52; pl. 10, figs. 77–80 (shell).

*Bulimus behrendti* Pfeiffer 1861; Malak. Blätt. 8:168.

*Bulimulus coriaceus* var. *berendti* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:249.

Type Locality.—State of Veracruz, México.

Distribution.—OAXACA: Cacaprieto, near Santa Efigenia, Tehuantepec (Von Martens 1893). TABASCO: Teapa; San Juan Bautista (Von Martens 1893). VERACRUZ: Jalapa; Orizaba; Córdoba; Veracruz; Toxpan, near Córdoba; Atoyac (Von Martens 1893).

#### *Bulimulus corneus corneus* (Sowerby 1833)

*Bulimus corneus* Sowerby 1833; Proc. Zool. Soc. Lond. 1:37.- Neubert & Janssen 2004; Arch. für Moll. 123:206; pl. 10, fig. 107 (syntype).

*Bulimulus (Leptomerus) corneus* (Sowerby). Fischer & Crosse 1875; Miss. Sci. Mex.:548.

*Bulimulus corneus* (Sowerby).- Pilsbry 1897; Man. Conch. 11:54–55; pl. 10, fig. 82 (shell).- Pérez, Santamaria & López 1996; Estud. Mus. Cienc. Naturales de Avala 10–11:259–265 (ecology).- Pérez & López 2002:208–210.

Type Locality.—Polvón, Dept. Chinadega, Nicaragua.

Distribution.—COSTA RICA, Prov. Alajuela: Las Palmares. Prov. San José: San José. Prov. Guanacaste: Guanacaste. Prov. Limón: Puerto Viejo, on the Rio Sarapiquí (Pilsbry 1897). GUATEMALA, Dept. Retalhuleu: Retalhuleu. Dept. Escuintla: Escuintla. Dept. Zacapa: Zacapa. NICARAGUA, Pacific versant, numerous localities (Pérez & López 2002). Dept. Rio San Juan: San Juan, Castillo; Toro Rapids (Pilsbry 1897); Bluefields (Fluck 1905).

#### *Bulimulus corneus nuberculatus* (Pfeiffer 1853)

*Bulimus nuberculatus* Pfeiffer 1853; Proc. Zool. Soc. Lond. 19:257.

*Bulimulus corneus* var. *nuberculatus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:247.- Pilsbry 1897; Man. Conch. 11:56.

Type Locality.—Central America. Lectotype BMNH 1975407 (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):63).

Distribution.—Exact locality unknown.

Taxonomy.—Regarded as a questionable variety of

*Bulimulus corneus* by Von Martens (1893) and by Pilsbry, (1897).

***Bulimulus corneus minor* (Von Martens 1893)**

*Bulimulus (Leptomerus) nubeculatus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:556; pl. 25, figs. 7, 7a (shell).

*Bulimulus corneus* var. *minor* Von Martens 1893; Biol. Cent. Amer.:247.- Pilsbry 1897; Man. Conch. 11:56; pl. 10, figs. 71, 72 (shell).

Type Locality.—San Andres Tuxtla, Veracruz, México.

Distribution.—Known only from the type locality.

Taxonomy.—Regarded as a questionable variety of *Bulimulus corneus* by Von Martens (1893) and by Pilsbry (1897).

***Bulimulus dysoni* (Pfeiffer 1846)**

*Bulimus dysoni* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:39.

*Bulimulus dysoni* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:551.- Von Martens 1893; Biol. Cent. Amer.:241.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila.:315.- Pilsbry 1897; Man. Conch. 11:56–57; pl. 10, fig. 83 (shell).- Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):62.

Type Locality.—Honduras. Syntypes BMNH 197453 (Breure 1979:62).

Distribution.—HONDURAS: exact locality unknown. NICARAGUA, Dept. Chontales: Acoyapa (Martens 1893). GUATEMALA, Dept. Sacatepeques: Duenas (Pilsbry 1897). YUCATÁN: Tabi (Pilsbry 1891).

***Bulimulus inermis inermis* (Morelet 1851)**

*Bulimus inermis* Morelet 1851; Test. Noviss. II:10.

*Bulimulus (Leptomerus) inermis* (Morelet). Fischer & Crosse 1875; Miss. Sci. Mex.:550; pl. 20, figs. 16, 17 (shell).

*Bulimulus inermis* (Morelet). Pilsbry 1897; Man. Conch. 11:51; pl. 19, fig. 87 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):534.

Type Locality.—Palizada, state of Campeche, México.

Distribution.—Known only from the type locality.

***Bulimulus inermis major* Von Martens 1897**

*Bulimulus inermis* var. *major* Von Martens 1897; Biol. Cent. Amer.:250.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:134, fig. 37 (syntype).

Type Locality.—Northern Guatemala, valley of the Rio Cisoy at Rancho Chisoy. Syntype ZMB 112736.

Distribution.—Known only from the type locality.

***Bulimulus inutilis* (Reeve 1850)**

*Bulimus inutilis* Reeve 1850; Conch. Icon.: pl. 86, fig. 639 (shell).

*Bulimulus inutilis* (Reeve). Pilsbry 1897; Man. Conch. 11:73–74; pl. 11, fig. 37 (shell).- Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):144.- Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):63.

Type Locality.—Central America. Lectotype BMNH 1975162 (Breure 1978:144).

Distribution.—Unknown. The taxonomic validity of this form is questionable, and its inclusion in the Central

American fauna is doubtful.

***Bulimulus sarcodes* (Pfeiffer 1846)**

*Bulimus sarcodes* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:30.

*Bulimus (Leptomerus) sardodes* Pfeiffer. Albers 1850; Die Heliceen:166.

*Bulimulus (Leptomerus) sarcodes* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:248.

*Bulimulus sarcodes* (Pfeiffer). Pilsbry 1897; Man. Conch. 11:56; pl. 10, figs. 74–76 (shell).

Type Locality.—Honduras. Syntype ZMB 112737 (Köhler 2007:135).

Distribution.—HONDURAS: not recorded from a specific locality.

***Bulimulus unicolor* (Sowerby 1833)**

*Bulimus unicolor* Sowerby 1833; Proc. Zool. Soc. Lond. 1:72.- Neubert & Janssen 2004; Arch. für Moll., 123:233; pl. 10, fig. 109 (syntype).

*Bulimulus unicolor* (Sowerby). Pilsbry 1897; Man. Conch. 11:53; pl. 10, fig. 73 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):534.- Branson & McCoy 1963; Nautilus 76:105.- Thompson 1967; Bull. Fla. St. Mus. 11:244–248.

*Bulimulus unicolor unicolor* (Reeve). Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):147–148.

*Bulimus umbraticus* Reeve 1849; Conch. Icon.: pl. 77, fig. 550.

*Bulimus ignavus* Reeve 1849; Conch. Icon.: pl. 77, fig. 562.

*Bulimus Peténensis* Morelet 1852:10.- Neubert & Janssen 2004; Archiv für Molluskenkunde 123:222; pl. 10, fig. 108 (paralectotype).

*Bulimulus unicolor petenensis* (Morelet). Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):149.

*Bulimulus (Leptomeris) istapensis* Fischer & Crosse 1875:549; pl. 20, fig. 18.

*Bulimulus sanmiguelensis* Richards 1937; Proc. Amer. Philos. Soc. 77:253–254; pl. 4, fig. 6.

*Bulimulus ochraspiris* Branson & McCoy 1965; Neotropica 11:97–100; figs. 1a, 1b (shell), fig. 2 (jaw), figs. 3 (radula).- Thompson 1969:106–107.

Type Localities.—*Bulimus unicolor*: Panamá, Isla Perico. Lectotype BMNH 1975411 (Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):148). *Bulimus umbraticus*: Central America. *Bulimus ignavus*: Central America. Lectotype BMNH 1975411 (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):63). *Bulimus petenensis*: Petén, Guatemala. Lectotype BMNH 1893.2.4.1176 (Breure 1979:64). *Bulimulus istapensis*: Istapa, Dept. Escuintla, Guatemala. *Bulimulus sanmiguelensis*: near the town of San Miguel, Isla Cozumel, Quintana Roo. Holotype ANSP 167746. *Bulimulus ochraspiris*: 17.2 miles south of Chapotón, Campeche, México. Holotype: University of Colorado Museum 26373.

Distribution.—BELIZE: W of Gales Point; Benque Viejo; Rio Benque Viejo, 1 mi. from cayo; Rio Belize (Thompson 1967). GUATEMALA, Dept. Petén: Paso Caballo; Flores; Puebla Nueva; Remate; island in Lago Eckixil; Uaxactun (Thompson 1967); Tikal National Park (Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):10). Dept. Zacapa: around



Zacapa (Thompson 1967). Dept. Chiquimula: between Jocotan and Jumusna (Thompson 1967). NICARAGUA: Greytown (Pilsbry 1897). CAMPECHE: numerous localities (Thompson 1967). CHIAPAS. QUINTANA ROO: Isla Cozumel, 1.5 mi. NNE of San Miguel; 7.1 mi. NNW of Xiatil; 2.3 mi. SSE of Xiatil, 4.0 mi. E of Xpujil (Thompson 1967). YUCATÁN: numerous localities (Pilsbry 1897; Bequaert & Clench 1933); Chichen Itza; San Ignacio; Merida; Uxmal; 0.8 mi. NE of Becanchén; 10.0 mi. NE of Becanchén; 7.0 mi. SSE of Uman; 1.0 mi. SSE of Puerto Telchac (Thompson 1967). COLIMA: 8 mi. SW of Colima (Branson & McCoy 1963).

### Genus *Drymaeus* Albers 1850

*Drymaeus* Albers 1950:155. Type species by subsequent designation (Pilsbry 1898): *Helix hygrohylaenus* Orbigny 1835 (Bolivia).

*Goniognathus* Fischer & Crosse 1875. Type species by original designation: *Bulimus lattarei* Pfeiffer 1847.

*Metadrymaeus* Pilsbry 1926. Type species by original designation: *Bulimus josephus* Angus 1878.

Distribution.—Throughout tropical and subtropical America from Argentina north to México, and throughout the West Indies to Florida.

Taxonomy.—*Drymaeus* is a very large genus consisting of nearly 600 named species. The genus includes 65 species and 50 subspecies in México and Central America. Since the genus first was proposed, satisfactory division into smaller units has eluded authors. Recognition of subgenera has proven to be unsustainable because of the numerous intermediate species. The arrangement of species groups presented here is modified from the systems employed by Von Martens (1893) and Pilsbry (1899). Nothing more satisfactory has been proposed during the past century. Many of the species have colorful shells, and local varieties frequently have been named. This has added to confusion when working with such a large group of species. Many of the varieties have little basis for taxonomic recognition. They were proposed as descriptors and not as taxonomic units, although subsequent authors have given them formal recognition. They are included in this account while recognizing that their taxonomic status requires further study.

Breure & Eskens (1981) recognized two subgenera, *Drymaeus* and *Mesembrinus*, within the study area. They are distinguished by the development of the peristome and by some anatomical differences (Breure 1979:103). The shell in the subgenus *Drymaeus* has an expanded to broadly reflected outer lip, whereas the outer lip is simple to narrowly expanded in the subgenus *Mesembrinus*. The distinction is arbitrary except when dealing with extreme cases. Breure (1979) listed nine subgeneric names that have been applied to the subgenus *Drymaeus*. Three subgenera have been proposed for species of the Central American fauna.

*Drymaeus* is divided into species groups on the basis of similar shell traits. The distinction between species groups sometimes is arbitrary because of intraspecific shell

variations. Solem (1955) divided eastern Mexican species into four groups based on penis sheath morphology. Breure and Eskens (1981) examined the anatomy of 49 species from throughout the range of the genus. Their data do not support Solem's arrangement.

### Subgenus *Drymaeus* Albers 1850

Taxonomy.—Thirteen species and twenty subspecies occur in the study area. The following two species groups are referred to the subgenus *Drymaeus*.

#### Group of *Drymaeus josephus*

##### *Drymaeus (Drymaeus) expansus balboa* Pilsbry 1926

*Drymaeus expansus balboa* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:82–83; pl. 10, fig. 5–7 (shell).

Type Locality.—Rio Puerco, Prov. Panamá, Panamá. Holotype ANSP 140691.

Distribution.—Known only from the type locality.

##### *Drymaeus (Drymaeus) josephus josephus* (Angas 1878)

*Bulimus josephus* Angas 1878; Proc. Zool. Soc. Lond. 46:73; pl. 5, figs. 13, 14 (shell).

*Otostomus josephus* (Angas). Von Martens 1893; Biol. Cent. Amer.:202; pl. 12.

*Drymaeus josephus* (Angas). Pilsbry 1899; Man. Conch. (2) 12:32; pl. 26, figs. 6–13 (shell).- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:6.

Type Locality.—San José, Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: Talamanca (Von Martens 1893); Guapiles (Pilsbry 1920).

##### *Drymaeus josephus concolor* (Von Martens 1893)

*Otostomus josephus* var. *concolor* Von Martens 1893; Biol. Cent. Amer.:202; pl. 12, figs. 8–10 (shell).- Von Martens 1901; Biol. Cent. Amer.:630.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:145; fig. 88 (syntype).

*Drymaeus josephus* var. *concolor* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:32; pl. 20, figs. 6, 7, 8, 10, 13 (shell).

*Bulimulus (Leptobryus) zeledoni* Dall 1893; Proc. U. S. Nat. Mus. 16:644; pl. 71, fig. 2 (shell).

Type Localities.—*Otostomus josephus* var. *concolor*: Costa Rica; exact locality not stated. *Bulimulus zeledoni*: Costa Rica; holotype USNM 98231.

Distribution.—COSTA RICA, Prov. Alajuela: Santa Clara. Prov. Cartago: Turrialba; Tuis. Limón Prov: Puerto Viejo. Prov. Heredia: Rio Sarapiquí; upper Savegal Valley, 1000 m alt. Prov. Puntarenas: near Terraba; Quebrada de Tocori, Rio Paqueta Valley; El Pital, Rio Naranjo Valley (all records from Von Martens 1893 1901).

##### *Drymaeus (Drymaeus) josephus errans* Pilsbry 1926

*Drymaeus (Drymaeus) josephus errans* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:84; text-fig. 15a (shell).

Type Locality.—Mono Creek, Prov. Bocas del Toro, Panamá. Holotype in the ANSP.

Distribution.—PANAMÁ, Prov. Bocas del Toro: Senori Creek. Canal Zone: between Tabernilla and San Pablo.

***Drymaeus (Drymaeus) josephus maculosus*  
(Von Martens 1893)**

*Otostomus josephus* var. *maculosus* Von Martens 1893; Biol. Cent. Amer.:202; pl. 12, fig. 7 (shell).

*Drymaeus josephus* var. *maculosus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:32; pl. 26, fig. 9 (shell).

Type Locality.—On the banks of the Rio Pacuare del Sur; about 500 m alt.

Distribution.—Known only from the type locality.

***Drymaeus (Drymaeus) megastomus* Parodiz 1962**

*Drymaeus megastomus* Parodiz 1962; Proc. U. S. Nat. Mus. 113:435–436; pl. 1, fig. 7.

Type Locality.—Costa Rica. Holotype USNM 98230.

Distribution.—COSTA RICA, no specific locality. PANAMÁ: Cerro Campana (Parodiz 1962).

***Drymaeus (Drymaeus) zhorquinensis* (Angas 1879)**

*Bulimus zhorquinensis* Angas 1879; Proc. Zool. Soc. Lond. 47:478; pl. 40, fig. 4 (shell).

*Otostomas zhorquinensis* (Angas). Von Martens 1893; Biol. Cent. Amer.:202.

*Drymaeus zhorquiensis* (Angas). Pilsbry 1899; Man. Conch. (2) 12:31; pl. 26, figs. 14, 15.

Type Locality.—SE Costa Rica, middle Zhorquin to Caubre, on low hills and flat ground.

Distribution.—Known only from the type locality.

**Group of *Drymaeus serperastrum***

***Drymaeus (Drymaeus) castus castus* (Pfeiffer 1846)**

*Bulimus castus* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:112.

*Bulimulus (Drymaeus) castus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:485; pl. 24, figs. 11, 11a-d (shell).

*Otostomus castus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:206; pl. 12, figs. 17–19, 21 (shell).

*Drymaeus castus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:43–45; pl. 9, figs. 42–51 (shell).- Hinkley 1920; Nautilus 34:50.

Type Locality.—Not specified.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Tamahú (Von Martens 1893); Chejel (Hinkley 1920)

***Drymaeus (Drymaeus) castus xantholeucus*  
(Von Martens 1893)**

*Otostomus castus* var. *xantholeucus* Von Martens 1893; Biol. Cent. Amer.:206; pl. 12, figs. 16, 16a (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:154; fig. 139 (lectotype).

*Drymaeus castus* var. *xantholeucus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:44; pl. 9, figs. 52, 53 (shell).

Type Locality.—Sabó [Sabob], Polochic Valley, Dept. Alta Verapaz, Guatemala. Lectotype ZMB 109.941 (Köhler 2007).

Distribution.—Known only from the type locality.

***Drymaeus (Drymaeus) castus porrectus*  
(Von Martens 1893)**

*Otostomus castus* var. *porrectus* Von Martens 1893; Biol. Cent. Amer.:206; pl. 12, fig. 20.- Köhler 2007; Mitt. Mus. für Nat.

Berlin, Zool. 82:153; fig. 132 (lectotype).

*Drymaeus castus* var. *porrectus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:44.

Type Locality.—Vera Paz, Guatemala. Lectotype ZMB 109.942 (Köhler 2007).

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán or Tamahu (Von Martens 1893).

***Drymaeus (Drymaeus) chiapensis chiapensis* (Pfeiffer 1866)**

*Bulimus chiapensis* Pfeiffer 1866; Malak. Blätt. 13:81.

*Bulimulus (Drymaeus) chiapensis* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:483.

*Bulimulus chiapensis* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:70–73; pl. 5, figs. 14a-c; pl. 6, figs 13, 15, 16; pl. 12, figs. 19a-c (shell).

*Otostomus chiapensis* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:205; pl. 12, fig. 15 (shell).

*Drymaeus chiapensis* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:42–43; pl. 8, figs. 27, 29–31 (shell).

Type Locality.—Cumbre de Manzanilla, Chiapas, México.

Distribution.—MÉXICO: Cuautitlan (Strebel 1882). VERACRUZ: Córdoba; Cerro de Palmas, near Córdoba; Orizaba; Coatepec (Von Martens 1893).

***Drymaeus (Drymaeus) chiapensis quadrifasciatus*  
(Von Martens 1893)**

*Otostomus chiapensis* var. *quadrifasciatus* Von Martens 1893; Biol. Cent. Amer.:205; pl. 12, fig. 15.

*Drymaeus chiapensis* var. *quadrifasciatus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:42; pl. 8, fig. 32 (shell).

Type Locality.—Matlaquihauitl, Veracruz, México.

Distribution.—VERACRUZ: Cerro de Plumas, near Córdoba (Von Martens 1893).

***Drymaeus (Drymaeus) chiapensis nebulosus* (Von Martens 1893)**

*Otostomus chiapensis* var. *nebulosus* Von Martens 1893; Biol. Cent. Amer.:205–206.

*Drymaeus chiapensis* var. *nebulosus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:43; pl. 8, fig. 33 (shell).

Type Locality.—Cuautitlan, México (Breure 1979).

Distribution.—MÉXICO: Cuautitlan. VERACRUZ: Coatepec; Quimistlan (Von Martens 1893).

***Drymaeus (Drymaeus) colimensis* (Rolle 1895)**

*Otostomus colimensis* Rolle 1895; Nach. Deut. Malak. Ges. 32:130.- Von Martens 1901; Biol. Cent. Amer.:630; pl. 44, fig. 9 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:144; fig. 86 (lectotype).

*Drymaeus colimensis* (Rolle). Pilsbry 1899; Man. Conch. (2) 12:47.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):9; pl. 1, fig. 16.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):8; pl. 1, fig. 16.

Type Locality.—Colima, México. Lectotype ZMB 47.660a (Köhler 2007).

Distribution.—COLIMA: no specific locality recorded.

***Drymaeus (Drymaeus) dombeyanus (Ferussac 1842)***

*Bulimus dombeyanus* Ferussac 1842, in Pfeiffer, Symb. Hist. Helic. II:76.

*Bulimulus (Scutalus) dombyanus* (Ferussac). Fischer & Crosse 1873; Miss. Sci. Mex. I:515.- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:74; pl. 7, fig. 3a, 3b (shell).

*Drymaeus dombyanus* (Ferussac). Pilsbry 1899; Man. Conch. 12:33; pl. 6, figs. 1–5 (shell).- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:218.- Solem 1957 Notulae Naturae (298):11–12.

*Bulimus alcantarae* Bernardi 1853; Jour. de Conchyl. 4:35; pl. 3, fig. 1.

*Bulimus chaperi* Crosse & Fischer 1893; Jour. de Conchyl. 41:31; pl. 1, figs. 1, 2 (shell).

Type Localities.—*Bulimus dombeyanus*: not stated.

*Bulimus alcantarae*: not stated. *Bulimulus chaperi*: Mescal Island, Lake Chapala, Jalisco, México.

Distribution.—GUERRERO: Laguna Coyuca, near Acapulco. JALISCO: Presidea Island, Lago de Chapala; Guadalajara. MICHOACÁN: E side of Cerro de Guzman, Coalcomán, 3200 ft. alt.; W side of Cerro Guzman, Coalcomán, 3500 ft. alt.; Sierra de Coalcomán, 3500–4500 ft. alt.; San José de Purua (Solem 1957); Venta de Zopilote (Pilsbry 1899).

***Drymaeus (Drymaeus) dunkeri dunkeri (Pfeiffer 1846)***

*Bulimus dunkeri* Pfeiffer 1846, in Philippi; Abbild. neuer Conch. 2:12; pl. 4, fig. 10.

*Bulimulus (Scutalus) dunkeri* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex.:511.- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:76.

*Ostostomus dunkeri* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:207–208; pl. 13, fig. 1 (shell).

*Drymaeus dunkeri* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:45–46; pl. 10, figs. 54–55; pl. 15, fig. 31 (shell).- Solem 1957; Notulae Naturae (298):13.

*Drymaeus (Drymaeus) dunkeri* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):20; pl. 6, fig. 2 (lectotype).

Type Locality.—Michoacán, México. Lectotype BMNH 1975512 (Breure & Eskens 1981).

Distribution.—MICHOACÁN: Patzcuaro; Tzintzuntzan; Morelia; Uruapan; 2 mi. S of Los Reyes (Solem 1957). NAYARIT: Tepic (Pilsbry 1899).

***Drymaeus (Drymaeus) dunkeri forreri (Mousson 1883)***

*Bulimulus forreri* Mousson 1883; Jour. de Conchyl. 31:217; pl. 9, fig. 2 (shell).

*Ostostomus dunkeri* var. *forreri* (Mousson). Von Martens 1893; 207; pl. 13, figs. 2, 2a (shell).

*Drymaeus dunkeri* var. *forreri* (Mousson). Pilsbry 1899; Man. Conch. (2) 12: pl. 10, figs. 56–58 (shell).

Type Locality.—Ventanas, Durango, México.

Distribution.—CHIHUAHUA: no specific locality (Von Martens 1893). DURANGO: type locality.

***Drymaeus (Drymaeus) fenestratus (Pfeiffer 1846)***

*Bulimus fenestratus* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:26.

*Bulimulus (Scutalus) fenestratus* (Pfeiffer). Fischer & Crosse 1873;

Miss. Sci. Mex.:528.

*Ostostomus fenestratus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:200; pl. 12, figs. 1–1b (shell).

*Drymaeus fenestratus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:34–35; pl. 7, figs. 11–14.- Solem 1857; Notulae Naturae (298):12.

*Drymaeus (Drymaeus) fenestratus* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):22–25; text-figs. 67–76 (reproductive anatomy); pl. 2, fig. 6 (radula); pl. 5, fig. 2 (lectotype shell).

*Bulimulus (Ostostomus) piescheli* Von Martens 1863; in Monatsber. Akad. Wiss. Berl., 26:541.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:152–153; fig. 131 (lectotype).

Type Localities.—*Bulimus fenestratus*: México. Lectotype BMNH 1975525 (Breure & Eskens 1981). *Bulimulus piescheli*: Manzanilla, Colima, México *Bulimulus piescheli*: Manzanillo, Colima; lectotype ZMB 4.581 (Köhler 2007).

Distribution.—COLIMA: Manzanillo (Solem 1957). JALISCO: NW slope of Nevada de Colima, 7500 ft. alt. (Solem 1957); 9.1 mi. SE of San Vicente (Breure & Eskens 1981). MICHOACÁN: Sierra de Coalcomán, between Pomare and Maruato; Rancho Quemado, 5600 ft. alt.; between Tecatas and Las Higueritas, 5300 ft.; Barranca de Herradero, S of San Pedro Damian, 1500 ft. alt.; above San José de los Montañas, 4700 ft. alt.; Cerro Barolosa, N of Coalcomán, 7600–9000 ft. alt. (Solem 1959); 4 mi. S of Capacuano (Breure & Eskens 1981).

***Drymaeus (Drymaeus) lattarei lattarei (Pfeiffer 1846)***

*Bulimus lattarei* Pfeiffer 1846:112; pl. 4, fig. 11 (shell).

*Bulimulus delattarei* (Pfeiffer). Fischer & Crosse 1785:481; pl. 20, fig. 3 (animal), fig. 4 (shell); pl. 22, figs. 1–11 (anatomy). (Name amended).

*Ostostomus delattarei* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:204; pl. 12, figs. 11–14 (shell).

*Drymaeus lattarei* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:41–42 (shell).- van der Schalie 1940:4.

*Drymaeus (Drymaeus) lattarei* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):28.

*Bulimus facillatus* Reeve 1848: pl. 36, fig. 211.

Type Locality.—Vera Cruz, México. Lectotype BMNH 1975555 (Breure & Eskens 1981). The type locality was corrected to Vera Paz, Guatemala, by Pilsbry (1899:42).

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; trail to Cobán ca. 3 km E of Samac (van der Schalie 1940). Dept. Baja Verapaz: San Geronimo (Von Martens 1893).

***Drymaeus (Drymaeus) lattarei hiabundus (Von Martens 1893)***

*Ostostomus delattarei* var. *hiabundus* Von Martens 1893; 205; pl. 12; fig. 13.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:146; fig. 94 (lectotype).

*Drymaeus lattarei* var. *hiabundus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:92; pl. 8, fig. 17–19 (shell).

Type Locality.—Cerro Zunil, [Dept. Quetzaltenango], Guatemala. Lectotype ZMB 101.812a (Köhler 2007).

Distribution.—Known only from the type locality.



***Drymaeus (Drymaeus) lilacinus lilacinus* (Reeve 1949)**

*Bulimus lilacinus* Reeve 1849; Conchologica Icanica V: pl. 74, fig. 532.

*Bulimulus lilacinus* (Reeve). Fischer & Crosse 1875; Miss. Sci. Mex.:478; pl. 20, figs. 1, 2 (shell).

*Otostomus lilacinus* (Reeve). Von Martens 1893; Biol. Cent. Amer.:201; pl. 12, figs. 3–6 (shell).

*Drymaeus lilacinus* (Reeve). Pilsbry 1899; Man. Conch. (2) 12:35–36; pl. 26, figs. 1–5 (shell).- Haas 1949; Nautilus 62:138.

*Drymaeus (Drymaeus) lilacinus* (Reeve). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):28.

*Bulimus patricius* Reeve 1849: pl. 81, fig. 600.

Type Localities.—*Bulimus lilacinus*: not given. *Bulimus patricius*: not given; lectotype BMNH 1874.12.11.220 (Breure & Eskens 1982).

Distribution.—GUATEMALA, Dept. Sololá: San Agustín (Von Martens 1893). Dept. Escuintla: Zapote (Haas 1949).

***Drymaeus (Drymaeus) lilacinus crossei* (Von Martens 1893)**

*Otostomus lilacinus* var. *crossei* Von Martens 1893; Biol. Cent. Amer.:201.

*Drymaeus lilacinus* var. *crossei* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:37; pl. 7, fig. 5, 6 (shell).

Type Locality.—Alta Vera Paz, Guatemala.

Distribution.—Known only from the type locality.

***Drymaeus (Drymaeus) lilacinus ictericus* (Von Martens 1893)**

*Otostomus lilacinus* var. *ictericus* Von Martens 1893; Biol. Cent. Amer.:202; pl. 12, fig. 5 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:146 (syntype). (Not *Ototostomus depictus* var. *ictericus* Martens 1873, a Venezuela shell.)

*Drymaeus lilacinus* var. *ictericus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:37; pl. 7, fig. 10 (shell).

Type Locality.—Cerro Zunil, [Dept. Quetzaltenango], Guatemala. Syntype ZMB 109.937 (146).

Distribution.—Known only from the type locality.

***Drymaeus (Drymaeus) lilacinus jansonii* (Von Martens 1893)**

*Otostomus lilacinus* var. *jansonii* Von Martens 1893; Biol. Cent. Amer.:201; pl. 12, figs. 3–3b.

*Drymaeus lilacinus* var. *jansonii* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:37; pl. 1, figs. 7–9 (shell).

Type Locality.—Nicaragua; lectotype BMNH 1901.6.22.951 (Breure & Eskens 1981).

Distribution.—NICARAGUA: not known from a specific locality.

***Drymaeus (Drymaeus) lilacinus undulosus* (Von Martens 1893)**

*Otostomus lilacinus* var. *undulosus* Von Martens 1893; Biol. Cent. Amer.:201; pl. 12, fig. 4 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:148; fig. 110 (lectotype).

*Drymaeus lilacinus* var. *undulosus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:36; pl. 7, fig. 4 (shell).

Type Locality.—Hacienda de Las Nubes, Cerro Zunil, [Dept. Quetzaltenango], Guatemala; 4000 ft. alt. Lectotype ZMB 109.940a (Köhler 2007).

Distribution.—Known only from the type locality.

***Drymaeus (Drymaeus) lilacinus unicolor* (Von Martens 1893)**

*Otostomus lilacinus* var. *unicolor* Von Martens 1893; Biol. Cent. Amer.:201; pl. 12, fig. 6 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:153, fig. 110 (lectotype).

*Drymaeus lilacinus* var. *unicolor* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:37.

Type Locality.—Cerro Zunil, Dept. Quetzaltenango, Guatemala. Lectotype ZMB 109.919 (Köhler 2007).

Distribution.—GUATEMALA, Dept. Huehuetenango: Chalhuitz; Dept. Quetzaltenango: Cerro Zunil, 4000 ft. alt.; El Esposo, 1000 ft. alt. Dept. Sacatepequez: mountain crest between Antigua and Escuintla; Hacienda Buenavista and Hacienda Helvitia (Von Martens 1893).

***Drymaeus (Drymaeus) serperastrum* (Say 1829)**

*Bulimus serperastrum* Say 1829; New Harmony Disseminator, Jan. 1:25.

*Bulimulus serperastrum* (Say). Fischer & Crosse 1875; Miss. Sci. Mex.:488; pl. 24, fig. 4.- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:83; pl. 6, fig. 12 (shell).

*Otostomus serperastrum* (Say). Von Martens 1893; Biol. Cent. Amer.:202–204.

*Drymaeus serperastrum* (Say). Pilsbry 1899; Man. Conch. (2) 12:37–39; pl. 9, figs. 34–41 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):532.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):253.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):12.- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):15–16; pl. 1, fig. 8; pl. 2, figs. 1, 10 (radula); pl. 3, fig. 2 (jaw); pl. 4, fig. 6 (reproductive anatomy).- Branson & McCoy 1963; Nautilus 76:106.- Thompson 1967; Bull. Fla. St. Mus. 11:249.- Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):87–88; text-figs. 297–298 (reproductive anatomy).

*Bulimus liebmanni* Pfeiffer 1846; Zeitschrift für Malak.:159.

*Bulimus paivanus* Pfeiffer 1866; Malak. Blätt. 13; 81.

Type Localities.—*Bulimus serperastrum*: On the road between Vera Cruz and México City; holotype ANSP 25909 (H. B. Baker 1963:230). *Bulimus liebmanni*: México. *Bulimus paivanus*: Veracruz, México.

Distribution.—CAMPECHE: 7.1 mi. SW of Cd. Campeche (Thompson 1967). QUINTANA ROO: Isla Cozumel, 3 km S of San Miguel (Branson & McCoy 1963). SINALOA: 22 mi. NNW of Mazatlán (Breure & Eskens 1981). YUCATÁN: Chichén Itza; Progreso (Bequaert & Clench 1933); Ebitz Cave, Oxkutzcab (Bequaert & Clench 1938); San Ignacio (Solem 1955a); 1.5 mi. S of Libre Union; Piste (Branson & McCoy 1963). VERACRUZ: Jalapa; Almolonga; Córdoba; Veracruz (Von Martens 1893); Tierra Colorado, between Jalapa and Veracruz; Paso de San Juan and Loma de Piedra on the Rio Jamapa; between Paso de Ovejas and Mirador; Bobo (Pilsbry 1899). Reported from HIDALGO, and TAMAULIPAS, but without specific localities (Pilsbry 1899).

***Drymaeus (Drymaeus) zieglerei* (Pfeiffer 1846)**

*Bulimulus zieglerei* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:113.- Binney 1869:133; text-fig. 336.

*Drymaeus zieglerti* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:39–41; pl. 40, figs. 4–6 (shell).

*Bulimus californicus* Reeve 1848: pl. 5, fig. 378.

Type Locality.—Not stated.

Distribution.—SINALOA: Mazatlán; Altata (Pilsbry 1899).

### Subgenus *Mesembrinus* Albers

Taxonomy.—Breure (1979) listed five subgeneric names that have been applied to *Mesembrinus*. Three names pertain to the Central American fauna: *Mesembrinus* Albers 1850:157 (type species by subsequent designation, Albers 1860: *Helix virgulata* Ferussac 1821); *Antidrymaeus* Germain 1907 (type species by subsequent designation, Pilsbry 1926: *Bulimulus inusitatus* Fulton 1900); and *Leptodrymaeus* Pilsbry 1946 (type species by original designation: *Bulimus dominicus* Reeve 1850). Fifty-two species and thirty subspecies of *Mesembrinus* occur in the study area. The following species groups are referred to *Mesembrinus*.

#### Group of *Drymaeus sulcosus*

##### *Drymaeus (Mesembrinus) sulcosus* (Pfeiffer 1841)

*Bulimus sulcosus* Pfeiffer 1841, Symbolae Hist. Heliciorum 1:43.

*Bulimulus sulcosus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:523; pl. 23, figs. 6, 6a (shell); pl. 22, figs. 7–11 (anatomy).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:63; pl. 5, fig. 3; pl. 6, fig. 9; pl. 11, figs. 12–15 (shell).

*Otostomus sulcosus* (Pfeiffer). Von Martens, 208; pl. 13, figs. 3, 3a, 4 (shell).

*Drymaeus (Drymaeus) sulcosus* (Pfeiffer). Pilsbry 1899; Man. Conch. 12:48–49; pl. 10, figs. 59–83.- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):16–17; pl. 1, fig. 6 (shell); pl. 3, fig. 1 (jaw); pl. 4, fig. 1 (reproductive anatomy).- Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):42–44; text-figs. 141–149 (reproductive anatomy).

*Drymaeus (Mesembrinus) sulcosus* (Pfeiffer). Thompson 2008:376.

Type Locality.—Tacubaya, México. There are six states that have a place named Tacubaya: Distrito Federal, Oaxaca, Jalisco, Guanajuato, Chihuahua, and Yucatán.

Distribution.—GUERRERO: Soledad; mountains near Chilpancingo, 9500 ft. alt. (Von Martens 1893); Cerro Muerto, 2600 ft. alt. (Breure & Eskens 1981). MÉXICO: near Cd. México; summit de los Aguas Escondidas (Von Martens 1893); Santa Rosa to El Desierto de los Leones (Solem 1955a). VERACRUZ: Tuxpán (Strebel 1882).

##### *Drymaeus (Mesembrinus) aurifluus* (Pfeiffer 1856)

*Bulimus aurifluus* Pfeiffer 1857:319; pl. 35, fig. 10 (shell).

*Bulimulus aurifluus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:499; pl. 20, figs. 21, 22 (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:79.

*Otostomus aurifluus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:213.

*Drymaeus (Mesembrinus) aurifluus* (Pfeiffer). Pilsbry 1899; Man. Conch. 12:55; pl. 1, figs. 86–87 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):17–18; pl. 1, fig. 4 (shell); pl. 2, fig. 5 (radula); pl. 3, fig. 7 (jaw); pl. 4, fig. 3 (reproductive anatomy).- Breure & Eskens 1982:53; text-fig.

187 (reproductive anatomy).

Type Locality.—Córdoba, Veracruz, México.

Distribution.—OAXACA: Juquila; Yalalag. VERACRUZ: Córdoba; Jalapa, Mirador; Tuxpan (Von Martens 1893); Sumidero (Solem 1955a); 4.7 mi. S of Huatusco (Breure & Eskens 1982).

##### *Drymaeus (Mesembrinus) botterii* (Crosse & Fischer 1875)

*Bulimulus (Drymaeus) botterii* Crosse & Fischer 1875; Jour. de Conchyl. 23:52.- Fischer & Crosse 1875; Miss. Sci. Mex.:487; pl. 24, figs. 10, 10a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:63.

*Otostomus sulcosus* var. *botterii* (Crosse & Fischer). Von Martens 1893; Biol. Cent. Amer.:208.

*Drymaeus botterii* (Crosse & Fischer). Pilsbry 1899; Man. Conch. (2) 12:47–48; pl. 15, figs. 34, 35.

Type Locality.—Near Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

##### *Drymaeus (Mesembrinus) cucullus* (Morelet 1851)

*Bulimus cucullus* Morelet 1849; Test. Noviss. I:9.

*Bulimulus (Scutalus) cucullus* (Morelet). Fischer & Crosse 1875; Miss. Sci. Mex.:519; pl. 20, fig. 11 (shell).

*Otostomus cucullus* (Morelet). Von Martens 1893; Biol. Cent. Amer.:214.

*Drymaeus cucullus* (Morelet). Pilsbry 1899; Man. Conch. (2) 12:58; pl. 1, figs. 88, 89.

*Bulimulus (Scutalus) cucullus* var. *gracilior* Fischer & Crosse 1875; Miss. Sci. Mex.:519; pl. 20, fig. 12.

Type Locality.—Sisal, Yucatán, México.

Distribution.—Known only from the type locality.

##### *Drymaeus (Mesembrinus) ghiesbreghtii ghiesbreghtii* (Pfeiffer 1866)

*Bulimus ghiesbreghtii* Pfeiffer 1866; Malak. Blätt. 82.

*Bulimulus (Scutalus) ghiesbreghtii* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:522; pl. 23, fig. 4 (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:60; pl. 6, fig. 14 (shell).

*Otostomus ghiesbreghtii* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:209–210; pl. 13, fig. 9 (shell).

*Drymaeus ghiesbreghtii* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:50–52; pl. 15, figs. 32, 33; pl. 1, figs. 79, 80 (shell).

Type Locality.—Chiapas, México.

Distribution.—OAXACA: Tlacolula (Von Martens 1893).

##### *Drymaeus (Mesembrinus) ghiesbreghtii interstitialis* (Von Martens 1893)

*Otostomus ghiesbreghtii* var. *interstitialis* Von Martens 1893; Biol. Cent. Amer.:210; pl. 13, fig. 9 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:151, fig. 120 (lectotype).

*Drymaeus ghiesbreghtii* var. *interstitialis* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:51; pl. 1, fig. 75 (shell).

Type Locality.—Cumbres de San Martín, on the NW slope of the Cordillera, Guatemala; lectotype ZMB 112.876 (Köhler 2007).

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) ghiesbreghtii iodostylus*  
(Pfeiffer 1861)**

*Bulimulus iodostylus* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:23  
*Bulimulus (Scutalus) iodostylus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:539.  
*Bulimulus iodostylus* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:70; pl. 12, figs. 8a, 8b (shell).  
*Otostomus ghiesbreghtii* var. *iodostylus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:210.- Rolle 1895:130.  
*Drymaeus ghiesbreghtii* var. *iodostylus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:51-52; pl. 1, figs. 79, 80 (shell).  
Type Locality.—Santa Efigenia, Isthmus of Tehuantepec, Oaxaca, México.  
Distribution.—COLIMA: Colima (Rolle 1895). OAXACA: only from the type locality.

***Drymaeus (Mesembrinus) ghiesbreghtii stollii* (Von Martens 1887)**

*Bulimulus jonasi* var. *stollii* Von Martens 1887; Sitz.-Ber Ges. Naturf. Freude Berlin 1886:161.  
*Otostomus ghiesbreghtii* var. *stollii* Von Martens 1893; Biol. Cent. Amer.:210; pl. 13, figs. 5-8, 10 (shell).  
*Drymaeus ghiesbreghtii* var. *stollii* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:51; pl. 1, figs. 72, 73, 76-78 (shell).  
Type Locality.—Llanos of Quetzaltenango, Dept. Quetzaltenango, Guatemala; 6000-8000 ft. alt.  
Distribution.—GUATEMALA, Dept. Chilpancingo: Tecpam, 7000 ft. alt. Dept. Huehuetenango: Hacienda Nubes, slopes of Cerro Zunil. Dept. Sapatatepequez: Antigua. Dept. Sololá: Argueta; Los Encuentros, 8000 ft. alt. (Von Martens 1893).

***Drymaeus (Mesembrinus) hegewischi* (Pfeiffer 1842)**

*Bulimus hegewischi* Pfeiffer 1842; Symbolae ad historiam heliceorum 2:46.  
*Bulimulus (Scutalus) hegewischi* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:526; pl. 23, figs. 10, 10a (shell).  
*Bulimulus hegewischi* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:66; pl. 6, fig. 10 (shell).  
*Otostomus hegewischi* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:211; pl. 13, fig. 14.  
*Drymaeus hegewischi* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:52-54; pl. 1, figs. 81-84 (shell).- Pilsbry 1920:192.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 77: text-fig. 4 (shell).  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer). Breure & Eskens 1982:71-73; text-figs. 225-232 (reproductive anatomy), pl. 4, fig. 5 (radula).  
Type Locality.—Not stated.  
Distribution.—GUERRERO: Omilteme. JALISCO: Lake Chapala (Pilsbry 1920). MÉXICO: environs of Cd. México; Toluca. MORELOS: Cuernavaca. OAXACA: Tenango. PUEBLA: Puebla; Tehuacán (all above records from Von Martens 1893); NE of Chietla (Breure & Eskens 1982). QUERÉTARO: Querétaro (Pilsbry 1926). VERACRUZ: Orizaba.

***Drymaeus (Mesembrinus) jonasi* (Pfeiffer 1846)**

*Bulimus jonasi* Pfeiffer 1846, in Philippi, Abbild. neuer Conchyl.

2:125; pl. 5, fig. 4 (shell).

*Bulimulus (Scutalus) jonasi* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:525; pl. 23, figs. 7, 7a (shell).  
*Otostomus jonasi* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:212-213; pl. 13, figs. 11-13 (shell).  
*Drymaeus jonasi* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:54-55; pl. 10, figs. 64, 68-71 (shell).- Hinkley 1920; Nautilus 34:38.- Haas 1949; Nautilus 62:136, 13.  
Type Locality.—“America Centralis, Vera Cruz” (Breure 1979). This is in error for Vera Paz, Guatemala (see Von Martens 1893; Biol. Cent. Amer.:212). Three syntype BMNH 1975557.  
Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Chimaltenango: Yepocapa (Haas 1949). Dept. Guatemala: Amatitlan (Von Martens 1893); Guatemala (Hinkley 1920; Haas 1949). Dept. Sacatepéquez: Antigua; Dueñas (Von Martens 1893); Finca San Rafael (Haas 1949).

***Drymaeus (Mesembrinus) lineolatus* (Conrad 1855)**

*Bulimulus lineolatus* Conrad 1855; Proc. Acad. Nat. Sci. Phila. 7:32.  
*Otosomus recluzianus* var. *lineolatus* (Conrad). Von Martens 1893; Biol. Cent. Amer.:214.  
*Drymaeus lineolatus* (Conrad). Pilsbry 1899:57; pl. 1, figs. 90, 90 (shell).  
Type Locality.—Volcán de Cartago, Prov. Cartago, Costa Rica.  
Distribution.—COSTA RICA, Prov. Cartago: Azahar de Cartago, 1600 m alt. Prov. San José: San José, 1161 m alt.

***Drymaeus (Mesembrinus) lirinus* (Morelet 1851)**

*Bulimus lirinus* Morelet 1851; Test. Noviss. II:11.  
*Bulimulus (Drymaeus) lirinus* (Morelet). Fischer & Crosse 1875; Miss. Sci. Mex.:494; pl. 20, fig. 10 (shell).  
*Otostomus lirinus* (Morelet). Von Martens 1893; Biol. Cent. Amer.:214.  
*Drymaeus lirinus* (Morelet). Pilsbry 1899; Man. Conch. (2) 12:57-58; pl. 1, fig. 96 (shell).  
Type Locality.—San Luis de Petén, Dept. Petén, Guatemala. Syntypes BMNH 1893.2.4.1954. (Breure 1979).  
Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) recluzianus recluzianus*  
(Pfeiffer 1847)**

*Bulimus recluzianus* Pfeiffer 1847; Zeit. Malak.:82.  
*Bulimulus (Scutalus) recluzianus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:510.  
*Bulimulus recluzianus* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:68; pl. 6, fig. 8 (shell).  
*Otostomus recluzianus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:213-214.  
Type Locality.—Chiapas, México.  
Distribution.—CHIAPAS: not known from a specific locality.

***Drymaeus (Mesembrinus) recluzianus martensianus*  
Pilsbry 1899**

*Otostomus recluzianus* var. *lineolatus* Conrad. Von Martens 1893; Biol. Cent. Amer.:214.



*Drymaeus recluzianus* var. *martensianus* Pilsbry 1899; Man. Conch. 12:56.

*Drymaeus (Mesembrinus) recluzianus martensianus* Pilsbry. Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):83; text-figs. 267–268 (reproductive anatomy).

Type Locality.—Not stated.

Distribution.—COSTA RICA, Prov. San José: San José; San Francisco de Dos Rios; La Unión, 1100 m alt. (Von Martens 1893).

***Drymaeus (Mesembrinus) rudis* (Anton 1839)**

*Bulimus rudis* Anton 1839; Verz. Der. Conch. Sammlungen:43.

*Bulimulus (Scutalus) rudis* (Anton). Fischer & Crosse 1875; Miss. Sci. Mex.:523; pl. 22, figs. 7–11 (anatomy); pl. 23, figs. 6, 6a (shell).

*Bulimulus rudis* (Anton). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:63; pl. 5, fig. 3; pl. 5, fig. 9 (shell).

*Otostomus rudis* (Anton). Von Martens 1893; Biol. Cent. Amer.:209.

*Drymaeus rudis* (Anton). Pilsbry 1899; Man. Conch. (2) 12:49–50; pl. 15, figs. 43–46; pl. 10, figs. 65–67 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):16; pl. 1, fig. 5 (shell); pl. 2, fig. 11 (radula); pl. 4, fig. 7 (reproductive anatomy).

*Drymaeus (Drymaeus) rudis* (Anton). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):36–37; text-figs. 112–113 (reproductive anatomy).

Type Locality.—Not stated.

Distribution.—MÉXICO: environs of Cd. México; Chapultepec (Von Martens 1893). MICHOACÁN: Angangüeo (Von Martens 1893). OAXACA: Oaxaca (Breure & Eskens 1981). MÉXICO, D. F.: Chapultepec Park (Solem 1955a).

**Group of *Drymaeus attenuatus***

***Drymaeus (Mesembrinus) attenuatus attenuatus*  
(Pfeiffer 1851)**

*Bulimus attenuatus* Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:256.

*Bulimulus (Drymaeus) attenuatus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:491; pl. 23, figs. 1, 1a (shell).

*Bulimulus attenuatus* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:79–81; pl. 5, figs. 7, 7a, 8a, 8b, 8c (shell); pl. 13, fig. 13 (jaw).

*Otostomus attenuatus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:215–216; pl. 13, figs. 15–15b (shell).

*Drymaeus attenuatus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12: pl. 2, figs. 6–8, 12–14 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):11–12; pl. 1, fig. 7 (shell); pl. 2, fig. 2 (radula); pl. 3, fig. 4 (jaw).- Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):6–8; figs. 3–6 (reproductive anatomy).

*Bulimus kefersteini* Pfeiffer 1866:82.

*Otostomus attenuatus* var. *concolor* Von Martens 1893; Biol. Cent. Amer.:215; pl. 13, figs. 16–16b (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:145; fig. 88 syntype).

Type Localities.—*Bulimus attenuatus*: Vera Cruz, México. Lectotype BMNH 1975458 (Breure & Eskens 1981). *Otostomus attenuatus* var. *concolor*: Veracruz; syntypes ZMB.

Distribution.—COSTA RICA, Prov. Cartago: Cartago (Breure & Eskens 1981). VERACRUZ: Córdoba; Orizaba,

Atoyac; Mirador (Von Martens 1893); Sumidero (Solem 1955a).

***Drymaeus (Mesembrinus) attenuatus pittieri* (Von Martens 1893)**

*Otostomus attenuatus* var. *pittieri* Von Martens 1893; Biol. Cent. Amer.:216.- Von Martens 1901; Biol. Cent. Amer.:631.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:147; fig. 105 (lectotype).

*Drymaeus attenuatus* var. *pittieri* (Von Martens). Pilsbry 1899; Man. Conch. 12:64; pl. 2, fig. 15 (shell).

*Drymaeus attenuatus pittieri* (Von Martens). Pilsbry 1920c; Proc. Acad. Nat. Sci. Phila. 72:5–6.

Type Locality.—Alto de Mano Tigre, near Terraba, Puntarenas Prov., Costa Rica; 600 m alt. Lectotype ZMB 48.234 (Köhler 2007).

Distribution.—COSTA RICA, Prov. Cartago: road from Juan Viñas to Rio Reventazón, 3000 ft. alt. (Pilsbry 1920). Prov. San José: Dota (Von Martens 1893).

***Drymaeus (Mesembrinus) attenuatus varicosus*  
(Pfeiffer 1851)**

*Bulimus varicosus* Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:256.

*Otostomus attenuatus* var. *varicosus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:216; pl. 13, figs. 16, 16a, 16b (shell).

*Drymaeus attenuatus* var. *varicosus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:61; pl. 15, figs. 36, 37; pl. 2, figs. 9–11 (shell).

Type Locality.—“in republicâ Mexicanâ”.

Distribution.—COSTA RICA, Prov. San José: San José (Von Martens 1901). VERACRUZ: Córdoba; Orizaba; Atoyac; Mirador (Von Martens 1893).

***Drymaeus (Mesembrinus) bugabensis* (Von Martens 1893)**

*Otostomus bugabensis* Von Martens 1893; Biol. Cent. Amer.:218; pl. 13, figs. 21, 21a (shell).

*Drymaeus bugabensis* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:64–65; pl. 3, figs. 34, 35 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:86; text-figs. 17a.

*Drymaeus (Mesembrinus) bugabensis* (Von Martens). Breure & Eskens 1982:54; text-fig. 4 (lectotype).

Type Locality.—Bugaba, Prov. Chiriquí, Panamá. Lectotype BMNH 1901.6.22.958 (Breure & Eskens 1982).

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) chiriquiensis* DaCosta 1901**

*Drymaeus chiriquiensis* DaCosta 1901; Proc. Malac. Soc. London 4:238; pl. 24, fig. 1 (shell).- Pilsbry 1902; Man. Conch. (2) 14:162; pl. 48, fig. 47 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:86; text-fig. 17b (shell).

Type Locality.—Boquete, Prov. Chiriquí, Panamá.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) costaricensis* (Pfeiffer 1862)**

*Bulimus costaricensis* Pfeiffer 1862; Malak. Blätt. 9:152.

*Otostomus costaricensis* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:217–218.

*Drymaeus costaricensis* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:63–64; pl. 2, figs. 19–22 (shell).- Pilsbry 1920c; Proc. Acad. Nat. Sci. Phila. 72:5.

*Drymaeus (Drymaeus) costaricensis* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):17; figs. 34–47 (reproductive anatomy).

*Bulimus navarrensis* Angas 1875; Proc. Zool. Soc. Lond. 43:73; pl. 5, figs. 15, 16 (shell).

Type Locality.—Costa Rica.

Distribution.—COSTA RICA, Prov. Alajuela: Alahuela, 900–1000 m alt. Prov. Cartago: Cartago to Navarro (Von Martens 1893); Juan Viñas; on road to Reventazón (Pilsbry 1920). Prov. San José: San José; San Francisco de Dos Rios NICARAGUA. Dept. Matagalpa: 1.5 mi. E of Matagalpa, 2700 ft. alt. (Breure & Eskens 1981).

***Drymaeus (Mesembrinus) droueti droueti* (Pfeiffer 1856)**

*Bulimus droueti* Pfeiffer 1856: Proc. Zool. Soc. 24:319; pl. 35, fig. 12.

*Bulimulus droueti* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:533; pl. 23, figs. 9, 9a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsww.-Conch. V:77; pl. 6, fig. 6; pl. 12, fig. 7b (shell).

*Otostomus droueti* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:218.

*Drymaeus droueti* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:65–67; pl. 3, figs. 36, 38, 43 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):12–13; pl. 1, figs. 11, 13, 14 (shell); pl. 2, fig. 4 (radula) pl. 3, fig. 6 (jaw); pl. 4, fig. 4 (reproductive anatomy).

*Drymaeus bourgeoisae* Rehder 1943:28; pl. 6, fig. 10 (shell).

Type Localities.—*Bulimus droueti*: Córdoba, Veracruz, México. *Drymaeus bourgeoisae*: near Paraje Nuevo, near Córdoba, Veracruz, México; holotype USNM 517550.

Distribution.—VERACRUZ: Atoyac; Córdoba; Coatepec; Chirimoyo; San José Miahuatlan; Jalapa; Mirador; Orizaba; Tuxpan (Pilsbry 1899); Potrero to Sumidero (Solem 1955a).

***Drymaeus (Mesembrinus) droueti deletus* Solem 1955**

*Drymaeus droueti deletus* Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):13–14; pl. 1, fig. 12 (shell).

Type Locality.—Sumidero, Veracruz, México. Holotype UMMZ 181389.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) droueti sporleleri* (Pfeiffer 1866)**

*Bulimus sporleleri* Pfeiffer 1866; Malak. Blätt. 13:83.

*Bulimulus sporleleri* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:535; pl. 21, figs. 5, 5a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsww.-Conch. V:78; pl. 12, figs. 7a, 7c; pl. 13, fig. 10; pl. 14, figs. 18a 18c (shell).

*Drymaeus droueti sporleleri* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:66; pl. 3, figs. 40–42 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):14; pl. 1, fig. 10 (shell).

Type Locality.—Mirador, near Veracruz, Veracruz, México.

Distribution.—VERACRUZ: Penuela to Sumidero (Solem 1955a).

***Drymaeus (Mesembrinus) fenestrellus* (Von Martens 1863)**

*Bulimulus (Scutalus) fenestrellus* Von Martens 1863; 541.- Fischer

& Crosse 1875; Miss. Sci. Mex.:529.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:145; fig. 90 (lectotype).

*Bulimulus fenestrellus* (Von Martens). Strebel 1882; 64; pl. 5, fig. 10b (shell); pl. 13, fig. 5 (radula); pl. 14, figs. 6a, 6b (reproductive anatomy).

*Otostomus fenestrellus* (Von Martens). Von Martens 1893; Biol. Cent. Amer.:214–215.

*Drymaeus fenestrellus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:58–60; pl. 2, figs. 1–5 (shell).

*Drymaeus (Drymaeus) fenestrellus* (Von Martens). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):26; text-figs. 56–57 (reproductive anatomy).

*Bulimus gealei* H. Adams 1867; Proc. Zool. Soc. Lond., 309; pl. 19, fig. 21.

*Otostomus fenestrellus* var. *subunicolor* Von Martens 1893; Biol. Cent. Amer.:215.

Type Locality.—*Bulimulus (Scutalus) fenestrellus*: Patzcuaro, Michoacán, México; lectotype ZMB 4.457a (Köhler 2007). *Otostomus fenestrellus* var. *subunicolor*: Puebla, México; lectotype ZMB 18.767a (Köhler 2007).

Distribution.—MICHOCÁN: near El Tigre (Breure & Eskens 1981). PUEBLA: Matamoros Izucar; Puebla (Von Martens 1893).

***Drymaeus (Mesembrinus) hepatostomus* (Pfeiffer 1861)**

*Bulimus hepatostomus* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:23; pl. 3, fig. 4 (shell).

*Bulimulus (Drymaeus) hepatostomus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:493; pl. 21, figs. 2, 2a (shell).

*Otostomus hepatostomus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:217; pl. 13, figs. 18–20 (shell).

*Drymaeus hepatostomus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:62–63; pl. 2, figs. 23–27 (shell).

*Drymaeus (Drymaeus) hepatostomus* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):28; pl. 8, fig. 10 (lectotype).

Type Locality.—Tepenistlahuaca, Oaxaca, México. Lectotype BMNH 1975571 (Breure & Eskens 1981).

Distribution.—OAXACA: Juquila (Von Martens 1893).

***Drymaeus (Mesembrinus) inglorius inglorius* (Reeve 1848)**

*Bulimus inglorius* Reeve 1848; Conchologica Iconica 5: pl. 55, fig. 368 (shell).

*Otostomus inglorius* (Reeve). Von Martens 1893; Biol. Cent. Amer.:219.

*Drymaeus inglorius* (Reeve). Pilsbry 1899; Man. Conch. (2) 12:67–68; pl. 3, 43 (shell).

*Drymaeus (Mesembrinus) inglorius* (Reeve). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):73–74; figs. 233–234 (reproductive anatomy).

Type Locality.—Juquila, Oaxaca, México. Lectotype BMNH 1975536 (Breure & Eskens 1981).

Distribution.—OAXACA: Oaxaca (Breure & Eskens 1981)

***Drymaeus (Mesembrinus) inglorius heynemanni* (Pfeiffer 1866)**

*Bulimus heynemanni* Pfeiffer 1866; Malak. Blätt. 13:89.

*Bulimulus (Scutalis) heynemanni* (Reeve). Fischer & Crosse 1875;

Miss. Sci. Mex.:527.

*Bulimulus heyneimanni* (Reeve). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:68; pl. 6, fig. 7.

*Ostostomus inglorius* var. *heyneimanni* (Reeve). Von Martens 1893; Biol. Cent. Amer.:220.

*Drymaeus inglorius heyneimanni* (Reeve). Pilsbry 1899; Man. Conch. (2) 12:68; pl. 3, figs. 44, 45, 47–52 (shell).

Type Locality.—Orizaba, Veracruz, México.

Distribution.—OAXACA: Cerro San Antonio de la Cal; Tlacolula. PUEBLA: Tecomavaca, SE of Tehuacán (Von Martens 1893). VERACRUZ: type locality.

***Drymaeus (Mesembrinus) necaxanus* Solem 1955**

*Drymaeus necaxanus* Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):14–15; pl. 1, fig. 9 (shell); pl. 2, fig. 6 (radula); pl. 5, fig. 5 (jaw); pl. 4, fig. 5 (reproductive system).

Type Locality.—Pine slope near Salto Grande, Necaxa, Puebla, México. Holotype UMMZ 181377.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) pluvialis* (Pfeiffer 1862)**

*Bulimus pluvialis* Pfeiffer 1862; Malak. Blätt. 9:153.

*Ostostomus pluvialis* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:218.

*Drymaeus pluvialis* (Pfeiffer). Pilsbry 1899; Man. Conch. 12:64; pl. 3, figs. 28, 29 (shell).

Type Locality.—Costa Rica.

Distribution.—COSTA RICA: not known from a specific locality.

***Drymaeus (Mesembrinus) rufescens pinchoti* Pilsbry 1930**

*Drymaeus rufescens pinchoti* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:252–255; text-figs. 10a (reproductive anatomy), 10b, 10c (jaw and radula); pl. 18, fig. 13–24 (shells).

*Drymaeus (Mesembrinus) rufescens pinchoti* Pilsbry. Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):83–84; text-figs. 269–277; pl. 1, fig. 2. (reproductive anatomy).

Type Locality.—COLOMBIA, Isla de Providencia: about half a mile inland from South Bay. Holotype ANSP 150852.

Distribution.—COLOMBIA: known only from Isla de Providencia.

***Drymaeus (Mesembrinus) sargi sargi* (Crosse & Fischer 1875)**

*Bulimulus sargi* Crosse & Fischer 1875; Jour. de Conchyl. 23:52.

*Bulimulus (Scutalus) sargi* Crosse & Fischer. Fischer & Crosse 1875; Miss. Sci. Mex.:534; pl. 24, figs. 6, 6a (shell).

*Ostostomus sargi* (Crosse & Fischer). Von Martens 1893; Biol. Cent. Amer.:218.

*Drymaeus sargi* (Crosse & Fischer). Pilsbry 1899; Man. Conch. (2) 12:65; pl. 3, figs. 30, 31 (shell).

Type Locality.—Tamahú, Dept. Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) sargi motaguae* (Von Martens 1893)**

*Ostostomus sargi* var. *motaguae* Von Martens 1893; Biol. Cent.

Amer.:218; pl. 14, figs. 2, 2a (shell).

*Ostostomus sargi* ar. *motaguae* Breure 1979.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:152; fig. 126 (lectotype).

*Drymaeus sargi* var. *motaguae* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:65; pl. 3, figs. 32, 33 (shell).

Type Locality.—Rio Motagua Valley, Dept. Baja Verapaz, Guatemala. Lectotype ZMB 112.877a (Köhler 2007).

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) trimarianus* (Von Martens 1893)**

*Ostostomus trimarianus* Von Martens 1893; Biol. Cent. Amer.:216; pl. 13, fig. 17 (shell).

*Drymaeus trimarianus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:62; pl. 2, figs. 17 18 (shell).- Jacobson 1958:11.

*Drymaeus (Mesembrinus) trimarianus* (Von Martens). Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):24.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:153; fig. 135 (syntype).

Type Locality.—Islas Mariás, Nayarit, México. Lectotype BMNH 1901.6.22.950 (Breure 1979).

Distribution.—NAYARIT, Islas Mariás: Isla María Madre (Jacobson 1958).

**Group of *Drymaeus tripictus***

***Drymaeus (Mesembrinus) irazuensis* (Angas 1878)**

*Bulimus irazuensis* Angas 1878; Proc. Zool. Soc. Lond. 46:73; pl. 5, figs. 17–21 (shell).

*Ostostomus irazuensis* (Angas). Von Martens 1893; Biol. Cent. Amer.:224; pl. 14, figs. 12, 12a, 13, 13a (shell).- Von Martens 1901; Biol. Cent. Amer.:631.

*Drymaeus irazuensis* (Angas). Pilsbry 1899; Man. Conch. (2) 12:68–69; pl. 6, figs. 16–20, 24, 25 (shell).

Type Locality.—Volcán de Irazú, Prov. Cartago, Costa Rica.

Distribution.—COSTA RICA, Prov. Cartago: Tierra Blanca, on the south slope of Volcán Irazú 1800 m alt. (Von Martens 1893); Estrella de Cartago (Von Martens 1901).

***Drymaeus (Mesembrinus) tripictus tripictus* (Albers 1857)**

*Bulimus tripictus* Albers 1857; Malak. Blätt. 3:97.

*Ostostomus tripictus* (Albers). Von Martens 1893; Biol. Cent. Amer.:225.

*Drymaeus tripictus* (Albers). Pilsbry 1899; Man. Conch. (2) 12:69–70; pl. 6, figs. 12–15.

*Bulimulus rhodotrema* Von Martens 1868; Malak. Blätt. 15:156.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:153, fig. 133 (holotype).

Type Locality.—*Bulimus tripictus*: unknown. *Bulimulus rhodotrema*: Costa Rica; holotype ZMB 14.410 (Köhler 2007).

Distribution.—COSTA RICA: not known from a specific locality.

***Drymaeus (Mesembrinus) tripictus hoffmanni* (Von Martens 1893)**

*Ostostomus tripictus* var. *hoffmanni* Von Martens 1893; Biol. Cent. Amer.:225; pl. 14, figs. 11, 11a (shell).- Von Martens 1901;



Biol. Cent. Amer.:631.

*Drymaeus tripictus* var. *hoffmanni* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:70; pl. 6, figs. 5, 6 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:85–86; text-figs. 16a-d (shell).

*Drymaeus prestoni* DaCosta 1906; Proc. Malac. Soc. London 7:9; pl. 1, fig. 9 (shell).

*Drymaeus prestoni* var. *cancellata* DaCosta 1906; Proc. Malac. Soc. London 7:9; pl. 1, fig. 10.

Type Localities.—*Drymaeus tripictus* var. *hoffmanni*: Woods of San Lorenzo de Dota, Prov. San José, Costa Rica; 1300 m alt. *Drymaeus prestoni*: Chiriquí, Panamá. Holotype BMNH 1975478 (Breure 1979). *Drymaeus prestoni cancellata*: Chiriquí, Panamá; holotype BMNH 1907.11.21.13 (Breure 1979).

Distribution.—COSTA RICA, Prov. Heredia: Heredia (Von Martens 1893); slope of Volcán de Barba, 1600 m alt. Prov. San José: Tarbaca, 1700 m alt. PANAMÁ, Prov. Chiriquí: Chiriquí (DaCosta 1906).

#### ***Drymaeus (Mesembrinus) gabbi* (Angas 1879)**

*Bulimus gabbi* Angas 1879; Proc. Zool. Soc. Lond. 47:477; pl. 40, figs. 3, 3a (shell).

*Otostomus gabbi* (Angas). Von Martens 1893; Biol. Cent. Amer.:207. *Drymaeus gabbi* (Angas). Pilsbry 1899; Man. Conch. (2) 12:70–71; pl. 6, figs. 7–11 (shell).

Type Locality.—Central Costa Rica, upon the flanks of Pico Blanco, at an altitude of about 3000 to 6000 ft. Lectotype BMNH 1879.7.22.23 (Breure 1979).

Distribution.—COSTA RICA, Prov. Heredia: La Paz, on the road to the Rio Sarapiquí (Von Martens 1893).

#### ***Drymaeus (Mesembrinus) pilsbryi* Zetek 1933**

*Drymaeus pilsbryi* Zetek 1933; Nautilus 47; pl. 13, figs. 1 (shell).

Type Locality.—Isla Barro Colorado, Canal Zone, Panamá. Holotype ANSP 162124.

Distribution.—PANAMÁ, Canal Zone: Pedro Miguel. San Blas Com.: San Blas; Ustupu [Ustupo] (Zetek 1933).

#### **Group of *Drymaeus totonacus***

##### ***Drymaeus (Mesembrinus) albostriatus* (Strebel 1882)**

*Bulimulus albostriatus* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:94; pl. 6, fig. 3 (shell).

*Drymaeus albostriatus* (Strebel). Pilsbry 1899; Man. Conch. (2) 12: pl. 12, figs. 25, 26 (shell).

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—Known only from the type locality.

##### ***Drymaeus (Mesembrinus) championi* (Von Martens 1893)**

*Otostomus championi* Von Martens 1893; Biol. Cent. Amer.:222; pl. 14, fig. 5 (shell).

*Drymaeus championi* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:73; pl. 5, fig. 10 (shell).

*Drymaeus (Drymaeus) championi* (Von Martens). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):14.

Type Locality.—Hacienda de Las Nubes, Cerro Zunil, [Dept. Quetzaltenango], Guatemala. Lectotype BMNH 1901.6.22.451 (Breure & Eskens 1981).

Distribution.—Known only from the type locality.

##### ***Drymaeus (Mesembrinus) dominicus* (Reeve 1850)**

*Bulimus dominicus* Reeve 1850; Conch. Icon.: pl. 88, fig. 659.

*Bulimulus dominicus* (Reeve). Fischer & Crosse 1875; Miss. Sci. Mex.:540.- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:94.

*Drymaeus dominicus* (Reeve). Pilsbry 1899; Man. Conch. (2) 12:3–7; pl. 20, figs. 30–32 (shell).- Baker 1922b:10.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):532.- Branson & McCoy 1965:8.- Thompson 1967; Bull. Fla. St. Mus. 11:249.- Pérez & López 2002:216–218.

*Drymaeus (Leptodrymaeus) dominicus* (Reeve). Pilsbry 1946; Land Moll. N. Amer. 2:24–26; text-figs. 14a–14d (shell).

*Drymaeus (Mesembrinus) dominicus* (Reeve). Breure & Eskens 1942:55–56; text-figs. 188–189 (reproductive anatomy).

Type Locality.—Florida, United States of America. Lectotype BMNH 1975199 (Breure & Eskens 1981).

Distribution.—Widely distributed from Florida to Cuba and Hispaniola, and from eastern México south to Nicaragua. NICARAGUA: San Nicolas (Pilsbry 1899). *Depts. Leon, Rivas* and *Chontales* (Pérez & López 2002). CAMPECHE: 11 mi. E of Cd. Campeche (Branson & McCoy 1965); 19.2 mi. E of Silvituc (Thompson 1967). QUINTANA ROO: 4.0 mi. E of Xpujil (Thompson 1967). TABASCO. VERACRUZ: Mirador; Callejon de Zamarana, near Veracruz (Pilsbry 1899). YUCATÁN: Chichen Itza (Bequaert & Clench 1933); Labna (Pilsbry 1899).

##### ***Drymaeus (Mesembrinus) emeus* (Say 1829)**

*Bulimus emeus* Say 1829a; New Harmony Disseminator of Useful Knowledge:25–26.

*Otostomus emeus* (Say). Von Martens 1893; Biol. Cent. Amer.:222.; pl. 14, figs. 6, 6a, 8, 8a (shell).

*Drymaeus emeus* (Say). Pilsbry 1899; Man. Conch. 12:73–75; pl. 4, figs. 52–61 (shell).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval 1999; Rev. Biol. Trop. 47:- Correa-Sandoval, Gutiérrez & Reza 1998; Acta Zool. Mex. (73):17.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.

*Drymaeus (Mesembrinus) emeus* (Say). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):66–68; text-figs. 213–221 (reproductive anatomy).

*Bulimulus palpalensis* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:85–87; pl. 5, figs. 12a-c, 16 (shell).- Neubert & Janssen 2004; Archiv für Molluskenkunde 123:221; pl. 16, fig. 192 (syntype).

*Otostomus emeus* var. *hypozoneus* Von Martens 1893; Biol. Cent. Amer.:223.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:150; fig. 116 (lectotype).

*Otostomus emeus* var. *albivariocosus* Von Martens 1893; Biol. Cent. Amer.:223; pl. 14, figs. 8, 8a.- Kohler 2007:143; fig. 82 (letotype).

Type Localities.—*Bulimus emeus*: road from Veracruz to México City. *Bulimulus palpalensis*: not specified among three localities near Misantla, Veracruz, México. *Otostomus emeus* var. *hypozoneus*: Jalapa, Veracruz; lectotype ZMB 109.947a (Köhler 2007). *Otostomus emeus* var. *albivariocosus*:

Playa Vicente, Veracruz; lectotype ZMB 109946a (Köhler 2007).

Distribution.—Reported from northeastern México south to Espírito Santo, Brazil (Breure & Eskens 1982). NUEVO LEÓN: Santiago (Correa-Sandoval 1993); Iturbide (Correa-Sandoval 1997). PUEBLA: near Necaxa (Solem 1955a). SAN LUIS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodríguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodríguez 2005). VERACRUZ: base of Volcán San Martín (Breure & Eskens 1982); San Juan Cuajinampa (21°11'53" N, 97°30'00" W); El Bajío, Carr. Naranjos-Tuxpan (20°57'17" N, 97°25'57" W); Carr. Tuxpan-Poza Rica, km 234 (20°49'11" N, 97°30'00" W); Barra de Cazones, 2 km al N (20°44'51" N, 97°12'06" W); El Cedral, Carr. Poza Rica-Tajín (20°29'11" N, 97°25'23" W); Ruinas El Tajín (20°26'29" N, 97°22'30" W) (Correa-Sandoval 2000).

***Drymaeus (Mesembrinus) intrapictus* Pilsbry 1930**

*Drymaeus intrapictus* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340; pl. 30, fig. 8 (shell).

Type Locality.—Tonosi, Prov. Los Santos, Panamá. Holotype ANSP 140834.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) perductorum* Rehder 1943**

*Drymaeus perductorum* Rehder 1943; Nautilus 57:20; pl. 6, figs. 6, 7 (shell).- Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):81; figs. 257–266 (reproductive anatomy); pl. 4, fig. 5. (radula).

Type Locality.—Near Las Grutas de Cacahuamilpa, Guerrero, México. Holotype USNM 517552.

Distribution.—GUERRERO: known only from the immediate vicinity of the type locality.

***Drymaeus (Mesembrinus) semimaculatus* Pilsbry 1898**

*Bulimus maculatus* Lea 1839; Trans. Amer. Philos. Soc. 6:86; pl. 23, fig. 112. (not *Bulimus maculatus* Bruguiere 1798).

*Ostostomus maculatus* (Lea). Von Martens 1893; Biol. Cent. Amer.:220–221; pl. 14, fig. 3.

*Drymaeus semimaculatus* Pilsbry 1898; Man. Conch. (2) 11:297–297; pl. 5, figs. 8, 9 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:84–85.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340.- Morrison 1946; Smiths. Misc. Coll. 106:43.

*Drymaeus (Mesembrinus) semimaculatus* Pilsbry. Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):84–86; text-figs. 278–287 (reproductive anatomy).

Type Locality.—Cartagena, Colombia.

Distribution.—Colombia north to Guatemala. PANAMÁ, Archipiélago de las Perlas: Isla San José (Morrison 1946). Canal Zone: Isla Barro Colorado (Pilsbry 1930d). Prov. Chiriquí: Chiriquí. Prov. Panamá: Garachino. COSTA RICA, Prov. Cartago: Tapantí (Breure & Eskens 1982). NICARAGUA: San Nicolás (Martens 1893). GUATEMALA, Dept. Petén: Dolores; San Luis. Dept. Retalhuleu: Champerico (Von Martens 1893).

***Drymaeus (Mesembrinus) totonacus* (Strebel 1882)**

*Bulimulus totonacus* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:84; pl. 5, figs. 13, 13a (shell); pl. 13, figs. 11, 11a (radula); pl. 14, figs. 9a-f, 10e (anatomy).

*Ostostomus totonacus* (Strebel). Von Martens 1893; Biol. Cent. Amer.:221–222.

*Drymaeus totonacus* (Strebel). Pilsbry 1899:71–72; pl. 5, figs. 11–13 (shell).

Type Locality.—Not stated.

Distribution.—VERACRUZ: Rancho Quilate, near Misantla; Agua Caliente, near Misantla (Strebel 1892).

***Drymaeus (Mesembrinus) tryoni tryoni* (Fischer & Crosse 1875)**

*Bulimus mexicanus* (Lamarck). Reeve 1850; Conch. Icon. *Bulimus*: pl. 40, fig. 244.

*Bulimulus (Thaumastus) tryoni* Fischer & Crosse 1875; Miss. Sci. Mex.:565.

*Ostostomus tryoni* (Fischer & Crosse). Von Martens 1893; Biol. Cent. Amer.:232–233.

*Drymaeus tryoni* (Fischer & Crosse). Pilsbry 1899; Man. Conch. (2) 12:75–76; pl. 3, fig. 53 (shell).

Type Locality.—Sinaloa, México.

Distribution.—SINALOA: not known from a specific locality.

***Drymaeus (Mesembrinus) tryoni pochutlensis* (Crosse & Fischer 1875)**

*Bulimulus tryoni pochutlensis* Crosse & Fischer 1875, in Fischer & Crosse 1875; Miss. Sci. Mex. I:565; pl. 24, figs. 3, 3a (shell).

*Ostostomus tryoni* var. *pochutlensis* (Crosse & Fischer). Von Martens 1893; Biol. Cent. Amer.:233.

*Drymaeus tryoni* var. *pochutlensis* (Crosse & Fischer). Pilsbry 1899; Man. Conch. (2) 12:76; pl. 3, 54–55 (shell).

Type Locality.—Pochutla, near Chilapa, Guerrero, México.

Distribution.—Known only from the type locality.

**Group of *Drymaeus sulfureus***

***Drymaeus (Mesembrinus) moricandi moricandi* (Pfeiffer 1846)**

*Bulimus moricandi* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:113.

*Ulimulus (Drymaeus) moricandi* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:497; pl. 24, figs. 9, 9a (shell).

*Drymaeus moricandi* (Pfeiffer). Pilsbry 1899; Man. Conch. 12:78–79; pl. 4, figs. 62–64 (shell).

*Drymaeus (Mesembrinus) moricandi* (Pfeiffer). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):78; text-figs. 247–248 (reproductive anatomy).

Type Locality.—Mount Cobán, Central America.

Lectotype BMNH 1975212 (Breure 1979).

Distribution.—VERACRUZ: above Rio Metlac 19 mi. SW and 0.8 mi. N of Fortín (Breure & Eskens 1981).

***Drymaeus moricandi hyalinoalbidus* (Fischer & Crosse 1875)**

*Bulimulus (Drymaeus) moricandi* var. *hyalino-albida* Fischer & Crosse 1875; Miss. Sci. Mex.:498.

*Ostostomus moricandi* var. *hyalino-albida* (Fischer & Crosse). Von

Martens 1893; Biol. Cent. Amer.:227.

*Drymaeus moricandi* var. *hyalino-albidus* (Fischer & Crosse). Pilsbry 1899; Man. Conch. 12:79.

Type Locality.—Chiapas, México.

Distribution.—GUATEMALA, Dept. Izabal: Izabal (Von Martens 1893). CHIAPAS: no specific locality.

***Drymaeus (Mesembrinus) sulfureus* (Pfeiffer 1856)**

*Bulimus sulfureus* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:318; pl. 35, fig. 11 (shell).

*Bulimulus sulfureus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:495; pl. 23, figs. 3, 3a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:87; pl. 5, figs. 11a-d; pl. 13, figs. 15, 15a, 16; pl. 15, figs. 2a-c (shell).

*Otostomus sulfureus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:225; pl. 14, figs. 14–17 (shell).- Von Martens 1901; Biol. Cent. Amer.:631–632.

*Drymaeus sulfureus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:76–78; pl. 4, figs. 65–68 (shell).- Hinkley 1920; Nautilus 34:48, 51.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:5.- Van der Schalie 1940; Occ. Pap. Mus. Zool. Univ. Mich. (413):4.- Haas 1949; Nautilus 62:138.- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):19; pl. 1, fig. 3 (shell); pl. 2, figs. 6, 9, 12 (radula); pl. 3, fig. 3 (jaw); pl. 4, fig. 2 (reproductive anatomy).- Branson & McCoy 1963; Nautilus 76:106.- Correa-Sandoval et al. 1998:17.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval 2002; Acta Zool. Mex. (86):238.

*Otostomus sulfureus* var. *albidus* Von Martens 1893; Biol. Cent. Amer.:226.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:148; fig. 112 (lectotype).

*Otostomus sulfureus* var. *gracilior* Von Martens 1893; Biol. Cent. Amer.:226; pl. 14, fig. 14 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:150; fig. 115 (lectotype).

*Bulimus citronellus* Angas 1879; Proc. Zool. Soc. Lond. 47:479; pl. 40, fig. 5 (shell).

*Otostomus sulfureus* var. *obesus* Von Martens 1893; Biol. Cent. Amer.:226; pl. 14, fig. 18 (shell).

Type Localities.—*Bulimus sulfureus*: Córdoba, Veracruz, México. *Bulimus citronellus*: Uren to Lipurio, Costa Rica; lectotype BMNH 1879.7.22.19 (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):117). *Otostomus sulfureus* var. *albidus*: Teapa, Tabasco; lectotype ZNB 109.947a (Köhler 2007). *Otostomus sulfureus* var. *gracilior*: Senahu, Dept. Alta Verapaz, Guatemala; lectotype ZMB 109.887a (Köhler 2007). *Otostomus sulfureus* var. *obesus*: Huatusco, Veracruz, México.

Distribution.—COSTA RICA, Prov. Alajuela: San Mateo. Prov. Cartago: Cartago; Rio Reventazón Valley, near Juan Viñas, 2500 ft. alt.; Turrialba; Tuis; Santa Clara. Prov. Heredia: San Juan, Sarapiquí, 100–200 m alt. Prov. Limón: near Guapiles, 980 ft. alt. Prov. Puntarenas: Bonnefil Farms, Rio Surubres, 700 ft. alt. (Pilsbry 1920c). Prov. San José: San José, 1161 m alt. NICARAGUA, Dept. Chontales: La Libertad. GUATEMALA, Dept. Alta Verapaz: north of Cobán; Chiacam; San Joaquin; Chacoj; Senahu; Panzos (Pilsbry 1899); Chamá (Hinkley 1920); Samac; Panzamala (van der Schalie 1940). Dept. Izabal: Jocolo (Hinkley 1920). Dept. Zacapa: Santa Clara (Haas 1949). CAMPECHE: Cd.

de Carmen; 16 mi. E of Cd. Campeche (Branson & McCoy 1963). SAN LUIS POTOSÍ: entrance to Las Pozas (Xilitla), 540 m alt. (21°23'39" N, 98°59'44" W); Carr. Tamazunchale-Chapulhuacán, km 15, 140 m alt. (21°12'40" N, 98°51'34" W); Carr. Tamazunchale-Chapulhuacán, 15.5 km from Tamazunchale, 140 m. alt. (21°12'26" N, 98°53'25" W); Vega Larga, 5 km from Tamazunchale, 120 m. alt. (21°14'23" N, 98°50'31" W); Cueva "El Salitre", Xilitla (21°22'55" N, 98°57'53" W) Correa-Sandoval et al. 1998). TABASCO: Teapa. NUEVO LEÓN: Hwy Santiago-Montemorelos, km. 7 (25°56'17" N, 99°58'25" W) (Correa-Sandoval & Salazar 2005). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). VERACRUZ: Atoyac; Córdoba; Orizaba; Consolapa; Soncoantla; Jalapa (Pilsbry 1899); Sumidero (Solem 1955a); Rancho El Sol, Naranjos (21°20'00" N, 97°43'6" W); San Juan Cuajinampa (21°11'53" N, 97°30'00" W); El Bajío, Carr. Naranjos-Tuxpan (20°57'17" N, 97°25'57" W); Carr. Tuxpan-Poza Rica, km 234 (20°49'11" N, 97°30'00" W); El Cedral, Carr. Poza Rica-Tajín (20°29'11" N, 97°25'23" W); La Ordeña, Papantla (20°29'43" N, 97°18'27" W); Papantla (20°25'24" N, 97°17'18" W) (Correa-Sandoval 2000). YUCATÁN: 1.5 mi. S of Libre Union (Branson & McCoy 1963).

**Group of *Drymaeus multilineatus***

***Drymaeus (Mesembrinus) discrepans* (Sowerby 1833)**

*Bulimus discrepans* Sowerby 1833; Proc. Zool. Soc. Lond. 1:72.

*Bulimulus (Liostracus) discrepans* (Sowerby). Fischer & Crosse 1875; Miss. Sci. Mex.:503.

*Otostomus discrepans* (Sowerby). Von Martens 1893; Biol. Cent. Amer.:230.

*Drymaeus discrepans* (Sowerby). Pilsbry 1899; Man. Conch. (2) 12:81–82; pl. 12, figs. 18 19 (shell).- Pérez & López 2002:213–215.

Type Locality.—Conchagua volcano, Dept. La Unión, El Salvador .

Distribution.—COSTA RICA, Prov. Guanacaste: Salinas Bay. NICARAGUA, Dept. Boaco: Masapa. Dept. Granada: Granada. Dept. León: San Nicolas. Pacific versant, numerous localities (Pérez & López 2002). EL SALVADOR, Dept. La Unión: Conchagua. GUATEMALA, Dept. Baja Verapaz: Salama; San Geronimo, near Salama. Dept. Zacapa: Zacapa. (All records from Von Martens 1893).

***Drymaeus (Mesembrinus) heterogeneus* (Pfeiffer 1866)**

*Bulimus heterogeneus* Pfeiffer 1866; Malak. Blätt. 8:118.

*Bulimulus (Liostracus) heterogeneus* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:506.

*Bulimulus heterogeneus* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:92.

*Otostomus heterogeneus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:235.

*Drymaeus heterogeneus* (Pfeiffer). Pilsbry 1899; 85; pl. 12, figs. 22, 23 (shell).

Type Locality.—Vera Cruz.



Distribution.—NAYARIT: Tepic (Von Martens 1893). VERACRUZ: Mirador; Palo Gacho, Rinconada; Jalapa (Von Martens 1893).

***Drymaeus (Mesembrinus) inusitatus (Fulton 1900)***

*Bulimulus (Drymaeus) inusitatus* Fulton 1900:87.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:151; fig. 121 (syntype?).

*Drymaeus inusitatus* (Fulton). Pilsbry 1902; Man. Conch. (2) 14:162–163; pl. 26, fig. 43.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:85; text-fig. 15b (shell).

*Drymaeus (Mesembrinus) inusitatus* (Fulton). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):75–76; text-figs. 245–246 (reproductive anatomy).

Type Locality.—Costa Rica; holotype BMNH 1901.4.25.28.

Distribution.—COSTA RICA, Prov. Limón 28.3 mi. W of Limón (Breure & Eskens 1981). PANAMÁ, Prov. Chiriquí: near Chiriquí Lagoon (Pilsbry 1926).

***Drymaeus (Mesembrinus) livescens (Pfeiffer 1842)***

*Bulimus livescens* Pfeiffer 1842; Symbolae ad historiam heliceorum II:48.

*Bulimulus (Mesembrinus) livescens* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex.:543.

*Bulimulus livescens* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:91; pl. 6, fig. 4 (shell).

*Otostomus livescens* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:228; pl. 15, figs. 7, 8 (shell).

*Drymaeus livescens* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:80–81; pl. 4, figs. 76–81 (shell).

Type Locality.—Tehuacán, Puebla, México.

Distribution.—GUERRERO: Chilpancingo. PUEBLA: SE of Tehuacán; Tecomavaca (Von Martens 1893).

***Drymaeus (Mesembrinus) moritinctus (Von Martens 1893)***

*Otostomus moritinctus* Von Martens 1893; Biol. Cent. Amer.:228; pl. 14, figs. 9–10.- Neubert & Janssen 2004; Archiv für Mollusk., 123: pl. 16, fig. 191 (paralectotype).

*Drymaeus moritinctus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:79–80; pl. 6, figs. 26–29 (shell).

*Drymaeus (Mesembrinus) moritinctus* (Von Martens). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):78.- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:152; fig. 128 (paralectotype).

Type Locality.—Chilpancingo, Guerrero, México; 4600 ft. alt. Lectotype BMNH 1901.6.22.841 (Breure & Eskens 1981).

Distribution.—GUERRERO: Known only from the vicinity of the type locality.

***Drymaeus (Mesembrinus) multilineatus (Say 1825)***

*Bulimus multilineatus* Say 1825; Journ. Journ. Acad. Nat. Sci. Phila. 5:120.

*Drymaeus multilineatus* (Say). Pilsbry 1899; Man. Conch. (2) 12:27; pl. 11, figs. 27–33.- Hinkley 1907; Nautilus 21:72.- Pilsbry 1946; Land Moll. N. Amer. 2:26–28; figs. 15a–15d.- Branson & McCoy 1965; Univ. Colorado Stud. Biol., (13):8.- Correa-Sandoval, Gutiérrez & Reza 1998; Acta Zool. Mex.

(73):17.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.- Pérez & López 2002:218–220.

*Drymaeus (Mesembrinus) multilineatus* (Say). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):78–80; text-figs. 249–256 (reproductive anatomy).

*Bulimus sisalensis* Morelet 1849; Test. Noviss. I:9.- Neubert & Janssen 2004; Archiv für Molluskenkunde 123:230; pl. 16, fig. 193 (paralectotype).

Type Locality.—*Bulimus multilineatus*: Miami, Dade Co., Florida. Neotype ANSP 12309a (Pilsbry 1946). *Bulimus sisalensis*: Sisal, Yucatán, México.

Distribution.—South Florida, Colombia, Venezuela, Curaçao, and México. NICARAGUA, Depts. Managua and Chontales (Pérez & López 2002). CAMPECHE: 11 mi. E of Cd. Campeche (Branson & McCoy 1965:8). OAXACA: 4.0 mi. WNW of Tehantepec (Breure & Eskens 1981). SAN LUIS POTOSÍ: Valles (Hinkley 1907); Rancho El Rodeo; Ejido Buenavista, km 18, Carr. Cd. Valles, 500 m alt. (22°11'13" N, 99°00'00" W); Cd. del Maíz-El Naranjo, S.L.P. km 10 (22°30'00" N, 99°22'06" W); Cd. del Maíz-El Naranjo, S.L.P. km 35 (22°30'00" N, 99°22'06" W); carr. Cd. del Maíz-El Naranjo, La Cortina (22°30'58" N, 99°20'15" W) (Correa-Sandoval- Sandoval et al. 1998). TAMAULIPAS: numerous localities (Correa-Sandoval & Costo 2002). YUCATÁN Sisal.

***Drymaeus (Mesembrinus) semipellucidus (Tristram 1861)***

*Bulimus semipellucidus* Tristram 1861, Proc. Zool. Soc. Lond. 29:230; pl. 26, fig. 8 (shell).

*Bulimulus (Liostracus) semipellucidus* (Tristram). Fischer & Crosse 1875; Miss. Sci. Mex.:507.

*Otostomus semipellucidus* (Tristram). Von Martens 1893; Biol. Cent. Amer.:236; pl. 15, fig. 10 (shell).

*Drymaeus semipellucidus* (Tristram). Pilsbry 1899; Man. Conch. (2) 12:82–83; pl. 4, figs. 71–73 (shell).

*Drymaeus (Mesembrinus) semipellucidus* (Tristram). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):86–87; text figs. 288–296 (reproductive anatomy).

Type Locality.—Guatemala.

Distribution.—COSTA RICA, Prov. Alajuela: Alajuela. Prov. Guanacaste: Salinas Bay. Prov. Heredia: Puerto Viejo, Rio Sarapiquí (Von Martens 1893). NICARAGUA, Dept. Masaya:2.4 mi. N of Masatepe (Breure & Eskens 1981).

***Drymaeus (Mesembrinus) shattucki Bequaert & Clench 1931***

*Drymaeus shattucki* Bequaert & Clench 1931:424.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):533–534; pl. 68, figs. 4–7.- Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):64.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):258.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):10.- Branson & McCoy 1963; Nautilus 76:106.

Type Locality.—Chichen Itza, Yucatán, México. Holotype MCZ 79396.

Distribution.—GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959). QUINTANA ROO:3 km S of San Miguel, Isla Cozumel (Branson & McCoy 1963). YUCATÁN: Tabi; Progreso (Bequaert & Clench 1933); Ebitz Cave, Oxkutzcab (Bequaert & Clench 1938).

***Drymaeus (Mesembrinus) tropicalis (Morelet 1849)***

*Bulimus tropicalis* Morelet 1849; Test. Noviss. I:9.- Neubert & Jannsen 2004; Archiv für Molluskenkunde 123:233; pl. 16, fig. 194 (paralectotype).

*Bulimulus (Liostracus) tropicalis* (Morelet). Fischer & Crosse 1875; Miss. Sci. Mex.:504; pl. 20, figs. 7, 8 (shell).

*Bulimulus tropicalis* (Morelet). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:95.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila.:315.

*Ostomus tropicalis* (Morelet). Von Martens 1893; Biol. Cent. Amer.:233.

*Drymaeus tropicalis* (Morelet). Pilsbry 1899; Man. Conch. (2) 12:85–86; pl. 6, figs. 21–23 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):533.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):258.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):10.- Branson & McCoy 1963; Nautilus 76:106.- Thompson 1967; Bull. Fla. St. Mus. 11:248–249.

*Drymaeus (Mesembrinus) tropicalis* (Morelet). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):89.

Type Locality.—México, Campeche, civic plaza of Cd. Campeche. Lectotype BMNH 1893.2.4.210 (Breure & Eskens 1981).

Distribution.—GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959). CAMPECHE: 5–11 mi. E of Cd. Campeche; 32 mi. S of Cd. Campeche (Branson & McCoy 1963); 5.1 mi. NNW of Dzibalchén; 3.6 mi. S of Hopelchén; 5.7 mi. E of Cd. Campeche (Thompson 1967). QUINTANA ROO: 4.0 mi. E of Xpujil (Thompson 1967). YUCATÁN: Labna; Tabi, S of Merida (Pilsbry 1891); Ebitz Cave, Oxkutzcab (Bequaert & Clench 1938); 0.8 mi. NE of Becanchén; 19.1 mi. SSE of Uman (Thompson 1967).

***Drymaeus (Mesembrinus) uhdeanus uhdeanus (Von Martens 1893)***

*Bulimulus (Mesembrinus) uhdeanus* Von Martens 1863; in Monatsber. Akad. Wiss. Berl. 26:541.- Fischer & Crosse 1875; Miss. Sci. Mex.:530; pl. 21, figs. 4, 4a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:90; pl. 11, figs. 11a, 11b (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:153; fig. 136 (lectotype).

*Ostomus uhdeanus* (Von Martens). Von Martens 1893; Biol. Cent. Amer.:233; pl. 15, figs. 1–3 (shell).

*Drymaeus uhdeanus* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:83–84; pl. 15, figs. 47, 49, 50 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):11.

*Drymaeus (Mesembrinus) uhdeanus* (Von Martens). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):89; text-figs. 299–300 (reproductive anatomy).

*Drymaeus herrerae* Bartsch 1907; Proc. U. S. Nat. Mus. 32:119; text-fig. 1 (shell).

Type Locality.—*Bulimulus uhdeanus*: México; lectotype ZMB 4.575b (Köhler 2007). *Drymaeus herrerae*: Bonanza Zimapan, Hidalgo, México; holotype USNM 192997.

Distribution.—HIDALGO: Zimapan. JALISCO: Sayula. VERACRUZ: Aculcingo, south of Orizaba (Pilsbry 1899); 8.5 mi. SW of Cd. Mendoza, 5200 ft. alt. (Breure & Eskens 1981).

***Drymaeus (Mesembrinus) uhdeanus borealis (Von Martens 1893)***

*Ostomus uhdeanus* var. *borealis* Von Martens 1893; Biol. Cent. Amer.:234; pl. 15, fig. 6 (shell).- Köhler 2007; Mitt. Mus. für Nat. Berlin, Zool. 82:150; fig. 114 (lectotype).

*Drymaeus uhdeanus borealis* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:84; pl. 15, fig. 53 (shell).

Type Locality.—Ventanas, Durango, México; 2000 ft. alt. Lectotype ZMB 101.817a (Köhler 2007).

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) uhdeanus cuernovacensis (Crosse & Fischer 1874)***

*Bulimulus (Scutalus) cuernovacensis* Crosse & Fischer 1874; Jour. de Conchyl. 22:283.- Fischer & Crosse 1875; Miss. Sci. Mex.:532; pl. 23, figs. 11, 11a (shell).- Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:65; pl. 12, fig. 17 (shell).

*Ostomus uhdeanus* var. *cuernovacensis* (Crosse & Fischer). Von Martens 1893; Biol. Cent. Amer.:234; pl. 15, fig. 4 (shell).

*Drymaeus uhdeanus cuernovacensis* (Crosse & Fischer). Pilsbry 1899; Man. Conch. (2) 12:84; pl. 15, figs. 42, 51 (shell).- Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):11.

*Drymaeus herrerae veracruzensis* Bartsch 1907:120; text-fig. 2.

Type Locality.—*Bulimulus cuernovacensis*: Cuernovaca, Morelos. *Drymaeus herrerae veracruzensis*: Córdoba, Veracruz, México.

Distribution.—MORELOS: Cuernovaca. VERACRUZ: Orizaba; Maltrata (Pilsbry 1899).

***Drymaeus (Mesembrinus) uhdeanus tepicensis (Von Martens 1893)***

*Ostomus uhdeanus* var. *tepicensis* Von Martens 1893; Biol. Cent. Amer.:234; pl. 15, fig. 5.

*Drymaeus uhdeanus tepicensis* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:84; pl. 15, fig. 52 (shell).

Type Locality.—Tepic, Jalisco [Nayarit], México.

Distribution.—NAYARIT: Isla María Madre, Islas Marias (Dall 1926).

**Group of *Drymaeus translucens******Drymaeus (Mesembrinus) cozumelensis Richards 1937***

*Drymaeus shattucki cozumelensis* Richards 1937; Proc. Amer. Philos. Soc. 77:253; pl. 4, fig. 4.- Rehder 1966; Proc. Biol. Soc. Wash. 79:285–286; fig. 7.

Type Locality.—On trail from San Miguel to Santa Rita, Isla Cozumel, Quintana Roo, México. Holotype ANSP 167744.

Distribution.—QUINTANA ROO: known only from Isla Cozumel.

***Drymaeus (Mesembrinus) hondurasanus (Pfeiffer 1846)***

*Bulimus hondurasanus* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:29. *Bulimulus (Liostracus) hondurasanus* (Pfeiffer): Fischer & Crosse 1875; Miss. Sci. Mex.:503.

*Ostomus hondurasanus* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:232.

*Drymaeus hondurasanus* (Pfeiffer). Pilsbry 1899; Man. Conch. (2) 12:88–89; pl. 15, fig. 41 (shell).- Rehder 1966; Proc. Biol. Soc.

Wash. 79:286; figs. 5–6 (lectotype shell).

*Drymaeus (D.) alternans honduranus* (Pfeiffer). Haas & Solem 1960; Nautilus 73:131.

Type Locality.—Honduras. Lectotype in the BMNH 1975265 (Rehder 1966).

Distribution.—BELIZE: Rio Frio Cave; Kate's Lagoon (Haas & Solem 1960). HONDURAS: not known from a specific locality.

***Drymaeus (Mesembrinus) mayaorum* Rehder 1966**

*Drymaeus mayaorum* Rehder 1966; Proc. Biol. Soc. Wash. 79:287; figs. 3, 4.

Type Locality.—Isla Mujeres, Quintana Roo, México. Holotype USNM 251656.

Distribution.—QUINTANA ROO: Isla Mujeres; near San Miguel, Isla Cozumel (Rehder 1966).

***Drymaeus (Mesembrinus) translucens translucens* (Broderip 1842)**

*Bulimus translucens* Broderip 1842; Proc. Zool. Soc. Lond. 10:31.

*Bulimulus translucens* (Broderip). Von Martens 1893; Biol. Cent. Amer.:250.

*Drymaeus translucens* (Broderip). Pilsbry 1899; Man. Conch. (2) 12:89; pl. 24, figs. 28, 29 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340; pl. 30, figs. 13, 14. (shell).- Morrison 1946; Smiths. Misc. Coll. 106:42–43.- Pérez & López 2002:221.

Type Locality.—Islas del Rey and Sabogas, Panamá.

Distribution.—PANAMÁ, Archipiélago de las Perlas: Isla del Rey; Isla Saboga (Pilsbry 1926b); Isla San José (Morrison 1946). NICARAGUA, Dept. Boaco (Pérez & López 2002)?

***Drymaeus (Mesembrinus) translucens alternans* (Beck 1837)**

*Bulimus (Bulimulus) alternans* Beck 1837; Index molluscorum.:65.

*Bulimulus(Liostracus) alternans* (Beck). Fischer & Crosse 1875; Miss. Sci. Mex.:500; pl. 23, figs. 5 (shell).

*Otostomus alternans* (Beck). Von Martens 1893; Biol. Cent. Amer.:230–231.- Von Martens 1901; Biol. Cent. Amer.:632.

*Drymaeus alternans* (Beck). Pilsbry 1899; Man. Conch. (2) 12:86–88; pl. 15, figs. 38–40 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:84; text-figs. 15d, 15e (shell).- Hinkley 1920; Nautilus 34:38.- Pérez & López 2002:213.

*Drymaeus translucens alternans* (Beck). Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340; pl. 20, fig. 4 (shell).

*Drymaeus (Mesembrinus) alternans* (Beck). Breure & Eskens 1981; Zool. Verh. Rijkmuseum Nat. Hist. Leiden (216):47–50; text-figs. 160–173 (reproductive anatomy); pl. 3, fig. 7 (radula).

Type Locality.—Isla Saboga, Panamá.

Distribution.—COSTA RICA, Prov. Alajuela: Alajuela (Von Martens 1893). Prov. Cartago: Cartago, 1142 m alt. Prov. Puntarenas: San Diquis Valley, near Terraba, 100 m alt. Prov. San José: San José; La Uruca, 100 m alt. (Von Martens 1893 1901). GUATEMALA, Dept. Baja Verapaz: San Geronimo, near Salama (Von Martens 1893). Dept. Guatemala: Cd. Guatemala (Hinkley 1920). Dept. Sacatepéquez: Capetillo, near Antigua (Von Martens 1901). NICARAGUA, Dept. Matagalpa: 1 mi. E of Matagalpa (Breure & Eskens 1981). Dept. Leon (Pérez & López 2002). PANAMÁ, Archipiélago

de las Perlas: Isla del Rey; Isla Saboga (Pilsbry 1926b).

***Drymaeus (Mesembrinus) translucens juquilensis* (Von Martens 1893)**

*Otostomus alternans* var. *juquilensis* Von Martens 1893; Biol. Cent. Amer.:231.

*Drymaeus alternans* var. *juquilensis* (Von Martens). Pilsbry 1899; Man. Conch. (2) 12:88; pl. 15, fig. 40 (shell).

Type Locality.—Juquila, Oaxaca, México.

Distribution.—OAXACA: Juquila. GUATEMALA: “Vera Paz” (Von Martens 1893).

***Drymaeus (Mesembrinus) translucens misellus* Pilsbry 1926**

*Drymaeus translucens* form *misellus* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:83; text-fig. 14b (shell).

Type Locality.—Tonosi, Prov. Los Santos, Panamá. Holotype ANSP 140281.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) translucens pachecensis* Pilsbry 1930**

*Drymaeus translucens* form *pachenensis* Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:34; pl. 30, fig. 11 (shell).

Type Locality.—Isla Pacheco, Archipiélago de las Perlas, Panamá. Holotype ANSP 151302.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) translucens panamensis* (Broderip 1833)**

*Bulimus panamensis* Broderip 1833; Proc. Zool. Soc. Lond. 1:105.

*Otostomus panamensis* (Broderip). Von Martens 1893; Biol. Cent. Amer.:236.

*Drymaeus panamensis* (Broderip). Pilsbry 1899; Man. Conch. (2) 12:90; pl. 24, fig. 30 (shell).

*Drymaeus translucens* form *panamensis* (Broderip). Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340; pl. 30, fig. 12.

Type Locality.—San Miguel, Isla del Rey, Panamá.

Distribution.—PANAMÁ: Isla del Rey, Isla Saboga (Pilsbry 1926).

***Drymaeus (Mesembrinus) translucens sororcula* Pilsbry 1926**

*Drymaeus translucens sororcula* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:83; text-fig. 14c (shell).

Type Locality.—Isla Taboga, Panamá. Holotype ANSP 45238.

Distribution.—Known only from the type locality.

***Drymaeus (Mesembrinus) translucens subfloccosus* Pilsbry 1899**

*Drymaeus translucens* var. *subfloccosus* Pilsbry 1899; Man. Conch. (2) 12:90; pl. 24, figs. 26, 27 (shell).- Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):124.

Type Locality.—Nicaragua. Lectotype ANSP 25040a (Breure 1979).

Distribution.—NICARAGUA: no specific locality known.



***Drymaeus (Mesembrinus) translucens tonosiesis* Pilsbry 1930**

*Drymaeus alternans* (Beck). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:84; text-fig. 15E.

*Drymaeus translucens tonosiesis* Pilsbry 1930:340.

Type Locality.—Tonosi, Prov. Los Santos, Panamá.

Holotype ANSP 151288.

Distribution.—Known only from the type locality.

**Genus *Naesiotus* Albers 1850**

*Naesiotus* Albers 1850:162.- Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):64–72.- Hoffman 1988; Veliger 30:117–120.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47: 112–119.

*Sonorina* Pilsbry 1896; Nautilus 9: 114.

*Puritanina* Jacobson 1958; Amer. Mus. Nov. (1899):7.

*Hannarabdotus* Emerson & Jacobson 1965; Trans. San Diego Soc. Nat. Hist. 13:325.

Type Species.—*Naesiotus*: *Bulimus nux* Broderip 1832. *Sonorina*: *Bulimulus spirifer* Gabb 1868. *Puritanina*: *Bulimulus montezuma* Dall 1893. *Hannarabdotus*: *Bulimulus slevini* Hanna 1923.

Distribution.—South America, Islas Galápagos, the Windward Islands of the West Indies, northwestern México, and Arizona (Breure 1978; Hoffman 1988).

Taxonomy.—The generic synonymy given above applies only to the Mexican fauna. Breure (1979:67–72) listed over 160 names that have been proposed for species of *Naesiotus*. Twenty species are recognized in the study area. An Arizona species, *Naesiotus christenseni*, is included because of its close affinities to northern Mexico species.

***Naesiotus altus* (Dall 1893)**

*Naesiotus altus* (Dall). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:112; text-fig. 16 (map).

*Bulimulus (Leptobryus) subspirifer* Mabilite 1895; Bulletin de la Société Philomathique de Paris (8) 7:67.- Christensen & Miller 1976; Western Soc. Malac. Ann. Rep., 9:51.

Type Localities.—*Bulimulus altus*: Sierra Laguna, Baja California Sur, México; 3000 ft. alt. (*vide* Christensen 1978). *Bulimulus subspirifer*: Lower California.

Distribution.—BAJA CALIFORNIA SUR: 2.3 km from main hwy. on road to microwave station San Bartolo, 430 m alt.; ca. 1 km SE of San Bartolo, 240 m alt.; 2.1 km SE of San Bartolo (Smith et al. 1990).

***Naesiotus beldingi* (Cooper 1892)**

*Bulimulus inscendens* var. *beldingi* Cooper 1892; Proc. Calif. Acad. Sci. (2) 3:209.

*Bulimulus (Orthotomium) beldingi* Cooper. Dall 1895; Proc. U. S. Nat. Mus. 19:357.- Pilsbry 1898; Man. Conch. 11:149; pl. 25, fig. 56 (shell).

*Naesiotus beldingi* (Cooper). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:112–113; text-fig. 16 (map).

*Bulimulus (Leptobryus) dismenicus* Mabilite 1895; Bulletin de la Société Philomathique de Paris (8) 7:67.- Emerson & Jacobson

1964; Trans. San Diego Soc. Nat. Hist. 16:51.

Type Localities.—*Bulimulus beldingi*: Sierra Laguna, Punta Arena, near San José del Cabo, Baja California Sur, México. *Bulimulus dismenicus*: Sierra de Puna, Baja California Sur 1800 m alt.

Distribution.—BAJA CALIFORNIA SUR: several localities in the Sierra Laguna at 610–2070 m alt. (Smith et al. 1990).

***Naesiotus christenseni* (Miller & Reeder 1984)**

*Rabdotus christenseni* Miller & Reeder 1984; Bull. Southern California Acad. Sci. 8:106–109; figs. 1 center, 1 right (shell), text-fig. 2 (reproductive anatomy).

*Naesiotus christenseni* (Miller & Reeder). Hoffman 1988; Veliger 30:417.

Type Locality.—Arizona, Pima Co.; north end of the Santa Rita Mountains, in a large rockslide on the left bank of south fork of Sycamore Creek, ca. 100 m upstream from Sycamore Spring; 31°52.9' N, 110°45.7' W; ca. 1300 m alt. Holotype CAS 37525.

Distribution.—Known only from the type locality.

***Naesiotus cosmicus* (Mabilite 1895)**

*Bulimulus (Scutalus) cosmicus* Mabilite 1895; Bulletin de la Société Philomathique de Paris (8) 7:68.

*Bulimulus (Orthotomium) cosmicus* Mabilite. Pilsbry 1897; Man. Conch. 11:144.

*Naesiotus cosmicus* (Mabilite). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:113; text-fig. 17 (map).

Type Locality.—“La Sierra du Sud dela Presqu’ile”, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: stations on the NE side of the Sierra Laguna (Smith et al. 1990).

***Naesiotus dentifer dentifer* (Mabilite 1895)**

*Bulimulus (Leptobryus) dentifer* Mabilite 1895; Bulletin de la Société Philomathique de Paris (8) 7:67.

*Bulimulus (Sonorbna) dentifer* Mabilite. Pilsbry 1898; Man. Conch. 11:161–162.- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:492–494; pl. 8, figs. 16–20 (shell); text-figs. 1 (reproductive anatomy, jaw).

*Rabdotus (Leptobryus) dentifer* (Mabilite). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:319–321.

*Naesiotus dentifer dentifer* (Mabilite). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:113; text-fig. 18 (map).

Type Locality.—Isla Tortuga, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla Tortuga (Smith et al. 1990).

***Naesioyus dentifer johnstoni* (Hanna 1923)**

*Bulimulus johnstoni* Hanna 1923; Proc. Calif. Acad. Sci. 12:491; pl. 7, figs. 1–6 (shell); pl. 11, fig. 3 (embryonic sculpture).

*Rabdotus (Hannarabdotus) johnstoni* (Hanna). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:326.

*Naesiotus dentifer johnstoni* (Hanna). Smith, Miller, Christensen &

Roth 1990; Proc. Calif. Acad. Sci. 47:114; text-fig. 18 (map).

Type Locality.—Isla Santa Catalina, Baja California Sur, México. Holotype CAS 1024.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla Santa Catalina (Smith et al. 1990).

***Naesiotus dentifer lamellifer* (Pilsbry 1897)**

*Bulimulus lamellifer* Pilsbry 1897; Nautilus 10:103.

*Bulimulus (Sororina) lamellifer* Pilsbry 1898; Man. Conch. 11:160; pl. 21, figs. 94–99 (shell).- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:495–497.

*Rabdodus (Leptobryus) lamellifer lamellifer* (Pilsbry). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:321–321; figs. 2a-k (shell).

*Naesiotus dentifer lamellifer* (Pilsbry). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:114–115; text-fig. 18 (map).

*Bulimulus spirifer* var. *orthelasmus* Pilsbry 1898; Man. Conch. 11:159–160.- Christensen & Miller 1976; Western Soc. Malac. Ann. Rep., 9:51.

*Bulimulus ximenez* Hanna 1923; Proceedings of the California Academy of Science, (4), 12:497–499; pl. 8, figs. 4–9 (shell).

*Rabdodus (Leptobryus) ximenez* (Pilsbry). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:323–324; figs. 3a-e (shell).

*Bulimulus bakeri* Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:500–501; pl. 7, figs. 7–10 (shell).

*Bulimulus sanmarcosensis* Pilsbry & Lowe 1932; Nautilus 46:49–50; unfigured.

*Bulimulus carmen* Pilsbry & Lowe 1932; Nautilus 46:50–51; unfigured.- Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:2; pl. 1, fig. 7 (shell).

Type Localities.—*Bulimulus lamellifer*: Lower California. *Bulimulus spirifer* var. *orthelasmus*: not given. *Bulimulus ximenez*: Marquer Bay, Isla Carmen. *Bulimulus bakeri*: Punta San Antonio, south of Bahia San Nicolas, Baja California Sur, México; holotype CAS 1017. *Bulimulus sanmarcosensis*: Isla San Marcos. *Bulimulus carmen*: Salinas Bay, Isla Carmen.

Distribution.—BAJA CALIFORNIA SUR: northern peninsular Baja California Sur and Isla San Marcos, Isla Carmen, Isla Danzante, Isla Coronados, and Isla San José (Smith et al. 1990).

***Naesiotus dentifer santacruzensis* (Hanna 1923)**

*Bulimulus santacruzensis* Hanna 1923; Proc. Calif. Acad. Sci. 12:487; pl. 7, figs. 12–15 (shell).

*Bulimulus slevini* Hanna 1923; Proc. Calif. Acad. Sci. 12:488–489; pl. 7, figs. 16–19 (shell).

*Rabdodus (Hannarebdodus) slevini* (Hanna). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:325–326; figs. 4a-f (shell).

*Naesiotus dentifer slevini* (Hanna). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:115; text-fig. 18 (map).

Type Localities.—*Bulimulus santacruzensis*: Isla Santa Cruz, Baja California Sur, México; holotype CAS 1030. *Bulimulus dentifer slevini*: Isla Monserrate, Baja California Sur, México; holotype CAS 1034.

Distribution.—BAJA CALIFORNIA SUR: known only

from Isla Monserrate and Isla Santa Cruz (Smith et al. 1990).

Taxonomy.—Smith et al. (1990) used the name *slevini* for this subspecies, but the name *santacruzensis* has page priority.

***Naesiotus durangoanus* (Von Martens 1893)**

*Bulimulus durangoanus* Von Martens 1893; Biol. Cent. Amer.:246; pl. 15, figs. 11, 11a (shell).- Pilsbry 1897; Man. Conch. 11:127–128; pl. 18, figs. 32, 33 (shell).

Type Locality.—Villa Lerdo, Durango, México.

Distribution.—DURANGO: reported only from the type locality.

Remarks.—There are many samples of this and/or closely related species in the Florida Museum of Natural History from the states of Chihuahua, Durango, Coahuila and Nuevo León. The sculpture of the juvenile shells indicates that they are properly placed in *Naesiotus*. Further study is needed to determine their specific status.

***Naesiotus excelsus* (Gould 1853)**

*Bulimus excelsus* Gould 1853; Jour. Boston Soc. Nat. Hist. 6:376; pl. 14, fig. 3 (shell).

*Bulimulus (Orthotomium) excelsus* (Gould). Pilsbry 1897; Man. Conch. 11:141–142; pl. 20, figs. 69–71.

*Naesiotus excelsus* (Gould). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:115; text-fig. 17 (map).

*Bulimulus elatus* Gould 1853; Jour. Boston Soc. Nat. Hist. 6:406.

*Bulimulus (Scutalus) cacotyctus* Mabilie 1895; Bulletin de la Société Philomathique de Paris (8) 7:69.- Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:51.

*Bulimulus excelsus* var. *sinaloae* Pilsbry 1897; Man. Conch. 11:142.

Type Localities.—*Bulimus excelsus*: “California”.

*Bulimus elatus*: not given. *Bulimulus cacotyctus*: Les Sierras du Sud de la Presqu’île [Baja California Sur]. *Bulimulus excelsus* var. *sinaloae*: Sinaloa (*doubtful*, Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:487; Smith et al. 1990:115).

Distribution.—BAJA CALIFORNIA SUR: La Paz; N slope of La Calavera Mt. Above Playa Coromuel; Playa Coromuel; 20.6 km E of La Paz on road to Las Cruces; granite cliff near Rancho Viniamos, 2.6 km E of La Paz (Smith et al. 1990).

***Naesiotus gabbi* (Crosse & Fischer 1872)**

*Bulimulus (Scutalus) gabbi* Crosse & Fischer 1872; Jour. de Conchyl. 20:223.- Fischer & Crosse 1873; Miss. Sci. Mex. 1:517; l. 20, fig. 19 (shell).

*Bulimulus (Orthotomium) gabbi* Crosse & Fischer. Pilsbry 1898; Man. Conch. 11:147–148; pl. 19, figs. 58, 59; pl. 33, figs. 34, 35 (shell).

*Naesiotus gabbi* (Crosse & Fischer). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:115; text-fig. 19 (map).

Type Locality.—“California Mexicana”.

Distribution.—BAJA CALIFORNIA SUR: rock outcrop E of road to La Paz, 4.2 km NE of junct. with road between El Gonzaga and El Obispo 180 m alt.; along road between El

Obispo and Rancho Tinajitas; arroyo near Microwave Station El Rifle, 120 m. alt.; arroyo 1.0 km NE of the trans-peninsular hwy. at km 77, N of La Paz (Smith et al. 1990).

***Naesiotus gigantensis* (Christensen & Miller 1977)**

*Rabdotus gigantensis* Christensen & Miller 1977; Nautilus 91:131–132; figs. 1–3 (shell).

*Naesiotus gigantensis* (Christensen & Miller). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:116; text-fig. 19 (map).

Type Locality.—In a large lava rockslide immediately south of the mission at San Javier, Baja California Sur, México; 350–450 m alt. Holotype CAS 57937.

Distribution.—BAJA CALIFORNIA SUR: nearly the entire length of the Sierra de la Giganta, numerous localities (Smith et al. 1990).

***Naesiotus hannai* (Pilsbry 1927)**

*Bulimulus hannai* Pilsbry 1927; Proc. Calif. Acad. Sci. (4) 17:183–184; pl. 11, figs. 16–20 (shell); pl. 12, fig. 3 (sculpture).

*Naesiotus hannai* (Pilsbry). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:116; text-fig. 19 (map).

Type Locality.—Isla Margarita, under stones within 1 mi. west and south of the village near the center of the east side of the island, Baja California Sur, México. Holotype CAS 2621.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla Margarita. Ravine below Mt. Izabal; in rocky outcrops in hills just W of road from Puerto Alcatraz to Puerto Cortez (Smith et al. 1990).

***Naesiotus harribaueri* (Jacobson 1958)**

*Bulimulus (Puritanina) harribraueri* Jacobson 1958; Amer. Mus. Nov. (1899):7–11; fig. 1 (shell), fig. 1 left (sculpture).

*Naesiotus harribaueri* (Jacobson). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:116; text-fig. 16 (map).

Type Locality.—Sand dunes along Bahía de los Frailes, Baja California Sur, México. Holotype AMNH 74003.

Distribution.—BAJA CALIFORNIA SUR: several localities along the east coast of Cabo San Lucas (Smith et al. 1990).

***Naesiotus laevapex* (Christensen & Miller 1977)**

*Rabdotus laevapex* Christensen & Miller 1977; Nautilus 91:132–133; figs. 4–7 (shell), fig. 7 (reproductive anatomy).

*Naesiotus laevapex* (Christensen & Miller). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:116; text-fig. 16 (map).

Type Locality.—In a narrow arroyo approximately 0.5 km inland of the beach at El Limón, on the west side of Isla Cerralvo, Baja California Sur, México; 50–100 m alt. Holotype CAS 57942.

Distribution.—Known only from the type locality.

***Naesiotus milleri* (Hoffman 1987)**

*Rabdotus milleri* Hoffman 1987; Veliger 20:419–423; figs. 4c, 4d

(shell), text-fig. 1 (map), text-fig. 3 (reproductive anatomy).

*Naesiotus milleri* (Hoffman). Hoffman 1988; Veliger 30:420.

Type Locality.—Sonora, México; 5.4 km west of the Rio Yaqui bridge at La Estrella on road to Sahuaripa, in a canyon extending north from road (28°57.1' N, 109°36.7' W); 350 m alt. Holotype SBMNH 3490.

Distribution.—SONORA: known only from the vicinity of the type locality (Hoffman 1987).

***Naesiotus montezuma* (Dall 1893)**

*Bulimus proteus* Binney 1869; Smithsonian Miscellaneous Collections, 8:207; fig. 358 (shell). (Not *Bulinus proteus* Broderip 1832.)

*Bulimulus (Scutalus) montezuma* Dall 1893; Proc. U. S. Nat. Mus. 16:16, 640; pl. 72, fig. 1.

*Bulimulus (Orthotomium) montezuma* Dall. Pilsbry 1898; Man. Conch. 11:144–145; pl. 19, figs. 56, 57 (shell).

*Bulimulus (Puritanina) montezuma* Ball. Jacobson 1958:10–11.

*Naesiotus montezuma* (Dall). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:116–117; text-fig. 17 (map).

*Bulimulus (Scutalus) acholus* Mabilie 1895; Bulletin de la Société Philomathique de Paris (8) 7:68.- Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:51.

Type Localities.—*Bulimulus montezuma*: Lower California, mostly from the mountainous region. Lectotype USNM 8564 (Jacobson 1958:11). *Bulimulus acholus*: “montagnes de la Base Californie”.

Distribution.—BAJA CALIFORNIA SUR: Cabo San Lucas, numerous localities from 60–2070 m alt. (Smith et al. 1990).

***Naesiotus nigromontanus* (Dall 1897)**

*Bulimulus (alternatus* var. ?) *nigromontanus* Dall 1897; Proc. U. S. Nat. Mus. 19:357–358.

*Rabdotus nigromontanus* (Dall). Hoffman 1987:419; text-fig. 1 (map); text-fig. 2 (reproductive anatomy), figs. 4a, 4b (shell).

*Naesiotus nigromontanus* (Dall 1897). Hoffman 1988; Veliger 30:420.

Type Locality.—Summit of Black Mountain, 12 mi. S of Monument 77 of International Boundary, right bank of Rio San Bernardino, Sonora [La Loma Colorado, 31°14.2' N, 109°17.5' W]. Holotype USNM 129993.

Distribution.—SONORA: La Loma Colorado; Angostura; Magdalena; Alamos (Hoffman 1987). ARIZONA, Santa Cruz Co.: Pena Blanca Canyon, Pajaritos Mts, ca. 4000 ft. alt. (Bequaert & Miller 1973:137).

***Naesiotus pallidior* (Sowerby 1833)**

*Bulimus pallidior* Sowerby 1833; Proc. Zool. Soc. Lond. 1:72.

*Bulimulus (Orthotomium) pallidior* (Sowerby). Pilsbry 1897; Man. Conch. 11:142–143; pl. 51, figs. 53–55 (shell).

*Naesiotus pallidior* (Sowerby). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:117–118; text-fig. 20 (map).

*Bulimulus vegetus* Gould 1853; Jour. Boston Soc. Nat. Hist. 6:375; pl. 14, fig. 2.

*Bulimulus pallidior* var. *striatulus* Dall 1893:640.- Pilsbry 1927;



Proc. Calif. Acad. Sci. 16:184–185; pl. 12, figs. 1, 7, 8 (shell).  
*Bulimulus vegetus vegexspiza* Cooper 1894; Proc. Calif. Acad. Sci. (2) 4:134.

Type Locality.—Not stated.

Distribution.—BAJA CALIFORNIA SUR: Cabo San Lucas, numerous localities from 60–760 m alt. (Smith et al. 1990).

#### ***Naesiotus rimatus* (Pfeiffer 1846)**

*Bulimus rimatus* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:112.

*Bulimulus (Sonorina) rimatus* (Pfeiffer). Pilsbry 1898; Man. Conch. 11:157; pl. 21, figs. 1–4 (shell).- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:495.

*Naesiotus rimatus* (Pfeiffer). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:117–118; text-fig. 20 (map).

*Bulimulus (Mesembrinus) inscendens* var. *bryanti* Cooper 1891; Proc. Calif. Acad. Sci. Ser. II, 3:340; pl. 13, figs. 4a-c (shell).

*Bulimulus (Leptobryus) bryanti* (Cooper). Dall 1893; Proc. U. S. Nat. Mus. 16:645; pl. 71, fig. 3 (shell).

*Bulimulus (Leptobryus) inscendens* var. *monticola* Dall 1893; Proc. U. S. Nat. Mus. 16:643

Type Localities.—*Bulimus rimatus*: not given. *Bulimulus inscendens* var. *bryanti*: San José del Cabo, Baja California Sur, México (restricted by Christensen 1978). *Bulimulus inscendens monticolus*: Sierra Laguna, Baja California Sur; 900 m alt. (restricted by Christensen 1978).

Distribution.—BAJA CALIFORNIA SUR: numerous localities on the southern end of Cabo San Lucas below 150 m alt. (Smith et al. 1990).

#### ***Naesiotus spirifer* (Gabb 1868)**

*Bulimus spirifer* Gabb 1868; Amer. Jour. Conch. 3:236; pl. 16, fig. 5.

*Bulimulus (Sonorina) spirifer* (Gabb). Pilsbry 1898; Man. Conch. 11:158–159; pl. 2, figs. 87–91 (shell).

*Naesiotus spirifer* (Gabb). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:118–119; text-fig. 21 (map).

*Bulimulus lapidivagus* Mabile 1895; Bulletin de la Société Philomathique de Paris (8) 7:66.- Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:51.

Type Localities.—*Bulimus spirifer*: in the mountains, among rocks from San Antonio, below La Paz, to near San Borja, and in the mountains perhaps even farther north. *Bulimulus lapidivagus*: Sierra de la Cachila au Sud de la Paz.

Distribution.—BAJA CALIFORNIA SUR: Cabo San Lucas, from various localities in the Sierra Cachila and near by areas; 430–690 m alt. (Smith et al. 1990).

#### ***Naesiotus vesityianus* (Dall 1893)**

*Bulimulus (Leptobryus) vesityianus* Dall 1893; Proc. U. S. Nat. Mus. 16:645; pl. 71, figs. 4, 5 (shell).

*Bulimulus (Sonorina) vesityianus* Dall. Pilsbry 1898; Man. Conch. 11:160; pl. 21, figs. 92, 93 (shell).- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:499–500; pl. 8, figs. 1–3 (shell).

*Rabdotus (Leptobryus) vesityianus* (Dall). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:324.

*Naesiotus vesityianus* (Dall). Hoffman 1988; Veliger 30:420.-

Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:119; text-fig. 19 (map).

Type Locality.—Isla Espiritu Santo, Baja California Sur, México. Holotype USNM 34122.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla Espiritu Santo (Smith et al. 1990).

#### ***Naesiotus xantusi* (Binney 1861)**

*Bulimus xantusi* W. G. Binney 1861; Proc. Acad. Nat. Sci. Phila.:331; fig. (shell).

*Bulimulus (Orthotomium) xantusi* (Binney). Pilsbry 1898; Man. Conch. 11:148; pl. 19, figs. 60–62; pl. 33, fig. 36 (shell).

*Naesiotus xantusi* (Binney). Hoffman 1988; Veliger 30:420.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:119; text-fig. 22 (map).

Type Locality.—Cabo San Lucas, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: various localities on the Cabo San Lucas, from 90–910 m alt. (Smith et al. 1990).

#### **Genus *Rabdotus* Albers 1850**

*Rabdotus* Albers 1850; Die Heliceen:164.- Pilsbry 1946; Land Moll. N. Amer. 2:4.

Distribution.—Central México from Puebla north to Texas, the central-southern United States, and Baja California Sur.

Taxonomy.—Two subgenera and sixteen species are recognized.

#### **Subgenus *Rabdotus* Albers 1850**

*Rabdotus* Albers 1850; Die Heliceen:164.

*Odontostomus* Fischer & Crosse 1874; Miss. Sci. Mex. 1:473.

*Globulinus* Fischer & Crosse 1874; Miss. Sci. Mex. 1:475.

Type Species.—*Rabdotus*: *Helix dealbatus* Say 1821. *Odontostomus*: *Bulimus sufflatus* Gould 1859. *Globulinus*: *Bulimus sufflatus* Gould 1859.

Distribution.—The same as for the genus.

Taxonomy.—Eleven species and one subspecies occur in the study area.

#### **Group of *Rabdotus alternatus***

##### ***Rabdotus (Rabdotus) alternatus alternatus* (Say 1830)**

*Bulimus alternatus* Say 1830; New Harmony Disseminator:25.

*Bulimulus alternatus alternatus* (Say 1830). Pilsbry 1928:117.- Pilsbry 1946; Land Moll. N. Amer. 2:15–16; fig. 6e.- Branson & McCoy 1963; Nautilus 76:105.

*Rabdotus alternatus* (Say). Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval, García-Cubas & Reguero 1998:17.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.

*Bulimus lactarius* Menke 1846; in Pfeiffer, Symbolae ad Historiam Heliceorum 3:85.

Type Locality.—Monterrey, Nuevo León, México (restricted by Pilsbry 1946). Holotype ANSP 25694.

Distribution.—NUEVO LEÓN: Santa Caterina Valley

opposite and above the Obispada (Pilsbry 1946); Santiago (Correa-Sandoval-Sadoval 1993); Iturbide (Correa-Sandoval 1997). SAN LUIS POTOSÍ: 0.1 km Ejido Buenavista km 18 Carr. Mante-Cd. Valles (22°30'43" N, 99°01'50" W, 320 m alt.); Km 92, W of Cd. del Maíz (22°25'36" N, 99°38'09" W, 1260 m alt.); Ejido Buena Vista, 2 km S of Carr. Antiguo Morelos-Cd. Valles (22°16'49" N, 99°02'22" W, 300 m alt.); km 169 on Carretera Río Verde-San Luis Potosí (21°59'30" N, 100°11'50" W); Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval et al. 1998); 2 mi. SE of Charro Blanco Branson & McCoy 1963). TAMAULIPAS: Mesa de Solis, near La Lajilla, between Padilla and Jimenez (Pilsbry 1928); numerous records (Correa-Sandoval & Rodriguez 2002). VERACRUZ: La Ordeña, Papantla (20°29'43"N, 97°18' 27" W) (Correa-Sandoval 2000).

***Rabdotus (Rabdotus) alternatus mariae* (Albers 1850)**

*Bulimus mariae* Albers 1850; Die Heliceen:162.

*Bulimulus alternatus mariae* (Albers). Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:139; pl.7, figs. 13–30.

*Bulimulus (Rabdotus) alternatus mariae* (Albers). Pilsbry 1946; Land Moll. N. Amer. 2:14–15; figs. 6a-d, f (shell).

Type Locality.—Brownsville, Texas (restricted by Pilsbry 1946). Syntype ZMB 112669 (Köhler 2007).

Distribution.—Many localities in northern Nuevo León and Tamaulipas (Pilsbry 1946).

***Rabdotus (Rabdotus) dealbatus dealbatus* (Say 1821)**

*Helix dealba* Say 1821; Journ. Acad. Nat. Sci. Phila. 2:150.

*Bulimulus dealbatus* (Say). W. G. Binney 1878; Terrestrial Mollusks of North America 5:393; fig. 269 (shell); pl. 8, figs. E (jaw, radula).

*Bulimulus (Rabdotus) dealbatus* (Say). Pilsbry 1946; Land Moll. N. Amer. 2:7–9; figs. a-d.

*Rabdotus dealbatus dealbatus* (Say). Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):61.

*Bulimus liquabilis* Reeve, Conch. Icon., 5: pl. 57, fig. 384 (shell).

*Bulimus confinis* Reeve 1850; Conch. Icon., 5: pl. 86, fig. 643 (shell).

Type Localities.—*Helix dealbatus*: Missouri and Alabama. Holotype in the ANSP (Pilsbry 1946). *Bulimus liquabilis*: Texas; lectotype BMNH 1975422 (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):76). *Bulimus confinis*: Texas.

Distribution.—Widely distributed in the eastern United States from Illinois south to Alabama and west to eastern Texas and Oklahoma. Mexican records are as follow. NUEVO LEÓN: Santiago (Correa-Sandoval 1993; Rev. Biol. Trop. 41:675); Hwy. Santiago-Montemorelos km 7 (25°56'17" N, 99°58'25" W) Correa-Sandoval & Salazar 2005). SAN LUIS POTOSÍ: Valles (Hinkley 1907). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodriguez 2002).

Taxonomy.—Six subspecies are recognized, only one of which occurs in México, *Rhabdotus d. dealbatus*.

***Rabdotus (Rabdotus) pilsbryi* (Ferriss 1925)**

*Bulimulus pilsbryi* Ferriss 1925; Nautilus 30:25.

*Bulimulus (Rabdotus) pilsbryi* (Ferriss). Pilsbry 1946; Land Moll. N. Amer. 2:20–21, figs. 10a-c (shell).

Type Locality.—Sanderson, Terrell Co., Texas. Holotype ANSP 175851.

Distribution.—Southwestern Texas, Terrell County. In México this species has been collected at the following localities. CHIHUAHUA: near Coyame (29°44.5' N, 104°54.0' W), 1100 m alt. (UF 251521); pass at NW end of Sierra Matasagnas, ca. 50 km W of Ojinaga, 9.6 km E of turn-off to Alamos on hwy, 16 ((29°02.1' N, 104°47.6' W), 1000 m alt. (UF 317157). COAHUILA: 5 KM NW of Quatro Cienegas, 800 m slt. (UF 267670); limestone hill 18.7 km E of Quatro Cienegas, 800 m alt. (UF 178584); 3 km N of Quatro Cienegas, 870 m alt. (UF 39968); NW foothills of the Sierra la Madera, 9.3 km SE, 14.7 km SW of Ocampo, 1200 m alt. (27°11.6' N, 102°25.4' W) (UF 267667); ridge 2.5 km E of Paredón, 780 m alt. (26°56.3' N, 100°55.0' W) (UF 267692); Cerro Sesteadero 11 km S of San Miguel, 1000 m alt. (28°32.9' N, 102°56.1' W) (UF 268362). NUEVO LEÓN: canyon 6.5 km by road N of Rinconada, 1050 m alt. (25°42.5' N, 100°43.1' N) (UF 268303).

***Rabdotus (Rabdotus) schiedeanus schiedeanus* (Pfeiffer 1841)**

*Bulimus schiedeanus* Pfeiffer 1841; Symbolae ad Histori Heliceorum 1:43.

*Bulimulus schiedeans* (Pfeiffer). Von Martens 1893; Biol. Cent. Amer.:239; pl. 15, figs. 12–23 (shell).- Pilsbry 1897; Man. Conch. 11:131.- Hinkley 1907; Nautilus 21:72.

*Bulimulus (Rabdotus) schiedeanus* (Pfeiffer). Pilsbry 1946; Land Moll. N. Amer. 2:16–17; figs. 7a-d (shell).- Solem 1954:4.- Branson & McCoy 1963; Nautilus 76:105.

*Bulimus patriarcha* W. G. Binney 1858; Manual of North American Land Shells:396; fig. 431 (shell).

*Bulimulus alternatus hesperius* Pilsbry & Ferriss 1924; Nautilus 38:40.

Type Localities.—*Bulimus schiedeanus*: México. *Bulimus patriarcha*: Buena Vista, [south of Saltillo, Coahuila]. *Bulimulus alternatus hesperius*: east of the Pecos at the High Bridge, Val Verde Co., Texas; holotype in the ANSP.

Distribution.—Texas, counties along the Rio Grande from Val Verde County to Presidio County; widely distributed but sparse in México from the state of Puebla north to Chihuahua and Coahuila. CHIHUAHUA: La India, 7 mi. E of Escalón (Branson & McCoy 1963). COAHUILA: around Saltillo (Pilsbry 1946). DURANGO: Villa Lerdo (Pilsbry 1946). Sierra de Tlahualilo, 25 mi. N of Tlahualilo (Solem 1954:4). JALISCO: Laguna de Chapala (Pilsbry 1946). PUEBLA: Tahuacan (Pilsbry 1946). TAMAULIPAS: Tampico, in river drift (Hinkley 1907)

Taxonomy.—Two subspecies are recognized. *Rabdotus schiedeanus pecosensis* Pilsbry & Ferriss 1906, is confined to southwest Texas.

***Rabdotus (Rabdotus) fonsecanus* (Haas 1961)**

*Bulimulus (Rabdotus) fonsecanus* Haas 1961; Fieldiana, Zoology 44:20–21; fig. 11 (shell).

Type Locality.—Gulf of Fonseca, El Salvador or

Nicaragua. Holotype: FMNH 106702.

Distribution.—Known only from the type locality. The generic affinities of this species require further investigation.

#### Group of *Rabdotus sufflatus*

##### *Rabdotus (Rabdotus) baileyi* (Dall 1893)

*Bulimulus (Scutalus) baileyi* Dall 1893; Proc. U. S. Nat. Mus. 16:640–641; pl. 71, fig. 1 (shell).

*Bulimulus (Orthotomium) baileyi* Dall. Pilsbry 1898; Man. Conch. 11:145–146; pl. 19, figs. 65–67.

*Bulimulus baileyi* Dall. Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:487.

Type Locality.—Cabo San Lucas, Baja California Sur, México. Holotype in the USNM. (Doubtful locality, *fide* Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:487.)

Distribution.—SONORA: Guaymas; Hermosillo; Cerrro Tordilla, between Guaymas and San Marciel; Ortiz (Pilsbry 1898).

##### *Rabdotus (Rabdotus) ceralboensis* (Hanna 1923)

*Bulimulus ceralboensis* Hanna 1923; Proc. Calif. Acad. Sci. 12:490; pl. 7, fig. 11; pl. 11, figs. 2, 4 (shell).

*Rabdotus (Rabdotus) ceralboensis* (Hanna). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:327.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:120; text-fig. 20 (map).

Type Locality.—West of Ranch house, Cerralvo Island, Baja California Sur, México. Holotype CAS 1021.

Distribution.—BAJA CALIFORNIA SUR: known only from Cerralvo Island (Smith et al. 1990).

##### *Rabdotus (Rabdotus) chamberlini* (Hanna 1923)

*Bulimulus chamberlini* Hanna 1923; Proc. Calif. Acad. Sci. 12:494; pl. 8, fig. 21 (shell).

*Rabdotus (Leptobryus) chamberlini* (Hanna). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:318–319; figs. 1a-f (shell).

*Rabdotus (Rabdotus) chamberlini* (Hanna 1923). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:120; text-fig. 23 (map).

Type Locality.—San Diego Island, Baja California Sur, México. Holotype CAS 1023.

Distribution.—BAJA CALIFORNIA SUR: known only from Isla San Diego (Smith et al. 1990).

##### *Rabdotus (Rabdotus) levis* (Dall 1893)

*Bulimulus xantusi* var. *levis* Dall 1893; Proc. U. S. Nat. Mus. 16:642.

*Bulimulus levis* Dall. Dall 1895; Proc. U. S. Nat. Mus. 18:5.

*Bulimulus (Orthotomium) levis* Dall. Pilsbry 1897; Man. Conch. 11:140–141; pl. 19, fig. 64 (shell).

*Rabdotus (Rabdotus) levis* (Dall). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:120–121; text-fig. 22 (map).

*Bulimulus (Thaumastus) digueti* Mabilie 1895.

Type Localities.—*Bulimulus levis*: not specified.

*Bulimulus digueti*: Sierra de La Victoria, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: various localities near southern tip of peninsula (Smith et al. 1990).

##### *Rabdotus (Rabdotus) pilula* (Binney 1861)

*Bulimulus pilula* W. G. Binney 1881; Proc. Acad. Nat. Sci. Phila. 332; fig. (shell).

*Bulimulus (Orthotomium) pilula* Binney. Pilsbry 1897; Man. Conch. 11:138–139; pl. 25, fig. 57 (shell).

*Rabdotus (Rabdotus) pilula* (Binney 1861). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:121; text-fig. 22 (map).

*Bulimulus cooperi* Dall 1896; Proc. U. S. Nat. Mus. 18:5.

*Bulimulus (Orthotomium) decipiens* Cooper 1895; Proc. Calif. Acad. Sci. (2) 5:164.- Dall 1896; Proc. U. S. Nat. Mus. 19:358–459.

Type Localities.—*Bulimulus pilula*: Todos Santos Mission, Baja California Sur (Binney & Bland 1869). *Bulimulus decipiens*: Sierra San Lazaro, Cabo San Lucas. *Bulimulus cooperi*: San José del Cabo.

Distribution.—BAJA CALIFORNIA SUR: along the southern tip of the peninsula from Cabo San Lucas to San José del Cabo (Smith et al. 1990).

##### *Rabdotus (Rabdotus) sufflatus* (Gould 1859)

*Bulimus sufflatus* Gould 1859; Journal of the Boston Society of Natural History 6:375; pl. 14, fig. 1 (shell).

*Bulimulus (Orthotomium) sufflatus* (Gould). Pilsbry 1897; Man. Conch. 11:136–137; pl. 18, figs. 38–44 (shell).

*Rabdotus (Rabdotus) sufflatus* (Gould 1859). Smith, Miller & Christensen 1990:121–122; text-fig. 23 (map).

*Bulimus vesicalis* Gould 1853 (not *Bulimus vesicalis* Pfeiffer 1859).

*Bulimulus juarezi* Pfeiffer 1866; Proc. Zool. Soc. London 34:832.

*Bulimulus sufflatus* var. *insularis* Cooper 1892; Proc. Calif. Acad. Sci. (2) 3:208, 212.

*Bulimulus insularis* var. *chinchensis* Cooper 1894; Proc. Calif. Acad. Sci. (2) 4:140.

*Bulimulus (Globulus) recognitus* Mabilie 1895; Bulletin de la Société Philomathique de Paris (8) 7:69.- Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:51.- Breure 1976:1148 (measurements of holotype).

Type Localities.—*Bulimus sufflatus*: not stated.

*Bulimulus juarezi*: México; syntype in the BMNH (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):76). *Bulimulus sufflatus* var. *insularis*: Espiritu Santo Island, Baja California Sur, México. *Bulimulus insularis chinchensis*: El Chinche Mts., Baja California Sur. *Bulimulus (Globulus) recognitus*: México, Baja California; lectotype in the MNHN (Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):76).

Distribution.—BAJA CALIFORNIA SUR: numerous localities on the south end of the peninsula (Smith et al. 1990).

##### Subgenus *Plicolumna* Cooper 1895

*Plicolumna* Cooper 1895; Proc. Calif. Acad. Nat. Sci. (2), 5:164.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:101, 122–124.

Type Species.—*Rhodea californica ramentosa* Cooper 1895.

Distribution.—Endemic to the Cape region of Baja California Sur.

Taxonomy.—Five species are recognized (Smith et al. 1990).



***Rabdotus (Plicolumna) abbreviatus* (Cooper 1892)**

*Columna ramentosa* var. *abbreviata* Cooper 1892; Proc. Calif. Acad. Sci. (2) 3:215.

*Bulimulus (Plicolumna) abbreviata* (Cooper). Pilsbry 1898; Man. Conch. 11:153; pl. 20, figs. 80, 81 (shell).

*Rabdotus (Plicolumna) abbreviatus* (Cooper). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:122; text-fig. 24 (map).

Type Locality.—Sierra Laguna, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: known from three localities in the Cape region (Smith et al. 1990).

***Rabdotus (Plicolumna) artemisia* (Binney 1861)**

*Bulimus artemisia* W. G. Binney 1861; Proc. Acad. Nat. Sci. Phila.:33; fig. (shell).

*Bulimulus artemisia* (Binney). Dall 1893; Proceedings of the U.S. National Museum, 16:642–643; pl. 72; fig. 5 (shell).- Dall 1896:360–363; pl. 31, fig. 6; pl. 32, fig. D (shell).

*Bulimulus (Plicolumna) artemisia* (Binney). Pilsbry 1898; Man. Conch. 11:152–153; pl. 20, figs. 77–79; pl. 25, fig. 54 (shell).

*Rabdotus (Plicolumna) artemisia* (Binney 1861). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:122–123; text-fig. 25 (map).

Type Locality.—Cabo San Lucas, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: Cape region of the peninsula (Smith et al. 1990).

***Rabdotus (Plicolumna) inscendens* (Binney 1861)**

*Bulimus inscendens* W. G. Binney 1861; Proc. Acad. Nat. Sci. Phila.:332; fig. (shell).

*Bulimulus (Orthotomium) inscendens* (Binney). Pilsbry 1898; Man. Conch. 11:150–151; pl. 20, figs. 72–74 (shell).

*Rabdotus (Plicolumna) inscendens* (Binney). Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:44, 45; text-fig. 4 (reproductive anatomy).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:123–124; text-fig. 26 (map).

Type Locality.—Not stated.

Distribution.—BAJA CALIFORNIA SUR: numerous localities in the Cape region (Smith et al. 1990).

***Rabdotus (Plicolumna) perhirsutus* Miller, Christensen, & Roth 1990**

*Rabdotus (Plicolumna) perhirsutus* Miller, Christensen & Roth 1990, in Smith, Miller, Christensen & Roth. 1990:101–102, 124; figs. 1–3 (shell), fig. 4 (reproductive anatomy), text-fig. 25 (map).

Type Locality.—Along Todos Santos-Cabo San Lucas road 2.2 mi. (2.2 km) N of Saucito, México; ca. 1500 ft. (460 m) alt. Holotype SBMNH 35110.

Distribution.—BAJA CALIFORNIA SUR: known only from the vicinity of the type locality (Smith et al. 1990).

***Rabdotus (Plicolumna) ramentosus* (Cooper 1991)**

*Rhodea californica* subsp. ? *ramentosus* Cooper 1891; Proc. Calif. Acad. Sci. (2) 3:102.

*Bulimulus (Plicolumna) ramentosus* (Cooper). Pilsbry 1898; Man.

Conch. 11:153–154; pl. 20, figs. 82–85 (shell).

*Rabdotus (Plicolumna) ramentosus* (Cooper). Christensen & Miller 1975:45; fig. 7 (shell).- Smith, Miller, Christensen, & Roth 1990:124; text-fig. 24 (map).

Type Locality.—Mountains north of San José del Cabo, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: known from five localities in the Cape region (Smith et al. 1990).

**Genus *Spartocentrum* Dall 1895**

*Spartocentrum* Dall 1895; Nautilus 9:51.- Pilsbry 1902; Man. Conch. 15:15.- Christensen & Miller 1975; Nautilus 89: 44–46.

*Teneritia* Mabilite 1897; Bulletin de la Société Philomathique de Paris (8) 9:78.

Type Species.—*Spartocentrum: Cyliindrella irregulare* Gabb 1868. *Teneritia: Berendtia digueti* Mabilite 1895.

Distribution.—Endemic to the mainland of Baja California Sur, México and adjacent islands in the Gulf of California.

Taxonomy.—Five species are recognized.

***Spartocentrum digueti* (Mabilite 1895)**

*Bulimulus (Thaumastus) digueti* Mabilite 1895; Bulletin de la Société Philomathique de Paris (8) 7:70.

*Bulimulus (Orthotomium) digueti* Mabilite. Pilsbry 1898; Man. Conch. 11:148–149.

*Spartocentrum digueti* (Mabilite). Hanna & Smith 1968:396.- Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):155–158; figs. 256–258 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:125.

Type Locality.—Plateau de San Javier, [Baja California Sur], México (ca 25°50' N, 111°30' W). Lectotype in the MNHN (Hanna & Smith 1968; Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):155).

Distribution.—BAJA CALIFORNIA SUR: exact locality unknown (Smith et al. 1990).

***Spartocentrum eisenianum* (Pilsbry 1900)**

*Coelocentrum eisenianum* Pilsbry 1900; Proc. Acad. Nat. Sci. Phila. 52; 553; fig. 2 (shell).- Pilsbry 1903; Man. Conch. 15:55–56; pl. 13, figs. 20, 21, 22; pl. 17, fig. 25 (shell).

*Spartocentrum eisenianum* (Pilsbry). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:125.

*Coelocentrum eiseni* Bartsch 1907:119.

Type Locality.—Lower California. Holotype ANSP 77888.

Distribution.—BAJA CALIFORNIA SUR: exact locality unknown (Smith et al. 1990).

***Spartocentrum insulare* (Hanna 1923)**

*Coelocentrum insulare* Hanna 1923; Proc. Calif. Acad. Sci. 12:509–511; pl. 9, figs. 9–18 (shell); pl. 111, fig. 5 (juvenile shell).

*Spartocentrum insulare* (Hanna). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:125; text-fig. 28 (map).

*Coelocentrum oweni* Hanna 1923; 511–512; pl. 9, figs. 3–8 (shell); pl. 11, fig. 8 (juvenile shell).- Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16:328–329.

Type Localities.—*Coelocentrum insulare*: Puerto

Ballandra, Carmen Island, Baja California Sur, México. Holotype CAS 1061. *Coelocentrum oweni*: Agua Grande, Isla Carmen, Baja California Sur, México. Holotype CAS 1055.

Distribution.—BAJA CALIFORNIA SUR: Isla Carmen; Isla Montserrat; Isla Danzante; Isla Santa Catalina (Smith et al. 1990).

### ***Spartocentrum irregularis* (Gabb 1868)**

*Cylindrella* (*Urocoptis*) *irregularis* Gabb 1868:234; pl. 16, fig. 4 (shell).

*Coelocentrum irregularis* (Gabb). Pilsbry 1903; Man. Conch. 15:51; pl. 13, figs. 15, 16 (shell), pl. 17, fig. 24 (shell).- Hanna 1923; Proc. Calif. Acad. Sci. (4), 12:508; pl. 9, figs. 1, 2 (shell).

*Spartocentrum irregulare* (Gabb). Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):79.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:125–126; text-fig. 28 (map).

*Coelocentrum minorinum gabbi* Pilsbry 1900; Proc. Acad. Nat. Sci. Phila. 551.- Pilsbry 1903; Man. Conch. 15:54; pl. 13, figs. 17–19 (shell).

*Berendtia minorina* Mabilie 1895; Bulletin de la Société Philomathique de Paris (8) 7:70.

*Spartocentrum minorina* (Mabilie). Hanna & Smith 1968; Proc. Calif. Acad. Sci. (4) 30.- Breure 1978; Uitg. Rijkmuseum Nat. Hist. Leiden (164):158; figs. 259, 260 (shell).

*Coelocentrum clavigeroi* Hanna 1923; Proc. Calif. Acad. Sci. (4) 12:512–513; pl. 9, figs. 20–30 (shell); pl. 1, fig. 6 (juvenile shell).

Type Localities.—*Cylindrella irregularis*: table lands in the interior of Lower California, especially above Moleje [Mulege]; lectotype ANSP 25075 (H. B. Baker 1963:223). *Berendtia minorina*: “Au dessus de l’arroyo de Purisima”, [Baja California sur] (ca. 26°15' N, 112° W); lectotype in the MNHN (Hanna & Smith 1968). *Coelocentrum minorinum gabbi*: table lands in the interior of Lower California, especially above Moleje [Mulege]; holotype ANSP 25077a (Baker 1963:222). *Coelocentrum clavigeroi*: Agua Verde Bay, Baja California Sur, México; holotype CAS 1082.

Distribution.—BAJA CALIFORNIA SUR: numerous localities in the central third of the peninsula (Smith et al. 1990).

### ***Spartocentrum vanduzeei* (Hanna 1923)**

*Coelocentrum vanduzeei* Hanna 1923; Proc. Calif. Acad. Sci. (4) 12:508–509; pl. 9, figs. 31–34 (shell); pl. 11, fig. 7 (juvenile shell).

*Spartocentrum vanduzeei* (Hanna). Christensen & Miller 1975; Nautilus 89:44–46; text-fig. 2 (reproductive anatomy), fig. 6 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:126–127; text-fig. 28 (map).

Type Locality.—Puerto Escondido, Baja California Sur, México. Holotype CAS 1085.

Distribution.—BAJA CALIFORNIA SUR: Puerto Escondido; Juncalito; 1.6 km S of Chunque (Smith et al. 1990).

### **Genus *Simpulopsis* Beck 1838**

*Simpulopsis* Beck 1838; Index Molluscorum.:100.- Von Martens

1897; Biol. Cent. Amer.:252.- Pilsbry 1899; Man. Conch. 12:212.

Type Species.—*Helix* (*Cochlohydra*) *sulculosa* Ferussac.

Distribution.—South America, Trinidad and eastern

México.  
Taxonomy.—Three species occur in the study area. The taxonomic affinities of the Middle American species are uncertain.

### ***Simpulopsis aenea* Pfeiffer 1861**

*Simpulopsis aenea* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:27–28.- Fischer & Crosse 1877; Miss. Sci. Mex. I:580; pl. 24, figs. 12, 12a, 12b (shell).- Von Martens 1897; 253.

*Simpulopsis* (*Platysuccinea*) *aenea* Pilsbry 1899; Man. Conch. 12:225–226; pl. 63, figs. 58, 59, 60 (shell).

Type Locality.—Parada, Oaxaca, México.

Distribution.—Known only from the type locality.

### ***Simpulopsis cumingi* Pfeiffer 1861**

*Simpulopsis cumingi* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:27; pl. 3, fig. 2 (shell).- Von Martens 1897; Biol. Cent. Amer.:253.- Pilsbry 1899; Man. Conch. 12:220; pl. 63, figs. 61, 62 (shell).

Type Locality.—México.

Distribution.—MÉXICO (country or state?).

### ***Simpulopsis simula* (Morelet 1851)**

*Bulimus simula* Morelet 1851; Test. Noviss.:11.

*Simpulopsis simula* (Morelet). Fischer & Crosse 1877; Miss. Sci. Mex. I:576; pl. 24, figs. 13, 13a (shell).- Von Martens 1897; Biol. Cent. Amer.:252.- Pilsbry 1899; Man. Conch. 12:219–220; pl. 63, figs. 56, 57 (shell).- Bequaert 1957:221–222.- Breure 1979; Zool. Verhandl. Uit. Rijkmuseum Nat. Hist. Leiden (168):134.- Breure 2008; Basteria, 72:248–249; figs. 14, 15.

Type Locality.—Petén, Guatemala.

Distribution.—HONDURAS, Dept. Olancho: vicinity of Magua Cave, ca. 15 km. km SSW of Gualaco, 940 m alt. (Breure 2008). GUATEMALA, Dept. Petén: only from the type locality. Dept. Alta Verapaz: 15 km by road north of Cobán, 1050 m alt.; 3 km W of Pajál, 1130 m alt.; 11 km W of Lanquín, 1000 m alt. (Breure 2008). CHIAPAS: Ocotol (15°39'00" N, 92°00'00" W) to El Censo (on the border with Guatemala), 700–1000 m alt. (Bequaert 1957).

### **Superfamily UROCOPTOIDEA Uit de Weerd 2008**

#### **Family EUCALODIIDAE Crosse & Fischer 1868**

Distribution.—México, Guatemala, Honduras, and Belize.

Taxonomy.—Five genera are included in the Eucalodiidae. Four are restricted to México and northern Central America: *Eucalodium*, *Anisospira*, *Coelocentrum*, and *Dissotropis*. *Archeogocoptis* from Hispaniola is also a member of this group. Four other genera are associated provisionally with the Eucalodiidae: *Epirobia*, *Propilsbrya*, *Pectinistemma*, and *Prionoloplax*. A recent study by Uit de Weerd (2008) necessitated the recognition of the Eucalodiidae as a family distinct from the Urocoptidae and the Holospiridae.

**Genus *Eucalodium* Crosse & Fischer 1868**

*Eucalodium* Crosse & Fischer 1868; Jour. de Conchyl. 16:88.

Type Species.—*Pupa decollata* Nyst 1841.

Distribution.—El Salvador and Guatemala north and west in México to Jalisco along the west coast and San Luis Potosí along the east coast.

Taxonomy.—Four subgenera, 24 species and 9 subspecies are recognized.

**Subgenus *Eucalodium* Crosse & Fischer 1868**

Distribution.—Tabasco, Chiapas, and Oaxaca, México; Guatemala.

Taxonomy.—Four species and five subspecies occur in the study area.

***Eucalodium (Eucalodium) compactum* Pilsbry 1893**

*Eucalodium compactum* Pilsbry 1893. Proc. Acad. Nat. Sci. Phila.:338; pl. 14, fig. 4.- Pilsbry 1902; Man. Conch. 15: 5-6; pl. 7, figs. 1-3.

Type Locality.—Tabasco, México. Holotype ANSP 63388a (H. B. Baker 1963).

Distribution.—Known only from the type locality.

***Eucalodium (Eucalodium) decollatum decollatum* (Nyst 1841)**

*Pupa decollata* Nyst 1841; Bulletin de l'Académie Royal de Bruxelles 8:345.

*Cylindrella decollata* (Nyst). Pfeiffer 1856; Mon. helic. viv. VIII:421.

*Eucalodium decollatum* (Nyst). Fischer & Crosse 1872; Miss. Sci. Mex. I:362; pl. 14, figs. 3-3a (shell).

*Cylindrella gheisbreghti* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:380; pl. 36, fig. 1.

*Eucalodium gheisbreghti* (Pfeiffer). Crosse & Fischer 1868; Jour. de Conchyl. 14:88.- Fischer & Crosse 1872; Miss. Sci. Mex. I:368; pl. 14, figs. 4-4a (shell); pl. 16, figs. 14-21 (anatomy).- Strebel 1880; Beitrag; IV:63; pl. 5, fig. 20 (shell); pl. 14, figs. 11-11b (shell).

*Eucalodium decollatum* var. *gheisbreghti* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:3-4; pl. 1, fig. 1; pl. 4, fig. 9.—Thompson 1968; Bull. Fla. State Mus., 12:125-183; fig. 1-29.

Type Localities.—*Pupa decollata*: State of Tabasco, México. *Cylindrella gheisbreghti*: Chiapas, in SE México. The type locality for both nominate taxa is here restricted to limestone hills 5 km E of Teapa, Tabasco, México.

Distribution.—TABASCO: known for certain only from limestone hills immediately east of Teapa, Tabasco, México. Records for Cobán and Vera Paz, Guatemala require confirmation.

***Eucalodium (Eucalodium) decollatum guatemalensis* Bartsch 1906**

*Eucalodium decollatum guatemalensis* Bartsch 1906. Bull. U. S. Nat. Mus. 31:110; pl. 3, fig. 9.

Type Locality.—Guatemala. Holotype USNM 162307.

Distribution.—Known only from the type locality.

***Eucalodium (Eucalodium) mexicanum mexicanum* (Pfeiffer 1860)**

*Cylindrella mexicana* Pfeiffer 1860. Proc. Zool. Soc. Lond. 28:139.

*Eucalodium mexicanum mexicanum* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:369-371.—Strebel 1880; Beitrag, IV:62; pl. 6, fig. 7; pl. 11, figs. 3 (radula), 11 (jaw), 16 (anatomy).- Pilsbry 1902; Man. Conch. 15:6-8; pl. 1, figs. 2-3; pl. 7, figs. 8-10.

Type Locality.—Republic of México.

Distribution.—OAXACA: Juquila, Oaxaca (Fischer & Crosse 1873). Earlier records list "Tabasco" and "Chiapas".

Taxonomy.—Three subspecies are listed. Two were originally described from unlocalized sources, but they were later recorded from the same locality in Oaxaca. A third subspecies was described from Guatemala. It is unlikely that the latter is conspecific with the form(s) from Oaxaca.

***Eucalodium (Eucalodium) mexicanum major* Fischer & Crosse 1873**

*Eucalodium mexicanum major* Fischer & Crosse 1873; Miss. Sci. Mex. I: Miss. Sci. Mex. I:369.- Pilsbry 1902; Man. Conch. 15:8.

Type Locality.—Here restricted to woods between Tactic and Tamahu, Dept. Alta Verapaz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: woods between Tactic and Tamahu.

***Eucalodium (Eucalodium) mexicanum minor* (Pfeiffer 1860)**

*Cylindrella mexicana minor* Pfeiffer 1860. Novitat. Conch. III:435; pl. 97, figs. 16-17.

*Eucalodium mexicanum minor* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:370.- Strebel 1880; Beitrag, IV:63; pl. 5, fig. 11; pl. 11, fig. 16.- Pilsbry 1902; Man. Conch. 15:8; pl. 17, figs. 11-14 (shell).

Type Locality.—Not given.

Distribution.—OAXACA: Juquila (Fischer & Crosse 1873).

***Eucalodium (Eucalodium) otoides* Thompson 1968**

*Eucalodium otoides* Thompson 1968; Bull. Fla. St. Mus. 12:180-182; figs. 29a-b.

Type Locality.—Forested ravine 3.5 mi by road S of Rayón, Chiapas; 5500 ft. alt. Holotype UF 19050.

Distribution.—CHIAPAS: known only from the immediate vicinity of Rayón.

**Subgenus *Oligostylus* Pilsbry 1895**

*Oligostylus* Pilsbry 1895; Nautilus 9:51.

Type Species.—*Eucalodium blandianum* Crosse & Fischer 1868.

Distribution.—El Salvador, Guatemala, and the states of Chiapas, Oaxaca, Veracruz, Guerrero, Michoacán, and Jalisco in México.

Taxonomy.—Thirteen species are recognized.

***Eucalodium (Oligostylus) australis* Thompson 1963**

*Eucalodium australis* Thompson 1963; Proc. Biol. Soc. Wash.



76:22–27; pl. 1, figs. 5–5 (shell); text fig. 2 (anatomy).

Type Locality.—Hacienda Monte Cristo, Metapan, Dept. Santa Ana, El Salvador. Holotype SMF 161266.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) blandianum* Crosse & Fischer 1868**

*Eucalodium blandianum* Crosse & Fischer 1868. Jour. de Conchyl. 16:276.- Fischer & Crosse 1873; Miss. Sci. Mex. I.; Miss. Sci. Mex. 1:374; pl. 14, figs. 5 (shell); pl. 16, figs. 11–13 (radula).- Strebel 1880; Beitrag, IV:65; pl. 7, figs. 2a-k, 5 (shell); pl. 11, figs. 4, 5, 12 (shell); pl. 12, figs. 2a-o (anatomy); pl. 14, figs. 10a-b.- Pilsbry 1902; Man. Conch. 15:9–10; pl. 5, figs. 23–26; pl. 8, fig. 21.

Type Locality.—Mountains near Orizaba, Veracruz, México.

Distribution.—VERACRUZ: near Orizaba.

***Eucalodium (Oligostylus) decurtatum* (H. Adams 1872)**

*Cylindrella decurtata* H. Adams 1872; Proc. Zool. Soc. Lond. 41:13; pl. 3, fig. 20.

*Eucalodium decurtatum* (H. Adams). Fischer & Crosse 1873; Miss. Sci. Mex. I:385; pl. 15, figs. 5, 5a.- Pilsbry 1902; Man. Conch. 15:15; pl. 1, fig. 5; pl. 6, figs. 27–29; pl. 8, figs. 15–16.

Type Locality.—Putla, Oaxaca, México.

Distribution.—OAXACA: Putla.

***Eucalodium (Oligostylus) grande* (Pfeiffer 1860)**

*Cylindrella grandis* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:139; pl. 50, fig. 3.

*Eucalodium grande* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:371; pl. 15, fig. 4.- Strebel 1880; Beitrag, IV:68; pl. 5, fig. 19.- Pilsbry 1902; Man. Conch. 15:13–14; pl. 6, figs. 30–32, 36–37; pl. 8, fig. 20.

Type Locality.—Juquila, Oaxaca, México.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) hegewischi* (Bartsch 1947)**

*Bulinus truncatus* Pfeiffer 1841; Symb. Hist. Helv. I:43. (Not *Bulinus truncatus* Brugnoière 1792).

*Cylindrella truncata* Von Martens 1865; Malak. Blätt. 12:13.

*Eucalodium truncatum* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:392.- Strebel 1880; Beitrag, IV:73; pl. 11, fig. 8 (radula), 14 (jaw); pl. 12, fig. 3 (genitalia); pl. 13, fig. 13 (shell).- Von Martens 1877; Biol. Cent. Amer.:264; pl. 16, figs. 309.

*Oligostylus hegewischi* Bartsch 1947; Jour. Wash. Acad. Sci. 37:286.- Bartsch 1948; Jour. Wash. Acad. Sci. 38:350–351.

Type Locality.—Anganguero, Michoacán, México; type lost.

Distribution.—MICHOACÁN: known from the area near Anganguero, 9000 ft. alt. (Thompson 1968). Records of this species from Omilteme, Guerrero (Von Martens 1897:264) almost certainly pertain to *Eucalodium mariae* (Bartsch 1947).

***Eucalodium (Oligostylus) hippocastaneum* Dall 1897**

*Eucalodium hippocastaneum* Dall 1897; Nautilus 11:61.- Pilsbry 1902; Man. Conch. 15:15–16.

Type Locality.—San Sabastian, Jalisco, México.

Holotype USNM 186137.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) insigne* Crosse & Fischer 1872**

*Eucalodium insigne* Crosse & Fischer 1872; Jour. de Conchyl. 22:301.- Fischer & Crosse 1873; Miss. Sci. Mex. I: pl. 14, figs. 7, 7a.- Pilsbry 1902; Man. Conch. 15:12–13; pl. 4, figs. 6–7.

Type Locality.—“Southern México”.

Distribution.—Unknown.

***Eucalodium (Oligostylus) mariae* (Bartsch 1947)**

*Oligostylus mariae* Bartsch 1947; Jour. Wash. Acad. Sci. 37:285–286; fig. 1.

Type Locality.—Omilteme [Omilteme], Guerrero, México. Holotype USNM 543582.

Distribution.—GUERRERO: Omilteme.

***Eucalodium (Oligostylus) moussonianum* Crosse & Fischer 1872**

*Eucalodium moussonianum* Crosse & Fischer 1872; Jour. de Conchyl. 20:225.- Fischer & Crosse 1873; Miss. Sci. Mex. I:375; pl. 14, figs. 11, 11a.- Strebel 1880; Beitrag, IV:67; pl. 5, fig. 16; pl. 13; fig. 14.- Pilsbry 1902; Man. Conch. 15:16–17; pl. 3, figs. 15–18.

Type Locality.—Not stated.

Distribution.—Unknown.

***Eucalodium (Oligostylus) neglectum* Crosse & Fischer 1872**

*Eucalodium neglectum* Crosse & Fischer 1872; Jour. de Conchyl. 20:302.- Fischer & Crosse 1873; Miss. Sci. Mex. I:373; pl. 14, figs. 8, 8a.- Strebel 1880; Beitrag, IV:67; pl. 13, fig. 15.- Pilsbry 1902; Man. Conch. 15:17–18; pl. 3, figs. 19–20.

Type Locality.—Oaxaca, México.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) splendidum* (Pfeiffer 1860)**

*Cylindrella splendida* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:139; pl. 50, fig. 1.

*Eucalodium splendidum* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:372; pl. 15, figs. 3, 3a.- Strebel 1880; Beitrag, IV:69; pl. 5, fig. 17.- Pilsbry 1902; Man. Conch. 15:14; pl. 6, figs. 33–39; pl. 8, figs. 19, 23.

Type Locality.—Zacatepec, Oaxaca, México.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) sumichrasti* Crosse & Fischer 1878**

*Eucalodium sumichrasti* Crosse & Fischer 1878; Jour. de Conchyl. 26:250.- Crosse & Fischer 1879, 27:46; pl. 2, fig. 2.- Fischer & Crosse 1890; Miss. Sci. Mex. II:665; pl. 72, figs. 1–1a.- Pilsbry 1902; Man. Conch. 15:10–11; pl. 1, figs. 10–11.

Type Locality.—Chiapas, México.

Distribution.—Known only from the type locality.

***Eucalodium (Oligostylus) walpoleanum* Crosse & Fischer 1872**

*Eucalodium walpoleanum* Crosse & Fischer 1872; Jour. de Conchyl. 20:75.- Fischer & Crosse 1873; Miss. Sci. Mex. I:377; pl. 14, figs. 6–6a.- Strebel 1880; Beitrag, IV:67; pl. 7, figs. 1a–1b.-

Pilsbry 1902; *Man. Conch.* 15:11–12; pl. 4, figs. 1–4; pl. 8, fig. 22.- Bartsch 1906; *Proc. U. S. Nat. Mus.* 31:111.

Type Locality.—Woods of Palenque, Chiapas, México.

Distribution.—CHIAPAS: Palenque. GUATEMALA, Dept. Alta Verapaz

#### **Subgenus *Ptychocentrum* Bartsch 1943**

*Coelocentrum (Ptychocentrum)* Bartsch 1943; *Nautilus* 56:91–92; pl. 7, figs. 8–9.

Type Species.—*Coelocentrum bourgeoisae* Bartsch 1943 [= *Coelocentrum (Ptychocentrum) marianum* Bartsch 1943].

Distribution.—Central Chiapas, México.

Taxonomy.—This subgenus is monotypic.

#### ***Eucalodium (Ptychocentrum) marianum* (Bartsch 1943)**

*Coelocentrum (Ptychocentrum) bourgeoisae* Bartsch 1943; *Nautilus* 56:91–92; pl. 7, figs. 8–9. (Not *Coelocentrum bourgeoisae* Pilsbry 1939).

*Coelocentrum (Ptychocentrum) marianum* Bartsch 1943; *Nautilus* 56:144.- Solem 1957; *Notulae Naturae* (298):8.

Type Locality.—Tecpatán, Chiapas, México. Holotype USNM 536900.

Distribution.—Known only from the type locality.

#### **Subgenus *Resupinata* Von Martens 1897**

*Resupinata* Von Martens 1897; *Biol. Cent. Amer.*:255.

Type Species.—*Cylindrella speciosa* Dunker 1844 (Pilsbry 1953:134).

Distribution.—Central Veracruz and adjacent northern Oaxaca and San Luís Potosí, México.

Taxonomy.—Six species and five subspecies.

#### ***Eucalodium (Resupinata) cereum* Strebel 1880**

*Eucalodium cereum* Strebel 1880; *Beitrag*, IV:72; pl. 6, fig. 9.- Pilsbry 1902; *Man. Conch.* 15:22–23; pl. 7, figs. 4–7.

Type Locality.—San Antonio del Norte, 3 leagues east from Neolingo, on road to Misantla, Veracruz, México.

Distribution.—Known only from the type locality.

#### ***Eucalodium (Resupinata) densecostatum* Strebel 1880**

*Eucalodium densecostatum* Strebel 1880; *Beitrag*, IV:71; pl. 6, fig. 10.- Pilsbry 1902; *Man. Conch.* 15:20; pl. 1, fig. 4.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—VERACRUZ: Orizaba; Misantla (Bartsch 1906:111).

#### ***Eucalodium (Resupinata) deshaysianum* Crosse & Fischer 1873**

*Eucalodium deshaysianum* Crosse & Fischer 1872; *Jour. de Conchyl.* 20:223.- Fischer & Crosse 1873; *Miss. Sci. Mex.* I:384; pl. 14, figs. 9–9a.- Pilsbry 1902; *Man. Conch.* 15:24; pl. 2, figs. 13–14.

Type Locality.—“Southern México”.

Distribution.—Unknown.

#### ***Eucalodium (Resupinata) edwardsianum* Crosse & Fischer 1872**

*Eucalodium edwardsianum* Crosse & Fischer 1872. *Jour. de*

*Conchyl.* 20:224.- Fischer & Crosse 1873; *Miss. Sci. Mex.* I:383; pl. 14, figs. 10–10a.- Strebel 1880; *Beitrag*, IV:69; pl. 6, fig. 11; pl. 11, figs. 6, 7, 13; pl. 12, fig. 1 (anatomy).- Pilsbry 1902; *Man. Conch.*; 15:23–24; pl. 2, figs. 8–9, 12.

Type Locality.—Cordova, Veracruz, México.

Distribution.—VERACRUZ: Córdoba.

#### ***Eucalodium (Resupinata) ischnostele* (Pilsbry 1909)**

*Coelocentrum ischnostele* Pilsbry 1909; *Nautilus* 22:139.

*Eucalodium (Resupinata) ischnostele* (Pilsbry). Pilsbry 1953; *Proc. Acad. Nat. Sci. Phila.* 105:133–134; pl. 3, figs. 1, 1a.

Type Locality.—Mecos Falls, San Luís Potosí, México. Lectotype ANSP 99487A (H. B. Baker 1963:223).

Distribution.—SAN LUÍS POTOSÍ: Mecos Falls; near Tomasopo.

#### ***Eucalodium (Resupinata) speciosum speciosum* (Dunker 1844)**

*Cylindrella speciosum* Dunker in Phillipi 1844; *Abbild. Beschreib.*, I:86.

*Eucalodium speciosum speciosum* (Dunker). Fischer & Crosse 1873; *Miss. Sci. Mex.* I:381; pl. 15, figs. 6, 6a.- Strebel 1880; *Beitrag*, IV:71; pl. 6, fig. 6.- Pilsbry 1902; *Man. Conch.*; 15:20–21; pl. 2, figs. 1–3.- Bartsch 1906; *Proc. U. S. Nat. Mus.* 31:110.

*Eucalodium boucardi* var. *minor* Fischer & Crosse 1873; *Miss. Sci. Mex.* I:381; pl. 15, figs. 6–6a (shell).

Type Locality.—Unknown.

Distribution.—VERACRUZ: Córdoba; Coatepec; Cuesta de Misantla, Jalapa.

#### ***Eucalodium (Resupinata) speciosum boucardi* (Pfeiffer 1856)**

*Cylindrella boucardi* Pfeiffer 1856; *Proc. Zool. Soc. Lond.* 24:321; pl. 35, fig. 1.

*Eucalodium boucardi* (Pfeiffer). Fischer & Crosse 1873; *Miss. Sci. Mex.* I:381.- Strebel 1880; *Beitrag*, IV:70; pl. 5, fig. 15.

*Eucalodium speciosum boucardi* (Pfeiffer). Von Martens 1897; *Biol. Cent. Amer.*:262.- Pilsbry 1902; *Man. Conch.* 15:21–22; pl. 2, figs. 6–7; pl. 8, fig. 18.

Type Locality.—Cordova, Veracruz, México.

Distribution.—VERACRUZ: Córdoba; Orizaba.

#### ***Eucalodium (Resupinata) speciosum fischeri* Von Martens 1897**

*Eucalodium speciosum* (Dunker). Fischer & Crosse 1873; *Miss. Sci. Mex.* I:379; pl. 15, figs. 7–7a (shell).

*Eucalodium speciosum fischeri* Von Martens 1897. *Biol. Cent. Amer.*:262.- Pilsbry 1902; *Man. Conch.*; 15:22; pl. 2, figs. 10–11.

Type Locality.—Chiquihuitl, Veracruz, México.

Distribution.—VERACRUZ: Chiquihuitl.

#### ***Eucalodium (Resupinata) speciosum minimum* Von Martens 1897**

*Eucalodium speciosum*  $\gamma$  Fischer & Crosse 1873; *Miss. Sci. Mex.* I:381.

*Eucalodium speciosum minimum* Von Martens 1897; *Biol. Cent. Amer.*:262.- Pilsbry 1902; *Man. Conch.* 15:22.

Type Locality.—Cordova, Veracruz, México.

Distribution.—VERACRUZ: Córdoba; Atoyac.

***Eucalodium (Resupinata) speciosum strebeli*  
Von Martens 1897**

*Eucalodium boucardi* form B, Strebel 1860; Beitrag, IV:71; pl. 5, figs. 8–9.

*Eucalodium speciosum strebeli* Von Martens 1897. Biol. Cent. Amer. 262.- Pilsbry 1902; Man. Conch. 15:22; pl. 2, figs. 4–5.

Type Locality.—Environs of Jalapa, especially about the brooks on the road to Neolingo, and Chirimoya, Veracruz, México.

Distribution.—VERACRUZ: environs of Jalapa.

**Genus *Anisospira* Strebel 1880**

*Anisospira* Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:77.- Pilsbry 1902; Man. Conch. 15:24–25.- Thompson 1968; Bull. Fla. St. Mus. 12:142.

Type Species.—*Cylindrella liebmanni* Pfeiffer 1846.

Distribution.—Known from lowland regions of Colima, Michoacán, and Oaxaca, México.

Taxonomy.—*Anisospira* includes two subgenera, seven species, and two subspecies.

**Subgenus *Anisospira* Strebel 1880**

Distribution.—Southern Oaxaca, México.

Taxonomy.—Three species, one of which has two subspecies

***Anisospira (Anisospira) dalli dalli* (Von Martens 1901)**

*Anisospira strebeli* Dall 1897; Proc. U. S. Nat. Mus. 19:353; pl. 33, figs. 7–8 (not *Anisospira strebeli* Pfeiffer 1887).

*Eucalodium dalli* Von Martens 1901; Biol. Cent. Amer. :633 (new name for *Anisospira strebeli* Dall 1897).

*Anisospira dalli* (Von Martens). Pilsbry 1902; Man. Conch. 15:26–27; pl. 1, fig. 12; pl. 10, figs. 28–29.- Solem 1957; Notulae Naturae (298):5; pl. 1, fig. 6.

*Anisospira dalli dalli* (Von Martens). Thompson 1968; Bull. Fla. St. Mus. 12:142–147; figs. 10a–f, 11–12.

Type Locality.—Huilotepéc, Oaxaca, México. Holotype USNM 107366.

Distribution.—OAXACA: limestone hills west and north of Tehuantepec (Thompson 1968).

***Anisospira (Anisospira) dalli stringens* Thompson 1968**

*Anisospira dalli stringens* Thompson 1968; Bull. Fla. St. Mus. 12:147–148; figs. 10g–l.

Type Locality.—Hill about 0.4 mi. S of the Presa Benito Juárez on the Rio Tehuantepec, about 18 mi. NW of Tehuantepec, Oaxaca, México. Holotype UF 19079.

Distribution.—Known only from the type locality.

***Anisospira (Anisospira) liebmanni* (Pfeiffer 1846)**

*Cylindrella liebmanni* Pfeiffer 1846; Zeitschrift für Malak. 1:59.

*Anisospira liebmani* (Pfeiffer). Strebel 1880; Beitrag, IV: 79; pl. 5, figs. 12–13; pl. 14, fig. 2.- Pilsbry 1902; Man. Conch. 15:28–29; pl. 10, figs. 22–27; pl. 11, figs. 1–3.- Solem 1957; Notulae Naturae (298):5–6; pl. 1, fig. 5.- Thompson 1968; Bull. Fla.

St. Mus. 12:133–142; figs. 1–9 (shells, anatomy, distribution). *Cylindrella trochaeformis* Sowerby, in Reeve 1843; Conch. Icon., XX, pl. 9, fig. 80.

*Cylindrella hyalina* Pfeiffer in Philippi 1847: Abild., II; pl. 2, fig. 2. *Eucalodium (Anisospira) orcutti* Dall 1910; Nautilus 24:34–36.

*Anisospira orcutti* (Dall). Solem 1957; Notulae Naturae (298):6, pl. 1. *Liocentrum wilmoti* Bartsch 1948; Proc. Biol. Soc. Wash. 38:52; fig. 2.

Type Localities.—*Cylindrella liebmanni*: unknown. *Cylindrella trochaeformis*: unknown. *Cylindrella hyaline*: unknown. *Eucalodium (Anisospira) orcutti*: Rio Verde, Oaxaca, México; holotype USNM 212319. *Liocentrum wilmoti*: along the Pan American Highway between Oaxaca and Tehuantepec, Oaxaca, México; holotype USNM 589051.

Distribution.—Southeastern OAXACA.

***Anisospira (Anisospira) vonmartensi* (Strebel 1880)**

*Eucalodium vonmartensi* Strebel 1880; Beitrag, IV:73–74; pl. 11, figs. 8, 14; pl. 12, fig. 3; pl. 13, fig. 13.

*Anisospira vonmartensi* (Strebel). Bartsch 1947; Jour. Wash. Acad. Sci. 37:284–285.

Type Locality.—“México.”

Distribution.—Unknown.

**Subgenus *Trachycion* Thompson 1968**

*Trachycion* Thompson 1968; Bull. Fla. St. Mus. 12:148.

Type Species.—*Anisospira recticosta townsendi* Pilsbry & Cocherell 1903.

Distribution.—Coastal areas of Colima, Michoacán, and Oaxaca, México.

Taxonomy.—Four species, one of which has two subspecies.

***Anisospira (Trachycion) hadromylla* Thompson 1968**

*Anisospira hadromylla* Thompson 1968; Bull. Fla. St. Mus. 12:150–152, figs. 13a–d.

Type Locality.—A small range of limestone hills along the Pacific coast 10 mi. SE of San Vicente, Michoacán, México, 200 ft. alt. Holotype UF 19055.

Distribution.—Known only from the type locality.

***Anisospira (Trachycion) recticosta recticosta* (Pfeiffer 1847)**

*Cylindrella recticosta* Pfeiffer, in Philippi 1847; Abbild. 2:48; pl. 2, fig. 3.

*Eucalodium recticosta* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. 1:386; pl. 14; figs. 12–12b.

*Anisospira recticosta* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:299.- Pilsbry 1903; Man. Conch. 16: pl. 11, figs. 83–84.

*Anisospira (Trachycion) recticosta recticosta* (Pfeiffer). Thompson 1968; Bull. Fla. St. Mus. 12:147.

Type Locality.—Unknown.

Distribution.—Unknown.

***Anisospira (Trachycion) recticosta townsendi* Pilsbry & Cockerell 1903**

*Anisospira recticosta townsendi* Pilsbry & Cockerell, in H. A. Pilsbry 1902; Man. Conch. 15:300; pl. 63, figs. 51–55 (anatomy); vol. 16; pl. 11, figs. 85–86 (shell).- Solem, 1957; Notulae Naturae



(298):6; pl. 1, fig. 7.

*Anisospira (Trachycion) recticosta townsendi* Pilsbry & Cockerell.  
Thompson 1968; Bull. Fla. St. Mus. 12:150.

Type Locality.—Cualata, Colima, México. Holotype ANSP 84385.

Distribution.—Known only from the type locality.

***Anisospira (Trachycion) strebeli* Pfeiffer 1887**

*Anisospira strebeli* Pfeiffer 1887. Verh. Ver. Naturw. Hamburg:21.-  
Pilsbry 1902; Man. Conch. 15:29–30; pl. 10, figs. 30–34; pl. 16, fig. 4.-  
Solem 1957; Notulae Naturae (298):5; pl. 1, figs. 3–4.

*Anisospira (Trachycion) strebeli* Pfeiffer. Thomopson 1968; Bull. Fla. St. Mus. 12:150.- Breure 1977; Zoolog. Med. 51:305; pl. 1, fig. 11.

*Eucalodium strebeli* (Pfeiffer). Von Martens 1897; Biol. Cent. Amer.:265; pl. 16, figs. 31–34.

Type Locality.—Cerro de Las Plumas, near Puerto Angel, Oaxaca, México.

Distribution.—OAXACA: known only from the area near Puerto Angel and Pochutla.

***Anisospira (Trachycion) velascorum* Breure 1977**

*Anisospira velascorum* Breure 1977. Zoolog. Med. 51:301–305; figs. 1–10; pl. 1.

Type Locality.—Km 151 on the road from Pochutla to Puerto Escondido (ca. 10 km E of Puerto Escondido), Oaxaca, México.

Distribution.—Known only from the type locality.

**Genus *Coelocentrum* Crosse & Fischer 1870**

*Coelocentrum* Crosse & Fischer 1870; Jour. de Conchyl. 20:302.

Type Species.—*Cylindrella turris* Pfeiffer 1856.

Distribution.—From Tamaulipas and Guerrero, México SE to Guatemala.

Taxonomy.—The genus includes six subgenera, 33 species and six subspecies.

**Subgenus *Coelocentrum* Crosse & Fischer 1870**

Distribution.—From Tamaulipas and Guerrero SE to Guatemala.

Taxonomy.—Nineteen species and six subspecies are recognized.

***Coelocentrum (Coelocentrum) anconai* Bartsch 1948**

*Coelocentrum anconai* Bartsch 1948. Jour. Wash. Acad. Sci. 38:351–352; fig. 1.

Type Locality.—Woods of Ocote, Ocozocoautla, Chiapas, México. Holotype USNM 589052.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) anomalum* Strebel 1880**

*Coelocentrum anomalum* Strebel 1880. Beitrag, IV:59; pl. 6, fig. 8; pl. 14, fig. 5.- Pilsbry 1902; Man. Conch. 15:35–36; pl. 9, figs. 6–7.

Type Locality.—Cobán, Departamento Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) arctispira arctispira* (Pfeiffer 1860)**

*Cylindrella arctispira* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:139; pl. 50, fig. 2.

*Coelocentrum arctispira* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. 1:348; pl. 15, fig. 15.- Strebel 1880. Beitrag, IV:58; pl. 6, fig. 4 (shell); pl. 11, fig. 9 (radula), fig. 15 (jaw); pl. 13, fig. 6 (anatomy); pl. 14, fig. 3 (shell axis).

*Coelocentrum arctispira arctispira* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:42–43; pl. 14, figs. 33–36 (shell).

Type Locality.—Juquila, Oaxaca, México.

Distribution.—OAXACA: Juquila. TABASCO: Istapa, (Fischer & Crosse 1873).

Remarks.—The status of the species is uncertain, and its occurrence at the given type locality needs to be verified. The identity of specimens from Istapa, Tabasco also needs verification (Pilsbry 1902).

***Coelocentrum (Coelocentrum) arctispira estefaniae* Pilsbry 1902**

*Coelocentrum arctispira estefaniae* Pilsbry 1902; Man. Conch. 15:43–44; pl. 14, figs. 28–32.

*Coelocentrum arctispira* (Pfeiffer). Strebel 1880; Beitrag, IV: pl. 14, fig. 3.

Type Locality.—Here restricted to Quilate, Veracruz, México.

Distribution.—VERACRUZ: Agua Caliente; Arroyo del Banco (Strebel 1880).

***Coelocentrum (Coelocentrum) cataclines* Thompson 1968**

*Coelocentrum cataclines* Thompson 1968; Bull. Fla. St. Mus. 12:178–180; figs. 28a-c.

Type Locality.—Limestone knoll 15.8 mi. NW by road from Ocozocoautla, Chiapas, México, 2700 ft. alt.; holotype UF 19031.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) championi* Von Martens 1897**

*Coelocentrum championi* Von Martens 1897; Biol. Cent. Amer.:269; pl. 16, fig. 26.- Pilsbry 1903; Man. Conch. 15:49; pl. 7, figs. 12–15.

Type Locality.—Cerro Zunil, [Dept. Altenango], Guatemala; syntypes in the BMNH.

Distribution.—Known only from the type locality.

Remarks.—The subgeneric status is uncertain. Pilsbry (1903) related *Coelocentrum championi* and *C. clathratum* to *C. (Gymnocentrum) filicosta* on the basis of spiral striae between the costate sculpture of the shell. This similarity seems to be superficial compared to the much more distinct spiral threads that occur in *C. filicosta*. There is little other similarity between the two species and *C. filicosta*.

***Coelocentrum (Coelocentrum) clathratum* Von Martens 1897**

*Coelocentrum clathratum* Von Martens 1897; Biol. Cent. Amer.:269; pl. 16, figs. 29–30.- Pilsbry 1902; Man. Conch. 15:49–50; pl.

9, figs. 8–11.

Type Locality.—Hacienda Buena Vista, in upper Chulhuitz, Costa Cuca, western Guatemala; 3500 ft. altitude. Syntypes in the BMNH.

Distribution.—Known only from the type locality.

Remarks.—As with *Coelocentrum championi*, the subgeneric status of this species is uncertain.

***Coelocentrum (Coelocentrum) dispar* Pilsbry 1902**

*Coelocentrum dispar* Pilsbry 1902; Man. Conch. 15:44–45; pl. 17, figs. 16–19.

Type Locality.—Guatemala. Holotype ANSP 25079.

Distribution.—GUATEMALA: specific locality unknown.

***Coelocentrum (Coelocentrum) fistulare* (Morelet 1849)**

*Cylindrella fistulare* Morelet 1849; Test. Noviss. 1:10.

*Coelocentrum fistulare* (Morelet). Fischer & Crosse 1873; Miss. Sci. Mex. 1:343; pl. 15, figs. 12–12a (shell).- Strebelt 1880; Beitrag, iv:58; pl. 6, fig. 2; pl. 4, fig. 1a-b.- Pilsbry 1902; Man. Conch. 15:41–42; pl. 9, figs. 16–20.- Van der Schalie 1940; Occ. Pap. Mus. Zool. Univ. Mich. (413):4.- Haas & Solem 1960; Nautilus 73:131; fig. 8.

Type Locality.—Forests of Petén, Guatemala.

Distribution.—GUATEMALA: widely distributed in the Depts. Petén and Alta Verapaz, and adjacent BELIZE.

***Coelocentrum (Coelocentrum) gigas* Von Martens 1897**

*Coelocentrum gigas* Von Martens 1897. Biol. Cent. Amer.:267; pl. 16, figs. 27–29c.- Pilsbry 1902; Man. Conch. 15:33–34; pl. 9, figs. 1–5.

Type Locality.—Livingston, Departamento Izabal, Guatemala. Synotypes in the BMNH.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) huertai* Bartsch 1947**

*Coelocentrum huertai* Bartsch 1947; Jour. Wash. Acad. Sci. 37:286–287; fig. 5.

Type Locality.—Omilteme, Guerrero, México; holotype USNM 543585.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) nelsoni* Dall 1896**

*Coelocentrum nelsoni* Dall 1896; Proc. U. S. Nat. Mus. 19:352; figs. 5–6.- Thompson 1968; Bull. Fla. St. Mus. 12:173–176; figs. 26a-e, 22g.

Type Locality.—Tuxtla Gutierrez, Chiapas, México. Holotype USNM 107368.

Distribution.—CHIAPAS: known only from the vicinity of Tuxtla Gutierrez, Chiapas (Thompson 1968).

***Coelocentrum (Coelocentrum) penion* Thompson & Correa-Sandoval 1994**

*Coelocentrum penion* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:145–147; figs. 2–6.

Type Locality.—Sierra de Cucharas, 7 km by road west of Gómez Farías, Tamaulipas, México (23°03'20" N,

90°10'21"W); 730 m alt. Holotype UF 190974.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) pfefferi* Dall, 1896**

*Coelocentrum pfefferi* Dall 1896; Proc. U. S. Nat. Mus. 19:352; pl. 33, figs. 1–2.- Thompson 1968; Bull. Fla. St. Mus. 12:172–173; figs. 25a-d, 22f.

Type Locality.—Ocozocoautla, Chiapas, México. Holotype USNM 107367.

Distribution.—CHIAPAS: known only from the vicinity of the type locality.

***Coelocentrum (Coelocentrum) pittieri pittieri* Bartsch 1906**

*Coelocentrum pittieri pittieri* Bartsch 1906; Proc. U. S. Nat. Mus. 31:116–117; pl. 3, fig. 7.

Type Locality.—Cave of Sakalkunta, near Senahu, Departamento Alta Verapaz, Guatemala. Holotype USNM 185492.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) pittieri guatemalensis* Bartsch 1906**

*Coelocentrum pittieri guatemalensis* Bartsch 1906; Proc. U. S. Nat. Mus. 31:117–118; pl. 4, fig. 11.

Type Locality.—Secanquim, Departamento Alta Verapaz, Guatemala. Holotype USNM 187469.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) stenocion* Thompson 1968**

*Coelocentrum stenocion* Thompson 1968; Bull. Fla. St. Mus. 12:167–169; figs. 23, 22e.

Type Locality.—Limestone cliff 5.6 miles NNE El Ocotito, Guerrero, 2900 ft. alt. Holotype UF 19061.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) tanydeira* Thompson 1968**

*Coelocentrum tanydeira* Thompson 1968; Bull. Fla. St. Mus. 12:164–176; figs. 21, 22a.

Type Locality.—Hillside 11.4 miles east of Jilitla [Xilitla], San Luís Potosí, 1100 ft. alt. Holotype UF 19040.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) tomacella tomacella* (Morelet 1849)**

*Cylindrella tomacella* Morelet 1849; Test. Noviss. I:10.

*Coelocentrum tomacella* (Morelet). Fischer & Crosse 1873; Miss. Sci. Mex. 1:342; pl. 15, fig. 11.- Strebelt 1880; Beitrag, IV:68; pl. 6, fig. 3.- Pilsbry 1902; Man. Conch. 15:38–39; pl. 6, fig. 3.

*Coelocentrum tomacella tomacella* (Morelet). Thompson 1968; Bull. Fla. St. Mus. 12:171.

*Cylindrella moreleti* Deshayes 1851; in Ferrusac 1851; Historie Naturel II:227.

Type Localities.—*Cylindrella tomacella*: woods of Tabasco and in the ruins of Palenque, State of Chiapas, México. *Cylindrella moreleti*: woods of Tabasco and in the ruins of Palenque, State of Chiapas.

Distribution.—Northern CHIAPAS and adjacent TABASCO (Thompson 1968:171).

***Coelocentrum (Coelocentrum) tomacella adelphion*  
Thompson 1968**

*Coelocentrum tomacella adelphion* Thompson 1968; Bull. Fla. St. Mus. 12:168–171; figs. 24a-c, 22b.

Type Locality.—Ravine 5.4 mi. N of Jitotol, Chiapas, México; 5400 ft. alt. Holotype UF 19052.

Distribution.—Known only from the type locality.

***Coelocentrum (Coelocentrum) tomacella attenuatum*  
(Pfeiffer 1856)**

*Cylindrella attenuatum* Pfeiffer 1856; Malak. Blatt., 3:258.

*Coelocentrum attenuatum* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:104.

*Coelocentrum attenuatum attenuatum* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:40; pl. 12, figs. 9, 10.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: specific locality not known.

***Coelocentrum (Coelocentrum) tomacella clava* (Pfeiffer 1856)**

*Cylindrella clava* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:380.

*Coelocentrum clava* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:346; pl. 15, fig. 14.- Strebel 1880; Beitrag, IV:57; pl. 5, fig. 10; pl. 14, fig. 8.- Von Martens 1897; Biol. Cent. Amer.:270–271

*Coelocentrum tomacella clava* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:39–40; pl. 12, figs. 11–14; pl. 14, figs. 26–27.- Thompson 1968; Bull. Fla. St. Mus. 12:171.

Type Locality.—Chiapas; here restricted to a limestone hill 2 km NE of Teapa, Tabasco, México.

Distribution.—TABASCO: known from the immediate vicinity of Teapa (Thompson 1968).

***Coelocentrum (Coelocentrum) tomacella rufescens*  
Von Martens 1897**

*Coelocentrum clava rufescens* Von Martens 1897; Biol. Cent. Amer.:271; pl. 16, fig. 2.

*Coelocentrum tomacella rufescens* Von Martens. Pilsbry 1902; Man. Conch. 15:40; pl. 12, fig. 8.

Type Locality.—México.

Distribution.—Unknown.

***Coelocentrum (Coelocentrum) turris* (Pfeiffer 1856)**

*Cylindrella turris* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:380; pl. 36, fig. 2.

*Coelocentrum turris* (Pfeiffer). Fischer & Crosse 1873; Miss. Sci. Mex. I:345; pl. 15, fig. 13.- Strebel 1880; Beitrag:56; pl. 5, fig. 18; pl. 14, figs. 2a-b.- Pilsbry 1902; Man. Conch. 15:36–37; pl. 12, figs. 1–5.- Thompson 1968; Bull. Fla. St. Mus. 12:172.

Type Locality.—Chiapas; here restricted to limestone hills 5 km E of Teapa, Tabasco, México.

Distribution.—CHIAPAS: vicinity of Solusuchiapa. TABASCO: vicinity of Teapa (Thompson 1968).

***Coelocentrum (Coelocentrum) tyla* Thompson 1968**

*Coelocentrum tyla* Thompson 1968; Bull. Fla. St. Mus. 12:176–178; figs. 27a-c.

Type Locality.—Ravine 8.6 mi. by road E of Chiapa de

Corzo, Chiapas, México; 3100 ft. alt. Holotype UF 19044.

Distribution.—Known only from the type locality.

**Subgenus *Crossostephanus* Dall 1908**

*Crossostephanus* Dall 1908; Proc. U. S. Nat. Mus. 35:177.

Type Species.—*Coelocentrum palmeri* Dall & Bartsch 1908.

Distribution.—Central Tamaulipas, México.

Taxonomy.—Six species.

***Coelocentrum (Crossostephanus) affinis* Thompson  
& Correa-Sandoval 1994**

*Coelocentrum affinis* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:154–156; figs. 16–19, 40.

Type Locality.—Sierra Tamalave, 7 km west-southwest of Adolfo Lopéz Mateos, Tamaulipas, México; 350 m alt. Holotype UF 159634.

Distribution.—TAMAULIPAS: known from the Sierra Tamalave in the vicinity of the type locality.

***Coelocentrum (Crossostephanus) hinkleyi* Pilsbry 1909**

*Coelocentrum hinkleyi* Pilsbry 1909; Nautilus 22:138–139.- Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:153; figs. 20, 21, 33, 42–43.

Type Locality.—Highest mountain on south side of river at Mecos Falls, San Luís Potosí, México. Lectotype ANSP 9884a (H. B. Baker 1963:223).

Distribution.—SAN LUÍS POTOSÍ: recorded only from the type locality and San Diegito.

***Coelocentrum (Crossostephanus) palmeri* Dall  
& Bartsch 1908**

*Coelocentrum palmeri* Dall & Bartsch 1908; in Dall 1908; Proc. U. S. Nat. Mus. 35:177–178; pl. 29, figs. 2, 5.- Thompson & Correa-Sandoval 1994; Bull. Fla. St. Mus. 36:162–164; figs. 38, 39, 44, 45, 49.

Type Locality.—Tamaulipas, México; restricted to the Sierra de Cucharas, west of Gomez Farías, Tamaulipas (Thompson & Correa-Sandoval 1994). Holotype USNM 198083.

Distribution.—TAMAULIPAS: known only from the Sierra de Cucharas, W of Gomez Farías.

***Coelocentrum (Crossostephanus) paucinoda* Thompson & Correa-Sandoval 1994**

*Coelocentrum paucinoda* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:158–159; figs. 28–32.

Type Locality.—Limestone escarpment 3 km east of and ascending to Gómez Farías, Tamaulipas, México; 300 m alt. (23°01'21" N, 99°08'00" W). Holotype UF 193544.

Distribution.—TAMAULIPAS: known only from the vicinity of the type locality.

***Coelocentrum (Crossostephanus) priosculpta* Thompson  
& Correa-Sandoval 1994**

*Coelocentrum priosculpta* Thompson & Correa-Sandoval 1994.



Bul. Fla. Mus. Nat. Hist. 36:156–158; figs. 22–27, 52.

Type Locality.—Sierra Grande, 2 km west of Santa Maria de Guadalupe, 21 km west of Ocampo, Tamaulipa, México s; 1100 m alt. Holotype UF 159672.

Distribution.—TAMAULIPAS: known from the type locality and in immediately adjacent SAN LUÍS POTOSÍ

***Coelocentrum (Crossostephanus) torosum* Thompson & Correa-Sandoval 1994**

*Coelocentrum torosum* Thompson & Correa 1994; Bull. Fla. Mus. Nat. Hist. 36:160–162; figs. 34–37, 41.

Type Locality.—Sierra de Tamaulipas, 7 km northwest of Pirulí, Tamaulipas, México; 350 m alt. (23°34'27" N, 98°33'50" W). Holotype UF 189695.

Distribution.—TAMAULIPAS: confined to the Sierra de Tamaulipas from 50–480 m alt.

**Subgenus *Elasmocentrum* Pilsbry 1902**

*Elasmocentrum* Pilsbry 1902; Man. Conch. 15:49.

Type Species.—*Coelocentrum exlex* Pilsbry 1902.

Distribution.—Unknown; attributed to México.

Taxonomy.—This subgenus is monotypic.

***Coelocentrum (Elasmocentrum) exlex* Pilsbry 1902**

*Coelocentrum exlex* Pilsbry 1902. Man. Conch. 15:50; pl. 17, figs. 20–23.

Type Locality.—México. Holotype ANSP 3938.

Distribution.—Unknown.

**Subgenus *Gymnocentrum* Pilsbry 1942.**

*Liocentrum* Pilsbry 1902; Man. Conch. 15:46 (*non Liocentrum* Karsch 1890).

*Gymnocentrum* Pilsbry 1942; Nautilus 55:105.

Type Species.—*Cylindrella filicosta* Shuttleworth 1852.

Distribution.—Central Veracruz, México

Taxonomy.—This subgenus contains two species.

***Coelocentrum (Gymnocentrum) crosseanum* (Pfeiffer 1867)**

*Cylindrella crosseana* Pfeiffer 1867; Jour. de Conchyl. 15:437.

*Eucalodium crosseanum* (Pfeiffer). Crosse & Fischer 1870; Jour. de Conchyl. 18:22.

*Coelocentrum crosseanum* (Pfeiffer). Fischer & Crosse. 1873; Miss. Sci. Mex. I:351; pl. 15, figs. 16.- Strebel 1880; Beitrag, IV:60; pl. 6, figs. 1, 5.- Pilsbry 1902; Man. Conch. 15:; 47; pl. 17, figs. 25–29.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—VERACRUZ: known from the type locality and Cuautlatitlan (Von Martens 1897:272).

***Coelocentrum (Gymnocentrum) filicosta* (Shuttleworth 1852)**

*Cylindrella filicosta* Shuttleworth 1852; Mittheil. der Natur. Ges. Bern:296.

*Eucalodium filicosta* (Shuttleworth). Crosse & Fischer 1870; Jour. de Conchyl. 18:22.

*Coelocentrum filicosta* (Shuttleworth). Fischer & Crosse 1873; Miss. Sci. Mex. I:352; pl. 15, fig. 17.- Strebel 1880; Beitrag; IV:61; pl. 5, fig. 14.- Pilsbry 1902; Man. Conch. 15:47–48, pl.

18, fig. 38–41.- Neubert & Gosteli 2003:25; pl. 5, fig. 7.

Type Locality.—Cordova, Veracruz, México. Syntypes Naturhistorisches Museum Bern 18863/2 (Neubert & Gosteli 2003).

Distribution.—VERACRUZ: Córdoba; Orizaba.

**Subgenus *Ptychodonta* Bartsch 1906**

*Ptychodonta* Bartsch 1906; Proc. U. S. Nat. Mus. 31:118.

Type Species.—*Coelocentrum astrophorea* Dall 1897.

Distribution.—Central Hidalgo and eastern Querétaro, México.

Taxonomy.—Four species are recognized.

***Coelocentrum (Ptychodonta) astrophorea* Dall 1897**

*Coelocentrum astrophorea* Dall 1897; Nautilus 11:62.- Pilsbry 1902; Man. Conch. 15:45.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:118; figs. 5–6.- Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:148.

*Coelocentrum acanthophorea* Von Martens 1901; Biol. Cent. Amer.:634 (lapsus for *Coelocentrum astrophorea* Dall).

Type Locality.—Encarnación, Hidalgo, México. Holotype USNM 134696.

Distribution.—Known only from the type locality.

***Coelocentrum (Ptychodonta) brachyacron* Thompson & Correa-Sandoval 1994**

*Coelocentrum brachyacron* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:150–152; figs. 12–15, 51.

Type Locality.—1 km southeast of Tres Lagunas, Querétaro, México; 2600 m alt. Holotype UF 159627.

Distribution.—QUERÉTARO: known only from the vicinity of the type locality.

***Coelocentrum (Ptychodonta) endolophus* Pilsbry 1953**

*Coelocentrum endolophus* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:134–135; pl. 3; figs. 4–5a.- Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:152.

Type Locality.—Unknown; incorrectly given as “between Chilpancingo and a small town nearby called Mazatlán, Guerrero, México” (see Thompson & Correa-Sandoval 1994:152). Holotype ANSP 190964.

Distribution.—HIDALGO: about 10 km SSW of Jacala.

***Coelocentrum (Ptychodonta) telescopium* Thompson & Correa-Sandoval 1994**

*Coelocentrum telescopium* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:148–150; figs. 8–11, 46, 50.

Type Locality.—7 km southwest of El Lobo, Querétaro, México; 2100 m alt. Holotype UF 34493.

Distribution.—Known only from the type locality.

**Subgenus *Schizopile* Pilsbry 1939**

*Schizopile* Pilsbry 1939; Nautilus 53:27.

Type Species.—*Coelocentrum bourgeoisae* Pilsbry 1939.

Distribution.—Northwest Guerrero, México.

Taxonomy.—This subgenus is monotypic.

***Coelocentrum (Schizopile) bourgeoisae* Pilsbry 1939**

*Coelocentrum bourgeoisae* Pilsbry 1939; Nautilus 53:27; pl. 7, fig. 5.

Type Locality.—Zihuatanejo, Guerrero, México. Lectotype ANSP 174058a (H. B. Baker 1963:221).

Distribution.—Known only from the type locality.

***Nomen dubium associated with Coelocentrum.***

***Cylindrella ludersi* Pfeiffer 1859.**

Monographia Helicorum Viventium, IV:721.

Remarks.—Pfeiffer related this species to other *Coelocentrum* known at the time. Pilsbry (1903, 15:46) doubted that *C. ludersi* is a species of *Coelocentrum*.

**Genus *Dissotropis* Bartsch 1906**

*Dissotropis* Bartsch 1906; Bull. U. S. Nat. Mus. 113.

Type Species.—*Anisospira (Dissotropis) stearnsi* Bartsch 1906.

Distribution.—Southwestern México in the states of Jalisco, Colima, Michoacán, and Guerrero. Two species are reported from Mazatlán, Sinaloa, but these records need verification.

Taxonomy.—Five species are recognized.

***Dissotropis amplaxis* Thompson 1968**

*Dissotropis amplaxis* Thompson 1968; Bull. Fla. St. Mus. 12:161–162; figs. 16c, 20a-d.

Type Locality.—A xeric hillside along the NW side of the highway from Colima to Tecoman, 1.9 mi. SW of Tecolapa, Colima, México. Holotype UF 19764.

Distribution.—Known only from the type locality.

***Dissotropis blandi* (Bartsch 1906)**

*Anisospira (Dissotropis) blandi* Bartsch 1906; Proc. U. S. Nat. Mus. 31:114–115; pl. 3, fig. 3.- Solem 1957; Notulae Naturae (298):7.

*Dissotropis blandi* (Bartsch). Thompson 1968; Bull. Fla. St. Mus. 12:154.

Type Locality.—“Near Mazatlán, Sinaloa, México”. This surely is an error. Here-in restricted to near Mazatlán, Guerrero, México. Holotype USNM 58055.

Distribution.—GUERRERO: known only from near Mazatlán.

***Dissotropis castaneum* Thompson 1968**

*Dissotropis castaneum* Thompson 1968; Bull. Fla. St. Mus. 12:155–161; figs. 15a-d (shell), 16a-b (shell), 14, 17–19 (anatomy).

Type Locality.—Limesone sinkhole 6.0 mi. SW and 6.5 mi. E of Pihaumo, Jalisco, México. Holotype UF 19758.

Distribution.—Known only from the type locality.

***Dissotropis henryi* (Solem 1957)**

*Anisospira (Dissotropis) henryi* Solem 1957; Notulae Naturae (298):7–8; pl. 1, fig. 11–14.

*Dissotropis henryi* (Solem). Thompson 1968; Bull. Fla. St. Mus. 12:154.

Type Locality.—La Placita (= Sulatillo), Sierra de Coalcomán, Michoacán, México. Holotype UMMZ 185499.

Distribution.—Known only from the type locality.

***Dissotropis stearnsi* (Bartsch 1906)**

*Anisospira (Dissotropis) stearnsi* Bartsch 1906; Proc. U. S. Nat. Mus. 31:113–114; pl. 3, fig. 1.- Solem 1957; Notulae Naturae (298):7.

*Dissotropis stearnsi* (Bartsch). Thompson 1968; Bull. Fla. St. Mus. 12:154.

Type Locality.—“Near Mazatlán, Sinaloa, México”. This surely is an error. Here-in restricted to near Mazatlán, Guerrero, México. Holotype USNM 59055b.

Distribution.—Known only from the type locality.

**Genus *Epirobia* Strebel 1880**

*Epirobia* Strebel 1880; Beitrag, IV: 77, 85.- Von Martens 1897; Biol. Cent.-Amer.:283.- Pilsbry & Vanatta 1898; Proc. Acad. Nat. Sci. Phila.:281.- Pilsbry 1902; Man. Conch. 15:59–61.

Type Species.—*Cylindrella polygyra* Pfeiffer 1856 (Pilsbry & Vanatta 1898).

Distribution.—Northern Guatemala; northern Chiapas, central Veracruz, and southern Nuevo León, México.

Taxonomy.—Two subgenera, eight species and two subspecies are recognized.

**Subgenus *Epirobia* Strebel & Pfeiffer 1880**

Distribution.—Northern Guatemala; northern Chiapas and central Veracruz, México.

Taxonomy.—Seven species and two subspecies are recognized.

***Epirobia apiostoma* (Pfeiffer 1856)**

*Cylindrella apiostoma* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:322.- Fischer & Crosse 1873; Miss. Sci. Mex. 1:406; pl. 17, fig. 15.

*Holospira (Epirobia) apiostoma* (Pfeiffer). Von Martens 1897; Biol. Cent. Amer.:283.

*Epirobia apiostoma* (Pfeiffer). Strebel 1880; Beitrag, IV: 88; pl. 5, fig. 6; pl. 13, fig. 11.- Pilsbry 1902; Man. Conch. 15:63–64; pl. 20, fig. 11.

Type Locality.—Cordova, Veracruz, México.

Distribution.—VERACRUZ: Córdoba; at entrance to cave at Cacahuatla.

***Epirobia berendti berendti* (Pfeiffer 1866)**

*Cylindrella berendti* Pfeiffer 1866; Malak. Blätt. 8:87.- Fischer & Crosse 1873; Miss. Sci. Mex. 1:409.

*Epirobia berendti* (Pfeiffer). Strebel 1880:86; pl. 13, fig. 1; pl. 14, fig. 18.- Pilsbry 1902; Man. Conch. 15:61–62; pl. 20, figs. 1–3.

*Holospira berendti* (Pfeiffer). Von Martens 1897; Biol. Cent. Amer.: 281.

Type Locality.—Toxpan [Tuxpan], on the slope to Cerro Matlaguahuitl, near Cordova, Veracruz, México.

Distribution.—Known only from the type locality.

***Epirobia berendti albida* (Fischer & Crosse 1873)**

*Cylindrella berendti albida* Fischer & Crosse 1873; Miss. Sci. Mex. I:409.

*Holospira berendti* var. *albida* (Fischer & Crosse). Von Martens 1897; Biol. Cent. Amer.:281.

*Epirobia berendti albida* (Fischer & Crosse). Strebel 1880; Beitrag, IV:86; fig. 7.- Pilsbry 1902; Man. Conch. 15:52.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: unknown.

***Epirobia gassiesi* (Pfeiffer 1867)**

*Cylindrella gassiesi* Pfeiffer 1867; Jour. de Conchyl. 15:438.- Fischer & Crosse 1873; Miss. Sci. Mex. I:410; pl. 17, fig. 17.

*Holospira (Epirobia) gassiesi* (Pfeiffer). Von Martens 1897; Biol. Cent. Amer.:283.

*Epirobia gassiesi* (Pfeiffer). Pilsbry 1902; Man. Conch. 15: 63; pl. 20, figs. 5–7.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: unknown from a specific locality.

***Epirobia lurida* Thompson 1976**

*Epirobia lurida* Thompson 1976; Nautilus 90:43–45; figs. 1a-b, 2b (shell), 3 (anatomy).

Type Locality.—Low rolling limestone hills 15.8 mi. [25.5 km] NW of Ocozocoautla on road to Mal Paso, Chiapas, México; 2700 ft. alt. [830 m]. Holotype UF 22449.

Distribution.—Known only from the type locality.

***Epirobia polygyra* (Pfeiffer 1856)**

*Cylindrella polygyra* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:322; pl. 35, figs. 2–3.- Fischer & Crosse 1873; Miss. Sci. Mex. I:405; pl. 17, figs. 16.

*Holospira (Epirobia) polygyra* (Pfeiffer). Von Martens 1897; Biol. Cent. Amer.:284.

*Epirobia polygyra* (Pfeiffer). Strebel 1880:87; pl. 5, figs. 7a, 7b; pl. 13.- Pilsbry & Vanatta 1898; Proc. Acad. Nat. Sci. Phila. 50:281; pl. 17, fig. 2.- Pilsbry 1902; Man. Conch. 15:64–65; pl. 20, figs. 11, 16–19.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:120.

Type Locality.—Cordova, Veracruz, México.

Distribution.—Known only from the type locality.

***Epirobia polygyrella* (Von Martens 1863)**

*Cylindrella polygyrella* Von Martens 1863; Proc. Zool. Soc. Lond. 31:411.- Von Martens 1876; Jahrb. Deut. Malak. Ges. 3:261, pl. 9, fig. 8.

*Epirobia morini* (Von Martens). Strebel 1880; Beitrag, IV:87, pl. 5, fig. 3, pl. 13, fig. 4, pl. 14, figs. 15 a-c.- Pilsbry 1902; Man. Conch. 15:65–66; pl. 20, figs. 8–10.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:120.

*Holospira (Epirobia) polygyrella* (Von Martens). Von Martens 1897; Biol. Cent. Amer.:284; pl. 17, figs. 1–1b.

Type Locality.—Cobán, Dept. Alta Verapáz, Guatemala.

Distribution.—Known only from the type locality.

***Epirobia swiftiana swiftiana* (Crosse 1863)**

*Cylindrella swiftiana* Crosse 1863; Jour. de Conchyl. 11:388.-

Crosse 1867; Jour. de Conchyl. 15:200; pl. 5, fig. 5.- Fischer & Crosse 1873; Miss. Sci. Mex. I:407; pl. 17, figs. 14.

*Holospira (Epirobia) swiftiana* (Crosse). Von Martens 1897; Biol. Cent. Amer.:284.

*Epirobia swiftiana swiftiana* (Crosse). Pilsbry 1902; Man. Conch. 15:62–63; pl. 20, figs. 20–22.

Type Locality.—Unknown.

Distribution.—Unknown.

***Epirobia swiftiana alternans* Thompson 1976**

*Epirobia swiftiana alternans* Thompson 1976; Nautilus 90:41–43; figs. 1c-d, 2a.

Type Locality.—Limestone ledge along a ravine 4.5 mi. [10.2 km] N of Jitotol, Chiapas, México; 5400 ft. alt. [1662 m]. Holotype UF 22451.

Distribution.—Known only from the type locality.

**Subgenus *Gyrocion* Pilsbry 1904**

*Gyrocion* Pilsbry 1904a; Proc. Acad. Nat. Sci. Phila. 55:765.

Type Species.—*Epirobia (Gyrocion) mirabilis* Pilsbry 1902.

Distribution.—Southern Nuevo León, México.

Taxonomy.—Taxonomic status uncertain, see remarks below.

***Epirobia (Gyrocion) mirabilis* Pilsbry 1902**

*Epirobia mirabilis* Pilsbry 1904a; Proc. Acad. Nat. Sci. Phila. 55:765–766; pl. 50, figs. 10–10a.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype ANSP 85914.

Distribution.—Known only from the type locality.

Remarks.—The holotype and paratype, which are the only known specimens, are immature and consist only of the upper whorls of the spire. They are similar in all respects to juvenile *Coelocentrum* and not *Epirobia* (Thompson 1968).

**Genus *Propilsbrya* Bartsch 1906**

*Propilsbrya* Bartsch 1906; Proc. U. S. Nat. Mus. 31:121.

Type Species.—*Epirobia (Propilsbrya) nelsoni* Bartsch 1906.

Distribution.—Higher altitudes of mountains in southern Coahuila, and Nuevo León.

Taxonomy.—Two species are recognized.

***Propilsbrya nelsoni* (Bartsch 1906)**

*Epirobia (Propilsbrya) nelsoni* Bartsch 1906; Bull. U. S. Nat. Mus. 31:122–123; text-fig. 7; pl. 4, fig. 8.

*Propilsbrya nelsoni* (Bartsch). Rehder 1940; Jour. Wash. Acad. Sci. 30:316.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:136; figs. 3–3b.

Type Locality.—Sierra Guadalupe, Coahuila, México. Holotype USNM 187504.

Distribution.—COAHUILA: known only from the Sierra Guadalupe. Pilsbry (1953) recorded the species from 13 km back of the Hacienda Guadalupe, 7500–8500 ft. alt.

***Propilsbrya potosiana* (Pilsbry 1953)**

*Propilsbrya (Stalactella) potosiana* Pilsbry 1953; Proc. Acad. Nat.



Sci. Phila. 105:136–137; pl. 4, figs. 4–4b.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):61.

Type Locality.—Cerro Potosí, near Galeana, Nuevo León, México, on boulders in pine woods at 10,500 ft. alt. Holotype ANSP 164586.

Distribution.—Known only from the type locality.

#### Genus *Pectinistemma* Rehder 1940.

*Pectinistemma* Rehder 1940; Jour. Wash. Acad. Sci. 30:315.

Type Species.—*Propilsbrya koestneri* Rehder 1940.

Distribution.—High altitudes of mountains in southern Nuevo León, México.

Taxonomy.—Two species are recognized.

#### *Pectinistemma infernilla* Pilsbry 1953

*Propilsbrya (Pectinistemma) infernilla* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:138–139; pl. 4, figs. 2–2c, 6.

Type Locality.—Summit of El Infiernillo, a mountain above Pablillo, Nuevo León, México. Holotype ANSP 164148.

Distribution.—NUEVO LEÓN: known only from the vicinity of the type locality.

#### *Pectinistemma koestneri* Rehder 1940

*Propilsbrya (Pectinistemma) koestneri* Rehder 1940; Jour. Wash. Acad. Sci. 30:316; figs. 1–3.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:137–138; pl. 4, figs. 1, 1a.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):61.

Type Locality.—Cerro Potosí, Galeana, Nuevo León, México. Holotype USNM 535762.

Distribution.—NUEVO LEÓN: known only from Cerro Potosí.

#### Family HOLOSPIRIDAE Pilsbry 1946

Distribution.—México from Oaxaca north to Texas, New Mexico, and Arizona.

Taxonomy.—Six genera are recognized. Anatomical information and rRNA sequence data necessitated the recognition of Holospiridae as a distinct family (Uit de Weerd 2008).

#### Genus *Haplocion* Pilsbry 1902

*Haplocion* Pilsbry 1902; Man. Conch. 15:89.

*Liostemma* Bartsch 1906; Proc. U. S. Nat. Mus. 19:144.

Type Species.—*Haplocion: Holospira pasonis* Dall 1895. *Liostemma: Holospira hamiltoni* Dall 1897.

Distribution.—The typical group of species is found in Chihuahua, Coahuila, and adjacent Texas. *Haplocion plumbea* (Roth & Megaw 1989) is known from the early Tertiary of Chihuahua. A small group of species from Guerrero and the State of México appear not to be closely related to the typical group.

Taxonomy.—Fourteen species are recognized, 11 in México.

#### *Haplocion campoi* Bartsch 1943

*Haplocion campoi* Bartsch 1943; Jour. Wash. Acad. Sci. 33:56–58;

fig. 7.

Type Locality.—Las Grutas, Cacahuamilpa, Guerrero, México. Holotype USNM 536880.

Distribution.—Known only from the type locality.

#### *Haplocion coahuilensis* (W. G. Binney 1865)

*Cylindrella coahuilensis* W. G. Binney 1865; Amer. Jour. Conch., 1:50; pl. 7, figs. 4–5.

*Gongylostoma coahuilensis* (Binney). Tryon 1867; Amer. Jour. Conch. 3:312; pl. 15, fig. 29.

*Holospira coahuilensis* (Binney). Fischer & Crosse 1873; Miss. Sci. Mex. 1:334.- Pilsbry 1902; Man. Conch. 15:91–92; pl. 23, figs. 66–69.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:144–145.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:151.

*Metastoma coahuilensis* (Binney). Dall 1897; Proc. U. S. Nat. Mus. 19:351.

Type Locality.—Cienega Grande, Coahuila, México. Holotype USNM 9150.

Distribution.—Known only from the type locality.

#### *Haplocion durangoensis* Bartsch 1906

*Haplocion (Liostemma) durangoensis* Bartsch 1906:142–143; pl. 3, fig. 8.- Pilsbry 1953:151.- Solem 1954; Nautilus 68:4.

Type Locality.—Durango, Durango, México. Holotype USNM 187981.

Distribution.—DURANGO: Durango; Sierra de Tlahualilo, 25 miles N of Tlahualilo, Durango.

#### *Haplocion greggi* (Drake 1951)

*Coelostemma greggi* Drake 1951; Revista Soc. Malac., 8:40–41; pl. 6, figs. 3–4.

Type Locality.—Foothills of the Sierra de Almoloya, near Cuevo Diablo, near Salaires, Chihuahua, México. Holotype USNM 601628.

Distribution.—Known only from the type locality.

#### *Haplocion hamiltoni* (Dall 1897)

*Holospira (Haplostemma) hamiltoni* Dall 1897; Nautilus 11:38.- Dall 1902; Proc. U. S. Nat. Mus. 24:501; pl. 28, figs. 2, 11.

*Holospira (Liostemma) hamiltoni* Dall. Bartsch 1906; Proc. U. S. Nat. Mus. 31:141.

*Holospira (Haplocion) hamiltoni* Dall. Pilsbry 1946; Land Moll. N. Amer. 2:118; figs. 58c-d.- Cheatum and Fullington 1973; Bull. Dallas Mus. Nat. Hist. 1:38–39; pl. 4, fig. 2.

Type Locality.—Rio Grande Mountains, Brewster Co., Texas; 3500 feet alt. Holotype USNM 107759.

Distribution.—Known from Brewster Co., Texas and adjacent Chihuahua. CHIHUAHUA: Rio Conchas, just above its confluence with the Rio Grande.

#### *Haplocion mariae* Bartsch 1942

*Haplocion mariae* Bartsch 1942; Jour. Wash. Acad. Sci. 32:187–188; fig. 2.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

Type Locality.—Ixtapan de La Sal, México. Holotype USNM 536037.

Distribution.—Known only from the type locality.

***Haplocion mathewsoni* Bartsch 1942**

*Haplocion mathewsoni* Bartsch 1942. Jour. Wash. Acad. Sci. 32:188; fig. 3.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

Type Locality.—State of México. Holotype USNM 526036.

Distribution.—MÉXICO: exact locality unknown.

***Haplocion pasonis* (Dall 1896)**

*Holospira pasonis* Dall 1895; Nautilus 8:112.

*Holospira (Metastoma) pasonis* Dall. Dall 1896; Proc. U. S. Nat. Mus. 19:348–349; pl. 31, figs. 4–5.

*Holospira (Haplocion) pasonis* Dall. Bartsch 1906; Proc. U. S. Nat. Mus. 19:144.- Pilsbry 1917; Nautilus 30:125; pl. 4, fig. 5.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.- Pilsbry 1946; Land Moll. N. Amer. II:121; figs. 60a-d.

Type Locality.—Mule Canyon, El Paso Co., Texas; 4000 feet alt. Holotype USNM 129032.

Distribution.—TEXAS: Red Mule Canyon, El Paso; Davis Mountains. CHIHUAHUA: Rio Conchos, not far above its confluence with the Rio Grande.

***Haplocion semisculpta* (Stearns 1890)**

*Holospira semisculpta* Stearns 1890; Proc. U. S. Nat. Mus. 13:208; pl. 15, figs. 1, 4.

*Holospira (Haplocion) semisculpta* Stearns. Pilsbry 1902; Man. Conch. 15:91; pl. 16, figs. 3–4.- Bartsch 1906; Proc. U. S. Nat. Mus. 19:144.

*Haplocion semisculpta* (Stearns). Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

Type Locality.—Limestone cliffs in a canyon above San Carlos, Chihuahua, México. Holotype USNM 102310.

Distribution.—Known only from the type locality.

***Haplocion wilmoti* Bartsch 1947**

*Haplocion wilmoti* Bartsch 1947. Jour. Wash. Acad. Sci. 37:288; fig. 3.

Type Locality.—Mountains near Chihuahua, Chihuahua, México. Holotype USNM 543595.

Distribution.—Known only from the type locality.

***Haplocion yucatanensis* (Bartsch 1906).**

*Holospira (Liostemma) yucatanensis* Bartsch 1906; Proc. U. S. Nat. Mus. 31:143; pl. 3, fig. 2.

*Holospira (Haplocion) yucatanensis* Bartsch. Pilsbry 1952; Nautilus, 66:69–70.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:151.

*Haplocion yucatanensis* (Bartsch). Drake 1952; Rev. Soc. Malac. 8:131–132; figs. 1–3.

Type Locality.—Incorrectly given as Mujeres Island [Isla Mujeres], Yucatán, México. Holotype USNM 187980.

Distribution.—TEXAS: Brewster Co., Hot Springs International Park (Pilsbry 1952). COAHUILA: Boquillas (Drake 1952).

**Genus *Coelostemma* Dall 1895**

*Coelostemma* Dall 1895; Proc. U. S. Nat. Mus. 19:347.

*Megaxis* Pilsbry 1946; Land Mollusca of North America 2:123.

Type Species.—*Coelostemma: Holospira elizabethae* Pilsbry 1889. *Megaxis: Holospira fusca* Von Martens 1897.

Distribution.—MÉXICO: widespread from Veracruz, Puebla, and Oaxaca north to Colima, San Luis Potosi, Coahuila, Durango, Chihuahua and New Mexico.

Taxonomy.—The genus includes five subgenera, thirty-four species and two subspecies.

**Subgenus *Coelostemma* Dall 1895**

Distribution.—Oaxaca north to Colima and Coahuila.

Taxonomy.—Twenty-five species and two subspecies are recognized.

***Coelostemma (Coelostemma) adana* (Bartsch 1926)**

*Holospira (Coelostemma) adana* Bartsch 1926; Proc. U. S. Nat. Mus. 70:3; pl. 1, fig. 14.

*Coelostemma adana* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.

Type Locality.—River drift from along the Rio Balsas, Rio Balsas Station, Guerrero, México. Holotype USNM 363133.

Distribution.—Unknown.

***Coelostemma (Coelostemma) adria* (Bartsch 1926)**

*Holospira (Coelostemma) adria* Bartsch 1926; Proc. U. S. Nat. Mus. 70:2–3; pl. 1, fig. 1.

*Coelostemma adria* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.

Type Locality.—River drift from along the Rio Balsas, Rio Balsas Station, Guerrero, México. Holotype USNM 363131.

Distribution.—Unknown.

***Coelostemma (Coelostemma) anaclasta* Thompson 1971**

*Coelostemma anaclasta* Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:280–283.

Type Locality.—A small limestone ledge at the head of a small ravine about 300 yards west of the Colima-Manzanillo highway, 1.9 mi. NE of Tecolapa, Colima, México; 700 ft. alt. Holotype UF 20927.

Distribution.—COLIMA: known from the area south and east of Cd. Colima.

***Coelostemma (Coelostemma) anconai* Bartsch 1951**

*Coelostemma anconai* Bartsch 1951; Jour. Wash. Acad. Sci. 41:146, figs. 1, 3.

Type Locality.—Ixcatipán, Guerrero, México. Holotype USNM 595019.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) balesi* Pilsbry 1954**

*Coelostemma balesi* Pilsbry 1954; Nautilus 67:82; pl. 8, fig. 4.

Type Locality.—Km post 175, near Chilpancingo, on road to Acapulco, Guerrero, México. Holotype ANSP 191110.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) balsasensis* (Bartsch 1926)**

*Holospira (Coelostemma) balsasensis* Bartsch 1926; Proc. U. S. Nat. Mus. 70:1-2; pl. 1, fig. 16.

*Coelostemma balsasensis* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.

Type Locality.—Balsas Station, Guerrero, México. Holotype USNM 363129.

Distribution.—GUERRERO. Uncertain. Bartsch (1926) described five other species of *Coelostemma* and *Holospira* that were collected by C. R. Orcutt from river drift along the Rio Balsas at Balsas Station, Guerrero. It is not clear whether the type specimens of *C. balsasensis* also were collected from river drift or from a natural habitat at Balsas Station.

***Coelostemma (Coelostemma) bartschi* Pilsbry & Clapp 1909**

*Holospira bartschi* Pilsbry and Clapp 1909; Nautilus 22:114-115; pl. 8, figs. 5-6.

*Haplocion bartschi* (Pilsbry & Clapp). Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

Type Locality.—In crevices in the limestone rock 1000 ft. above the Rio Balsas, Balsas, Guerrero, México. Lectotype ANSP 117441 (H. B. Baker 1963:221).

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) bembix* Thompson 1971**

*Coelostemma bembix* Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:278-280; figs. 5a-f.

Type Locality.—Limestone ledge above an old road cut along Federal Highway 95 where it crosses a tributary to the Rio Balsas, 12.6 mi. N of Zumpango del Rio, Guerrero, México; 2300 ft. alt. Holotype UF 20901.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) bourgeoisana bourgeoisana* Bartsch 1942**

*Coelostemma bourgeoisana* Bartsch 1942; Jour. Wash. Acad. Sci. 32:187; fig. 1.

*Coelostemma bourgeoisana bourgeoisana* Bartsch 1942. Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:271.

Type Locality.—Ixtapán de la Sal, México. Holotype USNM 536885.

Distribution.—MÉXICO: common on limestone terrain about the type locality; 1875-2000 m alt.

***Coelostemma (Coelostemma) bourgeoisana antricola* Bartsch 1943**

*Coelostemma antricola* Bartsch 1943; Jour. Wash. Acad. Sci. 33:58; fig. 5.

*Coelostemma bourgeoisana antricola* Bartsch. Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:272.

Type Locality.—Ravine near Las Grutas, Cacahuamilpa, Guerrero, México. Holotype USNM 536885.

Distribution.—GUERRERO: near Taxco, and southern MÉXICO; 1275-1750 m alt.

***Coelostemma (Coelostemma) chilpancingoensis* Pilsbry 1953**

*Coelostemma chilpancingoensis* Pilsbry 1953; Proc. Acad. Nat. Sci.

Phila. 105:158; pl. 5, figs. 2-3a.

Type Locality.—Between Chilpancingo and a small town nearby called Mazatlán, Guerrero, México. Holotype ANSP 190967.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) dalli* (Pilsbry 1902)**

*Holospira (Coelostemma) dalli* Pilsbry 1902; Man. Conch. 15:100-101; pl. 26, figs. 28-30.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:149.

*Coelostemma dalli* (Pilsbry). Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:157; pl. 5, figs. 1-1c.

*Holospira strebeliana* Pilsbry 1902; Man Conch. 15:101-102; pl. 26, figs. 24-27.

Type Localities.—*Holospira dalli*: Sierra de Guadalupe, Coahuila, México. Holotype ANSP 58095. *Holospira strebeliana*: Sierra de Guadalupe, Coahuila, México. Lectotype ANSP 58096a (Baker 1963:225).

Distribution.—COAHUILA: Sierra de Guadalupe; 2275-2875 m alt.

***Coelostemma (Coelostemma) eclipses* Thompson 1971**

*Coelostemma eclipses* Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:276-278; figs. 1b, 4a-e.

Type Locality.—Limestone ledge 16.4 mi. N of Zumpango del Rio, Guerrero, México; 2300 ft. alt. Holotype UF 21210.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) elizabethae* (Pilsbry 1898)**

*Holospira (Coelostemma) elizabethae* Pilsbry 1889; Proc. Acad. Nat. Sci. Phila. 81; pl. 3, figs. 1-5.- Dall 1895; Nautilus 9:50.- Pilsbry 1902; Man. Conch. 15:99-100; pl. 15, figs. 6-15; pl. 27, fig. 27.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:149.

*Coelostemma elizabethae* (Pilsbry). Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.- Thompson 1971; Bull. Fla. Stat. Mus. 15:270; fig. 1a.- Thompson 1988; Bull. Fla. Mus. Nat. Hist. 33:102; figs. 52-53.

*Holospira claviformis* Von Martens 1897; Biol. Cent. Amer.:277; pl. 16, figs. 10-16.

Type Localities.—*Holospira elizabethae*: Amula, Guerrero, México. Lectotype ANSP 25049a (H. B. Baker 1963:222). *Holospira claviformis*: Amula, Guerrero, México; syntypes in the BMNH.

Distribution.—GUERRERO: area east of Chilpancingo, between Tixtla and Chilapa, 1600-2000 m alt.

***Coelostemma (Coelostemma) fusca* (Von Martens 1897)**

*Holospira fusca* Von Martens 1897; Biol. Cent. Amer.:281; pl. 16, figs. 19-24.

*Holospira (Haplocion) fusca* (Von Martens). Pilsbry 1902; Man. Conch. 15:95-95; pl. 25, figs. 8-10, 12-14.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:146.

*Haplocion fusca* (Von Martens). Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

*Coelostemma fusca* (Von Martens). Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:156.- Thompson 1971; Bull. Fla. Sta. Mus.,



15:283–284.- Thompson 1988; Bull. Fla. State Mus. 30:50–51.  
*Holospira (Megaxis) fusca* Von Martens. Pilsbry 1946; Land Moll.  
N. Amer. II:123.

Type Locality.—Omiteme, Guerrero, México. Syntypes  
in the BMNH.

Distribution.—GUERRERO: commonly distributed in  
the mountains east and west of Chilpancingo; 1975–2400 m  
alt.

***Coelostemma (Coelostemma) hazelae* Pilsbry 1953**

*Coelostemma hazelae* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila.  
105:159; pl. 5, fig. 4.- Thompson 1971; Bull. Fla. State Mus.  
15:274–276; fig. 3a-f.

Type Locality.—Between Chilpancingo and a small  
town nearby called Mazatlán, Guerrero, México. Holotype  
ANSP 190966.

Distribution.—GUERRERO: known from a small area  
near Mazatlán; 1425–1450 m alt.

***Coelostemma (Coelostemma) herrerae* (Bartsch 1906).**

*Holospira (Coelostemma herrerae* Bartsch 1906; Proc. U. S. Nat.  
Mus. 31:150; pl. 4, fig. 14.

*Coelostemma herrerae* (Bartsch). Bartsch 1943; Jour. Wash. Acad.  
Sci. 58.

Type Locality.—Silaca Yuapán (= Silacayoapán),  
Oaxaca, México. Holotype USNM 188180.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) igualaensis* (Bartsch 1926)**

*Holospira (Coelostemma) igualaensis* Bartsch 1926; Proc. U. S.  
Nat. Mus. 70:3–4; pl. 1, fig. 12.

*Coelostemma igualaensis* (Bartsch). Bartsch 1943; Jour. Wash.  
Acad. Sci. 33:58.- Thompson 1971; Bull. Fla. State Mus.  
15:270–271; fig. 1f.

Type Locality.—Iquala, Guerrero, México. Holotype  
USNM 363135.

Distribution.—GUERRERO: Iquala, and the area im-  
mediately north and east; 1000–1250 m alt.

***Coelostemma (Coelostemma) leucostoma* Thompson 1971**

*Coelostemma leucostoma* Thompson 1971; Bull. Fla. State Mus.  
15:272–274; figs. 1i, 2a-f.

Type Locality.—Ruins of Xochicalco, Morelos; 4900 ft.  
alt. Holotype UF 21145.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) lichenophora* (Bartsch 1906)**

*Holospira (Coelostemma) lichenophora* Bartsch 1906; Proc. U. S.  
Nat. Mus. 31:146–147; pl. 4, fig. 7.

*Coelostemma lichenophora* (Bartsch). Bartsch 1943; Jour. Wash.  
Acad. Sci. 33:58.

Type Locality.—Encarnación, Hidalgo, México. Holo-  
type USNM 134699.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) lissocentrum* Pilsbry 1953**

*Coelostemma lissocentrum* Pilsbry 1953; Proc. Acad. Nat. Sci.

Phila. 105:158–159; pl. 8, figs. 5–5b.

Type Locality.—Cerro Potosi, Nuevo León, México.  
10,000 ft. alt. Holotype ANSP 190968.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) microstoma* (Pfeiffer 1861)**

*Cylindrella microstoma* Pfeiffer 1861; Proc. Zool. Soc. Lond.  
29:27.- Pfeiffer 1862a:81.- Pfeiffer 1868:390.

*Holospira microstoma* (Pfeiffer). Fischer & Crosse; 1873:337; pl.  
17, figs. 9–9a.- Von Martens 1897; Biol. Cent. Amer.:278.-  
Pilsbry 1902:102–103; pl. 15, figs. 4–5.

*Coelostemma (?) microstoma* (Pfeiffer). Bartsch 1943:58.

*Coelostemma microstoma* (Pfeiffer). Thompson & Mihalcik 2005;  
Bull. Fla. Mus. Nat. Hist. 43:95–96; figs. 196–198.

Type Locality.—Unknown. Lectotype BMNH 1996161  
(Thompson & Mihalcik 2005).

Distribution.—Unknown.

***Coelostemma (Coelostemma) notogastor* Thompson 1971**

*Coelostemma notogastor* Thompson 1971; Bull. Fla. State Mus.  
15:286–289; figs. 8a-e.

Type Locality.—Limestone hill 14.2 mi. SW of Sola de  
Vega, Oaxaca, México; 6500 ft. alt. Holotype UF 20910.

Distribution.—OAXACA: various localities near Sola  
de Vega and Tlapacoyan.

***Coelostemma (Coelostemma) presidioensis* Bartsch 1943**

*Coelostemma presidioensis* Bartsch 1943; Jour. Wash. Acad. Sci.  
33:58–59, fig. 2.

Type Locality.—Presidio, Veracruz, México. Holotype  
USNM 536886.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) richardi* Thompson 1971**

*Coelostemma richardi* Thompson 1971; Bull. Fla. Sta. Mus.,  
15:284–286; figs. 1h, 7a-e.

Type Locality.—Limestone hillside 1.3 mi. NE of  
Tonalá, Oaxaca, México. Holotype UF 20905.

Distribution.—Known only from the type locality.

***Coelostemma (Coelostemma) saltillensis* Pilsbry 1953**

*Coelostemma saltillensis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila.  
105:157–158; pl. 5, figs. 5–5c.

Type Locality.—Mountain on the right of the highest  
pass on the road from Saltillo to Diamante, Coahuila, México;  
7900 ft. alt. Holotype ANSP 164078.

Distribution.—COAHUILA: known from the type  
locality and San Lorenzo Canyon SE of Saltillo on the  
Coahuila-Zacatecas Railroad.

***Coelostemma (Coelostemma) scaphopleuron* Thompson 1988**

*Coelostemma scaphopleuron* Thompson 1988; Bull. Fla. Mus. Nat.  
Hist. 33:101–102; figs. 42–47.

Type Locality.—Limestone ridge 1.5 km. west-northwest  
of Colotlipa, Guerrero, México; 800 m alt. (17°26' N, 99°10'  
W). Holotype UF 93145.

Distribution.—Known only from the type locality.

**Subgenus *Apertaxis* Pilsbry 1953**

*Apertaxis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:159.

Type Species.—*Coelostemma amplaxis* Pilsbry 1953 (= *Epirobia coahuilensis* Bartsch 1906).

Distribution.—Sierra Guadalupe, Coahuila, México.

Taxonomy.—One species. The generic relationships of *Apertaxis* remain uncertain.

***Coelostemma (Apertaxis) coahuilensis* (Bartsch 1906)**

*Epirobia coahuilensis* Bartsch 1906; Proc. U. S. Nat. Mus. 31:121; pl. 4, fig. 2.

*Coelostemma (Apertaxis) amplaxis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:159–160; pl. 3, figs. 3–3b.-Thompson 1971; Bull. Fla. Mus. Nat. Hist. 15:298–299, fig. 9b.

Type Localities.—*Epirobia coahuilensis*: Sierra Guadalupe, Coahuila, México. Holotype USNM 187505. *Coelostemma amplaxis*: Sierra Guadalupe back of the Hacienda Guadalupe, Coahuila, México; 7500–8000 ft. alt. Holotype ANSP 191189.

Distribution.—COAHUILA: known only from the Sierra Guadalupe; 2250–2400 m alt.

**Subgenus *Crycoryne* Thompson 1971**

*Crycoryne* Thompson 1971; Bull. Fla. St. Mus. 15:289.

Type Species.—*Coelocentrum astraxis* Thompson 1971.

Distribution.—Eastern Durango, México.

Taxonomy.—This subgenus is monotypic.

***Coelostemma (Crycoryne) astraxis* Thompson 1971**

*Coelostemma (Crycoryne) astraxis* Thompson 1971; Bull. Fla. State Mus. 15:289–293; figs. 9a, 10a-e.

Type Locality.—Limestone bluff 9.0 mi. south-southwest of Picardias, Durango, México; 4400 ft. alt. Holotype UF 20903.

Distribution.—DURANGO: known from a small area along the east and south edges of the Sierra El Rosario.

**Subgenus *Goniapex* Thompson 1988**

*Goniapex* Thompson 1988; Bull. Fla. State Mus. 33:91.

Type Species.—*Coelostemma pyrgonasta* Thompson 1988.

Distribution.—Southern New Mexico; Chihuahua, México.

Taxonomy.—This subgenus contains six species.

***Coelostemma (Goniapex) attenuapex* Thompson 1988**

*Coelostemma (Goniapex) attenuapex* Thompson 1988; Bull. Fla. State Mus. 33:99–100; figs. 35–39.

Type Locality.—Limestone ridge 12.7 km southeast of Ciudad Camargo, Chihuahua, México. Holotype UF 93144.

Distribution.—Known only from the type locality.

***Coelostemma (Goniapex) bryantwalkerii* (Pilsbry 1917)**

*Holospira bryantwalkerii* Pilsbry 1917; Nautilus 30:125–125; pl. 4, fig. 6.

*Coelostemma (Goniapex) bryantwalkerii* (Pilsbry). Thompson 1988; Bull. Fla. State Mus. 30:100; figs. 40–41.

Type Locality.—River drift along the Rio Conchas, not far above its confluence with the Rio Grande, Chihuahua, México. Holotype UMMZ 140145.

Distribution.—CHIHUAHUA: exact locality unknown.

***Coelostemma (Goniapex) freytagi* Bartsch 1950**

*Coelostemma freytagi* Bartsch 1950; Jour. Wash. Acad. Sci. 40:265; fig. 1.

*Coelostemma (Goniapex) freytagi* Bartsch. Thompson 1988; Bull. Fla. State Mus. 33:95–97; figs. 22–29.

*Coelostemma marrsi* Drake 1951; Rev. Soc. Malac. 8:39–40; figs. 1–2.

Type Localities.—*Coelostemma freytagi*: 29 km west of Ciudad Jimenez, Chihuahua, México. Holotype USNM 601851. *Coelostemma marrsi*: Cueva Diablo, near Salaces, Chihuahua, México. Holotype USNM 601645.

Distribution.—CHIHUAHUA: Sierra Almoloya, near Salaces, Chihuahua.

***Coelostemma (Goniapex) pyrgonasta* Thompson 1988**

*Coelostemma (Goniapex) pyrgonasta* Thompson 1988; Bull. Fla. State Mus. 33:92–94; figs. 3, 4, 7, 12–14.

Type Locality.—West-northwest side of Bishop's Cap Mountain, Dona Ana County, New Mexico, 1600 m alt. (32°11'25" N, 106°36'06" W). Holotype UF 93134.

Distribution.—Known only from the type locality.

***Coelostemma (Goniapex) reiteri* Drake 1951**

*Coelostemma reiteri* Drake 1951; Rev. Soc. Malac. 8:41–42, figs. 5–6.

*Coelostemma (Goniapex) reiteri* Drake. Thompson 1988; Bull. Fla. State Mus. 33:97–99; figs. 30–34.

Type Locality.—Distrito Jimenez, Los Remedios (26°53' N, 104° 21' W). Los Remedios is a small village at the southeast end of the Sierra Remedios, Chihuahua, México. Holotype USNM 601627.

Distribution.—CHIHUAHUA: low limestone mountain ranges extending NW from Los Remedios to about halfway between Ciudad Jiménez and Ciudad Camargo.

***Coelostemma (Goniapex) townsendi* (Bartsch 1906)**

*Holospira (Haplocion) townsendi* Bartsch 1906; Proc. U. S. Nat. Mus. 31:145–146; pl. 4, fig. 13.

*Haplocion townsendi* Bartsch. Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

*Coelostemma (Goniapex) townsendi* (Bartsch).- Thompson 1988; Bull. Fla. State Mus. 33:100.

Type Locality.—Cerro Chilote, 20 km north of Ciudad Chihuahua and due east of Aldama, Chihuahua, México. Holotype USNM 10925.

Distribution.—Known only from the type locality.

**Subgenus *Styloptyx* Thompson 1971**

*Styloptyx* Thompson 1971; Bull. Fla. State Mus. 15:292.

Type Species.—*Coelostemma fornax fornax* Thompson 1971.

Distribution.—A small area in eastern Durango near

Torreón, Coahuila, and extending over a NNE-SSW distance of about 80 km.; Nuevo León, México.

Taxonomy.—One species and two subspecies are recognized.

***Coelostemma (Styloptyx) fornax fornax* Thompson 1971**

*Coelostemma (Styloptyx) fornax fornax* Thompson 1971; Bull. Fla. State Mus. 15:293–296; figs. 9d, 11a–e.

Type Locality.—Limestone mountain side 2.2 mi. [3.65 km]. S of the Presa Francisco Zarco [Zarco], Durango, México; 4100 ft. [1262 m] alt. The Presa Francisco Zarco is a dam on the Rio Nazas about 40 km SSE of León Guzman, about 19 km NE of Pedriceña, and about 8 km N of the Torreon-Durango highway. Holotype UF 20895.

Distribution.—DURANGO: known only from a small area south of the Rio Nazas and east of the Presa Francisco Zarco.

***Coelostemma (Styloptyx) fornax ix* Thompson 1971**

*Coelostemma (Styloptyx) fornax ix* Thompson 1971; Bull. Fla. Sta. Mus., 15:296–299; figs. 12a–e.

Type Locality.—Limestone hillside 1.0 mi. east of Dinamita, Durango, México; 4200 ft. alt. Dinamita is a small village about 30 mi. NW of Torreón, Coahuila, México. Holotype UF 20907.

Distribution.—Known only from the type locality.

**Genus *Hendersoniella* Dall 1905**

*Hendersonia* Dall 1905; Smithson. Misc. Coll. 45:187 (not *Hendersonia* Wagner 1905; Gastropoda, Prosobranchia).

*Hendersoniella* Dall 1905; Proc. Biol. Soc. Wash. 18:189.

Type Species.—*Hendersonia palmeri* Dall 1905.

Distribution.—States of Nuevo León and San Luís Potosí, México.

Taxonomy.—Three species and two subspecies are recognized.

***Hendersoniella christmani* Thompson & Correa-Sandoval 1994**

*Hendersoniella christmani* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:14–17; figs. 15 19, 20, 30–34.

Type Locality.—Limestone hillside on south side of Arroyo San Juan, 2.5 km WNW of La Cienega, Municipio Santiago, Nuevo León, México; 1350 m alt. (25°22'34" N, 100°14'55" N). Holotype UF 166309.

Distribution.—NUEVO LEÓN: known only from the vicinity of the type locality.

***Hendersoniella lux lux* Thompson & Correa-Sandoval 1994**

*Hendersoniella lux lux* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:11–12; figs. 7, 12, 22, 23–26.

Type Locality.—22 km west of Santa Catarina, Valle de Las Fantasma, San Luís Potosí, San Luís Potosí, México, (22°03.34' N, 100°33.16' W). Holotype UF 165719.

Distribution.—SAN LUÍS POTOSÍ: known only from the vicinity of the type locality.

***Hendersoniella lux chonomphix* Thompson & Correa-Sandoval 1994**

*Hendersoniella lux chonomphix* Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:13–14; figs. 13 18, 27–29.

Type Locality.—Valle de las Fantasma, hillside 15.5 km W of Santa Catarina, San Luís Potosí, México, 1770 m alt. (22°04'01" N, 100°31'44" W). Holotype UF 166310.

Distribution.—Known only from the type locality.

***Hendersoniella palmeri* (Dall 1905)**

*Hendersonia palmeri* Dall 1905; Smiths. Misc. Coll. 48:187–190; pl. 48, figs. 1–4.

*Hendersoniella palmeri* (Dall 1905). Dall 1905; Proc. Biol. Soc. Wash. 18:189.- Thompson & Correa-Sandoval 1994; Bull. Fla. Mus. Nat. Hist. 36:8–11; figs. 5–11, 16, 21.

*Hendersoniella palmeri simplex* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:160.

Type Localities.—*Hendersonia palmeri*: Sierra Alvaréz, San Luís Potosí, México. Holotype USNM 110385. *Hendersoniella palmeri simplex*: in crevices and under stones north of the railroad station, Alvaréz, San Luís Potosí, México. Holotype ANSP 164312.

Distribution.—SAN LUÍS POTOSÍ: known only from the immediate vicinity of Alvaréz, San Luís Potosí.

**Genus *Holospira* Von Martens 1860**

*Acera* Albers 1850. (Not *Acera* Cuvier 1810).

*Holospira* Von Martens; in Albers 1860:209.- Thompson 1998:87–89.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:66.

Type Species.—*Cylindrella golfussi* Menke 1847, not *Cylindrella piloceri* Pfeiffer 1841 (OPINION 1932; International Commission of Zoological Nomenclature; Opinion 1932:206–207).

Distribution.—Oaxaca north and west to Arizona, New Mexico, and Texas.

Taxonomy.—Seven subgenera, 74 species, and 11 subspecies occur in México.

**Subgenus *Holospira* Von Martens 1860**

Distribution.—From Oaxaca, Puebla, adjacent Veracruz and Guerrero north to Arizona, New Mexico and Texas.

Taxonomy.—Forty-eight species and two subspecies currently are recognized in México. Additional species occur in Texas, New Mexico, and Arizona. The following are considered synonyms of the subgenus *Holospira*: *Eudistemma* Dall 1895 (type species: *Holospira arizonensis* Stearns 1890); *Distomospira* Dall 1895 (type species *Holospira bilamellata* Dall 1895); *Tristemma* Bartsch 1906 (type species: *Holospira ferrissi* Pilsbry 1905 [non *Tristemma* Brandt 1835, Coleoptera]); and *Malinchia* Bartsch 1945 (type species: *Holospira ferrissi* Pilsbry 1905).

***Holospira (Holospira) acanthidia* Thompson & Mihalcik 2005**

*Holospira acanthidia* Thompson & Mihalcik 2005; Bull. Fla. Mus.



Nat. Hist. 43:68–69; figs. 11–16.

Type Locality.—Limestone bluff 6.3 km northwest of Tehuacán, Puebla, México; 1750 m altitude. Holotype: UF 34377.

Distribution.—Known only from the type locality.

***Holospira (Holospira) aguerreveri* Hanna & Hertlein 1929**

*Holospira aguerreveri* Hanna and Hertlein 1929; Proc. Calif. Acad. Sci. 18:219–220; pl. 24, figs. 5–6 (shell).

*Holospira (Haplocion) aguerreveri* Hanna & Hertline. Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:151.

Type Locality.—On the road to Paredon, 16 km north of Ramos Arizpe. Holotype California Academy Science.

Distribution.—Known only from the type locality.

***Holospira (Holospira) albertoi* Bartsch 1947**

*Holospira albertoi* Bartsch 1947; Jour. Wash. Acad. Sci. 37:141–142; fig. 1 (shell).—Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:71–72; figs. 40–44.

Type Locality.—Steep west bank of gully on SE lower flank of Cerro Chimeco, near Petlalcingo, Puebla, México, very close to the Oaxaca border along the Pan American Highway; 1400–1500 m alt. Holotype USNM 543495.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality.

***Holospira (Holospira) amalthea* Bartsch 1926**

*Holospira amalthea* Bartsch 1926; Proc. U. S. Nat. Mus. 70:9–10; pl. 1, fig. 13 (shell).

Type Locality.—Monterey, Nuevo León, México. Holotype USNM 363140.

Distribution.—Known only from the type locality.

***Holospira (Holospira) andromeda* Bartsch 1926**

*Holospira andromeda* Bartsch 1926; Proc. U. S. Nat. Mus. 70:7–8; pl. 1, fig. 8 (shell).

Type Locality.—Not stated. Holotype USNM 363138.

Distribution.—Unknown.

***Holospira (Holospira) arellanoi* (Bartsch 1945)**

*Malinchia arellanoi* Bartsch 1945; Jour. Wash. Acad. Sci. 35:94; fig. 6 (shell).

*Holospira arellanoi* (Bartsch). Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:141.

Type Locality.—Limestone hill 10–30 km north-northeast of Cadereyta, Querétaro, México. Holotype USNM 431959.

Distribution.—Known only from the type locality.

***Holospira (Holospira) aurantiaca* Thompson & Mihalcik 2005**

*Holospira aurantiaca* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:83–85; Figs. 130–136.

Type Locality.—Limestone canyon 2 km southeast of Tecamachalco, Puebla, México; 2140 m alt. (18°51.4' N, 97°42.0' W). Holotype: UF 190756.

Distribution.—Known only from the immediate vicinity of the type locality.

***Holospira (Holospira) bachia* Bartsch 1926.**

*Holospira bachia* Bartsch 1926; Proc. U. S. Nat. Mus. 70: pl. 1, fig. 10.

Type Locality.—River drift along the Rio Balsas, Rio Balsas Station, Guerrero, México. Holotype USNM 363152.

Distribution.—Unknown.

***Holospira (Holospira) catorceana* Pilsbry 1953**

*Holospira catorceana* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:142–142; pl. 8, figs. 2–2b (shell).

Type Locality.—Sierra Catorce, near the top of the northward slope facing Santana [Potero], San Luis Potosí, México. Holotype ANSP 164197.

Distribution.—Known only from the type locality.

***Holospira (Holospira) colymis* Thompson & Mihalcik 2005**

*Holospira colymis* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:86–87; figs. 145–150.

Type Locality.—Limestone hillside 13.5 km west southwest of San Bartola Teontepec, Puebla, México; 2120 m alt. (18°26'03" N, 97°36'42" W). Holotype: UF 200782.

Distribution.—PUEBLA: known only from the vicinity of the type locality; the north facing slope of a limestone hill about 7 km by road N of Los Reyes Metzontla 1800 m alt. (18°15'46" N, 97°30'22" W).

***Holospira (Holospira) cyclostoma* Pilsbry 1953**

*Holospira cyclostoma* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:148–149; pl. 8, figs. 1–1b.

Type Locality.—Drift in the Rio Gochico, about 7 km from San Bernardo, Sonora, México; 900 ft. alt. Holotype ANSP 166411.

Distribution.—SONORA; not known for certain. This species has been collected from stream drift at the type locality and at San Blás, Sinaloa, México.

***Holospira (Holospira) denserpens* Thompson & Mihalcik 2005**

*Holospira denserpens* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:82–83; figs. 123–129.

Type Locality.—Limestone hill 1 km east of Azumbilla, 23 km north of Tehuacán, Puebla, México; 2150 m alt. (18°37.2' N, 97°23.4' W). Holotype UF 190783.

Distribution.—Known only from the type locality.

***Holospira (Holospira) eburnea* Thompson & Mihalcik 2005**

*Holospira eburnea* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:74–75; figs. 60–66.

Type Locality.—Limestone hill-top 7.6 km south-southwest of Molcaxac, Puebla, México; 2040 m alt. (18°40.1' N, 97°54.2' W). Holotype: UF 34294.

Distribution.—Known only from the type locality.

***Holospira (Holospira) fortisculpta* Thompson  
& Mihalcik 2005**

*Holospira fortisculpta* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:87–88; figs. 151–158.

Type Locality.—5 km northwest of Atenco, Puebla, México; 2650 m alt. Holotype: UF 34293.

Distribution.—Known from the vicinity of the type locality. PUEBLA: limestone ridge 1 km SW of Coyotepec, 2400 m (19°01.2' N, 97°34.1' W) (UF 369834); box canyon 2 km NW, 1.3 km W of Coyotepec, 2450 m (19°02.5' N, 97°37.0' W) (UF 369836); limestone ridge 2 km NW of Coyotepec, 2400 m (19°05.2' N, 97°36.1' W) (UF 369838).

***Holospira (Holospira) fergusonii* Gilbertson  
& Naranjo-Garcia 2010**

*Holospira (Holospira) fergusonii* Gilbertson & Naranjo-Garcia 2010; Nautilus 124:181–184; figs. 1–4.

Type Locality.—Municipio Arteaga, Sierra La Viga, 0.5 km E of summit, Coahuila, México; (21°21'35" N, 100°33'15" W). 2650 m alt. Holotype: LACM 3112.

Distribution.—Known only from the type locality.

***Holospira (Holospira) goniostoma* (Pfeiffer 1856)**

*Cylindrella goniostoma* Pfeiffer 1856; Malak. Blätt. 3:47.

*Holosira goniostoma* (Pfeiffer).- Fischer & Crosse 1873; Miss. Sci. Mex. 1:328; pl. 17, fig. 4.- Strebel 1880; Beitrag, IV:84; pl. 14, figs. 6–6c.- Pilsbry 1902; Man. Conch. 15:77–79; pl. 21, figs. 36–41.- Thompson & Mihalcik 2005:67–68; figs. 2–7.

Type Locality.—“México”. Lectotype BMNH 1996153 (Thompson & Mihalcik 2005:68).

Distribution.—Unknown.

***Holospira (Holospira) haploplax* Thompson & Mihalcik 2005**

*Holospira haploplax* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:88–89; figs. 159–164.

Type Locality.—12.3 km east of Cd. Puebla, Puebla, México; 2525 m alt. Holotype UF 34381.

Distribution.—Known only from the type locality.

***Holospira (Holospira) hinkleyi* Pilsbry 1907**

*Holospira hinkleyi* Pilsbry 1907; Nautilus 21:27–28.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:148; pl. 6, figs. 4–4b (shell).- Correa-Sandoval, Gutiérrez & Reza 1998; Acta Zool. Mex. (73):16.

Type Locality.—El Abra, San Luis Potosí, México. Holotype ANSP 96575.

Distribution.—East-central SAN LUIS POTOSÍ: Cascadas Micos (Sierra Colmena), 240 m alt. (22°06'35" N, 99°09'44" W); Las Cascadas, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval et al. 1998).

***Holospira (Holospira) hogeana* Von Martens 1897**

*Holospira teres hogeana* Von Martens 1897. Biol. Cent. Amer.:280; pl. 16, fig. 17.- Pilsbry 1902; Man. Conch. 15:105; pl. 23, fig. 71.

*Holospira hogeana* Von Martens. Thompson & Mihalcik 2005;

Bull. Fla. Mus. Nat. Hist. 43:76–78; figs. 76–85.

Type Locality.—Maltrate, Veracruz, México, 2299 m alt. [18°48' N, 97°16' W], on the railway between Veracruz [City] and the City of México, a little west of Orizaba, eastern slope of the plateau. Lectotype BMNH 1901.6.22.1903 (Thompson & Mihalcik 2005:77).

Distribution.—PUEBLA: 1 km NE of Chapulco 1940 m alt. 1.5 km NNE Chapulco 1900 m alt.; 3 km NNE Chapulco 1940 m alt.; 4 km NNE Chapulco 1940 m alt.; 5 km NE of San Martín Esperillo, 2430 m alt. (18°45'11" N, 97°31'36" W); limestone hill 1 km E of Azumbilla, 23 km N of Tehuacán, 2150 m alt. (18°37'23" N, 97°23'35" W); 1.5 km WNW Azumbilla, 2400 m alt. (UF 34288); 3 km NW Azumbilla, 2100 m alt. (18°39'21" N, 97°24'37" W); Cerro San Juanico, 4 km E of Azumbilla 1800 m alt. (18°39'49" N, 97°28'19" W); 2 km N of Tecamachalco, 2300 m alt.; 2 km SE of Tecamachalco, 2140 m alt.; 3.7 km SE of Tecamachalco, 2300 m alt.; limestone escarpment 23 km W of the Puebla-Veracruz state line, 10 km E of Esperanza, 2350 m alt. (ca. 18°50' N, 97°25' W). VERACRUZ: 20 km WSW of Ciudad Mendoza, 1750 m alt. (Thompson & Mihalcik 2005).

***Holospira (Holospira) hyperia* Bartsch 1926**

*Holospira hyperia* Bartsch 1926; Proc. U. S. Nat. Mus. 70:6; pl. 1, fig. 15 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:141.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:74; figs. 57–59.

Type Locality.—Esperanza, Puebla, México. Holotype USNM 363146.

Distribution.—Known only from the type locality.

***Holospira (Holospira) infanta* Bartsch 1906**

*Holospira infanta* Bartsch 1906; Proc. U. S. Nat. Mus. 31:129–130; pl. 3, fig. 4.

Type Locality.—Sierra Guadalupe, Coahuila, México. Holotype USNM 187650.

Distribution.—Known only from the type locality.

***Holospira (Holospira) kriegei* Drake 1950**

*Holospira kriegei* Drake 1950; Nautilus 64:51–53; pl. 4, fig. 9.

Type Locality.—Cañon del Diablo, Sierra de Tamaulipas, Tamaulipas, México. Holotype USNM 601629).

Distribution.—Known only from the type locality. The type specimens were collected from an archeological cave deposit, the exact locality of which is not given in Drake (1950). MacNeish (1947:2) vaguely indicated by map that the locality is along the Arroyo Las Palmas, due south of Soto La Marina.

***Holospira (Holospira) maxwelli* Pilsbry 1953**

*Holospira maxwelli* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:143; pl. 9, fig. 4.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:68; figs. 8–10.

Type Locality.—Beyond Terote [Perote], near Córdoba, Veracruz, México. Holotype ANSP 191105.

Distribution.—Known only from the type locality.

***Holospira (Holospira) melea* Bartsch 1926**

*Holospira melea* Bartsch 1926; Proc. U. S. Nat. Mus. 70:5; pl. 1, fig. 11.- Pilsbry 1953:141.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:73–74; figs. 53–56.

Type Locality.—Ixcaquixtla, Puebla, México. Holotype ANSP 191105.

Distribution.—Known only from the type locality.

***Holospira (Holospira) mexicana* Bartsch 1906**

*Holospira mexicana* Bartsch 1906; Proc. U. S. Nat. Mus. 31:127–128; pl. 4, fig. 9.

Type Locality.—“Southwestern México”. Holotype USNM 73987.

Distribution.—Unknown.

***Holospira (Holospira) mitraensis* Bartsch 1926**

*Holospira mitraensis* Bartsch 1926; Proc. U. S. Nat. Mus. 70:10–11; pl. 1, fig. 9 (shell).

Type Locality.—La Mitra Mountain, Monterrey, Nuevo León, México. Holotype USNM 363142.

Distribution.—Known only from the type locality.

***Holospira (Holospira) monclovana* Bartsch 1925**

*Holospira monclovana* Bartsch 1925; Proc. U. S. Nat. Mus. 67:2–3; pl. 1, figs. 1–2.

Type Locality.—East of Monclova, Coahuila, México. Holotype USNM 361962.

Distribution.—Known only from the type locality.

***Holospira (Holospira) nelsoni* Pilsbry 1902**

*Holospira nelsoni* Pilsbry 1902; Man. Conch. 15:79–80; pl. 22, figs. 42–44 (shell), pl. 27, fig. 40 (jaw), pl. 27, figs. 33–34 (reproductive anatomy).- Bartsch 1906; Proc. U. S. Nat. Mus. 31:132.- H. B. Baker 1965; Proc. Acad. Nat. Sci. Phila. 115:224.

Type Locality.—Sierra Guadalupe, Coahuila, México; 6500 ft. alt. Lectotype ANSP 58094a (H. B. Baker 1963).

Distribution.—COAHUILA: known only from the type locality and at 9500 ft alt. in the Sierra Guadalupe (Bartsch 1906).

***Holospira (Holospira) oaxacana* Bartsch 1906**

*Holospira oaxacana* Bartsch 1906; Proc. U. S. Nat. Mus. 31:132–133; pl. 4, fig. 5 (shell).- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:80–81; figs. 106–109 (shell).

Type Locality.—Tomellín, Oaxaca, México. Lectotype USNM 175085 (Thompson & Mihalcik 2005:80).

Distribution.—Known only from the type locality.

***Holospira (Holospira) orcutti* Bartsch 1925**

*Holospira orcutti* Bartsch 1925; Proc. U. S. Nat. Mus. 67:1–2; pl. 1, figs. 5–6.

Type Locality.—A limestone paredon at Coahuila, México. This is amended here-in to Paredon, Coahuila. Holotype USNM 361961.

Distribution.—Known only from the type locality.

***Holospira (Holospira) painteri* Bartsch 1906**

*Holospira painteri* Bartsch 1906; Proc. U. S. Nat. Mus. 31:130–131; pl. 3, fig. 5.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:82; figs. 117–122.

Type Locality.—Tehuacán, Puebla, México. Holotype USNM 187675.

Distribution.—Known only from the type locality.

***Holosira (Holospira) palmeri* Bartsch 1906**

*Holosira palmeri* Bartsch 1906; Proc. U. S. Nat. Mus. 31:128–129; pl. 4, fig. 6.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:147–148; pl. 6, figs. 1–3a.

*Holospira alvarezensis* Bartsch 1926; Proc. U. S. Nat. Mus. 70:6–7; pl. 1, fig. 7 (shell).

Type Localities.—*Holospira palmeri*: Sierra Álvarez, San Luís Potosí, México; holotype USNM 100388. *Holospira alvarezensis*: Alvarez, San Luís Potosí; holotype USNM 36316.

Distribution.—SAN LUÍS POTOSÍ: known only from the immediate vicinity of the type localities.

***Holospira (Holospira) pedroana pedroana* Bartsch 1926**

*Holospira pedroana pedroana* Bartsch 1926; Proc. U. S. Nat. Mus. 70:9; pl. 1, fig. 3 (shell).- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:143–145; pl. 7, figs. 1–3 (shell).

*Holospira creightoni* Bartsch 1926; Proc. U. S. Nat. Mus. 70:8–9; pl. 1, fig. 4 (shell).

Type Localities.—*Holospira pedroana pedroana*: hills north of San Pedron, San Luís Potosí, México; holotype USNM 362176. *Holospira creightoni*: hill east of San Pedro, San Luís Potosí; holotype USNM 326178.

Distribution.—SAN LUÍS POTOSÍ: known from the vicinity of the type locality.

***Holospira (Holospira) pedroana laevisissima* Pilsbry 1953**

*Holospira pedroana laevisissima* Pilsbry 1953. Proc. Acad. Nat. Sci. Phila. 105:145–146; pl. 7, 4–4d (shell).

Type Locality.—Hill southeast of the reservoir east of San Pedro, up to about 7100 feet on slope facing east and north, San Luís Potosí, México. Holotype ANSP 164377.

Distribution.—Known only from the type locality.

***Holospira (Holospira) pfeifferi* (Menke 1847)**

*Cylindrella pfeifferi* Menke 1847; Zeitsch. für Malak., 4:1.

*Holospira pfeifferi* (Menke). Strebel 1880; Biétrag, IV:84; pl. 13, fig. 12.- Pilsbry 1902; Man. Conch. 15:80–81; pl. 22, figs. 49–51.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:79–80; figs. 101–105.

Type Locality.—Tehuacán, Puebla, México. Lectotype BMNH 1996134 (Thompson & Mihalcik 2005:80).

Distribution.—Known only from the type locality.

***Holospira (Holospira) picta* Bartsch 1925**

*Holospira picta* Bartsch 1925; Proc. U. S. Nat. Mus. 67:3–5, pl. 1, figs. 3–4 (shell).

Type Locality.—East of Monclova, Coahuila, México; holotype USNM 361964.

Distribution.—Known only from the type locality.



***Holospira (Holospira) politecnica* (Bartsch 1945)**

*Malinchia politecnica* Bartsch 1945; Jour. Wash. Acad. Sci. 35:94; fig. 4 (shell).

*Holospira politecnica* (Bartsch). Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:141.

Type Locality.—10–30 km north-northwest of Cadereyte, Querétaro, México. Holotype USNM 341961.

Distribution.—Known only from the type locality.

***Holospira (Holospira) queretaroensis* (Bartsch 1945)**

*Malinchia queretaroensis* Bartsch 1945; Jour. Wash. Acad. Sci. 35:94–95; fig. 3 (shell).

Type Locality.—Limestone hill 10–30 km north-northwest of Cadereyte, Querétaro, México. Holotype USNM 431963.

Distribution.—Known only from the type locality.

***Holospira (Holospira) rehderi* Bartsch 1947**

*Holospira rehderi* Bartsch 1947; Jour. Wash. Acad. Sci. 37:287–288; fig. 2 (shell).—Thompson and Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:69–71; figs. 1, 17–39.

*Holospira morelosensis* Bartsch 1947; Jour. Wash. Acad. Sci. 37:288; fig. 4 (shell).

Type Localities.—*Holospira rehderi*: Chietla, Puebla, México; holotype USNM 543589. *Holospira morelosensis*: Tlaquiltenango, Morelos; holotype USNM 543591.

Distribution.—Known from a broad area in eastern Morelos and adjacent Puebla and Oaxaca, from 1000–2100 m alt. MORELOS: 7.2 km SSW of Ticumán, 1033 m alt.; limestone ridge 2 km NW of Nopalera, 1200 m alt. (18°48'35" N, 99°03'55" W); 7 km W of Jojutla, 1033 m alt. PUEBLA: 5 km SSE of Izucar de Matamoros, 1340 m alt. (18°32'34" N, 98° 25'40" W); microwave tower hill 12.5 km SE of Izucar de Matamoros, 1450 m alt. (18°31'16" N, 98°24'59" W); 12.6 km SSE of Izucar de Matamoros, 1700 m alt.; 13 km SE of Izucar de Matamoros, 1475 m alt. OAXACA: 2.7 km W of Teposcolula, 2100 m alt. (17°30'22" N, 97°29'50" W); limestone hill 7 km E of Teposcolula, km Post 7, 2160 m alt.; 2 km NE of Tonalá, 1540 m alt.; 13.4 km NE of Tonalá, 2060 m alt.; 13.5 km N of Tonalá, 2090 m alt.

***Holospira (Holospira) rhinion* Thompson & Mihalcik 2005**

*Holospira rhinion* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:81–82; figs. 110–116.

Type Locality.—Limestone hillside on the west side of Federal Highway 131, 15 km southeast of Tehuacán, Puebla, México; 1540 m altitude. Holotype UF 34375.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality.

***Holospira (Holospira) scololaema* Thompson & Mihalcik 2005**

*Holospira scololaema* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:85–86; figs. 137–144.

Type Locality.—Limestone mountain side 1 km northeast of Yehualtepec, Puebla, México; 2340 m alt. Holotype UF

34289.

Distribution.—Known only from the type locality.

***Holospira (Holospira) stenopylis* Pilsbry 1953**

*Holospira stenopylis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:146–147; pl. 8, figs. 3–3b (shell).

Type Locality.—Slopes on the north side of the valley northeast of San Pedro, San Luís Potosí, México. Holotype ANSP 164376.

Distribution.—Known only from the type locality.

***Holospira (Holospira) temeroso* Pilsbry 1953**

*Holospira temeroso* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:141–142; pl. 4, figs. 5–5a (shell).

Type Locality.—Temeroso, Concepción del Oro Mountain, on the trail up from Aranzaza, Zacatecas, México; 9250 feet alt. Holotype ANSP 164131.

Distribution.—Known only from the type locality.

***Holospira (Holospira) teotitlana* Bartsch 1945**

*Holospira teotitlana teotitlana* Bartsch 1945; Jour. Wash. Acad. Sci. 35:92–92; fig. 2 (shell).

*Holospira teotitlana filia* Bartsch 1945; Jour. Wash. Acad. Sci. 35:93–95; fig. 1 (shell).

*Holospira teotitlana* Bartsch. Thompson & Mihalcik; Bull. Fla. Mus. Nat. Hist. 43 2005:78–79; figs. 86–100.

Type Localities.—*Holospira teotitlana teotitlana*: foothills of Cerro Blanco (Cerro de Tizatepec) at Teotitlán del Camino, Oaxaca, México; holotype USNM 431954. *Holospira teotitlana filia*: Cerro Tizatepec, near Ignacio Mejia, Oaxaca; holotype USNM 431957.

Distribution.—Eastern Puebla and adjacent Oaxaca in the Tehuacán - Tomellín Valley, at 790–950 meters altitude. PUEBLA: 10.7 km N of Teotitlán del Camino, 950 m alt. ; 2.5 km N of Teotitlán del Camino; 10 km NW of Coxcatlán, 880 m alt; 11.5 km SSE of Coxcatlán. OAXACA: 2.7 km S, 1.5 km W of Teotitán del Camino, 810 m alt. (18°06.3' N, 97°05.2' W); 8 km S of Teotitán del Camino, 910 alt. (18°05.2' N. 97°04.6' W); 2.5 km N of San Juan de Los Cues, 850 m alt. (18°03.9' N, 97°04.1' W); 1.3 km N of San Juan de Los Cues (18°03.3' N. 97°04.4' W).

***Holospira (Holospira) teres* (Menke 1847)**

*Cylindrella teres* Menke 1847; Zeitschrift für Malakologische 4:1.-Philippi 1848; Abbild., iii:3; figs. 5, 6.-Pfeiffer 1848; Monogr. Helic. viv., ii:381.-Pfeiffer, Conchyl. Cab.:59; pl. 6, figs. 28, 29.

*Holospira teres* (Menke). Fischer & Crosse 1873; Miss. Sci. Mex. I:327–328.- Von Martens 1897, Biol. Cent. Amer:279; pl. 17, fig. 3.- Pilsbry 1902; Man. Conch. 15:104–105; pl. 15, figs. 18–20.- Haas 1933; Archiv f. Molluskenkunde 65:271.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:58.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:75–76; figs. 67–75.

*Holospira teres minor* Von Martens 1897; Biol. Cent. Amer.:278.

Type Locality.—State of Puebla, México. Lectotype SMF 7023 (Thompson & Mihalcik 2005:75).

Distribution.—Unknown.

***Holospira (Holospira) tetralasma* Pilsbry 1902**

*Holospira tetralasm* Pilsbry 1902. Man. Conch. 15:73–75; pl. 21, figs. 23–27 (shell).- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:79.

Type Locality.—“México”. Holotype in the Dohrn Collection at the Stettin Museum, which is now Muzeum Narodowe, Szczecin, Poland, The Dohrn mollusk collection was totally destroyed in the 1939–1945 War (Dance 1986:219).

Distribution.—Unknown.

***Holospira (Holospira) topochicoana* Bartsch 1926**

*Holospira topochicoana* Bartsch 1926; Proc. U. S. Nat. Mus. 70:12–13; pl. 1, fig. 5 (shell).

Type Locality.—Topochico Mountain, Monterey, Nuevo León, México. Holotype USNM 363143.

Distribution.—Known only from the type locality.

***Holospira (Holospira) torrei* Pilsbry 1935**

*Holospira torrei* Pilsbry 1935. Proc. Acad. Nat. Sci. Phila. 87:2; pl. 1, fig. 4 (shell).

Type Locality.—“México”. Holotype USNM 363143.

Distribution.—Unknown.

***Holospira (Holospira) wilmoti* Bartsch 1951**

*Holospira wilmoti* Bartsch 1951; Jour. Wash. Acad. Sci. 41:147; fig. 2.

*Coelostemma wilmoti* (Bartsch). Thompson 2008:356.

Type Locality.—Cerro del Fraile, near Villa Garcia, Nuevo León, México. Holotype USNM 595020.

Distribution.—Known only from the type locality.

***Holospira (Holospira) zygoptyx* Thompson & Mihalcik 2005**

*Holospira zygoptyx* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:72–73; figs. 45–52.

Type Locality.—1.0 km by road south of San Antonia Texcala, Puebla, México; 2000 m alt. (18°22'42" N, 97°27'16" W). Holotype: UF 190771.

Distribution.—Known only from the type locality.

**Subgenus *Allocoryphe* Pilsbry 1946**

*Allocoryphe* Pilsbry 1946; Land Moll. N. Amer. 2:123.

Type Species.—*Holospira minima* Von Martens 1897.

Distribution.—Central Sonora, México.

Taxonomy.—Two species are recognized.

***Holospira (Allocoryphe) guaymasensis* (Bartsch 1943)**

*Haplocion guaymasensis* Bartsch 1943; Jour. Wash. Acad. Sci. 33:56; fig. 1.

*Holospira (Allocoryphe) guaymasensis* (Bartsch). Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:152.

Type Locality.—Guaymas, Sonora, México; holotype USNM 536883.

Distribution.—Known only from the type locality.

***Holospira (Allocoryphe) minima* Von Martens 1897**

*Holospira pfeifferi* var. *minima* Von Martens 1897; Biol. Cent.

Amer.:280; pl. 16, fig. 18.

*Holospira pfeifferi* var. *percostata* Pilsbry 1902; Man. Conch. 15:95; pl. 24, figs. 5–6, 8–9.

*Haplocion minima* Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

*Holospira (Allocoryphe) minima* Von Martens. Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:156; pl. 9, figs. 1–1c.- Pilsbry 1946; Land Moll. N. Amer. II:123.- Thompson 1988; Bull. Fla. Mus. Nat. Hist. 33:92; figs. 5–6, 9–11.- Gilbertson 1989; Veliger 32:93–94; fig. 3 (reproductive anatomy).- Gilbertson 1993:71–72, 77–78; figs. 2a (shell), 3a (reproductive anatomy).- Gilbertson 1993; Amer. Malac. Bull., 10:71–72, 77–78; figs. 2a (shell), 3a (reproductive anatomy).

Type Localities.—*Holospira pfeifferi* var. *minima*: “México”. *Holospira minima* var. *percostata*: N.W. México. Holotype in the ANSP.

Distribution.—SONORA: immediate vicinity of Hermosilla.

**Subgenus *Bostrichocentrum* Strebel 1880**

*Bostrichocentrum* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:80–81.

Type Species.—*Cylindrella tryoni* Pfeiffer 1867.

Distribution.—The subgenus is concentrated in south-central México in northeastern Oaxaca, Puebla, and adjacent Veracruz. Two species also occur in northeastern México.

Taxonomy.—Fifteen species are recognized.

***Holospira (Bostrichocentrum) anomala* Pilsbry 1953**

*Holospira anomala* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:150–151; pl. 8, figs. 6–6a.

Type Locality.—Tepeaca, about 22 km east of Cd. Puebla, Puebla, México. Holotype ANSP 191108.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) centicostata* Thompson 1964**

*Holospira (Bostrichocentrum) centicostata* Thompson 1964; Malacologia 2:133–134; pl. 1, figs. 12–15 (shell); pl. 2, fig. 1 (reproductive system); pl. 3, figs. 4, 8 (retractor muscles), fig. 9 (jaw), fig. 10 (radula).

Type Locality.—A caliche hillside 14.4 miles northwest of Acatlán, Puebla, México; 4300 feet alt. Holotype UMMZ 213218.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) eurybia* Bartsch 1926**

*Holospira (Bostrichocentrum) eurybia* Bartsch 1926; Proc. U. S. Nat. Mus. 70:4–5; pl. 1, fig. 2.

*Bostrichocentrum eurybia* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—River drift, Rio Balsas Station, Guerrero, México. Holotype USNM 363147.

Distribution.—Unknown.

***Holospira (Bostrichocentrum) galathea* Bartsch 1926**

*Holospira (Bostrichocentrum) galathea* Bartsch 1926; Proc. U. S. Nat. Mus. 70: pl. 1, fig. 7.

*Bostrichocentrum galathea* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—River drift, Rio Balsas Station, Guerrero, México. Holotype USNM 363148.  
Distribution.—Unknown.

***Holospira (Bostrichocentrum) gealei* (H. Adams 1872)**

*Cylindrella (Holospira) gealei* H. Adams 1872; Proc. Zool. Soc. Lond. 40:13; pl. 3, fig. 19.

*Holospira tryoni gealei* (H. Adams). Pilsbry 1902; Man. Conch. 15:85; pl. 15, fig. 3.- Thompson 1964; Malacologia 2:132.

*Bostrichocentrum gealei* (H. Adams). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—Putla, Puebla, México; syntype in the BM(NH).

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) goldmani* Bartsch 1906**

*Holospira (Bostrichocentrum) goldmani* Bartsch 1906; Proc. U. S. Nat. Mus. 31:136–137; pl. 4, fig. 1.- Thompson 1964; Malacologia 2:134; pl. 2, fig. 4 (reproductive system); pl. 3, figs. 3, 7 (retractor muscles).

*Bostrichocentrum goldmani* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.- Bartsch 1947; Jour. Wash. Acad. Sci. 37:142.

Type Locality.—Tamazulapán, Oaxaca, México. Holotype USNM 187793.

Distribution.—OAXACA: Tamazulapan; 5.7 miles NW of Huahapán de León. PUEBLA: Cerro Sangre de Grado, Pan American Highway km. post 304; 2.2 miles SE of Chila.

***Holospira (Bostrichocentrum) hidalgoensis* Bartsch 1906**

*Holospira (Bostrichocentrum) hidalgoensis* Bartsch 1906; Proc. U. S. Nat. Mus. 31:138; pl. 4, fig. 12.

*Bostrichocentrum hidalgoensis* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—Zimapán, Hidalgo, México. Holotype USNM 187982.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) perplexa* Thompson 1964**

*Holospira (Bostrichocentrum) perplexa* Thompson 1964; Malacologia 2:134–136; pl. 1, figs. 7–11 (shell); pl. 2, fig. 3 (reproductive system); pl. 3, figs. 2, 6 (retractor muscles).

Type Locality.—Hill 10.3 mi. northwest of Huahapán de León, Oaxaca, México; 6200 feet alt. Holotype UMMZ 213220.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) pilsbryi* Dall 1895**

*Holospira pilsbryi* Dall 1895; Proc. U. S. Nat. Mus. 18:4.

*Holospira (Bostrichocentrum) pilsbryi* Dall. Pilsbry; 1902; Man. Conch. 15:86–87; pl. 16, figs. 6–9; pl. 23, fig. 76.

*Bostrichocentrum pilsbryi* (Dall). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—Around sulfur springs near the City of Puebla, Puebla, México. Holotype USNM 56932.

Distribution.—PUEBLA: vicinity of the type locality and Tepeaca.

***Holospira (Bostrichocentrum) pupa* Thompson 1964**

*Holospira (Bostrichocentrum) pupa* Thompson 1964. Malacologia

2:136–138; pl. 1, figs. 1–6 (shell); pl. 2, fig. 2 (reproductive system), pl. 3, figs. 1, 5 (retractor muscles).

Type Locality.—15 miles southeast of Acatlán, Puebla, México; 4900 feet alt. Holotype UMMZ 213217.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) ronzonei* Bartsch 1943**

*Bostrichocentrum ronzonei* Bartsch 1943; Jour. Wash. Acad. Sci. 33:55–56; fig. 3.

Type Locality.—Pajaro Verde, Puebla, México. Holotype USNM 536874.

Distribution.—PUEBLA: known for certain only from the type locality. Also reported from “either Córdoba or Orizaba, Veracruz” (Bartsch 1943:56).

***Holospira (Bostrichocentrum) tamaulipensis* Bartsch 1906**

*Holospira (Bostrichocentrum) tamaulipensis* Bartsch 1906; Proc. U. S. Nat. Mus. 31:139–140; pl. 4, fig. 2.

*Bostrichocentrum tamaulipensis* (Bartsch). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—[Ciudad] Camargo, Tamaulipas, México. Holotype 187979.

Distribution.—Known only from the type locality. The type locality is so far removed from the rest of the range of *Bostrichocentrum* as to raise doubt about its authenticity.

***Holospira (Bostrichocentrum) tryoni* (Pfeiffer 1867)**

*Cylindrella tryoni* Pfeiffer 1867; Journal de Conchyl., 15:438.

*Holospira tryoni* (Pfeiffer). Crosse & Fischer 1870; Jour. de Conchyl. 18:14, 24; pl. 5, fig. 5 (jaw).- Fischer & Crosse 1873; Miss. Sci. Mex. 1:331–333, pl. 17, figs. 6–6c.- Von Martens 1897; Biol. Cent. Amer.:276–277.- Cross 1892; Jour. de Conchyl. 40:267; pl. 5, figs. 5–5a.

*Holospira (Bostrichocentrum) tryoni* (Pfeiffer). Pilsbry 1902; Man. Conch. 15:83–85; pl. 22, figs. 62–58.

*Bostrichocentrum tryoni* (Pfeiffer). Strebel 1880; Bietrag., IV:81; pl. 5, fig. 3; pl. 14, figs. 13, 16A–16B.- Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

*Holospira tryoni appressa* Fischer & Crosse 1873; Miss. Sci. Mex. 1:331.

Type Localities.—*Cylindrella tryoni*: Izucár, Puebla, México. *Holospira tryoni appressa*: Izucár, Puebla, México.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) veracruziana* Dall 1895**

*Holospira veracruziana* Dall 1895; Proc. U. S. Nat. Mus. 18:4.

*Holospira (Bostrichocentrum) veracruziana* Dall. Pilsbry 1902; Man. Conch. 15:85–86.

*Bostrichocentrum veracruziana* (Dall). Bartsch 1943; Jour. Wash. Acad. Sci. 33:55.

Type Locality.—Misantla, Veracruz, México. Holotype in the USNM.

Distribution.—Known only from the type locality.

***Holospira (Bostrichocentrum) veracruzicola* (Bartsch 1943)**

*Bostrichocentrum veracruzicola* Bartsch 1943; Jour. Wash. Acad. Sci. 33:55; fig. 4.

Type Locality.—“In the neighborhood of Orizaba or



Córdoba, or a little farther south, Veracruz?'. Holotype USNM 536877.

Distribution.—VERACRUZ: questionably known from the state.

#### Subgenus *Millerspira* Gilbertson & Naranjo-Garcia 2004

*Millerella* Gilbertson & Naranjo-Garcia 1998; Veliger 41:91 (*non Millerella* Thompson 1942; Protista).

*Millerspira* Gilbertson & Naranjo-Garcia 2004; Veliger 47:157.

Type Species.—*Holospira milleri* Gilbertson 1989.

Distribution.—East-central Sonora, México.

Taxonomy.—Two species.

#### *Holospira (Millerspira) milleri* Gilbertson 1989

*Holospira (Millerella) milleri* Gilbertson 1988; Veliger 32:91–94; figs. 1 (shell), 2 (reproductive anatomy).

*Holospira (Millerspira) milleri* Gilbertson & Naranjo-Garcia 1998; Veliger 41:314–315.

Type Locality.—Sonora, on the east side of the Rio Yaqui, under conglomerate rocks (containing calcite) in a ravine near the mouth of the Rio Alamo, ca. 1.5 km south of the military footbridge at El Novillo ca. 260 m alt. (28°59.1' N, 109°37.5' W). Holotype SBMNH 35042.

Distribution.—Known only from the type locality.

#### *Holospira (Millerspira) hoffmani* Gilbertson & Naranjo-Garcia 1998

*Holospira (Millerella) hoffmani* Gilbertson & Naranjo-Garcia 1998; Veliger 41:315–318; figs. 1 (shell), 2–3 (reproductive system).

Type Locality.—Sierra Batamonte (near El Milagro Mine, 20.5 km E of Rio Yaqui Bridge along Hwy. 15 from Estrella to Bacanora, Sonora, México (28°57.5' N, 109°30.5' W). Holotype SBMNH 143186.

Distribution.—SONORA: known only from the vicinity of the type locality.

#### Subgenus *Prionolopax* Pilsbry 1953

*Prionolopax* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:140.

Type Species.—*Holospira odontoplax* Pilsbry 1953.

Distribution.—Southern Coahuila, México.

Taxonomy.—This subgenus is monotypic.

#### *Holospira (Prionolopax) odontoplax* (Pilsbry 1953)

*Holospira (Prionolopax) odontoplax* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:141; pl. 3, fig. 2.

Type Locality.—First mountain of the Sierra de Penitente on the right side of the road from Saltillo to Diamante, at the highest pass, Coahuila, México; 7800–7900 feet alt. Holotype ANSP 164077.

Distribution.—Known only from the type locality.

#### Subgenus *Sonoraloa* Gilbertson 1993

*Sonoraloa* Gilbertson 1993; Amer. Malac. Bull., 10:72–73.

Type Species.—*Cylindrella remondi* Gabb 1865.

Distribution.—Sonora and Sinaloa, México.

Taxonomy.—The subgenus includes four species and

seven subspecies.

#### *Holospira (Sonoraloa) dentaxis dentaxis* Pilsbry 1953

*Holospira dentaxis dentaxis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:154–155; pl. 9, figs. 3–3a.

*Holospira (Sonoraloa) dentaxis dentaxis* Pilsbry. Gilbertson 1993; Amer. Malac. Bull., 10:72–73.

Type Locality.—River drift at ford of Rio Yaqui about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 166484.

Distribution.—SONORA: specific locality unknown.

#### *Holospira (Sonoraloa) dentaxis alamellata* Gilbertson 1993

*Holospira (Sonoraloa) dentaxis alamellata* Gilbertson 1993; Amer. Malac. Bull., 10:73–74.

Type Locality.—Riperian gorge, south side of Hwy 15, 7.5 km by road west of Sahuaripe, Sonora, México; 700 m alt. (29°01.5' N, 109°18.7' W). Holotype SBMNH 35514.

Distribution.—Known only from the type locality.

#### *Holospira (Sonoraloa) dentaxis lamellata* Pilsbry 1953

*Holospira dentaxis lamellata* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:155; pl. 9, fig. 6.- Gilbertson 1993; Amer. Malac. Bull., 10:75.

Type Locality.—River drift at ford of Rio Yaqui about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 190760.

Distribution.—SONORA: exact locality unknown.

#### *Holospira (Sonoraloa) dentaxis potamia* Pilsbry 1953

*Holospira dentaxis potamia* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:156; pl. 9, fig. 2.- Gilbertson 1993; Amer. Malac. Bull., 10:75.

Type Locality.—River drift at ford of Rio Yaqui about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 191107.

Distribution.—SONORA: exact locality unknown.

#### *Holospira (Sonoraloa) dentaxis striatella* Pilsbry 1953

*Holospira dentaxis striatella* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:155; pl. 10, fig. 1.- Gilbertson 1993; Amer. Malac. Bull., 10:75.

Type Locality.—River drift at ford of Rio Yaqui about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 191106.

Distribution.—SONORA: exact locality unknown.

#### *Holospira (Sonoraloa) kinonis* J. Baily & R. Baily 1940

*Holospira kinonis* Baily & Baily 1940; Nautilus 53:94–95; pl. 12, fig. 1.- Gilbertson 1993; Amer. Malac. Bull., 10:73.

Type Locality.—Tidal drift 2 miles south of Cochare, near Guaymas, Sonora, México. Holotype ANSP 174953.

Distribution.—SONORA: exact locality unknown.

#### *Holospira (Sonoraloa) mazatlanica* (Bartsch 1943)

*Haplocion mazatlanica* Bartsch 1943; Jour. Wash. Acad. Sci. 33:56;

fig. 6.

*Holospira (Sonoraloa) mazatlanica* (Bartsch). Gilbertson 1993; Amer. Malac. Bull., 10:73.

Type Locality.—Drift at Mazatlán, Sinaloa, México.

Holotype USNM 536884).

Distribution.—Unknown.

***Holospira (Sonoraloa) remondi remondi* (Gabb 1865)**

*Cylindrella remondi* Gabb 1865; Amer. Jour. Conch. 1:208; figs. 10–13.

*Holospira remondi* (Gabb). Tryon 1867; Amer. Jour. Conch. 3:313.- Pilsbry 1902; Man. Conch. 15:93; pl. 23, figs. 61–63, 70; pl. 24, figs. 1–4.

*Holospira remondi remondi* (Gabb). Pilsbry 1953; Proc. Acad. Nat. Sci., 105:152–153; pl. 10, figs. 1–1b.- Gilbertson 1993; Amer. Malac. Bull., 10:72–73.

*Haplocion remondi* (Gabb). Bartsch 1943; Jour. Wash. Acad. Sci. 33:56.

Type Locality.—1.5 leagues (ca. 6 km) from Arivechi, Sahuaripe Valley, Sonora, México. Lectotype ANSP 166484.

Distribution.—SONORA: known only from the type locality and from river drift in the Rio Yaqui north of Ciudad Obregón.

***Holospira (Sonoraloa) remondi forticostata* Pilsbry 1953**

*Holospira remondi forticostata* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:154; pl. 9, figs. 5–5a.

Type Locality.—Drift debris of the Rio Yaqui at the ford about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 166406.

Distribution.—SONORA: exact locality unknown.

***Holospira (Sonoraloa) remondi laevior* Pilsbry 1953**

*Holospira remondi laevior* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:153–154; pl. 10, fig. 2.- Gilbertson 1993; Amer. Malac. Bull., 10:73; fig. 3c (reproductive anatomy), 7a (shell), 7b (reproductive anatomy).

Type Locality.—Drift of Laguna Presa Rodriguez, Hermosillo, Sonora, México. Holotype ANSP 188316.

Distribution.—SONORA: exact locality unknown.

***Holospira (Sonoraloa) remondi yaquensis* Pilsbry 1953**

*Holospira remondi yaquensis* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:154; pl. 10, figs. 4–5.- Gilbertson 1993; Amer. Malac. Bull., 10:73.

Type Locality.—Drift debris of the Rio Yaqui at the ford about 17.5 km north of Ciudad Obregón, Sonora, México. Holotype ANSP 166405.

Distribution.—SONORA: exact locality unknown.

**Subgenus *Stalactella* Bartsch 1906**

*Stalactella* Bartsch 1906; Bull. U. S. Nat. Mus. 31:151.- Rehder 1940:315, Pilsbry 1953:135.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:89.

Type Species.—*Holospira (Stalactella) rosei* Bartsch 1906.

Distribution.—Southern Puebla and adjacent Oaxaca,

México.

Taxonomy.—Five species. Previous authors (e.g., Pilsbry 1953) treated *Stalactella* as a subgenus of *Propilsbrya*. Internal and external aspects of the shell indicate that *Stalactella* is derived from a species-group of *Holospira* s. s. that is localized in southern Puebla, and no close relationship exists with *Propilsbrya*.

***Holospira (Stalactella) chazumbae* Thompson & Mihalcik 2005**

*Holospira (Stalactella) chazumbae* Thompson & Mihalcik 2005:94–95; figs. 191–195.

Type Locality.—Hillside 2 km northeast of Santiago Chazumba, Oaxaca, México; 1970 m alt. Holotype UF 34299.

Distribution.—Known only from the type locality.

***Holospira (Stalactella) cremnobates* Thompson & Mihalcik 2005**

*Holospira (Stalactella) cremnobates* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43; 91–92; figs. 172–177.

Type Locality.—10 km north of Tehuacán, Puebla, México; 1990 m alt. (18°37'23" N, 97°23'35" W). Holotype UF 190789.

Distribution.—Known only from the type locality.

***Holospira (Stalactella) marmorata* Thompson & Mihalcik 2005**

*Holospira (Stalactella) marmorata* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43; 93–94; figs. 184–190.

Type Locality.—13.5 km WSW of San Bartolo Teontepec, Puebla, México; 2120 m alt. (18°26'19" N, 97°36'42" W). The area is a xeric limestone hillside on the north side of the highway. Snails were found under caliche slabs and limestone boulders. Holotype UF 233188.

Distribution.—Six km N of Santa Cruz Nueva, , Puebla. 1760 m alt. (18°20'19" N, 97°49'35" W) (UF 200956); 4.5 km S of San Vicente Coyotepec, 2080 m alt. (18°20'19" N, 97°49'59" W) (UF 200601); 3.7 km S of San Vicente Coyotepec 1880 m alt. (UF 233190).

***Holospira (Stalactella) psectra* Thompson & Mihalcik 2005**

*Holospira (Stalactella) psectra* Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:92–93; figs. 178–183.

Type Locality.—A limestone cliff on the south slope of Cerro Caolalote, 2 km east of El Carmen, Puebla, México; 1870 m altitude. (18°36" N, 97°26'01" W). The type locality is at the base of a south-facing bare limestone cliff. Holotype UF 233197.

Distribution.—Known only from the type locality.

***Holospira (Stalactella) rosei* Bartsch 1906**

*Holospira (Stalactella) rosei* Bartsch 1906; Proc. U. S. Nat. Mus. 31:151–153; text-figs. 11–12; pl. 4, fig. 9.- Thompson & Mihalcik 2005; Bull. Fla. Mus. Nat. Hist. 43:90–91; figs. 169–171.

Type Locality.—Tehuacán, Puebla, México. Holotype

USNM 188181.

Distribution.—Known only from the type locality.

**Names of uncertain status associated with *Holospira*  
*Cylindrella cretacea* Pfeiffer 1860.**

*Cylindrella cretacea* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:140.- Fischer & Crosse 1873; Miss. Sci. Mex. I:335; pl. 17, fig. 8.- Pilsbry 1902, Man. Conch. 15:104; pl. 15, figs. 16–17.

Type Locality.—“México”. Syntype in the Cuming Collection, BMNH.

Distribution.—Unknown.

Remarks.—The interior structure of the shell is unknown thereby preventing subgeneric assignment. Pilsbry (1902) commented on its external similarity to *Haplocion coahuilensis* (Binney 1865).

***Cylindrella (Holospira) imbricata* Von Martens 1863**

*Cylindrella (Holospira) imbricata* Von Martens 1863; Monatber. Berlin Akademie der Wissenschafte:540.- Fischer & Crosse 1873; Miss. Sci. Mex. I:336.- Von Martens 1897, Biol. Cent. Amer.:273; pl. 16, fig. 25.-Pilsbry 1902; Man. Conch. 15:103; pl. 15, figs. 1–2.

Type Locality.—“México”.

Distribution.—Unknown.

Remarks.—The interior of the shell is unknown. Externally it resembles some species of *Coelostemma* and *Bostrichocentrum*.

***Cylindrella pilocerei* Pfeiffer 1841**

*Cylindrella pilocerei* Pfeiffer 1841; Symbolae ad Hist. Helic. 1:47.- Pilsbry 1902; Man. Conch. 2 15:75; pl. 22, figs. 45–48 (shell).

Type Locality.—Cautla de Las Amilpas, “Puebla” [Morelos]; syntype apparently lost. A *nomum dubium* (OPINION 1932; International Commission of Zoological Nomenclature; Bulletin of Zoological Nomenclature, 56:206–207; September 1999).

Distribution.—Known only from the type locality; presumed to be extinct.

**Genus *Metastoma* Strebel 1880**

*Metastoma* Strebel 1880; Beitrag, IV:80.- Pilsbry 1902; Man. Conch. 15:96–97.- Pilsbry 1946; Land Moll. N. Amer. II:114.- Thompson 1971; Bull. Fla. St. Mus. 15:299–300.

Type Species.—*Cylindrella roemeri* Pfeiffer 1848, by original designation.

Distribution.—Southwestern Texas, southeastern New Mexico, northeastern Chihuahua, and northern Coahuila.

Taxonomy.—A single species is recognized.

***Metastoma roemeri* (Pfeiffer 1848)**

*Cylindrella roemeri* Pfeiffer 1848; Mono. Helic. Viv., 2:382.

*Holospira roemeri* (Pfeiffer).- Binney 1878; Terrest. Moll. N. Amer., 5:177; fig. 85 (shell).- Pilsbry 1902; Man. Conch. 15:97–98; pl. 25, figs. 1–8 (shell).- Pilsbry 1905; Proc. Acad. Nat. Sci. Phila. 57:220; pl. 26, figs. 10–18 (shell).- Bartsch 1906; Proc. U. S. Nat. Mus. 31:148.- Pilsbry 1946; Land Moll. N. Amer. II:114–115; figs. 55 (shell).

*Metastoma roemeri* (Pfeiffer).- Thompson 1971; Bull. Fla. St. Mus. 15:300.

Type Locality.—Around New Braunfels, Comal County, Texas.

Distribution.—Southwestern Texas and southeastern New Mexico. Previously unrecorded from México. CHIHUAHUA: limestone knoll, 7.5 km NE of Coyame, 1250 m alt. (29°30.5' N, 105°02.6' W). COAHUILA: Sierra La Encantada, Cañon La Ventana de Boquilla, 27 km WNW Rancho La Babia, 91 km NW Melechur Mosquiz, 1150 m alt. (28°39.1' N, 102°19.8' W) (UF 244916); Sierra La Encantada, limestone knoll, 2.5 km W of La Cuesta, 1500 m alt. (UF 244923); Sierra La Encantada, limestone knoll on E flank of mountain 3 km E La Cuesta, 1380 m alt. (UF 244929); Sierra La Encantada, canyon 3 km ESE La Cuesta, 1420 m alt. (UF 244930).

**Family UROCOPTIDAE Pilsbry 1898**

Distribution.—The West Indies in general, and adjacent areas of the mainland, including Florida, México. Central America, Colombia, and Venezuela.

Taxonomy.—There are numerous genera in the West Indies. Two genera representing two subfamilies have colonized México and Central America. The results from a recent study by Uit de Weerd (2008) necessitated the recognition of the Eucalodiidae, Epirobiidae, and Holospiridae as families distinct from the Urocoptidae.

**Subfamily BRACHYPODELLINAE H. B. Baker 1956**

**Genus *Brachypodella* Beck 1837**

*Brachypus* Guilding 1828 (not *Brachypus* Swainson 1824).

*Brachypodella* Beck 1837 Index Moll. :89.- Pilsbry & Vanatta 1898: 277, 278.- Pilsbry 1904:40–43.

*Brachypodisca* Agassiz 1847 (emendation for *Brachypodella*). (type species: *Helix (Cochlodina) antiperersa* Ferussac 1821).

Type Species.—*Brachypodella: Helix (Cochlodina) antiperersa* Ferussac 1821 (Pilsbry & Vanatta 1898).

Distribution.—Antilles except for western Cuba and the Bahama Islands; mainland of Trinidad and Venezuela; southeastern México and northern Guatemala.

Taxonomy.—About six subgenera and 50 species. Only one subgenus occurs in México and Central America.

**Subgenus *Brachypodella* Beck 1837**

Distribution.—Hispaniola southeast through the Lesser Antilles, Trinidad and Venezuela, Guatemala, and southern México.

Taxonomy.—Numerous species. Five species and three subspecies occur in México and Central America.

***Brachypodella bourguignatiana* (Ancey 1886)**

*Cylindrella bourguignatiana* Ancey 1886; Bull. Soc. Malac. France 2:243.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:316; pl. 15, figs. 13, 13a.- Von Martens 1897; Biol. Cent. Amer.:286.

*Brachypodella bourguignatiana* (Ancey). Pilsbry 1904; Man. Conch. 16:71; pl. 7, figs. 32–34.- Richards 1938; Proc. Amer.



Philos. Soc. 79:176.

Type Locality.—Isla de Útila, Honduras.

Distribution.—HONDURAS: Útila and Roatán, Dept. Islas de la Bahía.

***Brachypodella dubia* (Pilsbry 1891)**

*Cylindrella speluncae* var. *dubia* Pilsbry 1891; Proc. Phila. Acad. Nat. Sci., 43:315; pl. 15, figs. 15, 15a.

*Brachypodella speluncae* (Morelet) (in part). Pilsbry 1904; Man. Conch. 16:70–71; pl. 6, figs. 13, 14.- Bequaert and Clench 1933; Pub. Carnegie Inst. Wash. (431):535.- Berquaert & Clench 1936; Pub. Carnegie Inst. Wash. (457): 65.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):258.- Richards 1937; Proc. Amer. Philos. Soc. 77:254.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich.; (524):16.- Branson and McCoy 1965; Univ. Col. Stud. Biol., (13):9.

*Brachypodella speluncae* var. *dubia* (Pilsbry). Pilsbry 1904; Man. Conch. 16:71.

*Brachypodella dubia* (Pilsbry). Thompson 1967; Bull. Fla. Sta. Mus., 11:249–252; figs. 5c-e.

Type Locality.—Labná, Yucatán, México. Lectotype ANSP 62027a (H. B. Baker 1963:222).

Distribution.—The Yucanan Peninsula of México. CAMPECHE: 19.2 mi. S of Píxtún; 6.1 mi. SW of Seybaplaya; 7.1 mi. SW of Campeche; 5.1 mi. NNW of Dzilbalchén; 5.1 mi. W of Tikinmúl. QUINTANA ROO: 7.1 mi. NW of Xiatil; Isla Cozumel, 1.5 km NE of San Miquel. YUCATÁN: Labná; 10.0 mi. NE of Becanchén; cave at Tabi; Ticul; between Sitalpech and Tunkas.

***Brachypodella morini morini* (Morelet 1849)**

*Cylindrella morini* Morelet 1849; Test. Noviss. I:11.- Pfeiffer 1849; Monogr. Helic. Viv., 3:578.- Fischer & Crosse 1873; Miss. Sci. Mex. I:412; pl. 17, fig. 12.- Sowerby, in Reeve, Conch. Icon., 20: pl. 16, fig. 136.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:338.

*Holospira morini* (Morelet). Von Martens 1897; Biol. Cent. Amer.: 285.

*Brachypodella morini* (Morelet). Pilsbry 1904; Man. Conch. 16:67–68; pl. 6, figs. 4–6, 10.

Type Locality.—Vera Páz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapáz, Cahabón. TABASCO: San Juan Bantista; mountains.

***Brachypodella morini salpinx* (Tristram 1861)**

*Cylindrella salpinx* Tristram 1861; Proc. Zool. Soc. Lond. 29:231.- Fischer & Crosse 1873; Miss. Sci. Mex. I:415.

*Holospira morini* var. *salpinx* (Tristram). Von Martens 1897; Biol. Cent. Amer.:285; pl. 17, fig. 5.

*Brachypodella morini* var. *salpinx* (Tristram). Pilsbry 1904; Man. Conch. 16:68; pl. 6, fig. 3.

Type Locality.—“Probably near Cobán or Lanquín”, Dept. Alta Verapáz, Guatemala.

Distribution.—Known only from the type locality.

***Brachypodella morini sargi* (Von Martens 1897)**

*Holospira morini* var. *sargi* Von Martens 1897; Biol. Cent. Amer.:285.

*Brachypodella morini* form *sargi* (Von Martens). Pilsbry 1904; Man. Conch. 16:68.

Type Locality.—Cahabón, Dept. Alta Verapáz, Guatemala.

Distribution.—Known only from the type locality.

***Brachypodella speluncae* (Morelet 1852)**

*Cylindrella speluncae* Morelet 1852; Test. Nov., 2:12.- Fischer & Crosse 1873; Miss. Sci. Mex. I:410; pl. 17, fig. 11.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:315; pl. 15, figs. 15, 15a.

*Holospira speluncae* (Morelet). Von Martens 1897; Biol. Cent. Amer.:284.

*Brachypodella speluncae* (Morelet). Pilsbry 1904; Man. Conch. 16:69–71; pl. 6, figs. 13, 14, 17 18.- Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):28.- Thompson 1967; Bull. Fla. State Mus. 11:252–253; figs. 5f-h.

*Cylindrella costulata* Morelet 1851; Test. Noviss. II:12, (not *Cylindrella costulata* C. B. Adams 1849).

Type Locality.—Walls of the Cave Jobitsinal, Dept. Petén, Guatemala.

Distribution.—GUATEMALA, Dept. Petén: knoll 1.2 mi. S of Flores; Cubixinal Cave, S of Flores; 7–9 mi. SW of San Benito; 2 km S of Puebla Nueva; knoll E of La Libertad; west shore Lago de Peténxil; San Andres; Tabi; Ticúl; between Sitalpech and Tuncas, Labná.

***Brachypodella subtilis subtilis* (Morelet 1849)**

*Cylindrella subtilis* Morelet 1849; Test. Noviss. I:11.- Fischer & Crosse 1873; Miss. Sci. Mex. I:413; pl. 17, fig. 13.

*Holospira subtilis* (Morelet). Von Martens 1897; Biol. Cent. Amer.:284.

*Brachypodella subtilis* (Morelet). Pilsbry 1904; Man. Conch. 16:69: pl. 6, figs. 11–12 19–20.- Haas and Solem 1960; Nautilus 73:131.

Type Locality.—Forests of Petén, Guatemala.

Distribution.—GUATEMALA: known from the type locality. BELIZE: Cayo Dist.: Rio Frio Cave East, about 2 mi. from Augustine on the Mountain Pine Ridge.

***Brachypodella subtilis pulchella* (Von Martens 1886)**

*Cylindrella (Gongylostoma) pulchella* Von Martens 1886; Sitz. Ges. Nat. Freude Berlin:161.

*Holospira morini* var. *pulchella* (Von Martens). Von Martens 1897; Biol. Cent. Amer.:285; pl. 17, figs. 3, 3a.

*Brachypodella morini* var. *pulchella* (Von Martens). Pilsbry 1904; Man. Conch. 16:68; pl. 6, figs. 1, 2.

*Brachypodella subtilis pulchella* (Von Martens). Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:218.

Type Locality.—Livingston, Dept. Izabál, Guatemala.

Distribution.—Known only from the type locality.

**Doubtful name associated with Mexican and Guatemalan**

***Brachypodella***

***Brachypodella subula* Férussac 1821**

*Clausilia subula* Férussac 1821:61, (*nomen nudum*).- Deshayas, in Lamarck 1838:216.

*Brachypodella subula* (Férussac). Beck 1837:89.- Pilsbry 1904; Man. Conch. 16:72; pl. 2, figs. 20–22.

Type Locality.—Unknown.

Remarks.—The type is lost, and its internal shell structure is unknown. Pilsbry (1904) suggests that this taxon is most similar to species of *Brachypodella* described from Guatemala.

### Subfamily MICROCERAMINAE Pilsbry 1904

#### Genus *Microceramus* Pilsbry & Vanatta 1898

*Microceramus* Pilsbry & Vanatta 1904; Nautilus 11:107.

Type Species.—*Macroceramus floridanus* Pilsbry 1898.

Distribution.—Greater Antilles, Curacao, and Central America north to Texas and Florida.

Taxonomy.—Only a single subgenus is recognized. *Floreziella* Weyrauch 1967, from Peru is treated as a synonym by Richardson (1991:69), but its anatomy remains unknown. About 35 species are recognized. Three species and two subspecies occur in the study area.

#### *Microceramus concisus concisus* (Morelet, 1849)

*Cylindrella concisus* Morelet, 1849; Test. Noviss. I:12.

*Macroceramus concisus* (Morelet). Petit 1850; Jour. de Conchyl. 1:379.- Fischer & Crosse 1873; Miss. Sci. Mex. I:421; pl. 18, figs. 1–1b.- Strebel 1880; Beitrag, IV:90; pl. 5, fig. 4c.- Von Martens 1897; Biol. Cent. Amer.:287.

*Microceramus concisus* (Morelet). Pilsbry 1904; Man. Conch. 16:155; pl. 25, figs. 7–12.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:221–261.- Haas and Solem 1960; Nautilus 73:131.

*Macroceramus polystreptus* Tristram 1861; Proc. Zool. Soc. Lond. 29:233; pl. 26, fig. 11.

Type Localities.—*Cylindrella concisa*: “Yucatan”, México. *Macroceramus polystreptus*: Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—Nicaragua, Honduras, Isla de San Andrés, Isla del Cisne Grande, Isla del Cisne Pequeño, northern Guatemala, Belize, Yucatán, and Campeche.

#### *Microceramus concisus arctispirus* (Ancy 1886)

*Macroceramus gossei* var. *arctispirus* Ancy 1886; Ann. de Malacologie II:242.

*Microceramus consisus* var. *arctispirus* (Ancy). Pilsbry 1904; Man. Conch. 16:156; pl. 25, figs. 5, 6.- Richards 1938; Proc. Amer. Philos. Soc. 79:173.

Type Locality.—Isla de Útila, Honduras.

Distribution.—HONDURAS, Dept. Islas de la Bahía: Roatán and Isla de Útila.

#### *Microceramus kieneri* (Pfeiffer 1846)

*Bulimus kieneri* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:40.

*Macroceramus kieneri* (Pfeiffer). Pfeiffer 1859. Monographia heliceorum viventium 4:689.- Bland 1883; Ann. New York Acad. Sci. 2:127; text figure.

*Microceramus kieneri* (Pfeiffer). Pilsbry 1904; Man. Conch. 16:154; pl. 26, figs. 21–23.

Type Locality.—“Honduras”.

Distribution.—Unknown.

#### *Microceramus mexicanus* (Von Martens 1897)

*Macroceramus concisus* var. *mexicanus* Von Martens 1897; Biol.

Cent. Amer. 283; pl. 17, fig. 2.

*Microceramus mexicanus* (Von Martens). Pilsbry 1904; Man. Conch. 16:156; pl. 26, figs. 25–27.- Bartsch 1906; Proc. U. S. Nat. Mus. 31:157.- Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 105:161.- Correa-Sandoval 1993; Rev. Biol. Trop. 41:685.-Correa-Sandoval 1998; Acta Zool. Mex. (73):16.- Correa-Sandoval 2002; Acta Zool. Mex. 86:239.- Correa-Sandoval 2000; Acta Zool. Mex. 79:9.

*Macroceramus pontificus* (Gould). Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV: Beitrag, IV:89; pl. 5, fig. 4d.

Type Locality.—Here restricted to Orizaba, Veracruz, México.

Distribution.—Widely distributed and common. Reported from the Mexican states of: MÉXICO, MORELOS, JALISCO, NUEVO LEÓN, SAN LUÍS POTOSÍ, TAMAULIPAS and VERACRUZ.

### Superfamily ACHATINOIDEA Swainson 1840

#### Family FERUSSACIDAE Bourguignat 1883

##### Genus *Cecilioides* Férussac 1814

*Cecilioides* Férussac 1814; Mem. Geologiques:48. Pilsbry 1908; Man. Conch. 20:1.- Hugh Watson 1828; Jour. of Conch. 18:217 (anatomy).- Pilsbry 1946; Land Moll. N. Amer. 2:184–185.- Zilch 1959:338–339.

*Caecilioides* Hermannsen 1846; Ind. Gen. Malac., 1:150 (emendation for *Cecilioides*).

Type Species.—*Bulimus acicula* Bruguière (= *Buccinum aciculums* Müller 1774).

Distribution.—Europe, Africa, southern Asia, Philippines, Oceania, and the American tropics.

Taxonomy.—Zilch (1959) recognizes five subgenera. Three occur naturally in the neotropical region.

##### Subgenus *Karolus* De Folin 1870

*Karolus* De Folin 1870; Les Fonds des Mer étude internationale sur les particularités nouvelles des regions sous-marines 1:182 189.- Pilsbry 1916; Nautilus 19:119–120.

*Caecilianopsis* Pilsbry 1907; Nautilus 21:28.- Pilsbry 1909; Man. Conch. 20:5, 38.

Type Species.—*Caecilioides* (*Caecilianopsis*) *jod* Pilsbry 1907 (= *Karolus primus* De Folin 1870).

Distribution.—Tropical America. Introduced elsewhere.

Taxonomy.—The subgenus includes three species. One species, *Cecilioides consobrinus*, is widespread in the American tropics, and consists of several subspecies. The typical subspecies occurs in Cuba. Another subspecies, *C. c. primus*, is found in México and Central America.

##### *Cecilioides* (*Karolus*) *consobrinus primus* (De Folin 1870)

*Karolus primus* De Folin 1870; Les Fonds des Mer ....:189; pl. 28, figs. 7, 8 (shell).

*Caecilioides consobrinus primus* (De Folin). Pilsbry 1916; Nautilus 29:119–20.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):19.

*Cecilioides consobrinus primus* (De Folin). Dall 1926; Proc. Calif. Acad. Sci. (4) 15:471–472.- Baker 1930:14.- Thompson 1967; Bull. Fla. St. Mus. 11:240.

*Caecilianella veracruzensis* Crosse & Fischer 1877; Jour. de

Conchyl. 25:273.- Fischer & Crosse 1877:591; pl. 28, fig. 4 (shell).- Martens 1898:324.

*Caecilioides consobrinus* var. *veracruzensis* (Crosse & Fischer). Pilsbry 1908; Man. Conch. 20:40–41; pl. 5, figs. 70, 77, 78, 79 (shell).- Goodrich & van der Schalie 1937:29.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9.

*Cecilioides consobrinus veracruzensis* (Crosse & Fischer). Correa-Sandoval, Guerrero & Reza 1998:15.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.

*Caecilioides (Caecilianopsis) jod* Pilsbry 1907; Nautilus 21:28.

*Cecilioides consobrinus* (Orbigny). Pérez & López 1993:913.- Pérez & López 2002:116–118.

Type Localities.—*Karolus primus*: Veracruz, México.

*Caecilianella veracruzensis*: among debris drifted out of the Rio Antigua, Veracruz, México. *Caecilioides jod*: drift debris along the Rio Panuco, Tamaulipas, México.

Distribution.—NICARAGUA: Pacific versant, numerous localities (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920b). Dept. Izabal: Quiragua; Sierra Cavech; Jocolo (Hinkley 1920b). Dept. Petén: Tikal (Basch 1959). CAMPECHE: 8 mi. SW of Champotón (Thompson 1967). NAYARIT: Isla María Madre, Islas Marías; Isla Socorro (Dall 1926). PUEBLA: Necaxa, 3000 ft. alt. (Baker 1930a). NUEVO LEÓN: Iturbide (Correa-Sandoval 1997). SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Rio Antigua, Veracruz; Rancho El Sol, Naranjos (21°20'00"N, 97°43'16"W); road from Tuxpan- Poza Rica, km 234 (20°49'11"N, 97°30'00"W); El Cedral, road from Poza Rica-Tajín (20°29'11"N, 97°25'23"W) (Correa-Sandoval 1999). YUCATÁN: near Chichen Itza (Harry 1950); 0.8 mi. NE of Becanchén (Thompson 1967).

Taxonomy.—There is a tendency in current literature to disregard subspecies, and cite only species names, which automatically take on the name of the typical subspecies. It is presumptive of later workers to assume which subspecies was intended. Such is the case with the work by Pérez & López (2002). However, I am not aware of any authentic identifications of *Cecilioides consobrinus consobrinus* in the study area.

#### Subgenus *Caecilianopsis* Pilsbry 1907

*Caecilianopsis* Pilsbry 1907; Nautilus 21:28.

Type Species.—*Cecilioides (Caecilianopsis) jod* Pilsbry 1907.

Distribution.—Northeastern México.

Taxonomy.—The subgenus contains a single species.

#### *Cecilioides (Caecilianopsis) jod* Pilsbry 1907

*Cecilioides (Caecilianopsis) jod* Pilsbry 1907; Nautilus 21:28–29.- Hinkley 1907; Nautilus 21:77.

Type Locality.—In river drift, Tampico, Tamaulipas, México.

Distribution.—TAMAULIPAS: known only from the tpe locality.

#### Subgenus *Geostilba* Crosse 1867

*Geostilba* Crosse 1867; Jour. de Conchyl. 15:184.- Pilsbry 1909; Man. Conch. 20:43.

Type Species.—*Geostilba caledonica* Crosse 1867.

Distribution.—Tropics of both hemispheres.

Taxonomy.—Many species. One occurs in the study area.

#### *Cecilioides (Geostilba) aperta* (Swainson 1840)

*Macrospira aperta* Swainson 1840; Treatise on Malacology:335; fig. 97.

*Geostilbs aperta* (Swainson). E. A. Smith 1895; Proc. Zool. Soc. Lond. 63:307.

*Cecilioides aperta* (Swainson). Pilsbry 1946; Land Moll. N. Amer. 2:187fig. 80b (shell).

*Achatina gundlachi* Pfeiffer 1850; Zeit. für Malak. 7:80.

*Cecilioides gundlachi* (Pfeiffer). Pilsbry 1909; Man. Conch. 20:43.- Pérez & López 2002:118–120; map.

Type Localities.—*Macrospira aperta*: West Indies.

*Achatina gundlachi*: Cuba.

Distribution.—West Indies in general; introduced elsewhere. NICARAGUA: Pacific versant in general, common (Pérez & López 2002).

#### Family SUBULINIDAE Fischer & Crosse 1877

Distribution.—Tropical America east through Africa and southeast Asia.

Taxonomy.—Numerous genera.

#### Subfamily SUBULININAE Fischer & Crosse 1877

Taxonomy.—Most Middle American Subulinidae had been grouped in the genus *Leptinaria*. A species critical to this classification was *Allopeas gracilis* (Hutton 1834), which was placed variously within *Opeas* and then *Lamellaxis*, which in turn was considered a subgenus of *Leptinaria*. H. B. Baker (1927 1935 1945) pointed out the anatomical differences between *Opeas*, *Beckianum*, *Allopeas*, *Leptopeas*, *Lamellaxis* and *Leptinaria*. The anatomies of only a few species among these genera are known. Authors continued to unite most of the Middle American species within *Leptinaria* because of the lack of discrete shell differences between it and *Lamellaxis*, *Leptopeas*, and *Allopeas*. This classification recognizes *Opeas*, *Allopeas*, *Leptopeas*, *Lamellaxis*, and *Beckianum* as separate genera because of their known anatomies.

#### Genus *Allopeas* H. B. Baker 1935

*Allopeas* H. B. Baker 1935; Nautilus 48:84.- H. B. Baker 1945; Nautilus 58:88 (anatomy).

Type Species.—*Bulimus gracilis* Hutton 1834.

Distribution.—Tropical, subtropical, and many temperate regions of the paleotropical regions of the world. *Allopeas gracilis* and a few closely related species are readily dispersed elsewhere through human activities.

Taxonomy.—Several species. Conventionally, *Allopeas* was treated as a subgenus of *Lamellaxis*. More recently it is recognized as a separate genus because of its anatomical dissimilarity with *Lamellaxis* and other genera.



***Allopeas gracilis* (Hutton 1934)**

*Bulimus gracilis* Hutton 1834; Jour. As. Soc. Bengal 3:93–94.

*Opeas gracilis* (Hutton). Pilsbry 1906; Manual of Conchology (2) 18:125 198; pl. 18, figs. 3–6 (shell).- Gude 1914; Fauna of British India, II (Trochomorphidae – Janellidae):355–357.- Morrison 1946; Smiths. Misc. Coll. 106:41.

*Lamellaxis gracilis* (Hutton). Thompson 1967; 241.

*Lamellaxis (Allopeas) gracilis* (Hutton). H. B. Baker 1934; Nautilus 48:84.- H. B. Baker 1945; Nautilus 58:88–89 (anatomy). Pilsbry 1946; Land Moll. N. Amer. 2 (1):177–178; figs. 84, 8 (pallial organs), 9 (reproductive anatomy), 10 (penis); figs. 85, f, g (shell).- Correa-Sandoval et al. 1998:15.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Pérez & López 2002:126–128; map.

*Achatina subula* Pfeiffer 1839; Wiegmann's Archive f. Naturg., 1:352.

*Opeas subula* (Pfeiffer). Von Martens 1898; Biol. Cent. Amer.:291–29.

*Bulimus otonoides* Orbigny 1841; Moll. Cuba, 1:177; pl. 11, figs. 22–24.

Type Locality.—Mirzapur, Uttar Pradesh State, India.

Distribution.—This is the world's most widely distributed land snail (Pilsbry 1946). It is known from the following localities in the study area. PANAMÁ, Archipiélago de las Perlas: Isla San José (Morrison 1946). Prov. Panamá: Panamá; Quipo (Pilsbry 1926a); Mt. Hope (Pilsbry 1930). COSTA RICA, Prov. Limón: Puerto Viejo. NICARAGUA: numerous localities in the Pacific versant (Pérez & López 2002). HONDURAS, Dept. Islas de la Bahía: Isla de Útila. GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Petén: Tikal (Basch 1959). Dept. Sacatepéquez: Antigua. CAMPECHE: various localities (Thompson 1967). SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval 1998). TABASCO: San Juan Bautista (Pilsbry 1906). TAMAULIPAS: Valle de Aguayo, Cd. Victoria (Correa-Sandoval & Rodriguez 2002). YUCATÁN: Merida.

**Genus *Beckianum* H. B. Baker 1961**

*Beckianum* H. B. Baker 1961; Nautilus 75:64.- Pérez & López 2002:120.

*Synoeps* Jousseaume 1889 (not *Synoeps* Forster 1856, Hymenoptera).

*Diaoeps* Haas 1962:55.- Naranjo-Garcia & Fahy 2010; Amer. Maloc. Bull., 28:66.

Type Species.—*Beckianum*: *Bulimus beckianus* Pfeiffer 1846. *Diaoeps*: *Bulimus beckianus* Pfeiffer 1846.

Distribution.—Tropical America in general from Brazil and Bolivia north to México, and the West Indies.

Taxonomy.—*Diaoeps* is an objective junior synonym of *Beckianum* because it has the same type species. Two species of *Beckianum* are recognized.

***Beckianum beckianum beckianum* (Pfeiffer 1846)**

*Bulimus beckianus* Pfeiffer 1846; Symbolae ad Historiam Heliciorum 3:82.

*Opeas beckianum* (Pfeiffer). Pilsbry 1906; Man. Conch. 18:189–192; pl. 27, figs. 42–46, 54, 55 (shell).- Hinkley 1920b:39, 43, 48, 32.

*Synoeps beckianum* (Pfeiffer). H. B. Baker 1940:93.- H. B. Baker 1945; Nautilus 58:91 (anatomy).- H. B. Baker 1947; Nautilus 61: pl.1 (reproductive anatomy).- Thompson 1957:101.- Bequaert 1957:216.

*Beckianum beckianum* (Pfeiffer). H. B. Baker 1961; Nautilus 75:64.- Correa-Sandoval et al. 1998:15.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Pérez & López 2002:121–122; map.

*Diaoeps beckianum* (Pfeiffer). Haas 1962:55–56; pl. 10, figs. A-D (shell).- Naranjo-Garcia & Fahy 2010; Amer. Malc. Bull., 28:66.

*Bulimus curaccasensis* Revue 1849; Conch. Icon, 5: pl. 79, fig. 580.

*Opeas curaccasensis* (Reeve). Fischer & Crosse 1877:599; pl. 26, fig. 6 (shell).- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:99; pl. 7, figs. 8, 8a (shell); pl. 17, fig. 30 (shell); pl. 18, figs. 4 (radula), figs. 10a–10c, 11, 11c (anatomy).

*Opeas micra* var. *caraccasensis* (Reeve). Von Martens 1898; Biol. Cent. Amer.:294; pl. 17, fig. 11 (shell).

Type Locality.—Polvón, Nicaragua (Pilsbry 1906).

Distribution.—The same as for the genus. The species is easily transported to new localities, and it is difficult to determine its original distribution. PANAMÁ, Prov. Bocas del Toro: San San Creek; Mono Creek. Prov. Los Santos: Tonosi. Isla Taboga (Pilsbry 1926a). Prov. Panamá: ruins of Old Panamá City. Prov. Colón: Puerto Bello; Isla Barro Colorado (Pilsbry 1930). COSTA RICA, Prov. Limón: Cahuita (Pilsbry 1926b). Prov. Guanacaste: Bahía de Salinas. Prov. Puntarenas: Savana de Guacimo, 200 m alt.; Turubanes, 500 m alt. (Von Martens 1898). NICARAGUA: Pacific versant, abundant (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920b). Dept. Izabal: Quirigua, Sierra Cavech; Jocolo (Hinkley 1920b). Dept. Petén: Tikal (Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9). BELIZE: Cayo Dist.: Rio Frio Cave (Haas & Solem 1960). CAMPECHE. CHIAPAS: Ocosingo, 850 m alt.; Laguna Ocotol, 950 m alt.; Monte Libano to El Censo, 600–700 m alt. (Bequaert 1957). PUEBLA: Necaxa (H. B. Baker 1940). SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TABASCO: 0.5–1.0 mi. E of Teapa (Thompson 1957). TAMAULIPAS: Gomez Farias (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). VERACRUZ: Atoyac to Córdoba, 1300–3000 ft. alt. (H. B. Baker 1940); Córdoba; Orizaba; Dos Arroyos; Barranca de Mahuistlan, near Jalapa; Pacho; Mirador, 2630 ft. alt. (Von Martens 1898); Rancho El Sol, Naranjos (21°20'00"N, 97°43'16"W); San Juan Cuajinampa (21°11'53"N, 97°30'00"W); El Bajío, Carr. Naranjos- Tuxpan (20°57'17"N, 97°25'57"W); La Ordeña, Papantla (20°29'43"N, 97°18'27"W); Ruinas El Tajín (20°26'29"N, 97°22'30"W) (Correa-Sandoval 1998).

***Beckianum beckianum gabbianum* (Angas 1879)**

*Stenogyrus gabbiana* Angas 1879; Proc. Zool. Soc. Lond. 47:485; pl.40, fig. 17 (shell).

*Opeas beckianum* var. *gabbianum* (Angus). Pilsbry 1906; Man. Conch. 18:192; pl. 27, figs. 52, 53 (shell).

Type Locality.—Costa Rica.

Distribution.—Known only from the type locality.

***Beckianum sinistrum* (Von Martens 1898)**

*Leptinaria sinistra* Von Martens 1898; *Biologia Centrali-Americana*; 319; pl. 18, fig. 11.- Pilsbry 1906:311; pl.42, fig. 32.

*Beckianum sinistrum* (Von Martens).- Pérez and Lopez 1995; *Malacological Review* 28:127–130; figs. 1, 3–4 (shell), 2 (map).- Pérez & López 2002:122–125; map.

Type Locality.—Central Nicaragua: Acoyapa on the north shore of Lake Nicaragua.

Distribution.—COSTA RICA, Prov. Guanacaste: Palo Verde. NICARAGUA, region of the two great lakes, Dept. Boaco: Rio Santa Rita, Tustepec; Tecolostote; El Boqueron, Teustepe. Dept. Carazo: Chacocente Biological Station. Dept. León: Asososca; Laguna Asososca; Laguna Monte Galan. Dept. Managua: Laguna Xiloa. Dept. Masaya: Laguna Apoyo, Villa Carmen (Pérez & López 1995).

**Genus *Lamellaxis* Strebel & Pfeffer 1882**

*Lamellaxis* Strebel & Pfeffer 1882; *Beitrag. Mex. Land- und Süsw.-Conch.*:109.- Pilsbry 1907; *Man. Conch.*; 18:287.- H. B. Baker 1927c:17.- H. B. Baker 1945:85, 88.- Pilsbry 1946; *Land Moll. N. Amer.* 2:175.

Type Species.—*Spiraxis mexicanus* Pfeiffer 1866.

Distribution.—This is a tropical American genus which is distributed from México south to Bolivia.

Taxonomy.—Twenty-one species and five subspecies occur in the study area. Other species occur in South America. The arrangement of species given below follows Von Martens (1898) and Pilsbry (1907). Formerly most of the species were placed in *Leptinaria*, subgenus *Lamellaxis*. Data provided by H. B. Baker (1927c. 1945) necessitated the recognition of *Lamellaxis* as a separate genus. These non-lamellate Mexican and Central American species form a cohesive group of similar appearing species. *Lamellaxis* lacks a parietal lamella, and the outer lateral teeth of the radula are tri-cuspid, where-as *Leptinaria* has a parietal lamella at some stage of development, and the outer laterals are bi-cuspid.

***Lamellaxis tamaulipensis* (Pilsbry 1903)**

*Leptinaria tamaulipensis* Pilsbry 1903; *Proc. Acad. Nat. Sci. Phila.* 55:776; pl. 50, fig. 8.- Pilsbry 1907; *Man. Conch.* 18:306; pl. 50, fig. 26 (shell).- Jacobson 1952:113.- Correa-Sandoval, García-Cubas & Reguero 1998:15.- Correa-Sandoval & Rodriguez 2002; *Acta Zool. Mex.* (86):237.- Pérez & López 2002:139–140.- Naranjo-García & Fahy 2010; *Amer. Malaco. Bull.*, 28:66.

Type Locality.—A cañon about 4 miles west of [Ciudad] Victoria, Tamaulipas, México; about 3000 ft. alt. Syntypes ANSP 85909.

Distribution.—NICARAGUA, Dept. Chinandega (Pérez & López 2002). SAN LUIS POTOSÍ: road from San Martín to Tamazunchale (21°26'05"N, 98°42'06"W), 400 m alt. (Correa-Sandoval, García-Cubas & Reguero 1998). TAMAULIPAS: between km 652–653, between Santa Inez-Santa Llera (Jacobson 1952); numerous localities (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005).

***Lamellaxis martensi martensi* (Pfeiffer 1856)**

*Bulimus martensi* Pfeiffer 1856; *Proc. Zool. Soc. Lond.* 24:318–319. *Spiraxis martensi* (Pfeiffer). Fischer & Crosse 1878:619; pl. 25, fig. 9 (shell).

*Leptinaria martensi* (Pfeiffer). Von Martens 1898; *Biol. Cent. Amer.*:316.- Pilsbry 1907; *Manual* 18:308; pl. 41, figs. 6–8 (shell).- Dall 1926; *Proc. Calif. Acad. Sci.* (4) 15:472; pl. 35, fig. 5 (shell).- Bequaert & Clench 1933; *Pub. Carnegie Inst. Wash.* (431):536.- Bequaert & Clench 1936; *Pub. Carnegie Inst. Wash.* (457):65.- Goodrich & van der Schalie 1937:29.- Richards 1937; *Proc. Amer. Philos. Soc.* 77:254.- Rehder 1966; *Proc. Biol. Soc. Wash.* 79:283).

*Lamellaxis (Lamellaxis) martensi* (Pfeiffer). H. B. Baker 1940; *Nautilus* 53:93.- H. B. Baker 1945:91.- Harry 1950; *Occ. Pap. Mus. Zool. Univ. Mich.* (524):18.- Basch 1959; *Occ. Pap. Mus. Zool. Univ. Mich.* (612):9.

Type Locality.—Córdoba, Veracruz, México.

Distribution.—GUATEMALA, Dept. Petén: Tikal (Basch 1959). NAYARIT: Islas Marias, Isla María Madre; Isla María Magdalena, (Dall 1926). VERACRUZ: Antigua (Pilsbry 1907); Atoyac, 1400 ft. alt.; Atoyac to Córdoba, 1300–3000 ft. alt. (H. B. Baker 1940). QUINTANA ROO: San Miguel; San Gerbacio, Isla Cozumel (Richards 1937; Rehder 1966). YUCATÁN: Chichen Itza; Balam-Canche Cave, 4.8 km E of Chichen Itza (Bequaert & Clench 1933 1936); 8 mi. NW of Chichen Itza, near road to Merida (Harry 1950).

***Lamellaxis martensi modestus* Strebel 1882**

*Lamellaxis modestus* Strebel 1882; *Beitrag. Mex. Land- und Süsw.-Conch.* V:111–112; pl. 7, fig. 15; pl. 17, figs. 5a-h, 7b, 31 (shell).

*Leptinaria martensi* var. *modesta* (Strebel). Pilsbry 1907:308; pl. 41, fig. 7 (shell).

*Lamellaxis (Lamellaxis) martensi* form *modestus* (Strebel). H. B. Baker 1940:93.- H. B. Baker 1945; *Nautilus* 58:91.

Type Locality.—Misantla, Veracruz, México.

Distribution.—VERACRUZ: Misantla; Atoyac to Córdoba, 1300–3000 ft. alt.; Atoyac (H. B. Baker 1945).

***Lamellaxis mexicanus mexicanus* (Pfeiffer 1866)**

*Spiraxis mexicanus* Pfeiffer 1866; *Malak. Blätt.* 13:84.- Fischer & Crosse 1877:617.

*Lamellaxis mexicanus* (Pfeiffer). Strebel 1882; *Beitrag. Mex. Land- und Süsw.-Conch.* V:109; pl. 7, fig. 14; pl. 17., figs. 3, 6b, 6d, 7a, 38 (shell).

*Leptinaria (Lamellaxis) mexicana* (Pfeiffer). Von Martens 1898; *Biol. Cent. Amer.*:316.- Pilsbry 1907; *Man. Conch.* 18:306–307; pl. 41, figs. 2–5 9 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998:15.- Correa-Sandoval 2000; *Acta Zool. Mex.* (79):9.- Correa-Sandoval & Rodriguez 2002; *Acta Zool. Mex.* (86):237.

*Lamellaxis (Lamellaxis) mexicanus* (Pfeiffer). H. B. Baker 1940; *Nautilus* 53:93.- Richards 1938:173.- Richards 1939; *Proc. Amer. Philos. Soc.* 81:34.- H. B. Baker 1946; *Nautilus* 59: pl. 9, figs. 1 (pallial organs), fig. 2 (penis), fig. 3 (radula), fig. 4 (reproductive system).- Correa-Sandoval et al. 1998:15.- Correa-Sandoval 1999:9.- Correa-Sandoval & Rodriguez 2002; *Acta Zool. Mex.* (86):236.

*Leptinaria mexicana* var. *turrta* Von Martens 1898; Biol. Cent. Amer.:316.

Type Localities.—*Spiraxis mexicanus*: Mirador, Veracruz, México. *Leptinaria mexicana* var. *turreta*: Agua Caliente [near Misatla], Veracruz, México.

Distribution.—NICARAGUA: Quin Bluff, S end of Isla Grande del Maíz; Isla de Ometepe (Richards 1939). HONDURAS, Dept. Islas de la Bahía: Between Coxen Hole and French Harbor; West End, Isla de Roatán (Richards 1938). PUEBLA: Necaxa, 2215–5500 ft. alt. (H. B. Baker 1940). SAN LUIS POTOSÍ: numerous localities in eastern part of state (Correa-Sandoval, García-Cubas & Reguero 1998). TAMAULIPAS: Gomez Farias; Valle de los Ovnis, San José; Rio Frio (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Misantla; Cañada de Coatepec, near Jalapa (Pilsbry 1907); northern part of state, numerous localities (Correa-Sandoval 1999).

***Lamellaxis mexicanus abbreviatus* (Von Martens 1898)**

*Leptinaria mexicanus* var. *abbreviatus* Von Martens 1898; Biol. Cent. Amer.:316.- Pilsbry 1907; Man. Conch. 18:307; pl. 41, fig. 5 (shell).

*Lamellaxis* (*Lamellaxis*) *mexicanus* form *abbreviatus* (Von Martens). H. B. Baker 1940:93.

Type Locality.—Mirador, Veracruz, México.

Distribution.—PUEBLA: Necaxa, 2215–5500 ft. alt. (H. B. Baker 1940). VERACRUZ: Mirador; Agua Caliente, near Misantla (Von Martens 1898); Texola (Pilsbry 1907).

***Lamellaxis mexicanus utilensis* (Pilsbry 1907)**

*Leptinaria mexicanus utilensis* Pilsbry 1907; Man. Conch. 18:307–308; pl. 41, figs. 9, 10 (shell).

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—Known only from the type locality.

***Lamellaxis pittieri pittieri* (Von Martens 1898)**

*Leptinaria pittieri* Von Martens 1898; Biol. Cent. Amer.:317; pl. 18, fig. 7.- Pilsbry 1907; Man. Conch. 18:308–309; pl. 41, fig. 13 (shell).

Type Locality.—Costa Rica, type locality not specified.

Distribution.—COSTA RICA, Prov. Alajuela: Alajuela; Santa Clara; Prov. Limón: Juquin Valley, near Talamanca; Bruschik, Alta Tararia. Prov. Puntarenas: middle course of the Rio Pacuare del Sur. Prov. San José: San Francisco de Guadalupe; La Ueruca, 1100 m alt.; La Palma (Von Martens 1898).

***Lamellaxis pittieri obliquatus* (Von Martens 1898)**

*Leptinaria pittieri* var. *oblquatus* Von Martens 1898; Biol. Cent. Amer.:317; pl. 18, fig. 8.- Pilsbry 1907; Man. Conch. 18:309; pl. 41, fig. 14 (shell).

Type Locality.—Tarbaca, [Prov. San José], Costa Rica; 1700 m alt.

Distribution.—Known only from the type locality.

***Lamellaxis hyalinus* (Tate 1870)**

*Tornatellina hyalina* Tate 1870; American Journal of Conchology,

5:157.

*Leptinaria hyalina* (Tate). Von Martens 1898; Biol. Cent. Amer.:317.- Pilsbry 1907; Man. Conch. 18:309. (Not figured).

Type Locality.—Toro Rapids on the Rio San Juan; Dept. Rio San Juan, Nicaragua.

Distribution.—Known only from the type locality.

Taxonomy.—Von Martens (1898) stated that *Lamellaxis pittieri* may be a synonym of *L. hyalinus*.

***Lamellaxis exiguus* (Von Martens 1898)**

*Leptinaria exigua* Von Martens 1898; Biol. Cent. Amer.:318; pl. 18, fig. 10.- Pilsbry 1907; Man. Conch. 18:309–310; pl. 42, fig. 30 (shell).

*Lamellaxis exiguus* (Von Martens). Bequaert 1957:216.

Type Locality.—Teapa, Tabasco, México.

Distribution.—CHIAPAS: Laguna Ocotol, 950 m alt.; Ocosingo, 1000 m alt. (Bequaert 1957). TABASCO: Teapa.

***Lamellaxis interstriatus* (Tate 1870)**

*Tornatellina interstriata* Tate 1870; American Journal of Conchology,5:959; pl. 16, fig. 5 (shell).

*Leptinaria interstriata* (Tate). Von Martens 1898; Biol. Cent. Amer.:318.- Pilsbry 1907; Man. Conch. 18:310–311; pl. 41, fig. 12 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:89–90; text-fig. 19 L.- Pérez & López 2002:134–136.

*Lamellaxis interstriatus* (Tate). Thompon 2008:522.- Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

Type Locality.—On an island in the lagoon of Boca del Toro, Panamá.

Distribution.—Known only from the type locality. COSTA RICA, Prov. Puntarenas: plains of the Rio Grande de Terraba (Von Martens 1898). NICARAGUA: Pacific versant, abundant (Pérez & López 2002).

***Lamellaxis crenulatus* (Von Martens 1898)**

*Leptinaria crenulata* Von Martens 1898; Biol. Cent. Amer.:318; pl. 18, fig. 12 (shell).- Pilsbry 1907; Man. Conch. 18:311; pl. 41, fig. 21 (shell).

Type Locality.—Uren, near Talamanca, Prov. Limón, Costa Rica.

Distribution.—Known only from the type locality.

***Lamellaxis guatemalensis guatemalensis* (Crosse & Fischer 1877)**

*Spiraxis guatemalensis* Crosse & Fischer 1877; Jour. de Conchyl. 25:271.- Fischer & Crosse 1877:618; pl. 25, fig. 10 (shell).

*Leptinaria guatemalensis* (Crosse & Fischer). Von Martens 1898; Biol. Cent. Amer.:319.- Pilsbry 1907; Man. Conch. 18:312; pl. 41, fig. 11 (shell).- Hinkley 1920b:39, 44, 48.- Pérez & López 2002:131–12.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—GUATEMALA, Dept. Izabal: Quiri-gua; Sierra Cavech; Jocolo (Hinkley 1920b). Dept. Retalhueleu: Retalhueleu (Von Martens 1898). NICARAGUA: various localities in the Pacific versant (map).

***Lamellaxis guatemalensis majusculus* (Von Martens 1898)**

*Leptinaria guatemalensis* var. *majuscule* Von Martens 1892; Biol.



Cent. Amer.:319; pl. 18, fig. 13 (shell).- Pilsbry 1907; Man. Conch. 18:312–313; pl. 41, fig. 15 (shell).

Type Locality.—None selected.

Distribution.—COSTA RICA, Prov. Guanacaste: Guanacaste. Prov. Puntarenas: valley of the Rio Grande de Terraba, Palmar, 30 m alt.; Golfo Dulce. Prov. San José: San José (Von Martens 1898).

***Lamellaxis filicostatus* Strebel 1882**

*Lamellaxis filicostatus* Strebel 1882; Beitrag. Mex. Land- und Süssw.-Conch. V:113; pl. 17, fig. 10 (shell).

*Leptinaria filicostata* (Strebel). Von Martens 1898; Biol. Cent. Amer.:319.- Pilsbry 1907; Man. Conch. 18:313; pl. 41, figs. 16, 17 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:90; pl. 19, text-figs. D, E, K.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:343.- Goodrich & van der Schalie 1937:29.

Type Locality.—San Miguel Jucume, Guatemala [probably San Miguel Turucu in the Polochic Valley, *vide* Von Martens 1898; Biol. Cent. Amer.:319].

Distribution.—PANAMÁ, Prov. Colón: between Tabernilla and San Pedro; Los Cascades; Isla Barro Colorado; road SE of Empire. (Pilsbry 1926a). Prov. Panamá: ruins of Old Panamá City (Pilsbry 1930). Isla Taboga (Pilsbry 1926a); Isla San José, Archipiélago de las Perlas (Morrison 1946). HONDURAS, Dept. Copán: Copán (Von Martens 1898). GUATEMALA: only from the type locality.

***Lamellaxis strebelianus* (Pilsbry 1907)**

*Leptinaria strebeliana* Pilsbry 1907; Man. Conch. 18:313–314; pl. 42, fig. 25 (shell).

Type Locality.—Polvón, Dept. León, Nicaragua.

Distribution.—Known only from the type locality.

***Lamellaxis simpsoni* (Ancey 1886)**

*Nothus simpsoni* Ancey 1886; Annales de Malacologie, 2:245.

*Leptinaria simpsoni* (Ancey). Pilsbry 1907; Man. Conch. 18:314; pl. 42, fig. 23 (shell).

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—Known only from the type locality.

***Lamellaxis fordianus* (Ancey 1886)**

*Nothus fordianus* Ancey 1886; Annales de Malacologie, 2:248.

*Leptinaria fordiana* (Ancey). Pilsbry 1907; Man. Conch. 18:34–315; pl. 42, fig. 24 (shell).- Haas & Solem 1960; Nautilus 73:130.

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—BELIZE: Cayo Dist.: Rio Frio Cave (Haas & Solem 1960). HONDURAS: only from the type locality.

***Lamellaxis yucatanensis* (Pilsbry 1907)**

*Leptinaria yucatanensis* Pilsbry 1907; Man. Conch. 18:315–316; pl. 42, figs. 27, 29 (shell).

Type Locality.—Labna, Yucatán, México. Syntypes in the ANSP.

Distribution.—Known only from the type locality.

***Lamellaxis biolleyi* (Von Martens 1898)**

*Leptinaria biolleyi* Von Martens 1898; Biol. Cent. Amer.:319; pl. 18, fig. 14 (shell).- Pilsbry 1907; Man. Conch. 18:316; pl. 41, fig. 18 (shell).

Type Locality.—Near San José, Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: Talamanca.

***Lamellaxis costaricanus* (Von Martens 1898)**

*Leptinaria costaricana* Von Martens 1898; Biol. Cent. Amer.:320, 639; pl. 18, fig. 15 (shell).- Pilsbry 1907; Man. Conch. 18:316–317; pl. 41, fig. 19 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:90–91; text-fig. 19 F; text-fig. 20 B (shell).

Type Locality.—Costa Rica, type locality not specified.

Distribution.—COSTA RICA, Prov. Puntarenas: Terraba; El Pital; Rio Naranjo valley; plains of the Rio Corredor; Golfo Dulce region; Quebrada de Java; Djiri; Durania; San Blas valley; Rio Diquis valley. Prov. San José: San José (Von Martens 1898). PANAMÁ, Prov. Los Santos: Tonosi (Pilsbry 1926a).

***Lamellaxis panamensis panamensis* (Pilsbry 1910)**

*Leptinaria panamensis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:508; text-fig. 4 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:91–92; text-figs. 19, H, I, J; text-figs. 20 A (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:343.- Morrison 1946; Smiths. Misc. Coll. 106:41.

Type Locality.—between San Pedro and Tabernilla, [Prov. Colón], Panamá. Syntypes in the ANSP.

Distribution.—PANAMÁ, Isla San José, Archipiélago de las Perlas (Morrison 1946). Prov. Colón: type locality. Road E of Empire, Canal Zone. Prov. Panamá: ruins of old Panamá City (Pilsbry 1930).

***Lamellaxis panamensis tabogensis* (Pilsbry 1930)**

*Leptinaria panamensis* Pilsbry. Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:92, text-fig. 20C (shell).

*Leptinaria panamensis tabogensis* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:343.

Type Locality.—Isla Taboga, Panamá.

Distribution.—Known only from the type locality.

***Lamellaxis imperforatus* Strebel 1882**

*Lamellaxis imperforatus* Strebel 1882; Beitrag. Mex. Land- und Süssw.-Conch. V:113; pl. 7, figs. 7, 14c; pl. 17, fig. 2 (shell).- Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

*Leptinaria imperforata* (Strebel). Pilsbry 1907; Man. Conch. 18:317; pl. 42, fig. 28 (shell).

Type Locality.—Jalapa, Veracruz, México.

Distribution.—Known only from the type locality.

***Lamellaxis hapaloides* (Von Martens 1898)**

*Leptinaria hapaloides* Von Martens 1898; Biol. Cent. Amer.:321; pl. 18, fig. 16 (shell).- Pilsbry 1907; Man. Conch. 18:317–318; pl. 41, fig. 20 (shell).

Type Locality.—Plains of the Rio Grande de Terraba, Prov. Puntarenas, Costa Rica; 20 m alt.

Distribution.—Known only from the type locality.

***Lamellaxis ambiguus* (Von Martens 1898)**

*Leptinaria ambigua* Von Martens 1898; Biol. Cent. Amer.:321; pl. 18, fig. 17 (shell).- Pilsbry 1907; Man. Conch. 18: 318; pl. 42, fig. 22 (shell).

Type Locality.—Not specified.

Distribution.—COSTA RICA, Prov. Limón: Puerto Viejo. Prov. San José: La Palma (Von Martens 1898).

**Genus *Leptopeas* H. B. Baker 1927**

*Leptopeas* H. B. Baker 1927c:17.- H. B. Baker 1945; Nautilus 58:85.

Type Species.—*Leptinaria bequaerti* Pilsbry 1926a.

Distribution.—Brazil, Venezuela, and British Guayana, north to México; Known from Cuba and Hispaniola in the West Indies. Introduced elsewhere.

Taxonomy.—Eight species occur in the study area.

***Leptopeas argutus* (Pilsbry 1906)**

*Opeas argutum* Pilsbry 1906; Man. Conch. 18:211–22; pl. 28, fig. 68; pl. 40, fig. 9 (shell).

*Lamellaxis (Leptopeas) argutus* (Pilsbry). H. B. Baker 1940; Nautilus 53:92.- H. B. Baker 1945; Nautilus 58:90.-

*Lamellaxis argutus* (Pilsbry). Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

Type Locality.—Orizaba, Veracruz, México; 500 ft. alt. above the city.

Distribution.—PUEBLA: Necaxa (H. B. Baker 1940). VERACRUZ: Córdoba, 2625–3000 ft. alt. (H. B. Baker 1940); Texolo (Pilsbry 1906).

***Leptopeas bocourtianum bocourtianum* (Crosse & Fischer 1869)**

*Stenogyra bocourtiana* Crosse & Fischer 1869; Journ. De Conchyl. 17:424.

*Opeas bocourtianum* (Crosse & Fischer). Fischer & Crosse 1877:602; pl. 26, fig. 8 (shell).- Von Martens 1898; Biol. Cent. Amer.:292.- Pilsbry 1906; Man. Conch. 18:213; pl. 29, figs. 87, 88 (shell).

Type Locality.—Dept. Alta Verapaz, Guatemala; in the stomach of *Euglandina plicatula*.

Distribution.—Known only from the type locality.

***Leptopeas bocourtianum pittieri* (Von Martens 1898)**

*Opeas bocourtianum* var. *pittieri* Von Martens 1898; Biol. Cent. Amer.:292; pl. 17, fig. 6 (shell).- Pilsbry 1906; Man. Conch. 18:213; pl. 29, fig. 90 (shell).

Type Locality.—La Palma, Costa Rica, 1500 m alt. There are at least three places named La Palma in Costa Rica.

Distribution.—Known only from the type locality.

***Leptopeas gladiolus* (Crosse & Fischer 1877)**

*Opeas gladiolus* Crosse & Fischer 1877; Jour. de Conchyl. 25:272.- Fischer & Crosse 1877:604; pl.26, figs. 10 (shell).- Von Martens 1898; Biol. Cent. Amer.:293; pl. 17, fig. 8.- Pilsbry 1906; Man. Conch. 18:214–215; pl. 29, fig. 93 (shell).

Type Locality.—Guatemala.

Distribution.—Known only from the type locality. YUCATÁN: Merida (Martine 1898).

***Leptopeas colimense* (Crosse & Fischer 1869)**

*Stenogyra colimensis* Crosse & Fischer 1869; Jour. de Conchyl. 17:424.

*Opeas colimense* (Crosse & Fischer). Fischer & Crosse 1877:603; pl. 26, fig. 9 (shell).- Von Martens,1898:293.- Pilsbry 1906; Man. Conch. 18:215; pl. 29, figs. 92, 93 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila.:343.- Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

Type Locality.—Colima, México

Distribution.—PANAMÁ, Prov. Colón: Puerto Bello (Pilsbry 1930). COLIMA: type locality. VERACRUZ: Córdoba (Von Martens 1898).

***Leptopeas guatemalense guatemalense* (Strebel 1882)**

*Opeas guatemalensis* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:105; pl. 7, fig. 2a..

*Opeas guatemalense* Strebel. Von Martens 1898; Biol. Cent. Amer.:293.- Pilsbry 1906; Man. Conch. 18:213–214; pl. 29, fig. 91 (shell).

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—COSTA RICA, Prov. Puntarenas: along the Rio Coto, Golfo Dulce. GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Sacatepéquez: Antigua (Von Martens 1898).

***Leptopeas guatemalense majus* Von Martens 1898**

*Opeas guatemalense* var. *majus* Von Martens 1898; Biol. Cent. Amer.:293; pl. 17, fig. 7 (shell). - Pilsbry 1906; Man. Conch. 18:214; pl. 29, fig. 89 (shell).

Type Locality.—Miramar, near San Francisco, Dept. Escuintla, Guatemala.

Distribution.—Known only from the type locality.

***Leptopeas micra micra* (Orbigny 1835)**

*Helix micra* Orbigny 1835; Magazin de Zool.:9.

*Opeas micra* (Orbigny). Von Martens 1898; Biol. Cent. Amer.:294–296.- Pilsbry 1906; Man. Conch. 18:193.- H. B. Baker 1927c:10 (radula).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:93; text-fig. 21 C (shell).- Pilsbry,1926b:127.

*Lamellaxis micra* (Orbigny). Richards 1937; Proc. Amer. Philos. Soc. 77:254.- Richards 1938:173.- Richards 1939; Proc. Amer. Philos. Soc. 81:34.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9.- Correa-Sandoval, García-Cubas & Reguero 1998:15.- Correa-Sandoval 1999:9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):237.

*Lamellaxis (Leptopeas) micra* (Orbigny). H. B. Baker 1945; Nautilus 58:90.- Thompson 1957:101.

*Lamellaxis (Allopeas) micra* (Orbigny).- Pilsbry 1946; Land Moll. N. Amer. 2:178–179; figs. 85, a, b, c (shell).- Haas 1962:57–58.- Jacobson 1968:117.- Pérez & López 2002:128–130, map.

*Bulimus octonoides* C. B. Adams 1845; Proceedings of the Boston Society of Natural History:12.

*Opeas octonoides* of authority.

*Bulimus tryonianus* Tate 1870; American Journal of Conchology, 5:157; pl. 16, fig. 4.

*Opeas micra* var. *tryonianum* (Tate). Pilsbry 1906; Man. Conch. 18:196–197; pl. 28, fig. 63.- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila.. 78:93.

*Opeas tryonianum* var. *subovale* Von Martens 1898; Biol. Cent.

Amer.:296; pl. 17, fig. 12 (shell).

*Opeas octonoides* var. *subovale* Von Martens. Pilsbry 1906; Man. Conch. 18:197; pl. 28, fig. 5 (shell).

*Allopeas micra micra* (Orbigny). Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

*Leptopeas micra* (Orbigny). Thompson 2008:541.

Type Localities.—*Helix micra*: Eastern-most foothills of the Andes, not far from Santa Cruz de la Sierra, Bolivia. *Bulimus octonoides*: Jamaica. *Bulimus tryonianus*: island in the lagoon of Bocas del Toro, Panamá. *Opeas micra* var. *tryonianum*: Turubanes [Turrucare], Prov. Alajuela, Costa Rica.

Distribution.—Bolivia to México and the West Indies (Pilsbry 1946). PANAMÁ, Prov. Bocas del Toro: island in the lagoon. Prov. Colón: between Tabernillo and San Pablo; near Darién (Pilsbry 1926a); Puerto Bello; Isla Barro Colorado (Pilsbry 1930). Prov. Panamá: ruins of Old Panamá City. COSTA RICA, Prov. Alajuela: Turrucare. Prov. Limón: Cahuita (Pilsbry 1926b). NICARAGUA, numerous localities along the Pacific versant, abundant (Pérez & López 2002). Dept. Leon: Polvón (Pilsbry 1906). Quin Bluff, S end of Isla Grande del Maíz (Richards 1939). Dept. Managua: Managua (Jacobson 1968). HONDURAS, Dept. Islas de la Bahía: Isla de Útila; Isla de Roatán (Richards 1938). GUATEMALA, Dept. Izabal: Quirigua; Esmeralda; Jocolo (Hinkley 1920b). Dept. Petén: Tikál (Basch 1959). SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TABASCO: San Juan Bautista (Pilsbry 1906); 0.5–1.0 mi. E of Teapa (Thompson 1957). TAMAULIPAS: Tampico (Hinkley 1907); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). VERACRUZ: San Rafael Jicaltepec; Antigua; Texolo; Veracruz (Pilsbry 1906); Rancho El Sol, Naranjos (21°20'00"N, 97°43'16" W); San Juan Cuajinampa (21°11'53"N, 97°30'00"W); road from Tuxpan-Poza Rica, km 234 (20°49'11"N, 97°30'00"W); Río Cazones, Cazones (20°37'17"N, 97°24'13"W); 2 km N of Barra de Cazones (20°44'51"N, 97°12'06"W); El Cedral, road from Poza Rica-Tajín (20°29'11"N, 97°25'23"W); Ruinas El Tajín (20°26'29"N, 97°22'30"W) (Correa-Sandoval 1999). YUCATÁN: Izamal; Progreso; Tekanto; Ticul; Tunkas (Pilsbry 1906).

#### *Leptopeas micra mazatlanica* Pilsbry 1931

*Opeas micra mazatlanica* Pilsbry 1931; Nautilus 444:82; pl. 5, fig. 12.- Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

Type Locality.—Under stones on the trail to the summit, Isla del Faru, Mazatlán, Sinaloa, México. Holotype ANSP 151314.

Distribution.—Known only from the type locality.

#### *Leptopeas semistriatus* (Morelet 1851)

*Bulimus semistriatus* Morelet 1851; Test. Noviss. II:10.

*Bulimulus semistriatus* (Morelet). Fischer & Crosse 1877:555; pl. 20, figs. 14, 15 (shell).

*Opeas semistriatum* (Morelet). Von Martens 1898; Biol. Cent. Amer.:296,- Pilsbry 1906; Man. Conch. 18:212–213; pl. 29, figs. 84, 85 (shell).

*Lamellaxis semistriatus* (Morelet). Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

Type Locality.—Forests of Palenque, Chiapas, México.

Distribution.—Known only from the type locality.

#### *Leptopeas yucatanense* (Pilsbry 1906)

*Opeas yucatanense* Pilsbry 1906; Man. Conch. 18:212; pl. 28, fig. 69 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):536.- Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):258.

Type Locality.—Ticul, Yucatán, México. Syntypes in the ANSP.

Distribution.—YUCATÁN: Balaam Canche Cave, Chichen Itza; Chac Mol Cave, Tohil (Bequaert & Clench 1938).

#### Genus *Leptinaria* Beck 1839

*Leptinaria* Beck 1837; Index Molluscorum:79.- Fischer & Crosse 1877:622.- Pilsbry 1907; Man. Conch. 18:284–287.- H. B. Baker 1927c:22.- H. B. Baker 1945:88.

Type Species.—*Helix unilamellata* Orbigny 1835.

Distribution.—South America, north to México and the West Indies.

Taxonomy.—About a dozen species are included in *Leptinaria*. Nine occur in the study area.

#### *Leptinaria lamellata lamellata* (Potiez & Michaud 1838)

*Achatina lamellata* Potiez & Michaud 1838; Galerie des Mollusques, 1:128; pl. 11, figs. 7, 8 (shell).

*Leptinaria lamellata* (Potiez & Michaud). Pilsbry 1907; Man. Conch. 18:288–290; pl. 42, figs. 39, 40 (shell); pl. 43, Fig. 50 (anatomy).- H. B. Baker 1927c:22; pl. 20, figs. 100–101 (reproductive anatomy), fig. 102 (pallial organs).- Haas & Solem 1960; Nautilus 73:130.- Haas 1962:52–53.- Pérez & López 2002:136–138.

Type Localities.—*Achatina lamellata*: not given.

*Bulimus unilamellata*: last foothills of the Andes in Bolivia, at Petaca, near the Rio Piray, 20 leagues from Santa Cruz de la Sierra.

Distribution.—The species is widely distributed in South America north through the West Indies and Central America. NICARAGUA: Pacific versant, common (Pérez & López 2002). BELIZE: Stan Creek Dist.: Stan Creek (Haas & Solem 1960).

#### *Leptinaria lamellata concentrica* (Reeve 1849)

*Achatina concentrica* Reeve 1849; Conch. Icon., 5: pl. 19, fig. 106.

*Leptinaria lamellata* var. *concentrica* (Reeve). Pilsbry 1907; Man. Conch. 18:290–291; pl. 46, figs. 1–4 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:89; text-fig. 19, a-c (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:343.- H. B. Baker 1927c:22–23; pl. 21, fig. 8 (radula).- Morrison 1946; Smiths. Misc. Coll. 106:40.- Haas 1962:53, pl. 7, figs. H, I (shell).

*Achatina lamellosa* Moricand, in Reeve 1849; Conch. Con., 5: pl. 19, fig. 106 (shell).

*Leptinaria valenzuela* Jousseaume 1887; Bull. Soc. Zool. De rance, 12:170; pl. 19, fig. 107 (shell).

Type Localities.—*Achatina concentrica*: Bolivia.



*Achatina lamellose*: unknown. *Leptinaria valenzuela*: Coca, Ecuador.

Distribution.—Widely distributed in South America, the West Indies and Central America. PANAMÁ, Taboga island; Isla Pacheco (Pilsbry 1930); Isla San José, Archipiélago de las Perlas (Morrison 1946; Smiths. Misc. Coll. 106:40). Prov. Colón: Gatun; Puerto Cabello; between Tabernillo and San Pedro; Isla Barro Colorado. Prov. Los Santos: Tonosi. Prov. Panamá: Panamá; ruins of Old Panamá City; near Darién (Pilsbry 1926).

***Leptinaria unilamellata* (Orbigny 1842)**

*Bulimus unilamellata* Orbigny 1842; Voyage dans l'Amérique Méridionale:257.

*Leptinaria lamellate* (Pfeiffer), Pilsbry 1907; Man. Conch. 18:290.

*Leptinaria unilamellata* (Orbigny). H. B. Baker 1945; Nautilus 58:91.- H. B. Baker 1947; Nautilus 61: pl. 1 (reproductive system).

Type Locality.—Last foothills of the Andes, at Petaca, near the Rio Piray, 20 leagues from Santa Cruz de la Sierra.

Distribution.—Widely distributed in South America.

***Leptinaria ambigua* Von Martens 1898**

*Leptinaria ambigua* Von Martens 1898; Biol. Cent. Amer.:321; pl. 18, fig. 17 (shell).- Pilsbry 1907; Man. Conch. 18:318; pl. 42, fig. 22 (shell).

Type Locality.—Not selected.

Distribution.—COSTA RICA, Prov. Limón: Puerto Viejo; La Palma (Von Martens 1898).

***Leptinaria convoluta* Von Martens 1898**

*Leptinaria convoluta* Von Martens 1898; Biol. Cent. Amer.:322; pl. 18, fig. 20 (shell).- Pilsbry 1907; Man. Conch. 18:320–321; pl. 42, figs. 33, 34 (shell).

Type Locality.—Not specified.

Distribution.—COSTA RICA, Prov. Puntarenas: Santa Clara; Golfo Dulce; Turubares (Von Martens 1898).

***Leptinaria elisae* Tristram 1861**

*Leptinaria elisae* Tristram 1861; Proc. Zool. Soc. Lond. 29:231.- Fischer & Crosse 1877:625.- Von Martens 1898; Biol. Cent. Amer.:322; pl. 18, fig. 19 (shell).- Pilsbry 1907; Man. Conch. 18:319–320; pl. 42, fig. 38 (shell).- Hinkley 1920; Nautilus 34:52.- Goodrich & van der Schalie 1937:29.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Chama, 950 ft. alt. Dept. Izabal: Maya Farms, Quirigua, Sierra Cavech (Hinkley 1920). Dept. Petén: Tikal (Basch 1959).

***Leptinaria emmelinae* Tristram 1861**

*Leptinaria emmelinae* Tristram 1861; Proc. Zool. Soc. Lond. 29:231.- Von Martens 1898; Biol. Cent. Amer.:323; pl. 18, fig. 21 (shell).- Pilsbry 1907; Man. Conch. 18:321–322; pl. 42, figs. 35, 36 (shell).

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Leptinaria solida* Von Martens 1898**

*Leptinaria solida* Von Martens 1898; Biol. Cent. Amer.:321; pl. 18, fig. 18 (shell).- Pilsbry 1907; Man. Conch. 18:318–319; pl. 42, fig. 37 (shell).

Type Locality.—Not selected.

Distribution.—COSTA RICA, Prov. Limón: Puerto Viejo. Prov. Puntarenas: Alta de Mano Tigre, near Terraba (Von Martens 1898).

***Leptinaria stollii* Von Martens 1898**

*Leptinaria stollii* Von Martens 1898; Biol. Cent. Amer.:316; pl. 19, figs. 9, 9a.- Pilsbry 1907; Man. Conch. 18:320; pl. 42, figs. 26, 31 (shell).

Type Locality.—Retalhuleu, Dept. Retalhuleu, Guatemala.

Distribution.—Known only from the type locality.

***Leptinaria livingstonensis* Hinkley 1920**

*Leptinaria livingstonensis* Hinkley 1920; Nautilus 33:80.- Hinkley 1920b:39, 44, 48.- H. B. Baker 1927c:23; pl. 24, fig. 27 (radula).

Type Locality.—Livingston, Dept. Izabal, Guatemala.

Lectotype ANSP 107608a (H. B. Baker 1963:217).

Distribution.—GUATEMALA, Dept. Izabal: Sierra Cavech; Maya Farms, Quirigua; Jocolo (Hinkley 1920b).

**Genus *Ochrodermella* Pilsbry 1907**

*Ochrodermella* Pilsbry 1907; Man. Conch. (2):18:327.- Zilch 1959:351.- H. B. Baker 1945:87.

Type Species.—*Leptinaria (Neosubulina) Von Martensi* Dall 1900.

Distribution.—Central America.

Taxonomy.—Three species are recognized.

***Ochrodermella cumingiana* (Pfeiffer 1849)**

*Tornatellina cumingiana* Pfeiffer 1849; Proc. Zool. Soc. Lond. 17:134.- Von Martens 1898; Biol. Cent. Amer.:324.

*Ochroderma cumingiana* (Pfeiffer). Ancey 1903; Jour. de Conchyl. 51:102.

*Ochroderma (Ochrodermella) cumingiana* (Pfeiffer). Pilsbry 1907; Manual of Conchology 18:327–328; pl. 47, fig. 20 (shell).

Type Locality.—Real Llejos, Nicaragua.

Distribution.—COSTA RICA: Isla del Coco.

***Ochrodermella martensi* (Dall 1900)**

*Leptinaria (Neosubulina) martensi* Dall 1900; Proc. Acad. Nat. Sci. Phila. 52:97; pl. 8, fig. 10 (shell).

*Ochroderma (Ochrodermella) martensi* (Dall 1900). Pilsbry 1907:329–330; pl. 47, figs. 22, 23, 24 (shell).- Zilch 1959: fig. 1290.

Type Locality.—Isla de Coco, Costa Rica.

Distribution.—Known only from the type locality.

***Ochrodermella pittieri* (Von Martens 1898)**

*Tornatellina pittieri* Von Martens 1898; Gesel. Nat. Freunde zu Berlin 198:157.- Von Martens 1901; Biol. Cent. Amer.:640; pl.

44, fig. 10 (shell).

*Ochroderma (Ochrodermella) pittieri* (Von Martens). Pilsbry 1907:328–329; pl. 47, figs. 15, 16 (shell).

*Ochrodermella pittieri* (Von Martens). H. B. Baker 1945:87.

Type Locality.—Isla de Coco, Costa Rica.

Distribution.—Known only from the type locality.

### Genus *Opeas* Albers 1850

*Opeas* Albers 1850; Die Heliceen:175.- Pilsbry 1906; Man. Conch. 18:123.- H. B. Baker 1927c:8. H. B. Baker 1945:85.

Type Species.—*Helix goodalli* Müller 1822 (= *Bulimus pumilus* Pfeiffer 1840).

Distribution.—Worldwide in tropical, subtropical and many temperate regions of the world. Some species are readily transported through human activities, which account for much of the distribution of the genus.

Taxonomy.—Numerous species. The exact number is uncertain because many included species are known only from shells, and no doubt anatomical investigations will change their classification. Three species are known from the study area.

### *Opeas adamsi* Pilsbry 1906

*Opeas panamensis* (Pilsbry). Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:503.

*Opeas adamsi* Pilsbry 1906; Man. Conch. 18:216; pl. 50, fig. 18 (shell).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:93.- Thompson 1968; Nautilus 81:105.

Type Locality.—Panamá.

Distribution.—PANAMÁ, Prov. Darién: 2.5 mi. SW of El Real (Thompson 1968).

### *Opeas pumilus* (Pfeiffer 1840)

*Helix goodalli* Müller 1822, Ann. Philos., n. s. 3:381. (Not *Helix goodalli* Férussac 1821).

*Opeas goodalli* (Müller). Pilsbry 1906; Manual of Conchology (2) 18:200; pl. 28, figs. 72–74 (shell).

*Bulimus clavulus* Turton 1831; Manual of the land and freshwater shells of the British Islands:79; fig. 61. (Not *Bulimus clavulus* Lamarck 1822).

*Bulimus pumilus* Pfeiffer 1840; Archiv. Naturg.:252.

*Opeas pumilus* (Pfeiffer). Pilsbry 1910; Nautilus 24:31.- Hinkley 1920b:43, 45, 48.- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:92; text-fig. 21 B.- H. B. Baker 1927c:8; pl. 21, fig. 3 (radula).- H. B. Baker 1940; Nautilus 58:86.- Pilsbry 1946; Land Moll. N. Amer. 2 (1):181–18; fig. 87 (radula), fig. 88 (4) (shell).- Morrison 1946; Smiths. Misc. Coll. 106:41.- Pérez & López 2002; 141–143.

Type Locality.—Bristol, England (introduced).

Distribution.—Worldwide in tropical, subtropical and many temperate regions, as for the genus. PANAMÁ, Prov. Bocas del Torro: Bocas del Torro (Pilsbry 1906). Prov. Colón: Los Cascades. Prov. Panamá: Panamá (Pilsbry 1926a); ruins of Old Panamá City (Pilsbry 1930). Isla San José, Archipiélago de las Perlas (Morrison 1946). NICARAGUA: Pacific versant in general (Pérez & López 2002). GUATEMALA, Dept. Izabal: Sierra Cavech; Esmeralda; Jocolo (Hinkley 1920b). TABASCO: San Juan Bautista (Pilsbry 1906).

### *Opeas rarum* Miller 1879

*Opeas rarum* Miller 1879:125: pl. 14, fig. 2 (shell).- Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:103; pl. 17, figs. 8, 17; pl. 7, fig. 4 (shell).- Pilsbry 1906; Man. Conch. 18:208; pl. 29, figs. 82–83 (shell).- Dall 1926; Proc. Calif. Acad. Sci. (4) 15:471

Type Locality.—Guayaquil, Ecuador.

Distribution.—Guatemala and eastern México (Strebel 1882). NAYARIT: Isla Maria Magdalena, Islas Mariás (Dall 1926).

### Genus *Subulina* Beck 1837

*Subulina* Beck 1837; Index Molluscorum... :76.- Pilsbry 1906; Man. Conch. 18:71, 220.- H. B. Baker 1927c:2 (anatomy).- Zilch 1959:342.

Type Species.—*Helix octona* Bruguière 1789.

Distribution.—Tropical South America. One species, *Subulina octona*, has been introduced throughout much of the world through human agency.

Taxonomy.—Only two or three species are recognized. One occurs in the study area.

### *Subulina octona* (Bruguière 1792)

*Bulimus octona* Bruguière 1792; Encyclopédie Methodique...:325.

*Subulina octona* (Bruguière). Von Martens 1898; Biol. Cent. Amer.:298–300.- Pilsbry 1906; Man. Conch. 18:222–224.- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:89.- Goodrich & van der Schalie 1937:29.- Richards 1938:173.- Pilsbry 1946; Land Moll. N. Amer. 2:173–174; fig. 83a (radula), figs. b, c, d, e, g (shell), fig. f (egg), fig. h (reproductive system), fig. i (jaw).- Branson & McCoy 1963; Nautilus 76:107.- Thompson 1967; Bull. Fla. St. Mus. 11:241.- Pérez & López 2002:143–144; map.

*Achatina trochlea* Pfeiffer 1842; Symbolae ad historiam heliceorum 2:59.

*Subulina octona* var. *strebeli* Von Martens 1898; Biol. Cent. Amer.:299.

Type Localities.—*Helix octona*: probably South America. The species was already widely disseminated by humans long before it was studied by naturalists. *Achatina trochlea*: México. *Subulina octona* var. *strebeli*: Cd. Campeche, Campeche.

Distribution.—The species is nearly ubiquitous in the study area at lower elevations. PANAMÁ, Isla San José, Archipiélago de las Perlas (Morrison 1946; Smiths. Misc. Coll. 106:40). Prov. Bocas de Toro: Bocas del Toro; San San Creek. Prov. Los Santos: Tonosi; Anon; Cd. Panamá (Pilsbry 1926a). COSTA RICA, Prov. Cartago: Turrialba, 500 m. alt. (Pilsbry 1920). Prov. Limón: Cahuita (Pilsbry 1926b) Talamanca. Prov. Puntarenas: Puerto Lagarto, 70 m. alt.; Palmar, Rio Grande de Terraba valley; Golfo Dulce; Santo Domingo; Coto (Von Martens 1898). NICARAGUA: numerous localities in the Pacific verdant (Pérez & López 2002). Reg. Atlantico Sur.: Bluefields (Fluck 1905). HONDURAS, Dept. Islas de la Bahía: Isla de Roatán (Richards 1938). El SALVADOR. GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Huehuetenango: Hacienda

Helvetia, in upper Cholutz; Costa Cuco. Dept. Izabal: Sierra Cavech, 1 mi. back of Cavech Village (Hinkley 1920b); Puerto Barrios (Goodrich & van der Schalie 1937). BELIZE: Belize City. CAMPECHE: Cd. Campeche; Cd. Carmen (Branson & McCoy 1963). CHIAPAS. TABASCO: Teapa; San Juan Bautista; Villahermosa (Branson & McCoy 1963). SAN LUÍS POTOSÍ: Río Moctezuma, Tamazunchale (21°15'21"N, 98°48'56"W); Tamazunchale (21°15'21"N, 98°48'09"W) (Correa-Sandoval et al. 1998). TAMAULIPAS: Cd. Victoria (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). VERACRUZ: Veracruz; Ruinas El Tajín (20°26' 29"N, 97°22'30"W) (Correa-Sandoval 1999). YUCATÁN: Izamal; Merida.

#### Subfamily OBELISCINAE Thiele 1931

Distribution.—Tropical America.

Taxonomy.—Five genera are recognized (Zilch 1959). One genus occurs in the study area.

#### Genus *Obeliscus* Beck 1837

*Obeliscus* Beck 1837; Index Molluscorum. :61.- Pilsbry 1907; Man. Conch. 18:240–244.- Zilch 1959:357–359.

Type Species.—*Helix (Cochlicella) obeliscus* Moricand 1833.

Distribution.—South America from Brazil and Bolivia north to Panamá; Cuba, Hispaniola, and Puerto Rico.

Taxonomy.—Eight subgenera are recognized, one in the study area.

#### Subgenus *Ischnocion* Pilsbry 1908

*Ischnocion* Pilsbry 1908; Man. Conch. 18:324.- H. B. Baker 1927; Occ. Pap. Mus. Zool. Univ. Mich. (182):6.- Zilch 1959:358–359.

Type Species.—*Neosubulina (Ischnocion) triptyx* Pilsbry 1908.

Distribution.—Colombia and southern Panamá.

Taxonomy.—A single species is recognized.

#### *Obeliscus (Ischnocion) triptyx* (Pilsbry 1908)

*Neosubulina (Ischnocion) triptyx* Pilsbry 1908; Man. Conch. 18:324; pl. 47, figs. 21, 25, 26 (shell).- Zilch 1959:359; fig. 1323.- Thompson 1968; Nautilus 81:105.

Type Locality.—Colombia.

Distribution.—PANAMÁ, Prov. Darién: 2.5 mi. SW of El Real (Thompson 1968).

#### Subfamily RUMININAE Wenz 1923

Distribution.—Africa and Mediterranean Europe, east to India.

Taxonomy.—The subfamily includes only a few genera.

#### Genus *Rumina* Risso 1828

*Rumina* Risso 1826; Histoire naturele... L'Europe meridionale..., 4:79.- Pilsbry 1905; Man. Conch. 17:211.

Type Species.—*Helix decollata* Linnaeus 1758.

Distribution.—Native to the Mediterranean region of Europe, Africa and Asia, and introduced elsewhere.

Taxonomy.—A single species is recognized in México.

#### *Rumina decollata* (Linnaeus 1758)

*Helix decollata* Linnaeus 1758; Systema Naturae (10):773.

*Rumina decollata* (Linnaeus). Pilsbry 1905; Man. Conch. 17:212–213, 215; pl. 53, fig. 70 (shell); pl. 55, fig. 99 (animal).- Pilsbry 1946; Land Moll. N. Amer. 2:170–172; figs. 81 (anatomy); figs. 82a, 82b, 82c (shell).- Correa-Sandoval et al. 1998:15.- Correa-Sandoval 1999:9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Correa-Sandoval & Rodriguez 2005:60.

Type Locality.—Southern Europe.

Distribution.—This species is common throughout the arid regions of northern México, although it is often ignored by collectors because of its introduced status. COAHUILA: Parras de La Fuente (UMMZ). NUEVO LEÓN: Laguna de Sánchez (25°19'58" N, 100°15'18" W); km 52 on road Iturbide-San Roberto (24°44'56" N, 99°57'14" W); Dr. Arroyo (23°45'05" N, 100°06'35" W) (Correa-Sandoval & Rodriguez 2005); Iturbide (Correa-Sandoval 1997). SAN LUÍS POTOSÍ: Las Cascadaa, Tamasopo (21°56'05" N, 99°25'00" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodriguez 2002).

#### Superfamily TESTACELLOIDEA Gray 1840

#### Family SPIRAXIDAE H. B. Baker 1939

Taxonomy.—The classification of the family follows H. B. Baker (1939b, 1941a, 1941b, 1943a). Three subfamilies, representing 263 species and an additional 40 subspecies, are recognized in México and Central America. Most species are very restricted in their distributions, reflecting a high degree of local endemism. The majority of the species are known from only a few regions of the study area. This is a reflection of its early colonial history with limited accessibility into many of the regions, and the very small number of malacologists who have worked there. Large areas of the study area remain very poorly surveyed, and undoubtedly the number of spiraxid species will be vastly increased with further biodiversity surveys of the many biotic provinces that comprise México and Central America. Even areas that are relatively well known, such as central Veracruz, yield new taxa with each additional investigation.

#### Subfamily EUGLANDININAE H. B. Baker 1941

Euglandinarum H. B. Baker 1941; Nautilus 55:54.- Thompson 2010; Revista de Biología Tropical 58:196.

Type Genus.—*Euglandina* Crosse & Fischer 1870.

Distribution.—Southeastern United States south through México and Central America to Peru, Bolivia, and French Guyana. The subfamily is absent from the West Indies except for coastal islands such as Cozumel, Útila, Isla del Maíz, etc.

Taxonomy.—The subfamily Euglandininae includes five genera. Currently 112 species are recognized in México and Central America.



### Genus *Euglandina* Crosse & Fischer 1870

*Euglandina* Crosse & Fischer, in Fischer & Crosse 1870; Miss. Sci. Mex. I:97.- Pilsbry 1907; Man. Conch. 19:175.- H. B. Baker 1941; Nautilus 55:54–55.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:7–11.

*Glandina* Strebel 1875:1.- Von Martens 1891; Biol. Cent. Amer.:49.  
Type Species.—*Achatina lignaria* Reeve 1849 (= *Glandina aurata* Morelet 1849).

Distribution.—Southeastern United States and Texas south to Brazil, Peru, and Bolivia. The central radiation of the genus is in México and northern Central America.

Taxonomy.—*Euglandina* includes three subgenera. Forty-four species are recognized in México and Central America.

#### Subgenus *Euglandina* Crosse & Fischer 1870

Distribution.—Southeastern United States south to Bolivia, Brazil and Peru.

Taxonomy.—Twenty-two species and six subspecies occur in the study area.

#### *Euglandina (Euglandina) aurata* (Morelet 1849)

*Glandina aurata* Morelet 1849; Test. Noviss. I:12.- Fischer & Crosse 1870; Miss. Sci. Mex. I:106; pl. 3, figs. 7, 7a.- Von Martens 1890; Biol. Cent. Amer.:57.

*Oleacina aurata* (Morelet). Gray 1855:33.- Pfeiffer 1859:642.- Tryon 1885; Man. Conch. 1:36; pl. 6, fig. 83.

*Euglandina aurata* (Morelet). Pilsbry 1907; Man. Conch. 19:188.- Thompson 1987; Bull. Fla. Stat. Mus. 30: 40–41.

*Achatina lignaria* Reeve 1849; Conch. Icon., 6, *Achatina*: pl. 8, fig. 27 (shell).

*Oleacina lignaria* (Reeve). Gray 1855:34.

Type Locality.—*Glandina aurata*: “Woods of Vera Paz”, Guatemala. *Achatina lignaria*: not given.

Distribution.—GUATEMALA, Dept. Alta Verapaz. Recorded from Cobán, and from mountain forests between Tepán (Tecpán?) and Totonicapan, 8,000–9,000 ft. alt. Dept. Chimaltenango: Santa Elena, near Tecpán (Thompson 1987).

#### *Euglandina (Euglandina) bailyi* M. Smith 1950

*Euglandina bailyi* Smith 1950; Nautilus 64:60; pl. 4, fig. 11 (shell).

Type Locality.—Close to highway, three miles east of Chilpancingo, Guerrero, México. Holotype UF 105927.

Distribution.—Known only from the type locality.

#### *Euglandina (Euglandina) binneyana* (Pfeiffer 1845)

*Achatina (Oleacina) fusiformis* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:75. (not *Achatina lubrica* var. *fusiforme* Picard. 1840).

*Glandina fusiformis* (Pfeiffer). Morelet 1852; Jour. de Conchyl. 3:33.- Fischer & Crosse 1870; Miss. Sci. Mex. I:103; pl. 3, fig. 2a.- Strebel 1875:26; pl. 9, figs. 14–14a.

*Achatina (Oleacina) binneyana* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:117.- Pfeiffer 1859; Monog. Hel. Viv., 4:638–639.

*Glandina fusiformis* var. ? *binneana* (Pfeiffer). Von Martens 1891:58.  
*Euglandina binneyana* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:188, 320.

Type Localities.—Not known.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. Baja Verapaz: Purula, upper part of the Polochic Valley (Von Martens 1891).

#### *Euglandina (Euglandina) cognata* (Strebel 1875)

*Glandina cognata* Strebel 1875; Beitrag. Mex. Land- und Süßw.-Conch. II:12; pl. 4, fig. 7–7b (shell).- Tryon 1885; Man. Conch. 1:38; pl. 8, fig. 9 (shell).

*Euglandina cognata* (Strebel). Pilsbry 1908; Man. Conch. 19:195.

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—Known only from the type locality.

#### *Euglandina (Euglandina) cuneus* (Von Martens 1891)

*Glandina cuneus* Von Martens 1891; Biol. Cent. Amer.:56; pl. 3, figs. 1–2 (shell).

*Euglandina cuneus* Pilsbry 1907; Man. Conch. 19:187; pl. 22, figs. 18–21 (shell).

Type Locality.—Omiteme, Guerrero, México.

Distribution.—Known only from the type locality.

#### *Euglandina (Euglandina) dactylus* (Broderip 1832)

*Achatina dactylus* Broderip 1832; Proc. Zool. Soc. Lond. :32.

*Euglandina dactylus* (Broderip). Pilsbry 1926a:93–95; pl. 10, figs. 1–2 (shell).

*Glandina striata* of Authors 1832–1930.

Type Locality.—Isla Tumaco, near the Ecuador–Colombia border.

Distribution.—PANAMÁ, Prov. Panamá: Rio Puerco. Prov. Colón: near Lagarto; between Tabernilla and San Pablo. COLOMBIA: near Cartago (all Pilsbry 1926).

#### *Euglandina (Euglandina) daudebarti dardebarti* (Deshayes 1850)

*Achatina dardebarti* Deshayes 1850; in Ferussac’s Hist. Nat. Moll. Terr., ii:183.

*Glandina audebarti* (Deshayes). Fischer & Crosse 1870; Miss. Sci. Mex. I:118.- Strebel 1875:30–33. pl. 11, figs. 19c–19d.- Von Martens 1891; 62–63; pl. 3, figs. 5–8.

*Oleacina audebarti* (Deshayes). Tryon 1885; Man. Conch. 1:41; pl. 9, fig. 27.

*Euglandina daudebarti* (Deshayes). Pilsbry 1908; Man. Conch. 19:195.

Type Locality.—Not stated.

Distribution.—COLIMA: Colima (Von Martens 1901). GUERRERO: Venta de Zopilote. OAXACA: Tehuantepec. PUEBLA: Chietla. VERACRUZ: environs of Veracruz; Chiquihuitl (all records from Von Martens 1891).

#### *Euglandina (Euglandina) daudebarti amoena* (Von Martens 1865)

*Glandina amoena* Von Martens 1865, Malak. Blätt. 12:12; pl. 1, figs. 8–9 (shell).- Fischer & Crosse 1870; Miss. Sci. Mex. I:114.- Strebel 1878:34, pl. 11, fig. 4 (radula); pl. 13, fig. 9 (animal).

*Glandina audebarti* form A. Strebel 1875:30; pl. 11, figs. 19–19a-b. e-h, m-n (shell).

*Glandina audebarti* var. *amoena* Von Martens 1891; Biol. Cent. Amer.:63; pl. 3, figs. 7–7a (shell).

*Euglandina daudebarti* var. *amoena* (Von Martens). Pilsbry 1908;

Man. Conch. 19:195.

Type Locality.—México.

Distribution.—VERACRUZ: environs of Veracruz (Strebel 1875).

***Euglandina (Euglandina) daudebarti jalapana*  
(Von Martens 1891)**

*Glandina longula* var. *jalapana* Von Martens 1891; Biol. Cent. Amer.:64; pl. 3, figs. 9, 10.

*Euglandina daudebarti* var. *jalapana* (Von Martens). Pilsbry 1908; Man. Conch. 19:195; pl. 22, figs. 13–15.

Type Locality.—Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Misantla (Von Martens 1891).

***Euglandina (Euglandina) daudebarti miradorensis*  
(Strebel 1878)**

*Glandina audebarti* form B. Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:33; pl. 11, figs. 20–20b (shell).

*Glandina miradorensis* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:7, 33; pl. 9, fig. 14.

*Glandina audebaerti* var. *miradorensis* (Strebel). Von Martens 1891; Biol. Cent. Amer.:63.

Type Locality.—Mirador, Veracruz, México; 2630 ft. alt.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) gigantea Pilsbry 1926***

*Euglandina sowerbyana* form B, Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:16; pl. 5A, figs. 10.

*Euglandina gigantea* Pilsbry 1926; Proc. Acad. Nat. Sci., 78: 128; pl. 11, figs. 5–7; pl. 10, fig. 8.- Bull. Fla. Stat. Mus. 30:36–38; figs. 25–26 (shell).

*Euglandina gigantea gabbi* Pilsbry 1926; Proc. Acad. Nat. Sci., 78: pl. 11, figs. 1, 2.

Type Localities.—*Euglandina gigantea*: “Salinas Bay, in southwestern Costa Rica.” Amended to Bahía de Salinas, near La Cruz, Guancaste Prov., Costa Rica (Thompson 1987).  
*Euglandina gigantea gabbi*: no locality given.

Distribution.—Widely distributed in Costa Rica from near sea-level to 2600 m alt. Also known from Chiriquí Province, Panamá. COSTA RICA, Prov. Alajuela: Río Frio; San Carlos; Turubares, 250 m alt. (Turrucare?). Prov. Cartago: Estrella, near Cartago, 1500 m alt.; Tapantí, 1300 m alt.; Nicoya; Tilaran; Cache (Cache). Guanacasta Prov.: Río Jesús María. Prov. Heredia: Sarapiquí (on Sarapiquí); Puerto Viejo. Prov. Limón: Reventazón, 500 m alt. (on Río Reventazon). Prov. Puntarenas: Coto, 10 m. alt.; Rincon; 2.5 km NE of Monte Verde; Terraba, 700 m alt. Prov. San José: San José, 116 m alt. PANAMÁ, Prov. Chiriquí: Boquete; Chiriquí; Volcan de Chiriquí, 3000 ft. alt.

***Euglandina (Euglandina) huigensis (Pilsbry 1903)***

*Glandina huigensis* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:770; pl. 47, figs. 2–2b (shell).

*Euglandina huigensis* Pilsbry 1907; Man. Conch. 19:185; pl. 23 figs. 25–27 (shell).

Type Locality.—Huingo, Michoacán, México. Syntypes

ANSP 77179.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) immemorata Pilsbry 1907***

*Euglandina immemorata* Pilsbry 1907; Man. Conch. 19:192; pl. 24, figs. 46–47 (shell).- Pilsbry 1946; Land Moll. N. Amer. II:197; fig. 95d (shell).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:685.

Type Locality.—Texas. Holotype: ANSP 11777.

Distribution.—Northeastern México. Reported from Texas, but without localized information. NUEVO LEÓN: Santiago (Correa-Sandoval 1993).

***Euglandina (Euglandina) indusiata (Pfeiffer 1860)***

*Oleacina indusiata* Pfeiffer 1860; Proc. Zool. Soc. Lond. 28:138–139.

*Glandina indusiata* (Pfeiffer). Fischer & Crosse 1879:121; pl. 6, fig. 1 (shell).- Von Martens 1891:54; pl. 2., fig. 1–1a (shell).

*Euglandina indusiata* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:185.

Type Locality.—La Parada, in Oaxaca, México.

Distribution.—MICHOCÁN: Angangüeo. OAXACA: Oaxaca (Von Martens 1891).

***Euglandina (Euglandina) lamyi (Fischer & Chatelet 1903)***

*Glandina lamyi* Fischer & Chatelet 1903; Jour. de Conchyl. 51:321; pl. 13, fig. 10 (shell).- Fischer 1907; Jour. de Conch. 54:270.

*Euglandina lamyi* (Fischer & Chatelet). Pilsbry 1908; Man. Conch. 19:196; pl. 23, fig. 28 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.- Correa-Sandoval & Rodriguez 2005; Acta Zool. Mex. (86):237.

Type Locality.—Cardenas, San Luis Potosí, México.

Distribution.—SAN LUIS POTOSÍ: 2 km above Presa de Guadalupe, 1220 m alt. (22°49'01" N, 100°08'25" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: La Tapona (23°08'31" N, 99°58'16" W); Tula (23°03'55" N, 99°42'24" W) (Correa-Sandoval & Rodriguez 2005).

***Euglandina (Euglandina) liebmanni (Pfeiffer 1846)***

*Achatina liebmanni* Pfeiffer 1846; Zeit. für Malak.:159.

*Glandina liebmanni* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:119.- Strebel 1875:9–10; pl. 4, figs. 5–5f (shell).- Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:7, 46; pl. 12, fig. 2 (shell).- Von Martens 1891:63–64.

*Euglandina liebmanni* (Pfeiffer).- Pilsbry 1908; Man. Conch. 19:195.- Pilsbry 1909; Nautilus 22:114.

*Glandina nympa* Fischer & Crosse 1870; Miss. Sci. Mex. I:115; pl. 6, fig. 9 (shell).

Type Localities.—*Achatina liebmanni*: México. *Glandina nympa*: México.

Distribution.—COLIMA (Rolle 1895). GUERRERO: Chilpancingo (Von Martens 1892); Balsas, in limestone crevices above the river, 2000–3000 ft. alt. (Pilsbry 1909).

***Euglandina (Euglandina) livida Dall 1908***

*Euglandina livida* Dall 1908; Proc. U. S. Nat. Mus. 35:180; pl. 29, fig. 7 (shell).

Type Locality.—Between Bolanos and Guadalajara,

Jalisco, México.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) michoacanensis (Pilsbry 1899)***

*Glandina michoacanensis* Pilsbry 1899:397.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:770; pl. 47, figs. 1–1b (shell).- Von Martens 1901; Biol. Cent. Amer.:610.

*Euglandina michoacanensis* (Pilsbry). Pilsbry 1907, Man. Conch. 19:185–186; pl. 22, figs. 16–17 (shell).

Type Locality.—Uruapan, Michoacán, México. Holotype ANSP 77181a.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) pan Thompson 1987***

*Euglandina pan* Thompson 1987; Bull. Fla. Stat. Mus. 30:38–40; figs. 28–29 (shell).

Type Locality.—Finca Las Delicia, near Barillas, Dept. Guatemala, Guatemala. Holotype USNM 487385.

Distribution.—GUATEMALA: known only from moderate elevations in central and southern Dept. Guatemala.

***Euglandina (Euglandina) pilsbryi Bartsch 1909***

*Euglandina pilsbryi* Bartsch 1909; Proc. U. S. Nat. Mus. 37:322; pl. 33, fig. 5 (shell).- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.

Type Locality.—Bolanos, Jalisco, México. Holotype USNM 207776.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) pinicola (Fischer & Crosse 1870)***

*Glandina plicatula* var. *pinicola* Fischer & Crosse 1870; Miss. Sci. Mex. 1:95; pl. 2, fig. 12.- Strebel 1875:20.

*Glandina pinicola* (Fischer & Crosse). Von Martens 1891:64.

*Euglandina pinicola* Pilsbry 1908:196.

Type Locality.—Totonicapam [Totonicapán], Dept. Totonicapán, Guatemala.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) radula (Strebel 1875)***

*Glandina radula* Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:13; pl. 3, figs. 8–8b (shell).

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) sowerbyana sowerbyana (Pfeiffer 1846)***

*Achatina (Glandina) sowerbyana* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:32.

*Glandina sowerbyana* (Pfeiffer). Albers 1850:198.- Fischer & Crosse 1870:98.- Strebel 1875:15; pl. 5, figs. 10a–11; Strebel 1878:34–44; pls. 15–21 (anatomy).- Von Martens 1890:55.

*Oleacina sowerbyana* (Pfeiffer). Gray 1855:33.- Tryon 1885; Man. Conch. 1:36; pl. 6, fig. 86.

*Euglandina sowerbyana*. Pilsbry 1907, Man. Conch. 19:186.

*Glandina lignaria* (Reeve). Fischer & Crosse 1870:97; pl. 3, fig. 1.

*Euglandina sowerbyana sowerbyana* (Pfeiffer). Thompson 1987; Bull. Fla. Stat. Mus. 30:34–36; figs. 17–20 (shell).

Type Locality.—Totontepéc, Oaxaca, México. Syntype in BMNH.

Distribution.—Known from eastern México in the states of Veracruz and immediately adjacent areas of Oaxaca and Puebla. OAXACA: Totontepéc. PUEBLA: Puerto Morales, near Acultzingo, 2770 m alt. VERACRUZ: Catamaco; Cerro Mano Blanco, near Catamaco; Cerro Chicahuaxtla near Cuantlapan; Jalpan; pine forest near Veracruz; Volcan San Martín; Volcan Tuxla (Volcan San Martín), 1475 m alt.; Misantla; San José; San Juan Michautlán; Pacho; Jalapa; Mirador; Cerro Necoxtla between Jalapa and Orizaba, 3000–5000 ft.; Orizaba. (Thompson 1987).

***Euglandina (Euglandina) sowerbyana estephaniae (Strebel 1875)***

*Glandina sowerbyana* form D, Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:17–18; pl. 3, figs. 3, 3a (shell).

*Glandina estephaniae* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:45; pl. 16, figs. 1–8 (anatomy).- Tryon 1885; Man. Conch. 1:36; pl. 8, fig. 5.

*Euglandina sowerbyana estephaniae* (Strebel). Pilsbry 1907; Man. Conch. 19:186.- H. B. Baker 1941; Nautilus 55:51.- Thompson 1987; Bull. Fla. Stat. Mus. 30:36–38; figs. 21–22 (shell).

Type Locality.—Miahuatlán, between Jalapa and Misantla, Veracruz, México.

Distribution.—VERACRUZ: known only from the vicinity of the type locality; Córdoba to Sumidero, 2625–3400 ft. alt. (H. B. Baker 1941).

***Euglandina (Euglandina) striata (Müller 1774)***

*Buccinum striatum* O. F. Müller 1774; Hist. Verm. 2:149.

*Glandina striata* (Müller). Von Martens 1891; Biol. Cent. Amer.:79–80.

*Euglandina (Euglandina) striata* (Müller). Pilsbry 1907; Man. Conch. 19:176.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:344; text-fig. 1 (shell).

Type Locality.—Unknown.

Distribution.—Widely distributed in South America in Colombia, Peru, Bolivia, and Brazil (Von Martens 1891). PANAMÁ: Isla Barro Colorado (Pilsbry 1930).

***Euglandina (Euglandina) texasiana texasiana (Pfeiffer 1856)***

*Achatina texasiana* Pfeiffer 1856; Novitates Conchologicae 1:82; pl. 22, figs. 11, 12 (shell).

*Glandina texasiana*.- W. G. Binney 1859; Boston Jour. Nat. Hist. 7:140; pl. 61, fig. 2.- Strebel 1877:7; figs. 4, 4a, 4b (shell).

*Oleacina texasiana*.- Tryon 1885; Man. Conch. 1:34; pl. 6, fig. 82 (shell).

*Euglandina texasiana*.- Pilsbry 1907; Man. Conch. 19:190–191; pl. 24, figs. 52–54 (shell).- Pilsbry 1946; Land Moll. N. Amer. II:195–196; fig. 95c (shell).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:685.- Correa-Sandoval, García-Cubas & Reguero 1998:16.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodríguez 2002; Acta Zool. Mex. (86):237.

Type Locality.—Texas.

Distribution.—Northeastern México and extreme southern Texas. NUEVO LEÓN: Santiago (Correa-Sandoval 1993). SAN LUÍS POTOSÍ: El Abra, Valles (Pilsbry



1907); numerous localities (Correa-Sandoval et al. 1998). VERACRUZ: Isla Juan A. Ramirez (21°46'29" N, 97°39'13" W); Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W); San Juan Cuajinampa (21°11'53" N, 97°30'00" W); El Bajío, hwy. Naranjos- Tuxpan (20°57'17" N, 97°25'57" W); 1 km E of Poza Rica, km 234 (20°49'11" N, 97°30'00" W); Rancho Altos y Bajos, 2 km NW of Barra de Cazones (20°45'24" N, 97°15'00" W); El Cedral (20°29'11" N, 97°25'23" W); La Ordeña, Papantla (20°29'43" N, 97°18'27" W); La Guadalupe, (20°22'42" N, 96°55'23" W) (Correa-Sandoval 2000). TAMAULIPAS: Tampico; numerous localities (Correa-Sandoval & Rodriguez 2002).

***Euglandina (Euglandina) texasiana angustior* Pilsbry & Vanatta 1936**

*Euglandina texasiana angustior* Pilsbry & Vanatta 1936:97; pl. 7, fig. 4d (shell).

Type Locality.—Gonzalez, Tamaulipas, México. Holotype ANSP 162640.

Distribution.—Southeastern TAMAULIPAS and adjacent SAN LUÍS POTOSÍ.

***Euglandina (Euglandina) titan* Thompson 1987**

*Euglandina titan* Thompson 1987; Bull. Fla. St. Mus. 30:42–43; figs. 23–24 (shell).

Type Locality.—Montañas del Mico, 4 km WSW of Puerto Santo Tomás at 800 m elevation in a tropical rainforest, Dept. Izabel, Guatemala. Holotype UF 35307.

Distribution.—Known only from the type locality.

***Euglandina (Euglandina) vanuxemensis* (Lea 1834)**

*Achatina vanuxemensis* Lea 1832; Trans. Amer. Philos. Soc. 5:84.

*Achatina coronata* Pfeiffer 1846; Zeit. für Malak. 158:158.

*Glandina coulteri* Gray, in Pfeiffer, Monogr. Helic. Viv. 1:642.

*Glandina uhdeana* Gray. Von Martens 1863; in Monatsber. Akad. Wiss. Berl. 26:540.

*Glandina guttata* Crosse & Fischer 1869; Jour. de Conchyl. 17:250.

*Glandina vanuxemii* Tryon 1866; Amer. Jour. Conch. 2:226, pl. 16, fig. 6 (name amendment for *vanuxemensis*).

*Glandina vanuxemi* (Lea). Von Martens 1891:54–55; pl. 2, fig. 2–2c.

*Euglandina vanuxemensis* (Lea). Pilsbry 1907, Man. Conch. 19:185.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:10–11; pl. 3, fig. 24 (reproductive system).- Thompson 1987; Bull. Fla. St. Mus. 30:32–34; figs. 7–9 (shell).

Type Localities.—*Achatina vanuxemensis*: México.

*Glandina coulteri*: no locality given. *Achatina coronata*: México. *Glandina uhdeana*: Veracruz, México. *Glandina guttata*: México, near Puebla, México.

Distribution.—Confined to south-central México. GUERRERO: Omilteme. HIDALGO: Zimapán. MÉXICO: Volcán de Mexicalcingo; Pirámides; Teotihuacán; Guajimalpa. OAXACA: El Punto; Cuicatlán; Huajuapán de León; 8.3 mi. SE of Nochistlán; Hwy. 131, 3.2 mi. E of turnoff to Nacaltepec; 0.7 mi. W of Tlapacoyán, 5000 ft. alt.; Oaxaca; Juquila. PUEBLA:3.6 mi. SW of Chapulco; 8.1 mi. SW Izucar de Matamoros, 4800 ft. alt; Hwy. 150, 1.5 mi. SW of Veracruz-Puebla border; Cd. Puebla, México; Tecamachalco,

7500 m alt.; 1.1 mi. N of Tecamachalco; Tehuacán; Tepeaca. Adjacent area at altitudes of 1285–2375 m. VERACRUZ: Guajimalpa; Teotihuacan; Jalapa (all records from Thompson 1987).

**Subgenus *Singleya* H. B. Baker 1941**

*Singleya* H. B. Baker 1941:54.

Type Species.—By original designation: *Glandina singleyana* (W. G. Binney 1892).

Distribution.—Southern Texas south to Panamá.

Taxonomy.—Twenty-one species and four subspecies are recognized. *Cosmomenus*, which is treated as a separate subgenus, was described as a section of *Singleya* on the basis of the origin of the penis retractor muscle. The penis retractor in *Singleya* originates on the inner wall of the lung, while in *Cosmomenus* it originates on the left side of the columellar retractor muscle. The assignment of species to either subgenus on the basis of shell characters is arbitrary. Most of the following species are known only on the basis of the shell. They are placed in *Singleya* because it is the senior name.

***Euglandina (Singleya) anomala anomala* (Angas 1879)**

*Glandina (Oleacina) anomala* Angas 1879; Proc. Zool. Soc. Lond. 47:481; pl. 40, fig. 9 (shell).

*Euglandina anomala anomala* (Angas). Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:344.

Type Locality.—Hilly region of Costa Rica.

Distribution.—COSTA RICA: no specific locality record.

***Euglandina (Singleya) anomala barrocoloradensis* Pilsbry 1930**

*Euglandina anomala barrocoloradensis* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:343–344; pl. 30, fig. 7 (shell).

Type Locality.—Isla Barro Colorado, Panamá. Holotype ANSP 151391.

Distribution.—Known only from the type locality.

***Euglandina (Singleya) balesi* Pilsbry 1938**

*Euglandina balesi* Pilsbry 1938; Nautilus 52:16; Nautilus 53: pl. 2, fig. 10.

Type Locality.—Puerto Marques, south of Acapulco, [Sinaloa], México. Holotype ANSP 170440.

Distribution.—Known only from the type locality.

***Euglandina (Singleya) candida candida* (Shuttleworth 1852)**

*Achatina (Polyphema) candida* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:2002; pl. 12: fig. 1.

*Euglandina candida* (Shuttleworth). Pilsbry 1908; Man. Conch. 19:197; pl. 28, figs. 55–57 (shell).- Neubert & Gosteli 2003; Contr. Nat. Hist. 1:16; pl. 11, fig. 1.

*Euglandina (Singleya) candida* (Shuttleworth). H. B. Baker 1941; Nautilus 55:60.

*Glandina simplex* Strebel 1875; Beitrag. Mex. Land- und Süßw.-Conch. II:35; pl. 10., figs. 25–25c (shell).- Von Martens 1891; Biol. Cent. Amer.:66; pl. 4, figs. 5–6 (shell).

Type Localities.—*Achatina candida*: México. Syntype

Naturhistorische Museum Bern 18951/1 (Neubert & Gasteli 2003). *Glandina simplex*: Oaxaca, México.

Distribution.—OAXACA. VERACRUZ: Atoyac, 1300–1450 ft. alt. (H. B. Baker 1941).

***Euglandina (Singleya) candida conularis* (Pfeiffer 1855)**

*Achatina (Glandina) conularis* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:100.

*Glandina conularis* (Pfeiffer). Von Martens 1891; Biol. Cent. Amer.:66; pl. 4, fig. 8 (shell).

*Euglandina conularis* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:197–198; pl. 24, fig. 55 (shell).

*Euglandina (Singleya) candida* var. *conularia* (Pfeiffer). H. B. Baker 1941; Nautilus 55:60.

Type Locality.—México.

Distribution.—VERACRUZ: Potrero to Córdoba, 2150–3000 ft. alt. (H. B. Baker 1941).

***Euglandina (Singleya) carminensis* (Morelet 1849)**

*Glandina carminensis* Morelet 1849; Test. Noviss. I:14.- Morelet 1852, Jour. de Conchyl. 3:42; pl. 1, figs. 1–4 (shell).- Von Martens 1891:61.- Fiscer & Crosse 1870:109.- Strebel 1875:37; pl. 9, figs. 23–23d, h, i shell).- Von Martens 1891:61.

*Euglandina carmenensis* (Morelet). Pilsbry 1908; Man. Conch. 19:195.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):528.- Thompson 1967; Bull. Fla. St. Mus. 11:232–233.

Type Locality.—Isla de Carmen, Campeche, México.

Distribution.—CAMPECHE: 7.1 mi. SW of Campeche; 2.2 mi. S of Pixtún (Thompson 1967). YUCATÁN: Chankom (Bequaert & Clench 1933). GUATEMALA, Dept. Quetzaltenango: Cerro Zunil, near Quetzaltenango (Von Martens 1891). HONDURAS, Dept. Islas de la Bahía: Isla de Útila (Von Martens 1901).

***Euglandina (Singleya) corneola* (W. G. Binney 1857)**

*Glandina corneola* W. G. Binney 1857, Proc. Acad. Nat. Sci. Phila.:189.

*Euglandina corneolaa* (Binney). Pilsbry 1908; Man. Conch. 19:188–189; pl. 24, figs. 23–25 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998:16.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.

Type Locality.—Not stated.

Distribution.—SAN LUIS POTOSÍ: Valles (Pilsbry 1908); numerous localities (Correa-Sandoval et al. 1998). VERACRUZ: Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W); Ruinas El Tajín (20°26'29" N, 97°22'30" W); La Guadalupe, hwy. Papantla- Nautla, km 60 (20°22'42" N, 96°55'23" W) (Correa-Sandoval 2000).

***Euglandina (Singleya) decussata* (Deshayes 1840)**

*Achatina decussata* Deshayes 1840, in Ferussac's His. Nat. Moll. Terr. Fluv., II:182; pl. 123, figs. 3–4; pl. 134, figs. 33–35 (shell).

*Glandina decussata* (Deshayes). Fischer & Crosse 1870; Miss. Sci. Mex. I:112.- Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:34; pl. 10, figs. 22–22f (shell).- Von Martens 1891; Biol. Cent. Amer.:58–59.

*Euglandina decussata* (Deshayes). Pilsbry 1908; Man. Conch. 19:188.- Hinkley 1920; Nautilus 34:39, 43, 48, 51.- H. B.

Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (135):8.

*Euglandina (Singleya) decussata* (Deshayes). H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:9; pl. 2, fig. (radula).

Type Locality.—Not stated.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán; Chama (Hinkley 1920). Dept. Baja Verapaz: Senahu; Panzos (Von Martens 1891). Dept. Izabal: mountains of Cavech, back of Cavech Village; Jocolo (Hinkley 1920). Dept. Quirigua: Maya Farms (Hinkley 1920). VERACRUZ: Cuatotolapam (H. B. Baker 1923).

***Euglandina (Singleya) excavata* (Von Martens 1891)**

*Glandina excavata* Von Martens 1891; Biol. Cent. Amer.:67; pl. 4, figs. 9–9a (shell).

*Euglandina excavata* (Von Martens).- Pilsbry 1908; Man. Conch. 19:198; pl. 23, figs. 42–43.- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.

Type Locality.—Mazatlán, Sinaloa (?).

Distribution.—SINALOA (?).

***Euglandina (Singleya) ghiesbreghti* (Pfeiffer 1856)**

*Oleacina ghiesbreghti* Pfeiffer 1856; Malak. Blätt, 3:235.

*Glandina ghiesbreghti* (Pfeiffer). Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:39–40; pl. 10, figs 31–31d (shell).- Von Martens 1891; Biol. Cent. Amer.:58.

*Euglandina ghiesbreghti* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:188.- Bequaert 1957:218.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: Laguna Ocotol, 950 m alt.; El Censo to Laguna Ocotol, 700 m alt. (Bequaert 1957). TABASCO: San Juan Bautista (Von Martens 1901).

***Euglandina (Singleya) herrerae* (Contreras 1923)**

*Glandina herrerae* Contreras 1923; Boletín Soc. Estud. Biol. 1:13.

*Euglandina herrerae* (Contreras).- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.

Type Locality.—Chapala, Jalisco, México.

Distribution.—Known only from the type locality.

***Euglandina (Singleya) insignis* (Pfeiffer 1855)**

*Achatina (Glandina) insignis* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:100; pl. 31, figs. 11–12 (shell).

*Glandina insignis* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:110; pl. 6, figs. 2–2a (shell).- Strebel 1875:11.- Tryon 1885, Man. Conch. 1:39; pl. 7, fig. 1 (shell).

*Oleacina insignis* (Pfeiffer). Tryon 1885, Man. Conch. 1:35; pl. 7, fig. 1 (shell).

*Glandina liebamanni* var. *insignis* (Pfeiffer). Von Martens 1891:62.

*Euglandina insignis* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:195.- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.

Type Locality.—Unknown.

Distribution.—NAYARIT: San Blas; Tepic (Von Martens 1891); Islas Marias (Pilsbry & Cockerell 1925).

***Euglandina (Singleya) jacksoni* Pilsbry & Vanatta 1936**

*Euglandina jacksoni* Pilsbry & Vanatta 1936, Nautilus 49:97; pl. 7, fig. 4.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):237.

Type Locality.—Gonzalez, Tamaulipas, México.  
Holotype: ANSP 162639.

Distribution.—TAMAULIPAS: Gonzalez (Pilsbry & Vanatta 1937); El Moro, Hyw Cd. Victoria-Soto la Marina km 69 (23°35'14" N, 98°37'34" W) (Correa-Sandoval & Rodriguez 2002).

***Euglandina (Singleya) longula (Fischer & Crosse 1870)***

*Glandina longula* Fischer & Crosse 1870; Miss. Sci. Mex. I:111; pl. 6, figs. 6–6a (shell).- Strebel 1875:11.- Von Martens 1891:64.  
*Euglandina longula* (Fischer & Crosse). Pilsbry 1908; Man. Conch. 19:196.

Type Locality.—Rio San Juan, northeast México.

Distribution.—Unknown. The precise type locality has not been determined.

***Euglandina (Singleya) lowei Pilsbry 1931***

*Euglandina lowei* Pilsbry 1931; Nautilus 44:83–84; pl. 5, fig. 5 (shell).

Type Locality.—Isla María Madre, Islas Mariás, Nayarit, México. Holotype ANSP 151320.

Distribution.—Known only from the type locality.

***Euglandina (Singleya) mazatlanica mazatlanica (Von Martens 1891)***

*Glandina mazatlánica* Von Martens 1891; Biol. Cent. Amer.:65; pl. 4, figs. 2–2a (shell).

*Euglandina mazatlánica* (Von Martens). Pilsbry 1908; Man. Conch. 19:196–197; pl. 23, figs. 39–40 (shell).- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.- Dall 1926; Proc. Calif Acad. Sci. ser. 4, 15:470.

Type Locality.—Mazatlán, Sinaloa, México. Syntype Berlin Museum 35386.

Distribution.—NAYARIT: Islas Mariás (Dall 1926). SINALOA: Mazatlán.

***Euglandina (Singleya) mazatlanica abbreviata (Von Martens 1891)***

*Glandina mazatlanica* var. *abbreviata* Von Martens 1891; Biol. Cent. Amer.:65; pl. 4, fig. 3 (shell).

*Euglandina mazatlanica abbreviata* (Von Martens). Pilsbry 1908; Man. Conch. 19:197; pl. 23, fig. 41 (shell).

Type Locality.—Islas Mariás, Nayarit, México.

Distribution.—Known only from the type locality.

***Euglandina (Singleya) pseudoturris (Strebel 1875)***

*Glandina pseudoturris* Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:47; pl. 6a, figs. 41–41b.- Von Martens 1891; Biol. Cent. Amer.:65–66; pl. 4, figs. 4–4a.

*Euglandina pseudoturris* (Strebel). Pilsbry 1908; Man. Conch. 19:197.

Type Locality.—Juquila, Oaxaca, México.

Distribution.—GUERRERO: Tierra Colorada. OAXACA: Juquila.

***Euglandina (Singleya) singleyana (W. G. Binney 1892)***

*Glandina decussata* Deshayes. W. G. Binney 1878; Terr. Moll. N.

Amer. 5:86.

*Glandina singleyana* W. G. Binney 1892; 4<sup>th</sup> Suppl. Bull. Mus. Comp. Zool. 22:163; pl. 1, fig. 4.

*Euglandina singleyana*. Pilsbry and Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:143.- Pilsbry 1907; Man. Conch. 19:189; pl. 24, figs. 48–51 (shell).- Strecker 1929; Contr. Baylor Univ. Mus. (18):12 (eggs).- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:9; pl. 2, figs. 21, 22 (reproductive system).- Pilsbry 1946; Land Moll. N. Amer. II:197–199; fig. 95a (shell), fig. 96a (genitalia), fig. 96b (radula).

Type Locality.—San Antonio, Bexar County, Texas.

Distribution.—Southern Texas and adjacent Tamaulipas, México. TAMAULIPAS.

***Euglandina (Singleya) tenella (Strebel 1875)***

*Glandina tenella* Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:35; pl. 10, figs. 24–24d (shell).- Von Martens 1891; Biol. Cent. Amer.:59.

*Euglandina tenella* (Strebel). Pilsbry 1907; Man. Conch. 19:188.

Type Locality.—First woods 0.5–1 hour from Veracruz [City], Veracruz, México.

Distribution.—VERACRUZ: known only from the vicinity of Cd. Veracruz.

***Euglandina (Singleya) turris turris (Pfeiffer 1846)***

*Achatina (Glandina) turris* Pfeiffer 1846; Symb. Hist. Helic. 3:91.

*Glandina turris* (Pfeiffer). W. G. Binney 1869; Land and Freshw. Shell of N. Amer., 1:19; text-fig. (shell).- Strebel 1875:46; pl. 12, fig. 4.- Von Martens 1891; Biol. Cent. Amer.:65.

*Euglandina turris* (Pfeiffer).- Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila. 77:308.

Type Locality.—México.

Distribution.—SINALOA: Mazatlán (Von Martens 1891).

***Euglandina (Singleya) turris longurio Pilsbry & Cockerell 1926***

*Euglandina turris longurio* Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila. 77:308; text-figs. 2, 3, 3a, 5, 5a (shell).

Type Locality.—Mazatlán, Sinaloa, México. Holotype ANSP 24797.

Distribution.—JALISCO: Guadalajara. NAYARIT: Islas Mariás. SINALOA: Mazatlán.

***Euglandina (Singleya) wani (Jacobson 1968)***

*Streptostyla (Chersomitra) wani* Jacobson 1968; Nautilus 81:118; pl. 120, upper two figures.

Type Locality.—Near Wani (Huani), Nicaragua. Holotype USNM 426028.

Distribution.—Known only from the type locality.

**Subgenus *Cosmomenus* H. B. Baker 1941**

*Cosmomenus* H. B. Baker 1941; Nautilus 55:54.

Type Species.—*Glandina cumingi* Beck 1837.

Distribution.—Yucatán to Venezuela.

Taxonomy.—Two species are recognized as belonging to *Cosmomenus* on the basis of the origin of the penis retractor muscle.



***Euglandina (Cosmomenus) cumingi* (Beck 1837)**

*Glandina cumingi* Beck 1837; Index Moll.:78.- Von Martens 1891; Biol. Cent. Amer.:59–61, pl. 4, figs. 7, var. (shell)

*Euglandina cumingi* (Beck). Pilsbry 1908; Man. Conch. 19:195.- Richards 1938:172.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8–9; pl. 2, figs. 17 (reproductive anatomy) 18 (radula).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):8.- Jacobson 1968; Amer. Mus. Novit. (1899):117.- Pérez & Lopéz 2002:151–152.

*Glandina petiti* (Deshayes). Strebel 1875:40–43.

*Glandina rosea* (Férussac). Fischer & Crosse 1870; Miss. Sci. Mex. 1:107 (in part).- Strebel 1875:42; pl. 8, figs. 28–28b; pl. 12, figs. 27 f-h, figs. 28 f-h (shell).

Type Locality.—Not stated.

Distribution.—TABASCO: Teapa (Von Martens 1891). COSTA RICA: San José (Von Martens 1891); Alto de Mano Tigre, near Terraba, 600 m alt. (Von Martens 1901). GUATEMALA, Dept. Retalhuleu: Retalhuleu; El Reposo, 800 ft. alt.; Costa Cuca, 2500 ft. alt.; Cholluitz, on the slope of Volcán de Santa María (Von Martens 1891). Dept. Petén: Tikal National Park (Basch 1959). HONDURAS, Dept. Islas de la Bahía: between Coxen Hole and French Harbout, Isla de Roatán (Richards 1938). NICARAGUA: numerous localities along the Pacific Versant (Pérez & Lopéz 2002); Dept. Zelaya: Bonanza, Moravian Mission (Jacobson 1968). PANAMÁ, Prov. Chiriquí: Chiriquí. Prov. Panamá: Cd. Panamá; between Tabernilla and San Pablo. Prov. Los Santos: Tonosí (Pilsbry 1926). Canal Zone: Isla Barro Colorado (Pilsbry 1930). VENEZUELA: La Fria (H. B. Baker 1943).

***Euglandina (Cosmomenus) cylindracea* (Phillips 1846)**

*Glandina cylindracea* Phillips 1846; Proc. Acad. Nat. Sci. Phila. 3:67; pl. 1, fig. 33 (shell).

*Euglandina cylindracea* (Phillips). Pilsbry 1908; Man. Conch. 19:198.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):528–529.- Richards 1937; Proc. Amer. Philos. Soc. 77:251.- Thompson 1967; Bull. Fla. St. Mus. 11:232.

*Euglandina (Cosmomenus) cylindracea* (Phillips). H. B. Baker 1941; Nautilus 55:60.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:9; pl. 2, figs. 19 (radula), 20 (reproductive anatomy).

*Achatina largillierti* Pfeiffer 1846; Symbolae Hist. Helic., 3:90.

*Glandina largillierti* (Pfeiffer). Fischer & Crosse 1870:116.- Von Martens 1891:67; pl. 4, figs 14–14d, 15 (shell).

*Achatina yucatanensis* Pfeiffer 1846; Symbolae Hist. Helic. 3:92.

*Glandina yucatanensis* (Pfeiffer). Strebel 1875:44; pl. 1, figs. 18; pl. 8, figs. 18–18f (shell).

*Achatina carnea* Pfeiffer 1854; Proc. Zool. Soc. Lond. (1852):157.

Type Localities.—*Glandina cylindracea*: Yucatán, México. *Achatina largillierti*: Yucatán, México. *Achatina yucatanensis*: Yucatán, México. *Achatina carnea*: Central America.

Distribution.—CAMPECHE: 7.2 mi. S of Pixtún; 2.2 mi. S of Pixtún; Cd. d Carmin; 6.1 mi. SW of Sebaplaya; 6.2 mi. SE of Sebaplaya; 7.1 mi. SW of Campeche; 5.7 mi. E of Campeche; 3.6 mi. S of Hopelchen; 5.1 mi. NNW of Dzilbachén; 5.1 mi. W of Tikinmúl; 10.2 mi. E of Escarcega (Thompson 1967). QUINTANA ROO: San Miguel, Isla Cozumel (Richards 1937); Chetumal (Haas & Solem 1960);

7.1 mi. NNW of Xiatil (Thompson 1967). YUCATÁN: Chichen Itza; Chankom; Dzitas; Temax; Progreso; cave of Actun Lara, near Ticul; Actun Has, Hacienda Yocat (Bequaert & Clench 1933); 0.8 mi. NE of Becanchén; Uxmal; 19.1 mi. SSE of Uxmal; 7.0 mi. SSE of Uman; Progreso (Thompson 1967).

**Genus *Guillarmodia* H. B. Baker 1941**

*Guillarmodia* H. B. Baker 1941; Nautilus 55:54, 57.- Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:54–56.

Type Species.—*Euglandina pupa* H. B. Baker 1941).

Distribution.—México in general with one species from Costa Rica.

Taxonomy.—*Guillarmodia* was previously treated as a subgenus of *Euglandina*. Its distinct shell characters and reproductive anatomy justify recognition as a separate genus, with two subgenera. Forty-one species and seven subspecies are recognized within the genus.

**Subgenus *Guillarmodia* H. B. Baker 1941**

Distribution.—México, generally from states along the Pacific coast from Colima south to Oaxaca, and north along the east coast to Nuevo León and Tamaulipas.

Taxonomy.—Fourteen species are recognized.

***Guillarmodia (Guillarmodia) arthritica* (Thompson 1995)**

*Euglandina arthritica* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:68–69; figs. 35–37 (shell).

Type Locality.—An oak-forested limestone hillside 7.5 km ENE of Ixcateopán, Guerrero, México; 2650 m alt. Holotype UF 34666.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) brachystyla* (Thompson 1995)**

*Euglandina (Guillarmodia) brachystyla* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:56–59; figs. 20–22 (shell).

Type Locality.—A small karst limestone knoll 2 km east of Punta Troncones, Guerrero, México; 60 m alt. Holotype UF 193587.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) comma* (Thompson 1995)**

*Euglandina comma* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:59–61; figs. 23–25 (shell).

Type Locality.—Southeast side of the Rio Ixtapa, 6 km southeast of Pantla, Guerrero, México (17°43' N, 101°40' W); 20 m alt. Pantla is a small village on the coastal highway 23 km NW of Zihuatanejo. The type locality is in a lowland mesic forest overlying a substrata consisting of lateritic soils and limestone. Holotype UF 34663.

Distribution.—Found along coast areas of northwestern Guerrero, México. GUERRERO: 2 km SE of Pantla, 30 m alt.; 3.5 km NW of Zihuatanejo, 130 m alt.; 4.5 km NW of Zihuatanejo, 100 m alt.; limestone hill 3 km E of Naranjillo; 2 km NE Punta Troncones (17°47'36" N, 101°42'43" W), 50 m alt.; 1.3 km N of Playa Majahua (17°47'58" N, 101°44'11" W),

50 m alt.; 10 km N of La Unión (18°00'05" N, 101°45'20" W), 150 m alt.; 1 km SSE of La Junta (18°01'21" N, 101°44'58" W), 130 m alt.

***Guillarmodia (Guillarmodia) cymatophora (Pilsbry 1910)***

*Euglandina cymatophora* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61 (1909):544; text-fig. 3 (shell).

Type Locality.—Side of the canyon below Los Canoas, San Luis Potosí, México. Holotype ANSP 98612.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) dorsalis (Thompson 1963)***

*Euglandina (Guillarmodia) dorsalis* Thompson 1963:97–99; figs. 3, 4.

Type Locality.—One mile north of Pomero, Michoacán, México, 700 ft alt. Holotype UMMZ 213222.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) elegans (Von Martens 1895)***

*Salasiella elegans* Von Martens in Rolle 1895; Von Martens 1895; Biol. Cent. Amer.:613; pl. 44; figs. 1, 1a (shell).- Pilsbry 1907; Man. Conch. 19:174; pl. 28, figs. 58, 59 (shell).

*Euglandina (Guillarmodia) elegans* (Von Martens). Thompson 1963; Nautilus 76:95–99, figs. 1, 2 (shell).

Type Locality.—Colima, México. Lectotype Berlin Museum 47661 (Thompson 1963).

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) gracilior (Thompson 1995)***

*Euglandina gracilior* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:64–65; figs. 29–31 (shell).

Type Locality.—An open oak forest 12 km by road southwest of Xochilapa, Guerrero, México (17°48'41" N, 99°42'32" W); 1700 m alt. The area is an exposed limestone substrata with clusters of palms, shrubs and *Agave* sp. growing among the oaks. Holotype UF 194115.

Distribution.—GUERRERO: known only from intermediate altitudes along a limestone ridge southwest of Xochilapa, Guerrero, confined to a submesic zone between 1285–2200 m altitude that is dominated by sparse growths of oaks (*Quercus* sp.); 10 km SW of Xochilapa, 1700 m alt.; 11.5 km SW of Xochilapa, 1750 m alt.; 12 km by road SW of Xochilapa, 1700 m alt.; 15 km SW of Xochilapa, 2200 m alt.; 10 km SSW of Mazcala (18°34'03" N, 97°55'39" W), 1285 m alt; 10 km SSW of Mazcala (17°50'50" N, 99°40'25" W), 1485 m alt.

***Guillarmodia (Guillarmodia) kingi (Thompson 1995)***

*Euglandina kingi* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:62–64; figs. 26–28 (shell).

Type Locality.—Among boulders in an open semi-xeric scrub forest on a limestone hillside, on the west side of the Rio Tehuántepec, 25 km NW of the Presa Benito Juaréz (dam), Oaxaca, México; 300 m alt. Holotype UF 34691.

Distribution.—Confined to low and intermediate semi-xeric habitats along the Pacific coast of Oaxaca, México.

OAXACA:30 km NW, 3 km NE of Tehuántepec, 200 m alt.; 13.5 km NW of Tehuántepec, 150 m alt.; 24 km NW, 3 km NE of Tehuántepec, 210 m alt.; 3.5 km NW of Mixtequilla, 130 m alt.; 26 km SE of El Camarón, 1100 m alt.; 10 km N of La Ventosa, 210 m alt.; limestone hill 10 km E of La Ventosa, 50 m alt.; 7.5 km N of La Ventosa, 100 m alt.; 15 km ESE of Santiago Astata, 100 m alt. (15°57'53" N; 95°32'59" W); limestone mtn. 3 km W of Santiago Astata, 100 m alt. (15°59'55" N, 95°42.45" W); 5 km E of Santiago Astata, 100 m alt. (15°58'50" N, 95°38'16" W).

***Guillarmodia (Guillarmodia) mariana (Dall 1926)***

*Euglandina mariana* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:470–471; pl. 35, fig. 4 (shell).

Type Locality.—Isla Maria Magdalena, Islas Mariás, Nayarit, México. Holotype CAS 2190.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) minuta (Pilsbry 1910)***

*Streptostyla minuta* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61:545; text-fig. 5 (shell).

Type Locality.—Mountain sides of canyon below Los Canoas, San Luis Potosí, México. Holotype ANSP 98595.

Distribution.—Known only from the type locality.

Taxonomy.—See *Streptostyla minuta*. The general structure of the shell indicates a closer relationship with *Guillarmodia* than with *Streptostyla*.

***Guillarmodia (Guillarmodia) multispira (Pfeiffer 1861)***

*Oleacina multispira* Pfeiffer 1861; Novitat. Conch. 2:163; pl. 44, figs. 4–5 (shell).

*Glandina multiapira* (Pfeiffer). Tryon 1885; Man. Conch. 1:30; pl. 3, fig. 25 (shell).- Von Martens 1891; Biol. Cent. Amer.:68.

*Euglandina multispira* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:207.

Type Locality.—Juquila, Oaxaca, México.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) nelsoni (Bartsch 1909)***

*Euglandina nelsoni* Bartsch 1909; Proc. U. S. Nat. Mus. 37:321; pl. 33, figs. 1, 3, 4, 6.- Pilsbry and Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:307.

Type Locality.—Acaponeta, Tepic [Nayarit], México. Syntypes USNM 207784.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) pupa (H. B. Baker 1941)***

*Euglandina (Guillarmodia) pupa* H. B. Baker 1941; Nautilus 55:57; pl. 5, figs. 8–9 (shell).- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8; pl. 2, figs. 14–15 (anatomy).- Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:56; figs. 17–19.

Type Locality.—Atoyác, Veracruz, México; 1300–1415 ft. alt. Holotype in the UMMZ.

Distribution.—Eastern México in central Veracruz and immediately adjacent Oaxaca; 100–980 m alt. OAXACA: limestone range 1 km W of Cedral, 100 m alt.; 4 km NW of Temascal, 100 m alt.; 3 km S of Acatlán, 100 m alt.; 4 km SW

of Acatlán, 100 m alt. VERACRUZ: 3 km NE of Atoyác, 640 m alt.; 1 km NW of Atoyaquillas, ca. 7 km NNW of Paraje Nuevo, 750 m alt.; limestone knoll 4 km ESE of Córdoba, 800 m alt.; 1 km E of Berlín, ca. 4 km N of Córdoba, 980 m alt.; Cerro de Las Palmas, 1 km N of San Mateo, ca. 3 km NE of Córdoba, 910 m alt.; Comalapa, Cueva del Tunel; 4 km NE of Comalapa, 400 m alt.; 6 km NE of Comalapa, 250 m alt.

***Guillarmodia (Guillarmodia) pygmaea (Pilsbry & Vanatta 1936)***

*Euglandina pygmaea* Pilsbry & Vanatta 1936. Nautilus 49:98; pl. 7, fig. 5 (shell).

Type Locality.—Gonzalez, Tamaulipas, México. Holotype ANSP 162641.

Distribution.—Known only from the type locality.

***Guillarmodia (Guillarmodia) stenotrema (Thompson 1995)***

*Euglandina stenotrema* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:66–68; figs. 32–34 (shell).

Type Locality.—A limestone hillside 4.5 km ENE of Ixateopán, Guerrero; 2500 m alt. The area is forested with a dense growth of junipers among limestone boulders. Ixateopán (18°30' N, 99°47' W) is a small village about 37 km WSW of Taxco. Holotype UF 193042.

Distribution.—Confined to a small area of limestone terrain in northern Guerrero, México, north of the Rio Balsas from 1100–2100 m alt. GUERRERO: ca 10 km NE of Chapa, 1420 m alt. (18°25'51" N, 99°44'31" W); 1 km ENE of Ixateopán, 2250 m alt.; 2 km ENE of Ixateopán, 2100 m alt (18°30'16" N, 99°46'56" W); 7.5 km ENE of Ixateopán, 1650 m alt.; 5 km E of Teloloapán 1850 m alt.; 25 km E of Teloloapán 1850 m alt.; 18 km N of Tonalapa; 1100 m alt.; 9 km S of Buenavista de Cuellar, 1350 m alt.; ca. 20 km NNW of Buenavista de Cuellar 1540 m alt. (18°33'57" N, 99°27'57" W); Cerro Tuxpan, 1450 m alt. (18°23'36" N, 99°28'53" W).

**Subgenus *Proameria* H. B. Baker 1941**

Subgenus *Proameria* H. B. Baker 1941:54, 57–58.

Type Species.—*Euglandina saxitilis saxitilis* H. B. Baker 1941.

Distribution.—México in general south to Oaxaca and Veracruz. One species is recorded from Costa Rica. A species from Peru, *Euglandina haasi* Thompson 1982, also appears to belong here.

Taxonomy.—Twenty-seven species and seven subspecies are recognized.

***Guillarmodia (Proameria) albersi albersi (Pfeiffer 1854)***

*Achatina (Glandina) albersi* Pfeiffer 1854; Proc. Zool. Soc. Lond. 22:295.

*Glandina albersi* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:127.- Strebel 1875:7–9; pl. 6a, figs. 21 c, f, g; pl. 11, figs. 21–21b; pl. 12, figs. 21c, 21d, 21e (shell).- Von Martens 1891; Biol. Cent. Amer.:75; pl. 4, figs. 10, 10a (shell).

*Euglandina albersi* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:201.- Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila.

77:307.- Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:470.

Type Locality.—“Gulf of California”.

Distribution.—COLIMA: Sierra Madre de Colima (Von Martens 1891). NAYARIT: Tepic; Islas Marias (Dall 1926). SINALOA: Mazatlán (Von Martens 1891).

***Guillarmodia (Proameria) albersi infanta (Von Martens 1891)***

*Glandina albersi* var. *infanta* Von Martens 1891; Biol. Cent. Amer.:75; pl. 4, fig. 11 (shell).

*Euglandina albersi* var. *infanta* (Von Martens). Pilsbry 1908; Man. Conch. 19:201.

Type Locality.—Tepic, Nayarit, México.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) alticola (Pilsbry 1903)***

*Glandina victoriana alticola* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:772; pl. 48, fig. 52 (shell).

*Euglandina alticola* (Pilsbry). Pilsbry 1908; Man. Conch. 19:194–195; pl. 28, figs. 51–53 (shell).- Correa-Sandoval 1990:685.- Correa-Sandoval 1993; Rv. Biol. Trop., 41:685.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Syntypes ANSP 77174.

Distribution.—NUEVO LEÓN: Santiago (Correa-Sandoval 1993).

***Guillarmodia (Proameria) attenuata (Pfeiffer 1851)***

*Achatina (Glandina) attenuata* Pfeiffer 1851; Proc. Zool. Soc. Lond. 19:259.- Pfeiffer, in Martini & Chemnitz, Syst. Conch. Cab., ed. 2: *Achatina*, no. 43:322; pl. 26, figs. 10–11 (shell).

*Glandina attenuata* (Pfeiffer). Tryon 1885; Man. Conch. 1:22; pl. 4, fig. 42 (shell).

*Euglandina attenuata* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:208. Type Locality.—Central America.

Distribution.—Unknown. This species has not been found since its original discovery.

***Guillarmodia (Proameria) bellula (Crosse & Fischer 1869)***

*Glandina bellula* Crosse & Fischer 1869; Jour. de Conchyl. 17:425.- Fischer & Crosse 1870; Miss. Sci. Mex. I:128, pl. 6, figs. 3, 8a (shell).- Tryon 1885; Man. Conch. 1:23; pl. 4, fig. 36 (shell).

*Euglandina bellula* (Crosse & Fischer). Pilsbry 1908; Man. Conch. 19:207.

Type Locality.—México.

Distribution.—Unknown.

***Guillarmodia (Proameria) chasonae Pilsbry & Cockerell 1926***

*Euglandina chasonae* Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila. 77:305; text-fig. 4 (shell).

Type Locality.—Tepic, Nayarit, México. Holotype ANSP 139942.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) conferta conferta (Pfeiffer 1861)***

*Oleacina conferta* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:26.

*Glandina conferta* (Pfeiffer). Fischer & Crosse 1870:131 (*in part*).



Strebel 1875:50; pl. 13, figs. 44–44a (shell).- Tryon; 1885, Man. Conch. 1:34; pl. 8, fig. 6 (shell).- Von Martens 1891:71.  
*Euglandina conferta* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:210.  
 Type Locality.—Juquila, Oaxaca, México.  
 Distribution.—Known only from the type locality.  
 VERACRUZ: Huatusco; Jalapa; Mirador (Von Martens 1891).

***Guillarmodia (Proameria) conferta crossei* (Von Martens 1891)**

*Glandina conferta* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:131; pl. 6, fig. 7 (shell).  
*Glandina conferta* var. *crossei* Von Martens 1891; Biol. Cent. Amer.:71.  
 Type Locality.—Orizaba(?), Veracruz, México.  
 Distribution.—VERACRUZ(?).

***Guillarmodia (Proameria) cordovana* (Pfeiffer 1856)**

*Achatina (Varicella) cordovana* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:321.  
*Glandina cordovana* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:87; pl. 2, figs. 11–11a (shell).- Strebel 1875:51–52; pl. 13, fig. 45 (shell).- Von Martens 1891; Biol. Cent. Amer.:70.  
*Euglandina cordovana* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:209.  
*Euglandina (Proameria) cordovana* (Pfeiffer). H. B. Baker 1941; Nautilus 55:60.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8.  
 Type Locality.—Cordova [Córdoba], Veracruz, México.  
 Distribution.—VERACRUZ: Córdoba; Mirador (Strebel 1875); Sumidero, 3400 ft. alt. (H. B. Baker 1941).

***Guillarmodia (Proameria) dalli* (Pilsbry 1899)**

*Glandina dalli* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:396.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:772; pl. 47, figs. 5–5a (shell).  
*Euglandina dalli* (Pilsbry). Pilsbry 1908; Man. Conch. 19:207–208; pl. 26, figs. 12–13 (shell).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:685.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (73):237.  
 Type Locality.—Diente, near Monterrey, Nuevo León, México. Syntypes ANSP 77173.  
 Distribution.—NUEVO LEÓN: Diente; Santiago (Correa-Sandoval 1993). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Castro 2002).

***Guillarmodia (Proameria) delicata* Pilsbry 1903**

*Glandina delicata* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:771–772; pl. 48, figs. 1–1b (shell).  
*Euglandina delicata* (Pilsbry). Pilsbry 1908; Man. Conch. 19:194; pl. 28, figs. 48–50 (shell).  
 Type Locality.—Canyon 4 miles west of [Ciudad] Victoria, Tamaulipas, México. Syntypes ANSP 85917.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) delicatula delicatula* (Shuttleworth 1852)**

*Achatina (Polyphemus) delicatula* Shuttleworth 1852; Mitt. Naturf.

Ges. Bern 1852:202.

*Gandina delicatula* (Shuttleworth). Fischer & Crosse 1870:92.- Von Martens 1891; Biol. Cent. Amer.:70; pl. 5, figs. 4, 5, 5a (shell).  
*Euglandina delicatula* (Shuttleworth). Pilsbry 1908; Man. Conch. 19:209; pl. 27, fig. 41 (shell).- Neubert and Gosteli 2003; Contr. Nat. Hist. 1:21: pl. 12, fig. 1.

Type Locality.—Cordova [Córdoba], Veracruz, México.  
 Syntype: Naturhistorische Museum Bern 18844/1 (Neubert and Gosteli 2003).

Distribution.—VERACRUZ: Coatepec; Córdoba; Jalapa (Von Martens 1891).

***Guillarmodia (Proameria) delicatula major* (Von Martens 1891)**

*Glandina delicatula* var. *major* Von Martens 1891; Biol. Cent. Amer.:70–71; pl. 5, fig. 5 (shell).  
*Euglandina delicatula* var. *major* (Von Martens). Pilsbry 1908; Man. Conch. 19:209; pl. 27, figs. 42–43 (shell).  
 Type Locality.—Coatepec, Veracruz, México.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) delicatula montivaga* H. B. Baker 1941**

*Euglandina (Proameria) delicatula montivaga* H. B. Baker 1941; Nautilus 55:58; pl. 5, figs. 6–7 (shell).  
 Type Locality.—Above Necaxa, Puebla, México; 4925 ft. alt. Holotype in the UMMZ.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) filosa* (Pfeiffer 1855)**

*Achatina (Glandina) filosa* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:100.  
*Glandina filosa* (Pfeiffer). Fischer & Crosse 1870:129; pl. 6, fig. 5.- Von Martens 1891:74; pl. 5, figs. 2–2b (shell).  
*Euglandina filosa* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:200; pl. 23, figs. 31–33 (shell).  
 Type Locality.—Orizaba, Veracruz, México.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) fischeri* (Von Martens 1891)**

*Glandina fischeri* Von Martens 1891; Biol. Cent. Amer.:74; pl. 5, figs. 3–3a (shell).  
*Euglandina fischeri* (Von Martens). Pilsbry 1908; Man. Conch. 19:200; pl. 23, figs. 29–30 (shell).  
 Type Locality.—Toluca, State of México.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) mitriformis* (Angas 1879)**

*Glandina (Oleacina) mitriformis* Angas 1879; Proc. Zool. Soc. Lond. 47:481; pl. 40, fig. 10 (shell).  
*Oleacina mitriformis* (Angas). Tryon 1885; Man. Conch. 1:35; pl. 7, fig. 94.  
*Glandina mitriformis* Angas. Von Martens 1891; Biol. Cent. Amer.:75.  
*Euglandina mitriformis* (Angas). Pilsbry 1908:201.  
 Type Locality.—Low hills and flat country, middle Zhorquin to Cuabre, Costa Rica.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) oblonga* (Pfeiffer 1866)**

*Oleacina oblonga* Pfeiffer 1866; Malak. Blätt. 13:86.

*Glandina oblonga* (Pfeiffer). Von Martens 1891; Biol. Cent. Amer.:69; pl. 5, fig. 6 (shell).

*Euglandina oblonga* (Pfeiffer 1866). Pilsbry 1908; Man. Conch. 19:205–206; pl. 26, fig. 11 (shell).

Type Locality.—Mirador, Veracruz, México.

Distribution.—PUEBLA: Tehuacán (Von Martens 1891). VERACRUZ: Mirador.

***Guillarmodia (Proameria) orizabae* (Pfeiffer 1856)**

*Achatina (Varicella) orizabae* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:320; pl. 35, fig. 6 (shell).

*Glandina orizabae* (Pfeiffer). Fischer & Crosse 1870:85; pl. 2, figs. 8–8a (shell).- Strebel 1875:52.- Von Martens 1891:73.

Type Locality.—Volcán de Orizaba, at a height of 3000 meters, Veracruz, México.

Distribution.—VERACRUZ: Las Vigas, on the edge of the plateau NW of Jalapa, 7900 ft. alt. (Von Martens 1891).

***Guillarmodia (Proameria) polita* (Strebel 1875)**

*Glandina polita* Strebel 1875; Beitrag. Mex. Land- und Süßw.-Conch. II:48–49; pl. 22, figs. 1q, 1r (shell); 1–1g (anatomy).

*Euglandina (Proameria) polita* (Strebel). H. B. Baker 1941; Nautilus 55:57.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8.

Type Locality.—A short distance in the Barranca Mihuistlan, near Coatepec, Veracruz, México.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) potosiana potosiana* Pilsbry 1908**

*Euglandina oblonga* var. *potosiana* Pilsbry 1908; Man. Conch. 19:207; pl. 26, fig. 14 (shell).- Correa-Sandoval, García-Cubas & Reguero 1996; Acta Zool. Mex. (73):16.

Type Locality.—Valles, San Luis Potosí, México. Syntypes in the ANSP.

Distribution.—SAN LUIS POTOSÍ: Cascadas Micos (Sierra Colmena) (22°06'35" N, 99°09'44" W, 240 m alt.); 1 km E of Platanito, 1320 m alt. (22°28'02" N, 99°28'25" W); hwy. Cd. del Maíz-El Naranjo, km 10 (22°30'00" N, 99°22'06" W); hwy. Cd. del Maíz-El Naranjo, km 35 (22°30'00" N, 99°22'06" W) (Correa-Sandoval et al. 1998).

***Guillarmodia (Proameria) potosiana tamaulipensis* (Pilsbry 1908)**

*Glandina oblonga tamaulipensis* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:772; pl. 47, fig. 6 (shell).

*Euglandina oblonga* var. *tamaulipensis* Pilsbry. Pilsbry 1908; Man. Conch. 19:206–207; pl. 26, figs. 15–17 (shell).- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):237.

Type Locality.—A canyon about 4 miles west of [Ciudad] Victoria, Tamaulipas, México. Syntypes ANSP 85901.

Distribution.—NUEVO LEÓN: Iturbide (Correa-Sandoval 1997); numerous localities in southern part of state (Correa-Sandoval & Salazar 2005). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Catsro 2002).

***Guillarmodia (Proameria) pulcherrima* (Strebel 1883)**

*Glandina monilifera* form B, Strebel 1875; Beitrag. Mex. Land- und Süßw.-Conch. II:49; pl. 13, figs. 43–43a (shell).

*Glandina pulcherrima* Strebel 1883:104.

*Euglandina pulcherrima* (Strebel).- Pilsbry 1908; Man. Conch. 19:208–209; pl. 27, figs. 25–27 (shell).

Type Locality.—Quautlatitlan, Veracruz, México. Syn-type Berlin Museum 30738.

Distribution.—VERACRUZ: Cuatepec, above Jalapa (Strebel 1883).

***Guillarmodia (Proameria) rhoadsi* (Pilsbry 1899)**

*Glandina rhoadsi* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:395.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:771; pl. 47, figs. 3–3b (shell).

*Euglandina rhoadsi* (Pilsbry). Pilsbry 1908; Man. Conch. 19:192–193; pl. 26, figs. 2–24 (shell).- Correa-Sandoval 1993; Rev. Biol. Tropic., 41:685.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Syntypes ANSP 77173.

Distribution.—NUEVO LEÓN: Diente; Santiago (Correa Sandoval 1993).

***Guillarmodia (Proameria) saxitilit saxitilis* H. B. Baker 1941**

*Euglandina (Proameria) saxitilit saxitilis* H. B. Baker 1941; Nautilus 55:57–58, 60; pl. 5, figs. 2–3 (shell).- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8; pl. 2, fig. 16 (reproductive anatomy).

Type Locality.—Below Necaxa, Puebla, México; 3000 ft. alt.. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) saxitilis convallis* H. B. Baker 1941**

*Euglandina (Proameria) saxitilis convallis* H. B. Baker 1941; Nautilus 55:58, 60; pl. 5, fig. 1.

Type Locality.—Tepexic, below Necaxa, Puebla, México; 2215 ft. alt.. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) saxitilis montivaga* H. B. Baker 1941**

*Euglandina (Proameria) saxitilis montivaga* H. B. Baker 1941; Nautilus 55:58; pl. 5, figs. 6–7 (shell).

Type Locality.—Above Necaxa, Puebla, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) sayula* (Von Martens 1891)**

*Glandina turgida* var. *sayula* Von Martens 1891; Biol. Cent. Amer.:73; pl. 4, figs. 16–20a (shell).

*Euglandina turgida* var. *sayula* (Von Martens). Pilsbry 1908; Man. Conch. 19:200; pl. 24, figs. 57–59.

Type Locality.—Sayula, Jalisco, México.

Distribution.—JALISCO: Sayula.

***Guillarmodia (Proameria) speciosa* (Pfeiffer 1856)**

*Achatina (Varicella) speciosa* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:321; pl. 35, fig. 7 (shell).

*Glandina speciosa* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:86; pl. 2, figs. 10–10a (shell).- Strebel 1875:51; pl. 13, figs. 46–46a (shell).- Von Martens 1891:71–72.  
*Euglandina speciosa* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:210.  
 Type Locality.—Cordova [Córdoba], Veracruz, México.  
 Distribution.—VERACRUZ: Huatusca; Orizaba (Von Martens 1891).

***Guillarmodia (Proameria) sulcifera* (Von Martens 1891)**

*Glandina sulcifera* Von Martens 1891; Biol. Cent. Amer.:74; pl. 5, figs. 1–1b (shell).  
*Euglandina sulcifera* (Von Martens). Pilsbry 1908; Man. Conch. 19:201; pl. 23, figs. 34–36 (shell).  
 Type Locality.—Jalisco, México.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) tepicensis* Pilsbry & Cockerell 1926**

*Euglandina tepicensis* Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila. 77:306–307; text-figs. 1–1a (shell).  
 Type Locality.—Tepic, Nayarit, México. Holotype ANSP 139943.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) tortillana* (Pfeiffer 1846)**

*Achatina (Glandina) tortillana* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:32.  
*Achatina tortillana* Pfeiffer. Reeve 1850: pl. 15, fig. 66.  
*Glandina tortillana* (Pfeiffer). Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:50.- Von Martens 1891:72.  
*Oleacina tortillana* (Pfeiffer). Tryon 1885; Man. Conch. 1:35; pl. 6, fig. 79.  
*Euglandina tortillana* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:201.  
 Type Locality.—“Tortilla, Central America”.  
 Distribution.—Unknown.

***Guillarmodia (Proameria) turgida* (Pfeiffer 1861)**

*Oleacina turgida* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:26.  
*Glandina turgida* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:130.- Von Martens 1891:73; pl. 4, fig. 16 (shell).  
*Euglandina turgida* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:199; pl. 24, fig. 56 (shell).  
 Type Locality.—Juquila, Oaxaca, México.  
 Distribution.—Known only from the type locality.

***Guillarmodia (Proameria) victoriana* (Pilsbry 1903)**

*Glandina victoriana* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55: 771; pl. 47, figs. 4–4b (shell).  
*Euglandina victoriana* (Pilsbry). Pilsbry 1908; Man. Conch. 19:193–194; pl. 26, figs. 18–20 (shell).- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):237.  
 Type Locality.—Canyon 4 miles west of [Ciudad] Victoria, Tamaulipas, México. Lectotype ANSP 85918a (H. B. Baker 1963:219).  
 Distribution.—TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002).

**Genus *Varicoglandina* Pilsbry 1908**

*Varicoglandina* Pilsbry 1908:201.

Type Species.—*Glandina monilifera* Pfeiffer 1845.

Distribution.—Southern Veracruz and adjacent Oaxaca, Chiapas, and Guatemala.

Taxonomy.—Five species and one subspecies are recognized.

***Varicoglandina constricta* (Thompson 1995)**

*Euglandina constricta* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:71–73, figs. 41–43 (shell).  
 Type Locality.—A limestone ridge 3 km WNW of Mazín Grande, Oaxaca, México; 200 m alt. (18°08'01" N, 96°21'48" W). Holotype UF 190175.  
 Distribution.—Known only from the type locality.

***Varicoglandina monilifera monilifera* (Pfeiffer 1845)**

*Glandina monilifera* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:75.- Von Martens 1891; Biol. Cent. Amer.:75–76.  
*Glandina monilifera* form A. Strebel 1875:48; pl. 13, fig. 42 (shell).  
*Euglandina monilifera* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:210; pl. 27, figs. 26–29 (shell).- Hinkley 1920; Nautilus 34:43, 51.- Bequaert 1957:217.  
 Type Locality.—Cobán, [Dept. Alta Verapaz], Guatemala.  
 Distribution.—CHIAPAS: Monte Alban, 950 m. alt.; El Censo to Laguma Ocotol, 1000 m alt. (Bequaert 1937). GUERRERO: Omilteme (Von Martens 1891). GUATEMALA, Dept. Alta Verapaz: mountains of Cobán; Cobán; Cahabón (Von Martens 1891); on the mountain north of Chama (Hinkley 1920). Dept. Izabal: mountains of Cavech, above Cavech Village; Jocalo (Hinkley 1920).

***Varicoglandina monilifera rubella* (Morelet 1849)**

*Glandina rubella* Morelet 1849; Test. Noviss. I:14.  
*Euglandina monilifera* var. *rubella* (Morelet 1849). Pilsbry 1908; Man. Conch. 18:210; pl. 27, figs. 30–34 (shell).  
*Glandina iheringi* Pilsbry 1900; Nautilus 14:4.- Von Martens 1901; Biol. Cent. Amer.:612.  
*Euglandina iheringi* (Pilsbry). Pilsbry 1908; Man. Conch. 19:211; pl. 27, figs. 30–32.  
 Type Localities.—*Glandina rubella*: Province of Vera Paz, Guatemala. *Glandina iheringi*: Alta Vera Paz, Guatemala.  
 Distribution.—GUATEMALA: known only from the type localities.

***Varicoglandina nana* (Shuttleworth 1852)**

*Achatina (Polyphemus) nana* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:202.  
*Glandina nana* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:133; pl. 2, figs. 7–7b. (shell).- Strebel 1875; Beitrag. Mex. Land- und Süsw.-Conch. II:39.- Von Martens 1891; Biol. Cent. Amer.:77; pl. 5, fig. 7 (shell).  
*Euglandina nana* (Shuttleworth). Pilsbry 1908; Man. Conch. 19:201.  
*Varicoglandina nana* (Shuttleworth). Neubert & Gosteli 2003; Contributions to Natural History 1:38; pl. 12, fig. 2.  
 Type Locality.—Veracruz, México. Syntype Naturhistorische Museum Bern 18845/1 (Neubert & Gosteli 2003).  
 Distribution.—VERACRUZ: Córdoba; Misantla (Von Martens 1891).



***Varicoglandina rubiginosa* (Thompson 1995)**

*Euglandina* (*Varicoglandina*) *rubiginosa* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:69–71; figs. 38–40 (shell).

Type Locality.—A limestone knoll 11 km S of Cobán, Dept. Alta Verapaz, Guatemala; 1350 m alt. (15°24'57" N, 90°24'09" W). Holotype UF 190175.

Distribution.—Known only from a small area in the Dept. Alta Verapaz, Guatemala. GUATEMALA; Dept. Alta Verapaz: 15 km by road N of Cobán, 1050 m alt. (15°37'14" N, 90°19'10" W); limestone knoll 17.5 km NW of Tactic, 1330 m alt. (15°21'29" N, 90°25'25" W); 2 km ESE of Cajaj, 1250 m alt. (15°33'25" N, 90°06'56" W).

***Varicoglandina stigmatica* (Shuttleworth 1852)**

*Achatina* (*Polyphema*) *stigmatica* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:2002.

*Glandina stigmatica* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:91; pl. 2, figs. 9–9a (shell).- Von Martens 1891:77.

*Euglandina stigmatica* (Shuttleworth). Pilsbry 1908; Man. Conch. 19:210.- Neubert & Gosteli 2003; Contributions to Natural History 1:50; pl. 12, fig. 3.

*Euglandina* (*Varicoglandina*) *stigmatica* (Shuttleworth). H. B. Baker 1941; Nautilus 55:60.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:7–8; pl. 2, figs. 12 (reproductive anatomy), 13 (radula).

Type Locality.—Cordova [Córdoba], Veracruz, México. Syntype: Naturhistorische Museum Bern 18846/1 (Neubert & Gosteli 2003).

Distribution.—VERACRUZ: Córdoba; Orizaba; Atoyac (Von Martens 1891); Peñuela to Sumidero, 2625–3400 ft. alt. (H. B. Baker 1941).

**Genus *Streptostylella* Pilsbry 1907**

*Streptostylella* Pilsbry 1907; Man. Conch. 19:161.- H. B. Baker 1941:54.- Thompson 2009:64; figs. 1–3 (shell).

Type Species.—*Streptostyla botteriana* Crosse & Fischer 1869.

Distribution.—Central Veracruz, México.

Taxonomy.—A single species is recognized.

***Streptostylella botteriana* (Crosse & Fischer 1869)**

*Streptostyla botteriana* Crosse & Fischer 1869; Jour. de Conchyl. 18:190.- Fischer & Crosse 1870; Miss. Sci. Mex. 1:25; pl. 2, figs. 4–4b (shell).- Tryon 1885; Man. Conch. 1:44; pl. 11, fig. 95 (shell).- Von Martens 1891; Biol. Cent. Amer.:85.

*Streptostyla* (*Streptostylella*) *botteriana* Crosse & Fischer. Pilsbry 1907; Man. Conch. 19:161.- Thompson 2009; Arch. Moll. 138:64; figs. 1–3.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—VERACRUZ: W slope of Cerro de Las Palmas, San Bartolo, 851 m alt. (18.9433° N, 96.9283° W); Cerro de Las Palmas, 1 km N of San Mateo, ca. 3 km N of Córdoba, 910 m alt. (19.1549° N, 99.9437° W) (Thompson 2009).

**Genus *Varicoturris* Pilsbry 1907**

*Varicoturris* Pilsbry 1907; Man. Conch. 19:161.- H. B. Baker 1941;

Nautilus 55:56.- Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:47–48.- Thompson 2009; Arch. Molluskenkunde 138:64–65.

*Ghiesbreghtia* H. B. Baker 1941; Nautilus 55:52, 54.

Type Species.—*Varicoturris*: *Spiraxis dubia* Pfeiffer 1856. *Ghiesbreghtia*: *Euglandina* (*Ghiesbreghtia*) *flammulata* H. B. Baker.

Distribution.—Southeastern México and northern Guatemala.

Taxonomy.—The genus contains six species.

***Varicoturris dubia* (Pfeiffer 1856)**

*Spiraxis dubia* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:378.- Pfeiffer 1859. Monographia heliceorum viventium, IV:580.

*Streptostyla dubia* (Pfeiffer). Fischer & Crosse 1875; Miss. Sci. Mex. Amér. Cent.:65.- Von Martens 1891; Biol. Cent. Amer.:90; pl. 5, fig. 10.- Pilsbry 1907; Man. Conch. 19:161–162; pl. 28, fig. 65.

*Euglandina dubia* (Pfeiffer), H. B. Baker 1941; Nautilus 55:54.- Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:48–49; figs. 1–2 (shell).

Type Locality.—Chiapas, México. Syntypes BMNH 1991144.

Distribution.—México in extreme northern Chiapas and Adjacent Tabasco. CHIAPAS: 3 km N of Ixhuatán, 550 m alt. TABASCO: 4 km E of Teapa (Thompson 1995).

***Varicoturris elegans* Thompson 2009**

*Varicoturris elegans* Thompson 2009; Arch. Molluskenkunde 138:66–68; figs. 6–7.

Type Locality.—Limestone range on the northwest shore of Presa Miguel Aleman 11 km southwest, 3.5 m. northeast of Tierra Blanca, Oaxaca, México; 100 m alt. (18.405° N, 96.460° W).

Distribution.—Known only from the type locality.

***Varicoturris flammulata* (H. B. Baker 1941)**

*Euglandina* (*Ghiesbreghtia*) *flammulata* H. B. Baker 1941; Nautilus 55:56–57; pl. 5, figs. 10–11 (shell).- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:7; pl. 1, figs. 10–11 (anatomy).- Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:49; figs. 3–4, 6–7 (shell).

Type Locality.—Las Tortolas, near Córdoba, Veracruz, México; 2700 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: Cerro de las Palmas, 1 km E of Berlín, ca. 4 km N of Córdoba, 980 m alt. (Thompson 1995).

***Varicoturris hadra* Thompson 2009**

*Varicoturris hadra* Thompson 2009; Arch. Molluskenkunde 138:65–66; figs. 4–5.

Type Locality.—Limestone ridge 12 km northwest of Bethania, Oaxaca, México; 100 m alt. (17.968° N, 96.115° W).

Distribution.—Known only from the type locality.

***Varicoturris huehuetenangoensis* (Thompson 1995)**

*Euglandina huehuetenangoensis* Thompson 1995; Bull. Fla. Mus.

Nat. Hist. 39:54; figs. 14–16 (shell).

Type Locality.—Finca Chiblac, ca. 5 km W of San Ramón, Dept. Huehuetenango, Guatemala. Holotype UF 190305.

Distribution.—GUATEMALA: known only from the immediate vicinity of the type locality.

#### ***Varicoturris pycnoptyx* (Thompson 1995)**

*Euglandina pycnoptyx* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:49–52; figs. 8–11 (shell).

Type Locality.—Limestone bluff 6 km NE of Comalapa, Veracruz, México. Holotype UF 81946.

Distribution.—VERACRUZ: known only from the immediate vicinity of the type locality.

#### **Genus *Pittieria* Von Martens 1901**

*Pittieria* Von Martens 1901; Biol. Cent. Amer.:617.- Pilsbry 1907; Man. Conch 19:162.- H. B. Baker 1941; Nautilus 55:55.

Type Species.—*Streptostyla* (*Pittieria*) *bicolor* Von Martens 1901.

Distribution.—Central México south to northern Panamá.

Taxonomy.—Three subgenera and fourteen species are recognized.

#### **Subgenus *Pittieria* Von Martens 1901**

Distribution.—Costa Rica.

Taxonomy.—Two species are recognized.

#### ***Pittieria* (*Pittieria*) *bicolor* (Von Martens 1901)**

*Streptostyla* (*Pittieria*) *bicolor* Von Martens 1901; Biol. Cent. Amer.:617; pl. 44, fig. 6 (shell).- Pilsbry 1907; Man Conch. 19:162–163; pl. 29, fig. 86 (shell).

Type Locality.—Uiskar, in Alta Talamanca, Costa Rica.

Distribution.—Known only from the type locality.

#### ***Pittieria* (*Pittieria*) *pittieri* (Von Martens 1901)**

*Glandina pittieri* Von Martens 1901; Biol. Cent. Amer.:611; pl. 28, fig. 54.

*Euglandina pittieri* (Von Martens). Pilsbry 1908; Man. Conch. 19:199; pl. 28, fig. 54.

Type Locality.—Between Mokri and Ukutschka, near Talamanca, Costa Rica.

Distribution.—Known only from the type locality.

#### **Subgenus *Laeviglandina* Pilsbry 1908**

*Laeviglandina* Pilsbry 1908; Man. Conch. 19:201.- H. B. Baker 1941; Nautilus 55:55.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95; Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:12.

Type Species.—*Oleacina underwoodi* Fulton 1897

Distribution.—Central Veracruz and Guerrero south to northern Panamá.

Taxonomy.—Nine species are recognized.

#### ***Pittieria* (*Laeviglandina*) *aurantiaca* (Angas 1879)**

*Glandina aurantiaca* Angas 1879; Proc. Zool. Soc. Lond. 47:480; pl. 40, fig. 8 (shell).- Von Martens 1901; Biol. Cent. Amer.:612.

*Euglandina* (*Laeviglandina*) *aurantiaca* (Angas). Pilsbry 1908; Man. Conch. 19:204.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:96–97; text-fig. 22d (shell).

Type Locality.—“From the hill country”, Costa Rica,

Distribution.—COSTA RICA: Puerto Viejo; Rio Sarapiquí; San Miguel, on the road to Sarapiquí; Turrialba; Tuis, 600–600 m alt.; Santa Clara, 200–300 m alt.; Talamanca; Valley of Baca; Terraba (all Von Martens 1901). PANAMÁ: Bocas del Toro (Pilsbry 1926).

#### ***Pittieria* (*Laeviglandina*) *broctontomlini* (Pilsbry 1926)**

*Euglandina broctontomlini* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:97–98; text-fig. 22a (shell).

Type Locality.—Vesta Farms, Estrella Vally, Costa Rica. Holotype ACSP 132557a.

Distribution.—COSTA RICA: Cahuita; Rio Jiminey, 50 ft. alt. PANAMÁ, Prov. Bocas del Toro: Mono Creek.

#### ***Pittierria* (*Laeviglandina*) *chiriquiensis* (Da Costa 1900)**

*Glandina chiriquiensis* Da Costa 1900:66; pl. 7, fig. 2 (shell).- Von Martens 1901; Biol. Cent. Amer.:612.

*Euglandina chiriquiensis* (Da Costa). Pilsbry 1908; Man. Conch. 19:202; pl. 27, fig. 45 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:95–96; text-fig. 22a (shell).

*Pittierria chiriquiensis* (Da Costa). H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:12; pl. 3, fig. 29 (mantle collar), fig. 30 (reproductive system), fig. 31 (radula).

Type Locality.—Chiriquí, Panamá.

Distribution.—PANAMÁ: Near Santa Clara, Volcan de Chiriquí, 4100 ft. alt. (Pilsbry 1908).

#### ***Pittieria* (*Laeviglandina*) *decidua* (Pfeiffer 1861)**

*Oleacina decidua* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:26.

*Glandina decidua* (Pfeiffer). Fischer & Crosse 1970:122. Von Martens 1891; Biol. Cent. Amer.:70; pl. 4, figs. 12–13 (shell).

*Euglandina decidua* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:204; pl. 27, figs. 37–38.

Type Locality.—Juquila, Oaxaca, México.

Distribution.—Known only from the type locality.

#### ***Pittieria* (*Laeviglandina*) *izabellina* (Pfeiffer 1846)**

*Achatina* (*Glandina*) *izabellina* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:32.- Reeve, Conch. Icon, 6: pl. 21, fig. 95.

*Euglandina isabelina* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:203–204.- Pilsbry 1926:97–98.

Type Locality.—“México”.

Distribution.—Unknown.

#### ***Pittieria* (*Laeviglandina*) *lanceolata* (Von Martens 1891)**

*Glandina lanceolata* Von Martens 1891; Biol. Cent. Amer.:69; pl. 4, fig. 1–1b, 4 (shell).

*Euglandina lanceolata* (Von Martens). Pilsbry 1908; Man. Conch. 19:203; pl. 27, figs. 38–40 (shell).

Type Locality.—Omiteme, Guerrero, México.

Distribution.—Known only from the type locality.

#### ***Pittieria* (*Laeviglandina*) *obtusa* (Pfeiffer 1844)**

*Glandina obtusa* Pfeiffer 1844; in Philippi, Abbild. 1:132; pl. 1, fig.

3 (shell).- Strebel 1875:36, figs. 26–26b (shell).- Tryon 1885; Man. Conch. 1:24; pl. 4, fig. 55 (shell).- Von Martens 1891:76.  
*Euglandina obtusa* Pilsbry 1908; Man. Conch. 19:204.  
 Type Locality.—Ralejo, Nicaragua.  
 Distribution.—NICARAGUA, Dept. León: Polvón (Pilsbry 1908).

***Pittieria (Laeviglandina) tryoniana* Pilsbry 1908**

*Euglandina tryoniana* Pilsbry 1908; Man. Conch. 19:203; pl. 27, figs. 46–47 (shell).  
 Type Locality.—Central America. Holotype ANSP 24814.  
 Distribution.—Unknown.

***Pittieria (Laeviglandina) underwoodi* (Fulton 1897)**

*Oleacina underwoodi* Fulton 1897; Ann. & Mag. Nat. Hist. 6<sup>th</sup> ser. 20:212; pl. 6, fig. 9 (shell).  
*Glandina underwoodi* (Fulton). Von Martens 1901; Biol. Cent. Amer.:612.  
*Euglandina underwoodi* (Fulton). Pilsbry 1908; Man. Conch. 19:201–202; pl. 27, fig. 44 (shell).  
 Type Locality.—“Asaha Centago” [Azahar de Cartago], Costa Rica.  
 Distribution.—Known only from the type locality.

**Subgenus *Shuttleworthia* H. B. Baker 1941**

*Shuttleworthia* H. B. Baker 1941; Nautilus 55:55.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:11.  
 Type Species.—*Pittieria arborea* H. B. Baker 1941.  
 Distribution.—Eastern México in the states of Puebla and Veracruz.  
 Taxonomy.—Three species are recognized.

***Pittieria (Shuttleworthia) ambigua* (Pfeiffer 1856)**

*Achatina ambigua* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:321.  
*Glandina ambigua* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:139; pl. 6, figs. 1, 4a–4c.- Strebel 1875:53–54; pl. 2, fig. 48 (shell); pl. 13, figs. 48, 48a (shell).- Von Martens 1891:72.  
*Oleacina ambigua* (Pfeiffer). Tryon 1885; Man. Conch. 1:23; pl. 4, figs. 25, 27 (shell).  
*Euglandina ambigua* (Pfeiffer). Pilsbry 1908; Man. Conch. 19:201  
*Pittieria (Shuttleworthia) ambigua* (Pfeiffer). H. B. Baker 1941; Nautilus 55:59.  
 Type Locality.—Córdoba, Veracruz, México.  
 Distribution.—VERACRUZ: Bajada del Ojo de Agua, near Córdoba; Huatusco; Orizaba (Strebel 1875).

***Pittieria (Shuttleworthia) arborea* H. B. Baker 1941**

*Pittieria arborea* H. B. Baker 1941; Nautilus 55:59; pl. 5, figs. 13–15.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:11–12 (shell); pl. 3, figs. 25 (reproductive system), 26 (penis), 27 (radula), 28 (pallial organs).  
 Type Locality.—Below Necaxa, Puebla, México; 3120 ft. alt. Holotype in the UMMZ.  
 Distribution.—Known only from the type locality.

***Pittieria (Shuttleworthia) difficilis* (Crosse & Fischer 1869)**

*Glandina difficilis* Crosse & Fischer 1869; Jour. de Conchyl.

17:426.- Fischer & Crosse 1870; Miss. Sci. Mex. 1:132; pl. 6, figs. 3, 3a.- Von Martens 1891; Biol. Cent. Amer.:78.  
*Euglandina difficilis* (Crosse & Fischer). Pilsbry 1908; Man. Conch. 19:201.  
*Pittieria (Shuttleworthia) difficilis* (Crosse & Fischer). H. B. Baker 1941; Nautilus 55:59.  
 Type Locality.—“Probably in the environs of Cordova”, Veracruz, México.  
 Distribution.—Known only from the type locality.

**Subfamily STREPTOSTYLINAE H. B. Baker 1941**

Streptostylarum H. B. Baker 1941.- Thompson 2010; Revista de Biología Tropical 58:196.  
 Type Genus.—*Streptostyla* Shuttleworth 1852.  
 Distribution.—México and Central America. A single species is reported from Venezuela.  
 Taxonomy.—Seventy-four species are recognized in the study area.

**Genus *Myxastyla* Thompson 1995**

*Myxastyla* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:73–74.  
 Type Species.—*Streptostyla coxeni* Richards 1938.  
 Distribution.—Northern Central America.  
 Taxonomy.—Three species are recognized.

***Myxastyla coxeni* (Richards 1938)**

*Streptostyla coxeni* Richards 1938; Proc. Amer. Philos. Soc. 79:172; pl. III, fig. 2.  
*Myxastyla coxeni* (Richards). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:74–75; figs. 44–45 (shell).  
 Type Locality.—Limestone outcrops between Coxen Hole and West End, Isla de Roatán, Dept. Islas de la Bahía, Honduras. Holotype ANSP 170020.  
 Distribution.—HONDURAS: apparently endemic to Isla de Roatán. Other species of *Myxastyla*, currently undescribed, occur elsewhere in Honduras.

***Myxastyla hyalina* Thompson 1995**

*Myxastyla hyalina* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:78–79; figs. 49–50 (shell).  
 Type Locality.—Limestone knoll 17.5 km by road NW of Tactic, Dept. Alta Verapaz, Guatemala (15°21'29" N, 90°25'25" W); 1330 m alt. Holotype UF 189852.  
 Distribution.—GUATEMALA, Dept. Alta Verapaz: 11 km W of San Cristobal Verapaz, 1120 m alt.; 1.5 km SE of San Juan Chamelco; 1300 m alt.; 2 km ESE of Cajáj; 1250 m alt.; 11 km S of Cobán; 1350 m alt.; 14 km N of Cobán; 990 m alt. (Thompson 1995).

***Myxastyla pycnota* Thompson 1995**

*Myxastyla pycnota* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:75–78; figs. 46–48 (shell).  
 Type Locality.—Gorge along the Rio Selequa 12 km SSE of La Democracia, Dept. Huehuetenango, Guatemala; 950 m alt. HOLOTYPE UF 190415.  
 Distribution.—Known only from the type locality.



**Genus *Oryzosoma* Pilsbry 1891**

*Oryzosoma* Pilsbry 1891; Nautilus 5:9.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:311.- Pilsbry 1907; Man. Conch 19:163.

Type Species.—*Streptostyla (Orizosoma) tabiensis* Pilsbry 1891.

Distribution.—Yucatán, México.

Taxonomy.—The single known species is known only from a single bleached shell.

***Oryzosoma tabiensis* (Pilsbry 1891)**

*Streptostyla (Orizosoma) tabiensis* Pilsbry 1891; Nautilus 5:9.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:311; pl. 15, figs. 6–7 (shell).

*Oryzosoma tabiensis* (Pilsbry). Pilsbry, Man. Conch 19:163; pl. 30, figs. 99, 1 (shell).

Type Locality.—Cave in the mountains near the Hacienda Tabi, Yucatán, México. Holotype ANSP 61630.

Distribution.—Known only from the type locality.

**Genus *Salasiella* Strebel 1878**

*Salasiella* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:29.- H. B. Baker 1941; Nautilus 54:80–83.

Type Species.—*Salasiella joaquinae* Strebel 1877.

Distribution.—México south to Panamá.

Taxonomy.—Two subgenera are recognized. The genus includes twelve species.

**Subgenus *Salasiella* Strebel 1878**

Distribution.—México south to Panamá, Isla de Providencia, Colombia.

Taxonomy.—Nine species are included in the subgenus.

***Salasiella (Salasiella) browni* Pilsbry 1910**

*Salasiella browni* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:508; text-fig. 5 (shell).- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:345.- H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (135):7.

Type Locality.—Las Cascades, Canal Zone, Panamá. Holotype ANSP 101325.

Distribution.—PANAMÁ: Las Cascades; between Tabernillo and San Pablo (Pilsbry 1926); Isla Barro Colorado (Pilsbry 1930)

***Salasiella (Salasiella) corni* Richards 1939**

*Salasiella corni* Richards 1939; Proc. Amer. Philos. Soc. 81:32–33; text-fig. 3 (shell).

Type Locality.—Near Quin Bluff, Isla del Maíz, Nicaragua. Holotype ANSP 173926.

Distribution.—Known only from the type locality.

***Salasiella (Salasiella) guadalajarensis* Pilsbry & Cockerell 1926**

*Salasiella guadalajarensis* Pilsbry and Cockerell 1926; Proc. Acad. Nat. Sci. Phila. 77:308; fig. 6 (shell).

Type Locality.—Guadalajara, Jalisco, México. Holotype: ANSP 107474.

Distribution.—Known only from the type locality.

***Salasiella (Salasiella) guatemalensis* Pilsbry 1920**

*Salasiella guatemalensis* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:213; text-fig. 1.- Hinkley 1920; Nautilus 34:48.- H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (135):7.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):8.

Type Locality.—Gualan, [Dept. Zacapa], Guatemala. Holotype ANSP 114838.

Distribution.—GUATEMALA: Jocola (Pilsbry 1920). Dept. Petén: Tikal National Park (Basch 1959).

***Salasiella (Salasiella) hinkleyi* Pilsbry 1920**

*Salasiella hinkleyi* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:212; text-fig. 2 (shell).- Correa-Sandoval et al. 1998:16.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (79):237.

Type Locality.—Mountain side near the Tamosopo Sugar Company's place, San Luis Potosí, México. Holotype ANSP 45198a.

Distribution.—NUEVO LEÓN: Dientew, near Monterrey (Pilsbry 1920). SAN LUIS POTOSÍ: El Abra (Pilsbry 1920); numerous localities (Correa-Sandoval et al. 1998). NUEVO LEÓN: Diente, near Monterrey (Pilsbry 1920). SAN LUIS POTOSÍ: El Abra (Pilsbry 1920). TAMAULIPAS: Los Angeles, Sierra Tamaulipas (23°32'37" N, 98°29'30" W); Ejido Cuauhtemoc (Correa-Sandoval & Rodriguez 2002).

***Salasiella (Salasiella) joaquinae* Strebel 1878**

*Salasiella (Salasiella) joaquinae* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:29–30; pl. 10, figs. 1–7 (anatomy); pl. 11, fig. 8 (radula).- Von Martens 1891; Biol. Cent. Amer.:81.- Pilsbry 1907; Man. Conch. 19:172.

Type Locality.—Jalapa, Veracruz, México.

Distribution.—NUEVO LEÓN: Diente, near Monterrey (Pilsbry 1907). VERACRUZ: only from the type locality.

***Salasiella (Salasiella) margaritacea* (Pfeiffer 1856)**

*Achatina margaritacea* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:321.

*Salasiella margaritacea* (Pfeiffer). Von Martens 1891; Biol. Cent. Amer.:81; pl. 5, fig. 8.- Pilsbry 1907; Man. Conch. 19:171–172; pl. 28, fig. 61 (shell).- H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (135):6–7.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Córdoba; Hacienda Coatotolpam (H. B. Baker 1923).

***Salasiella (Salasiella) pulchella* (Pfeiffer 1856)**

*Achatina (Oleacina) pulchella* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:379 (not *Achatina pulchella* Spix 1827).

*Glandina pulchella* (Pfeiffer). Fischer & Crosse 1872:136.

*Salasiella pulchella* (Pfeiffer). Von Martens 1891; Biol. Cent. Amer.:83; pl. 5, fig. 9.- Pilsbry 1907; Man. Conch. 19:173–174; pl. 28, fig. 62.- H. B. Baker 1923; Occ. Pap. Mus. Zool. Univ. Mich. (135):7.- Jacobson 1968; Nautilus 81:118.

*Salasiella pfeifferi* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:398 (new name for *Achatina pulchella* Pfeiffer 1856).

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: type locality. NICARAGUA, Dept. Yelaya: 78 mi. W of San Carlos, along the Rio Cocos (Jacobson 1968).

***Salasiella (Salasiella) subcylindrica* Pilsbry 1903**

*Salasiella subcylindrica* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55: 774; text-fig. 1 (shell).- Pilsbry 1907; Man. Conch. 19:174; text-fig. 1.- Thompson 1957; Nautilus 70:101.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype ANSP 77169a.

Distribution.—Known only from the type locality. TABASCO: 0.5–1.0 mi. E of Teapa (Thompson 1957).

***Salasiella (?) camerata* H. B. Baker 1941**

*Oleacina? (Salasiella?) camerata* H. B. Baker 1941; Nautilus 55:55; pl. 5, figs. 4–5 (shell).

Type Locality.—Tepexic, below Necaxa, Puebla, México; 2200 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: known only from the type locality and a near-by locality above Necaxa, 4925 ft. alt. (H. B. Baker 1941).

**Subgenus *Perpusilla* H. B. Baker 1941**

*Perpusilla* H. B. Baker 1941; Nautilus 54:81–82.

Type Species.—*Salasiella perpusilla* (Pfeiffer 1866).

Distribution.—Eastern México in the states of Nuevo León, Puebla, and Veracruz.

Taxonomy.—Three species are recognized.

***Salasiella (Perpusilla) minima* Pilsbry 1907**

*Salasiella minima* Pilsbry 1907; Man. Conch. 19:172–173; text-fig. 6. *Salasiella (Perpusilla) minima* Pilsbry. H. B. Baker 1941; Nautilus 54:83; pl. 6, fig. 12 (radula), fig. 13 (reproductive anatomy).- Correa-Sadoval & Salazar 2005; Acta Zool. Mex. 21:60.

Type Locality.—Hills around Orizaba, about 500 ft. above the town, Veracruz, México. Holotype ANSP 58070.

Distribution.—VERACRUZ: type locality. PUEBLA: near Necaxa (H. B. Baker 1941). NUEVO LEÓN: ROAD Cercado-laguna de Sanchez, Parque Vito (25°23'24" N, 100°12'57" W) Correa-Sandoval & Salazar 2005).

***Salasiella (Perpusilla) modesta* (Pfeiffer 1862)**

*Oleacina modesta* Pfeiffer 1862; Malak. Blätt. 9:98.

*Glandina modesta* (Pfeiffer). Fischer & Crosse 1872:135.- Strebel 1875:52; pl. 13, fig. 49 (shell).

*Salasiella modesta* (Pfeiffer). Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:30; pl. 9, fig. 9.- Von Martens 1891:81.- Pilsbry 1907; Man. Conch. 19:172; text-figs. 4, 5 (shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):8.

*Salasiella (Perpusilla) modesta* (Pfeiffer). H. B. Baker 1941; Nautilus 54:82–83; pl. 6, figs. 8, 10 (reproductive anatomy), fig. 9 (shell).

Type Locality.—Veracruz, México.

Distribution.—PUEBLA: near Necaxa (H. B. Baker 1941). VERACRUZ: Córdoba (H. B. Baker 1941). GUATEMALA, Dept. Petén: Tikal National Park (Basch

1959).

***Salasiella (Perpusilla) perpusilla* (Pfeiffer 1866)**

*Oleacina perpusilla* Pfeiffer 1866; Malak. Blätt. 13:86.

*Glandina perpusilla* (Pfeiffer). Fischer & Crosse 1872:134; pl. 3, figs. 4, 4a-c.- Strebel 1875:53.- Strebel 1878:30; pl. 9, fig. 8 (shell).- Pilsbry 1907; Man. Conch. 19:173; text-figs. 2, 3 (shell).

*Salasiella (Perpusilla) perpusilla* (Pfeiffer). H. B. Baker 1941; Nautilus 54:81–82; pl. 6, fig. 1 (reproductive anatomy), fig. 2 (radula), figs. 3–4 (shell).

Type Locality.—Mirador, Veracruz, México.

Distribution.—NUEVO LEÓN: Diente, near Monterrey (Pilsbry 1907). PUEBLA: Necaxa (H. B. Baker 1941). VERACRUZ: woods of Pacho, near Jalapa (Strebel 1877).

**Genus *Strebelia* Crosse & Fischer 1868**

*Physella* Pfeiffer 1861; Malak. Blätt. 8:71 (*non Physella* Haldeman 1842).

*Strebelia* Crosse & Fischer 1868; Jour. de Conchyl. 16:90. - Pilsbry 1907; Man. Conch. 19: xxvii.

*Spirobulla* Ancey 1881; Le Naturaliste, 1:484.

Type Species.—*Physella berendti* Pfeiffer 1861.

Distribution.—Eastern México in the states of Veracruz and Hidalgo.

Taxonomy.—The genus is monotypic.

***Strebelia berendti* (Pfeiffer 1861)**

*Physella berendti* Pfeiffer 1861; Malak. Blätt. 8:71; pl. 1, figs. 1–4.

*Strebelia berendti* (Pfeiffer). Crosse & Fisher 1868; Jour. de Conchyl. 16:90.- Fischer & Crosse 1870:12; pl. 1, figs. 1–1b (shell).- Strebel 1878:9–10; pl. 1, figs. 1a–1b (animal), figs. 2–10 (anatomy); pl. 2, figs. 1–10 (anatomy); fig. 11 (radula).- Pilsbry 1904; Proc. Academy of Natural Sciences of Philadelphia:774.

Type Locality.—Here restricted to Mirador, Veracruz, México.

Distribution.—VERACRUZ: Mirado; Coiscomatepec (Pfeiffer 1861); Pacho, near Jalapa (Strebel 1878); Texolo (Pilsbry 1903).

**Genus *Streptostyla* Shuttleworth 1852**

*Streptostyla* Shuttleworth 1852; Mittheilungen für Naturforschenden Gesellschaft in Bern:203.- Pilsbry 1907; Man. Conch. 19:144–145.- H. B. Baker 1927; Nautilus 41:21.- H. B. Baker 1941; Nautilus 55:53.- Thompson 1967; Bull. Fla. St. Mus. 11:233–234.

Type Species.—By tautonymy, *Achatina streptostyla* Pfeiffer 1846.

Distribution.—México, Central America, and Cuba. A single species is reported from Venezuela.

Taxonomy.—Fifty-six species and fourteen subspecies are recognized in México and Central America. Four subgenera, *Streptostyla*, *Chersomitra*, *Peteniella*, and *Eustreptostyla*, occur in the study area. Another subgenus, *Rectoleacina*, occurs in Cuba. The distinctions between the subgenera *Streptostyla* and *Chersomitra* are primarily anatomical. The numerous species that remain unknown

anatomically are retained in the subgenus *Streptostyla*, with the exceptions of those placed in *Eustreptostyla* and *Peteniella*. Within *Streptostyla* species are grouped according to shell shape only as a matter of convenience following Von Martens (1892) and Pilsbry (1897). The arrangement does not reflect phylogenetic relationships, which is not possible to achieve without further anatomical or genetic information.

#### Subgenus *Streptostyla* Shuttleworth 1852

Distribution.—México and Central America.

Taxonomy.—Forty-two species and twelve subspecies are recognized.

#### Taxa with Oliviform Shell

##### *Streptostyla (Streptostyla) clavulata* Ancey 1903

*Streptostyla clavulata* Ancey 1903; Nautilus 17:56–57. (Not figured).

*Streptostyla clavulata* Ancey. Pilsbry 1907; Man. Conch. 19:160–161.

Type Locality.—“Central America”.

Distribution.—None recorded.

Taxonomy.—Apparently Ancey’s name *clavulata* was a typographic error, which was corrected to *clavulata* by Pilsbry (1907).

##### *Streptostyla (Streptostyla) cylindracea* (Pfeiffer 1846)

*Achatina cylindracea* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:31.

*Streptostyla cylindracea* (Pfeiffer). Fischer & Crosse 1870:30.- Angas 1879; Proc. Zool. Soc. Lond. 47:482.- Tryon 1885; Man. Conch. 1:48; pl. 11, fig. 98 (shell).- Von Martens 1891:93–94; pl. 5, fig. 13 (shell).- Pilsbry 1907; Man. Conch. 19:148.

Type Locality.—“Tortilla, Central America”.

Distribution.—GUATEMALA. VERACRUZ: Córdoba (Von Martens 1891).

##### *Streptostyla (Streptostyla) gabbi* Pilsbry 1907

*Streptostyla boucardi* (Pfeiffer) var. (?). Angas 1879; Proc. Zool. Soc. Lond. 47:482.

*Streptostyla boucardi* (Pfeiffer). Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 72 (shell).- Von Martens 1901; Biol. Cent. Amer.:616.

*Streptostyla gabbi* Pilsbry 1907; Man. Conch. 19:158; pl. 30, figs. 2, 3 (shell).

Type Locality.—On the ridge between Tiloría and Zorquin, Costa Rica.

Distribution.—COSTA RICA: Cabeceras de Tarazu, 2000 m alt.; Alahuéla; Tarbaca; Diquis, below Terraba; Cañas Gordas (Von Martens 1901).

##### *Streptostyla (Streptostyla) irrigua irrigua* (Shuttleworth 1852)

*Spiraxis (Streptostyla) irrigua* Shuttleworth 1852; Mitt. Natf. Ges. Bern 1852:205.

*Streptostyla irrigua* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:37.- Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 58.- Von Martens 1891; Biol. Cent. Amer.:92.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:8–9; pl. 1, fig. 7 (radula), fig. 8 (reproductive anatomy).- Neubert & Gosteli 2003;

Contributions to Natural History 1:31; pl. 11, fig. 7.

Type Locality.—Cordova [Córdoba], Veracruz, México; syntype: Naturhistorische Museum Bern 18837/1 (Neubert & Gosteli 2003).

Distribution.—VERACRUZ: Córdoba, 2625–3125 ft. alt. PUEBLA: Necaxa (H. B. Baker 1943)

##### *Streptostyla (Streptostyla) irrigua cingulata* Crosse & Fisher 1869

*Streptostyla cingulata* Crosse & Fischer 1869; Jour. de Conchyl. 17:31.- Fischer & Crosse 1870:40; pl. 1, figs. 6, 6a (shell).- Tryon 1885; Man. Conch. 1:45; pl. 10, fig. 55 (shell).

*Streptostyla irrigua cingulatum* Crosse & Fischer. Pilsbry 1907, Man. Conch. 19:146.

Type Locality.—[San Andres] Tuxtla, Veracruz, México.

Distribution.—VERACRUZ: Orizaba (Von Martens 1891).

##### *Streptostyla (Streptostyla) irrigua quirozi* Strebel 1878

*Streptostyla quirozi* Strebel 1878; Beitrag. Mex. Land- und Süßw.-Conch. III:21; pl. 8, fig. 3 (shell).- Tryon 1885; Man. Conch. 1:44; pl. 11, fig. 92 (shell).

*Streptostyla shuttleworthi* var. *quirozi* Strebel. Von Martens 1891; Biol. Cent. Amer.:93.

*Streptostyla irrigua quirozi* Strebel. Pilsbry 1907; Man. Conch. 19:146.- H. B. Baker 1941; Nautilus 55:60; H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:7.

Type Locality.—Not stated.

Distribution.—VERACRUZ: Coatepec; Miahuatlan; San Antonio de Monte (Strebel 1877); Tezuitlan; Misantla (Von Martens 1891). PUEBLA: Necaxa, 2120–5500 ft. alt. (H. B. Baker 1943).

##### *Streptostyla (Streptostyla) irrigua similis* Strebel 1878

*Streptostyla similis* Strebel 1878; Beitrag. Mex. Land- und Süßw.-Conch. III:19, 50; pl. 8, fig. 8; pl. 12, fig. 7 (shell).

*Streptostyla shuttleworthi* var. *similis* Strebel. Von Martens 1891; Biol. Cent. Amer.:93.

Type Locality.—Misantla, Veracruz, México.

Distribution.—VERACRUZ: Orizaba; Veracruz OAXACA: Juquila (Von Martens 1891).

##### *Streptostyla (Streptostyla) irrigua ventricosa* Von Martens 1891

*Streptostyla shuttleworthi* var.  $\lambda$  Fischer & Crosse 1870; Miss. Sci. Mex. 1:42, pl. 2, fig. 3 (shell).

*Streptostyla shuttleworthi* var. Strebel 1878; pl. 8, fig. 9a (shell).

*Streptostyla shuttleworthi* var. *ventricosa* Von Martens 1891; Biol. Cent. Amer.:93.

*Streptostyla irrigua* var. *ventricosa* Von Martens. Pilsbry 1907; Man. Conch. 19:146.

Type Locality.—Not specified by Von Martens (1891).

Distribution.—VERACRUZ: Orizaba; Nautla (Von Martens 1891).

##### *Streptostyla (Streptostyla) lattarei lattarei* (Pfeiffer 1845)

*Achatina lattarei* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:138.-



Reeve 1849; Conch. Icon, 6, *Achatina*: pl. 14, fig. 53 (shell).

*Streptostyla delattrei* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:33; pl. 1, figs. 5–5b.- Strebel 1878:21; pl. 8, figs. 10–10c; pl. 12, fig. 10 (shell).- Tryon 1885; Man. Conch. 1:44; pl. 10, fig. 49.- Von Martens 1891; Biol. Cent. Amer.:91.

*Streptostyla lattarei* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:145.- Hinkley 1920; Nautilus 34:43, 51.

*Glandina oliva* Morelet 1849; Test. Noviss. 1:13.

Type Locality.—*Achatina lattarei*: Not given. *Glandina oliva*: Vera Paz, Guatemala.

Distribution.—GUATEMALA. Alta Verapaz: Cobán; Chama (Hinkley 1920). Dept. Baja Verapaz: Panzos; Senahu, 2800 ft. alt. Dept. Izabal: Izabal (Von Martens 1891); mountains of Rio Cavech, above Cavech Village (Hinkley 1920).

***Streptostyla (Streptostyla) lattarei edwardsiana* Crosse & Fischer 1869**

*Streptostyla delattrei* var. *edwardsiana* Crosse & Fischer 1869; Jour. de Conchyl. 17:29.- Fischer & Crosse 1870; Miss. Sci. Mex. 1:35; pl. 2, figs. 2–2a (shell).- Strebel 1878:20.- Tryon 1885; Man. Conch. 1:44; pl. 10, fig. 49.- Von Martens 1891:91–92.

*Streptostyla lattarei* var. *edwardsiana* Crosse & Fischer. Pilsbry 1907; Man. Conch. 19:145.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) lattarei sallei* Crosse & Fischer 1869**

*Streptostyla delattrei* var. *sallei* Crosse & Fischer 1869; Jour. de Conch. 17:30.- Fischer & Crosse 1870:36; pl. 2, figs. 1–1a (shell).- Strebel 1878:20; pl. 8, fig. 4; pl. 12, fig. 20 (shell).

*Streptostyla sallei* Crosse & Fischer. Tryon 1885; Man. Conch. 1:44; pl. 10, fig. 50 (shell).

*Streptostyla lattarei* var. *sallei* Crosse & Fischer. Pilsbry 1907; Man. Conch. 19:145.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) novoleonis* Pilsbry 1899**

*Streptostyla novoleonis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:397.- Pilsbry 1903, Proc. Acad. Nat. Sci. Phila. 55:774; pl. 48, figs. 3, 3a (shell).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:605.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. (21):60.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Lectotype ANSP 77153a (H. B. Baker 1963:219).

Distribution.—NUEVO LEÓN: Santiago (Correa-Sandoval 1993); numerous localities (Correa-Sandoval & Salazar 2005).

***Streptostyla (Streptostyla) palmeri* Dall 1905**

*Streptostyla palmeri* Dall 1905; Smiths. Misc. Coll. 48:191.- Pilsbry 1907; Man. Conch. 19:146–147; pl. 29, fig. 68 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.

Type Locality.—Sierra Alvaréz, San Luis Potosí, México; 7200 ft. alt. Holotype USNM 110394.

Distribution.—SAN LUIS POTOSÍ: 2 km NW Poza de

la Media Luna, 1070 m alt. (21°53'39" N, 100°03'56" W); km post 140, east of Platanito, 1320 m alt. (22°28'02" N, 99°28'25" W); 6 km SW of Xilitla, 830 m alt. (21°23'10" N, 99°03'56" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: Ejido Conrado Castillo (23°57'1" N, 99°27'34" W) (Correa-Sandoval & Rodriguez 2002)

***Streptostyla (Streptostyla) potosiana* Dall 1905**

*Streptostyla potosiana* Dall 1905; Smiths. Misc. Coll. 48:190; pl. 44, fig. 4.- Pilsbry 1907; Man. Conch. 19:146; pl. 29, fig. 67 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):237.

Type Locality.—Sierra Alvaréz, San Luis Potosí, México; at a height of 7200 ft. Holotype USNM 110395.

Distribution.—SAN LUIS POTOSÍ: Hwy. Río Verde-Cd. Valles, Km 81, 1420 m alt. (21°53'54" N, 99°35'00" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: La Sanguinela, Ejido Los San Pedros (23°48'51" N, 99°24'49" W) (Correa-Sandoval & Rodriguez 2002)

***Streptostyla (Streptostyla) shuttleworthi* (Pfeiffer 1856)**

*Spiraxis shuttleworthi* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:320; pl. 35, fig. 8 (shell).

*Streptostyla shuttleworthi* Fischer & Crosse 1870:102; pl. 29, figs. 7, 7a; pl. 2, fig. 4 (shell).- Strebel 1878:6 18; pl. 8, fig. 9.- Tryon 1885; Man. Conch. 1:44; pl. 10, figs. 52–53 (shell).- Von Martens 1891:92.- Pilsbry 1907; Man. Conch. 19:146.

*Spiraxis bullacea* Pfeiffer 1866; Malak. Blätt. 13:84.- Von Martens 1891; Biol. Cent. Amer.:93.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—CHIAPAS. TABASCO: Teapa. VERACRUZ: Misantla; Orizaba; Córdoba (Von Martens 1891)

**Taxa with Coniform Shell**

***Streptostyla (Streptostyla) conulus* Von Martens 1891**

*Streptostyla conulus* Von Martens 1891; Biol. Cent. Amer.:94; pl. 5, fig. 15.- Pilsbry 1907; Man. Conch. 19:148; pl. 28, fig 60 (shell).

Type Locality.—Sayula, Jalisco, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) gracilis* Pilsbry 1907**

*Streptostyla gracilis* Pilsbry 1907; Man. Conch. 19:148–149; pl. 28, fig. 66.- Jacobson 1952; Nautilus 65:113.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. 86:237.

Type Locality.—Valles, San Luis Potosí, México. Holotype ANSP 92802a (Baker 1963:219).

Distribution.—SAN LUIS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: Km 636, on the road between Santa Inez and Llera (Jacobson 1956); numerous localities (Correa-Sandoval & Rodriguez 2002). VERACRUZ: San Juan Cuajinampa (21°11'53" N, 97°30'00" W) (Correa-Sandoval 2000).

***Streptostyla (Streptostyla) streptostyla streptostyla*  
(Pfeiffer 1846)**

*Achatina streptostyla* Pfeiffer 1846; Zeitschrift für Malakozoologie:159.

*Streptostyla streptostyla*.- H. B. Baker 1927; Nautilus 41:21.- H. B. Baker 1941; Nautilus 55:60.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:6.

*Streptostyla coniformis* (Shuttleworth).- Strebel 1878:15; pl. iv, figs. 11–14 (shell); pl. vi, fig. 1 (anatomy).

*Streptostyla pfeifferi* Fischer & Crosse 1870; Miss. Sci. Mex. I:27.- Tryon 1885; Man. Conch. 1:47.

Type Locality.—México.

Distribution.—VERACRUZ: Orizaba; Sumidero 2625–3400 ft. alt. (H. B. Baker 1941).

***Streptostyla (Streptostyla) streptostyla coniformis*  
(Shuttleworth 1852)**

*Spiraxis (Streptostyla) coniformis* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:206.

*Streptostyla coniformis* (Shuttleworth). Fischer & Crosse 1870:43.- Strebel 1878:6, 15; pl. 8, figs. 6–6b (shell); pl. 9, fig. 12 (live animal); pl. 6, fig. 3 (radula); pl. 4, figs. 11–13 (anatomy).- Von Martens 1891:94, pl. 5, fig. 14.- Neubert & Gosteli 2003; Contributions to Natural History 1:19; pl. 11, fig. 3 (shell).

*Streptostyla blandiana* Crosse & Fischer 1869; Jour. de Conchyl. 17:31.- Fischer & Crosse 1870:28; pl. 1, figs. 8, 8a (shell).

*Streptostyla pfeifferi* Crosse & Fischer, in Fischer & Crosse 1870:27.

*Streptostyla streptostyla form coniformis* (Shuttleworth). H. B. Baker 1941; Nautilus. 55:60.

Type Locality.—*Spiraxis coniformis*: Cordova, Veracruz, México.; Naturhistorische Museum Bern 18835/1 (Neubert & Gosteli 2003). *Streptostyla blandiana*: Cordova, Veracruz, México. *Streptostyla pfeifferi*: México.

Distribution.—VERACRUZ: Córdoba; Mirador; Coatepec; Orizaba (Von Martens 1891).

**Taxa with Turdiga Shell*****Streptostyla (Streptostyla) chiriquiana* Von Martens 1901**

*Streptostyla flavescens* Da Costa 1900; Proc. Malac. Soc. London 9:66; pl. 7, fig. 1 (shell) (not *Spiraxis (Streptostyla) flavescens* Shuttleworth 1852).

*Streptostyla chiriquiana* Von Martens 1901; Biol. Cent. Amer.:615.- Pilsbry 1907 (new name for *S. flavescens* Da Costa 1900); Man. Conch. 19:151.- Tomlin 1927; Nautilus 41:130–131.

*Streptostyla pallidus* Da Costa 1901; Proc. Malac. Soc. London 9:185 (new name for *S. flavescens* Da Costa 1900).

Type Locality.—Chiriquí, Panamá.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) costaricensis* Da Costa 1904**

*Streptostyla costaricensis* Da Costa 1904; Proc. Malac. Soc. London 6:6; pl. 1, fig. 3 (shell).- Pilsbry 1907; Man. Conch. 19:155–156; pl. 29, fig. 82 (shell).

Type Locality.—Azajjar de Cartago, Costa Rica.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) labida* (Morelet 1851)**

*Glandina labida* Morelet 1851; Test. Noviss. II:13.

*Streptostyla labida* (Morelet). Fischer & Crosse 1870; Miss. Sci. Mex. I:45.- Von Martens 1891:96; pl. 5, fig. 16 (shell).- Pilsbry 1907; Man. Conch. 19:150; pl. 29, fig. 73 (shell).

Type Locality.—Vera Paz [Alta Verapaz], Guatemala.

Distribution.—Known only from the type locality. Von Martens (1901) reported this species from Costa Rica.

***Streptostyla (Streptostyla) obesa* Von Martens 1891**

*Streptostyla obesa* Von Martens 1891; Biol. Cent. Amer.:95; pl. 5, fig. 12, 12a.- Pilsbry 1907; Man. Conch. 19:149; pl. 29, figs. 71–72 (shell).

Type Locality.—Honduras.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) turgidula turgidula* (Pfeiffer 1856)**

*Spiraxis turgidula* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:320; pl. 35, fig. 9 (shell).

*Streptostyla turgidula* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:58; pl. 1, fig. 4 (shell).- Strebel 1878:17; pl. 12, fig. 6.- Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 65.- Von Martens 1891; Biol. Cent. Amer.:95.- H. B. Baker 1941:60.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Jalapa (Strebel 1877); Córdoba, 2625–3000 ft. alt. (H. B. Baker 1941:60). Von Martens (1901) reports this species from COSTA RICA.

***Streptostyla (Streptostyla) turgidula guatemalensis* Fischer & Crosse 1870**

*Streptostyla turgidula guatemalensis* Fischer & Crosse 1870; Miss. Sci. Mex. I:59; pl. 1, fig. 4a (shell).- Von Martens 1891; Biol. Cent. Amer.:96.- Pilsbry 1907; Man. Conch. 19:150.

*Streptostyla schneideri* Strebel 1878:26; pl. 9, fig. 1 (shell).

*Streptostyla turgidula producta* “Pilsbry”. Hinkley 1920; Nautilus 34:40, 43, 51 (a *nomen nudum*).

Type Localities.—San Agustín, [Dept. Sololá], Guatemala (Von Martens 1891).

Distribution.—GUATEMALA. Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Izabal: Maya Farms, Quirigua; mountains of Rio Cavech, above Cavech Village (Hinkley 1920). Dept. Retalhuleu: Hacienda Helvetia, 3000 ft. alt.; Hacienda Buenavista, 3500 ft. alt.; Hacienda Germania (Von Martens 1891).

***Streptostyla (Streptostyla) nebulosa* Dall 1896**

*Streptostyla nebulosa* Dall 1896; Proc. U. S. Nat. Mus. 19:364–365; pl. 33, fig. 4 (shell).- Pilsbry 1907; Man. Conch. 19:150–151; pl. 29, fig. 74 (shell).

Type Locality.—San Cristobal, Chiapas, México. Holotype USNM 107369.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) sumichrasti* Ancey 1903**

*Streptostyla sumichrasti* Ancey 1903; Nautilus 17:56.- Pilsbry 1907; Man. Conch. 19:151 (not figured).

Type Locality.—Isthmus of Tehuantepec.

Distribution.—OAXACA (?).

***Streptostyla (Streptostyla) vancegreenei* Jacobson 1966**

*Streptostyla vancegreenei* Jacobson 1966; Nautilus 79:102–103; figs. 1.

Type Locality.—Quemigüas [Quimiquas] or Rio Negro, approximately 20 miles northeast of Bonanza, Zelaya Department, Nicaragua; approximately 14°12' N, 84°37' W, estimated elevation 1300 ft.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) viridula* Angas 1879**

*Streptostyla viridula* Angas 1879; Proc. Zool. Soc. Lond. 47:482; pl. 50, fig. 12.- Von Martens 1892; Biol. Cent. Amer.:98.- Von Martens 1901; Biol. Cent. Amer.:616.- Pilsbry 1907; Man. Conch. 19:157–158; pl. 29, fig. 81.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:98, text-fig. 22c (shell).- Tomlin 1927; Nautilus 41:131.

Type Locality.—Hills of Uren, Costa Rica. Holotype in the ASNSP.

Distribution.—COSTA RICA, Prov. Limón: Puerto del Tierra, on road to Sarapiquí, 600 m alt.; Tuis, 600 m alt.; Schukuluk, in Alto Uren; between Mokri and Ukatschka, Alta Talamanca; La Hondura, 1000 m alt.; slopes of Volcán Barba (Von Martens 1901). PANAMÁ, Prov. Bocas del Toro, Mono Creek (Pilsbry 1926).

**Taxa with Physaeform Shell*****Streptostyla (Streptostyla) biconica* Pfeiffer 1856**

*Spiraxis biconica* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:378.

*Streptostyla biconica* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:32.- Von Martens 1892; Biol. Cent. Amer.:98; pl. 5, figs. 17, 17a (shell).- Pilsbry 1907; Man. Conch. 19:157; pl. 29, fig. 79 (shell).

Type Locality.—Chiapas, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) binneyana* Crosse & Fischer 1869**

*Streptostyla (Streptostyla) binneyana* Crosse & Fischer 1869; Jour. de Conchyl. 17:29.- Fischer & Crosse 1870:29; pl. 1, figs. 3, 3a (shell).- Pilsbry 1907; Man. Conch. 19:156; pl. 30, fig. 98.

*Streptostyla venticosula* var. *binneyana* Crosse & Fischer. Von Martens 1892; Biol. Cent. Amer.:97; pl. 5, figs. 20, 21, 21a.

Type Locality.—Tonicapam [Tonicapam], [Dept. Tonicapam], Guatemala.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) crassa* Strebel 1878**

*Streptostyla crassa* Strebel 1878; Beitrag. Mex. Land- und Süßw.-Conch. III:26; pl. 9, figs. 2–2b (shell).- Tryon 1885; Man. Conch. 1:47; pl. 10, fig. 71.- Pilsbry 1907; Man. Conch. 19:152.

*Streptostyla delibuta* var. *crassa* Strebel. Von Martens 1892; Biol. Cent. Amer.:97.

Type Locality.—Cobán, [Dept. Alta Verapaz], Guatemala.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) delibuta* (Morelet 1851)**

*Glandina delibuta* Morelet 1851; Test. Noviss. II:13.

*Streptostyla delibuta* (Morelet). Fischer & Crosse 1870; Miss. Sci.

Mex. I:44.- Von Martens 1892; Biol. Cent. Amer.:97; pl. 5, figs. 18 18a (shell).- Pilsbry 1907; Man. Conch. 19:152; pl. 29, figs. 77, 78, 80 (shell).- Hinkley 1920; Nautilus 34:43, 51.

Type Locality.—Vera Paz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Izabál: environs of Izabál (Von Martens 1892); mountains of Cavech, above Cavech Village (Hinkley 1920). Von Martens (1901) reports this species from Costa Rica.

***Streptostyla (Streptostyla) flavescens flavescens* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) flavescens* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:206.

*Streptostyla flavescens* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. I:39.- Tryon 1885; Man. Conch. 1:48; pl. 11, fig. 77 (shell).- Von Martens 1892; Biol. Cent. Amer.:98; pl. 5, fig. 19 (shell).- Neubert & Gosteli 2003; Contributions to Natural History 1:25; pl. 11, fig. 6.

Type Locality.—Cordova [Córdoba], Veracruz, México. Syntypes: Naturhistorische Museum Bern 18836/2 (Neubert & Gosteli 2003).

Distribution.—VERACRUZ: Córdoba.

***Streptostyla (Streptostyla) flavescens boucardi* (Pfeiffer 1861)**

*Spiraxis boucardi* Pfeiffer 1861; Proc. Zool. Soc. Lond. 29:24.

*Streptostyla boucardi* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:43.- Von Martens 1892; Biol. Cent. Amer.:99; pl. 5, fig. 19.

*Streptostyla flavescens boucardi* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:158; pl. 29, fig. 83 (shell).

Type Locality.—Juquila, Oaxaca, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) fulvida* Crosse & Fischer 1869**

*Streptostyla fulvida* Crosse & Fischer 1869; Jour. de Conchyl. 17:32.- Fischer & Crosse 1870; Miss. Sci. Mex. I:50; pl. 1, figs. 11, 11a (shell).- Strebel 1878:17; pl. 12, fig. 8.- Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 60 (shell).- Von Martens 1892; Biol. Cent. Amer.:99.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) glandiformis* Crosse & Fischer 1869**

*Streptostyla glandiformis* Crosse & Fischer 1869; Jour. de Conchyl. 17:32.- Fischer & Crosse 1870; Miss. Sci. Mex. I:50; pl. 1, figs. 10, 10a.- Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 61 (shell).- Von Martens 1892; Biol. Cent. Amer.:99.- Pilsbry 1907; Man. Conch. 19:158.- H. B. Baker 1941:60.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—VERACRUZ: Orizaba; Córdoba, 2625–3125 ft. alt. (H. B. Baker 1941).

***Streptostyla (Streptostyla) oblonga* (Pfeiffer 1856)**

*Spiraxis oblonga* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:378.

*Streptostyla oblonga* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:57.- Von Martens 1892; Biol. Cent. Amer.:100.- Pilsbry 1907; Man. Conch. 19:159.



Type Locality.—Chiapas, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) plicatula* Strebel 1878**

*Streptostyla plicatula* Strebel 1878; Beitrag. Mex. Land- und Süßw.-Conch. III:16; pl. 8, fig. 2.- Tryon 1885; Man. Conch. 1:47; pl. 10, fig. 70.- Von Martens 1892; Biol. Cent. Amer.:98.- Pilsbry 1907; Man. Conch. 19:157.- H. B. Baker 1941; Nautilus 55:60. Type Locality.—Orizaba, Veracruz, México. Distribution.—VERACRUZ: Atoyac, 1300–1415 ft. alt. (H. B. Baker 1941).

***Streptostyla (Streptostyla) thomsoni* Ancy 1888**

*Streptostyla thomsoni* Ancy 1886; Ann. de Malac.:257.- Von Martens 1892; Biol. Cent. Amer.:98.- Pilsbry 1907; Man. Conch. 19:156 (not figured).- Haas & Solem 1960; Nautilus 73:130.

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—BELIZE: Cayo Dist.: Rio Frio Cave, 2 mi. from Augustine (Haas & Solem 1960; Nautilus 73:130). HONDURAS: type locality.

***Streptostyla (Streptostyla) valerioi* Rehder 1942**

*Streptostyla valerioi* Rehder 1942; Jour. Wash. Acad. Sci. 32:351–352; fig. 17 (shell).

Type Locality.—Cervantes, Prov. Cartago, Costa Rica; 1480 m alt. Holotype USNM 536020.

Distribution.—COSTA RICA, Prov. Cartago: Navarro. Prov. San José: Tablazo 1800 m alt.; La Verbina, 1000 m alt. (Rehder 1942).

***Streptostyla (Streptostyla) ventricosula* (Morelet 1849)**

*Glandina ventricosula* Morelet 1849; Test. Noviss. I:15.

*Streptostyla ventricosula* (Morelet). Von Martens 1892; Biol. Cent. Amer.:97; pl. 5, fig. 20 (shell).- Pilsbry 1907; Man. Conch. 19:153; pl. 30, figs. 87, 89 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):529.- Branson & McCoy 1963; Nautilus 76:103.- Thompson 1967; Bull. Fla. St. Mus. 11:235–238; text-figs. B, D, E, G (anatomy).

*Streptostyla yucatanensis* Pilsbry 1907; Man. Conch. 19:153; pl. 30, figs. 90–91 (shell).- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):529.- H. B. Baker 1941; Nautilus 55:60.

*Streptostyla yucatanensis* var. *distorta* Pilsbry 1907; Man. Conch. 19:154; pl. 30, fig. 92 (shell).

Type Localities.—*Glandina ventricosula*: environs of Merida, Yucatán, México. *Streptostyla yucatanensis*: Tekanto, Yucatán, México. *Streptostyla yucatanensis* var. *distorta*: Tekanto, Yucatán, México.

Distribution.—CAMPECHE: many localities (Thompson 1967). QUINTANA ROO: YUCATÁN: 19.1 mi. SSE of Uman; 0.8 mi. NE of Becanchén (Thompson 1967). Von Martens (1901:615) reported this species from COSTA RICA.

**Taxa with Aplectiform Shell**

***Streptostyla (Streptostyla) boyeriana* Crosse & Fischer 1869**

*Streptostyla boyeriana* Crosse & Fischer 1869, Jour. de Conchyl.

17:32.- Fischer & Crosse 1870; Miss. Sci. Mex. I:46; pl. 1, figs. 5, 9, 9a (shell).- Tryon 1885; Man. Conch. 1:48; pl. 10, fig. 67.- Von Martens 1892; Biol. Cent. Amer.:102.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) dysoni* (Pfeiffer 1846)**

*Achatina dysoni* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:32.

*Streptostyla dysoni* (Pfeiffer). Tryon 1885; Man. Conch. 1:48; pl. 11, fig. 75 (shell).- Von Martens 1892; Biol. Cent. Amer.:102.- Pilsbry 1907; Man. Conch. 19:159.- Haas & Solem 1960; Nautilus 73:130.

Type Locality.—Honduras.

Distribution.—BELIZE: Cayo Dist.: Rio Frio Cave, 2 mi. from Augustine (Haas & Solem 1960). HONDURAS. NICARAGUA, Dept. Chontales: Castillo Fort (Von Martens 1892).

***Streptostyla (Streptostyla) jacobsoni* Pilsbry 1951**

*Streptostyla jacobsoni* Pilsbry 1951; Nautilus 64:120; pl. 9, fig. 3 (shell).

Type Locality.—Km 636, on the road between Santa Inez and Llera, Nuevo León [Tamaulipas, see Jacobson 1952:112]. Holotype ANSP 187058.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) meridana meridana* (Morelet 1849)**

*Glandina meridana* Morelet 1849; Test. Noviss. I:15.

*Streptostyla meridana* (Morelet). Fischer & Crosse 1890:32.- Von Martens 1892; Biol. Cent. Amer.:103; pl. 5, figs. 25, 26 (shell).- Pilsbry 1907; Man. Conch. 19:154–155; pl. 30, figs. 93–96 (shell).- Thompson 1967; Bull. Fla. St. Mus. 11:238–240; text-figs. 1h, 1i (reproductive anatomy), text-figs. 2a–2d (shell).

*Streptostyla Streptostyla maslini* Branson & McCoy 1962; Nautilus 76:8; pl. 2, figs. 1, 2b (shell).

*Streptostyla toltecorum* Branson & McCoy 1962; Nautilus 76:8–9; pl. 2, figs. 2, 2b.

Type Localities.—*Glandina meridana*: Merida, Yucatán, México. *Streptostyla maslini*: 19 miles east of Merida, Yucatán; holotype UMMZ 210557. *Streptostyla toltecorum*: 3 miles east of Campeche, Campeche; holotype UMMZ 210558.

Distribution.—CAMPECHE: numerous localities (Thompson 1967). QUINTANA ROO: 7.1 mi. NNW of Xiatil. YUCATÁN: 7.0 mi. SSE of Uan; 1.0 mi. SSE of Puerto Telchac; 0.8 mi. NE of Becanchén; 30 mi. S of Uxmal; 19 mi. E of Merida (Branson & McCoy 1962). GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959).

***Streptostyla (Streptostyla) meridana cobanensis* (Tristram 1861)**

*Spiraxis cobanensis* Tristram 1861; Proc. Zool. Soc. Lond. 29:231.

*Streptostyla cobanensis* (Tristram). Fischer & Crosse 1870; Miss. Sci. Mex. I:52.

*Streptostyla meridana cobanensis* (Tristram). Von Martens 1892; Biol. Cent. Amer.:101.- Pilsbry 1907; Man. Conch. 19:155; pl. 30, fig. 82 (shell).- Thompson 1967; Bull. Fla. St. Mus., 11:240.

*Streptostyla cornea* Crosse & Fischer 1869; Jour. de Conchyl.

17:33.- Fischer & Crosse 1870:51; pl. 1, figs. 13, 13a (shell).

Type Locality.—*Spiraxis cobanensis*: Cobán, [Dept. Alta Verapaz], Guatemala. *Streptostyla cornea*: Guatemala.

Distribution.—GUATEMALA, Dept. Sololá: San Agustín; Hacienda Helvetia, upper Rio Chalhuitz, 3000 ft. alt. (Von Martens 1891). TABASCO: 0.5–1.0 mi. E of Teapa (Thompson 1957). Von Martens (1901:616) reports this species from Costa Rica.

***Streptostyla (Streptostyla) propinqua* Thompson 1963**

*Streptostyla propinqua* Thompson 1963; Proc. Biol. Soc. Wash. 76:22; pl. 2, figs. 1–3.

Type Locality.—Hacienda Monte Cristo, Metapan, Dept. Santa Ana, El Salvador; 2200 m alt. Holotype UMMZ 195760.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) sololensis* Crosse & Fischer 1869**

*Streptostyla sololensis* Crosse & Fischer 1869; Jour. de Conchyl. 17:33.- Fischer & Crosse 1870:16–20, 53; pl. 1, figs. 12, 12a (shell); pl. 4, figs. 1–5 (anatomy).- Strebel 1878:6.- Tryon 1885; Man. Conch. 1:46; pl. 10, fig. 65 (shell).- Von Martens 1892; Biol. Cent. Amer.:101; pl. 5, figs. 22, 23 (shell).- Hinkley 1920; Nautilus. 34:51.- Haas 1949; Nautilus 62:137.

Type Locality.—Mountains of Sololá, Dept. Sololá, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Chimultenango: Ruins of Iximche (Von Martens 1892); W slope of the Volcano Acatenango (Haas 1949). Dept. Sapatepequez: Finca San Rafael (Haas 1949). Von Martens (1901:616) reports this species from Costa Rica.

***Streptostyla (Streptostyla) vexans* Strebel 1878**

*Streptostyla vexans* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:28; pl. 9, fig. 7 (shell).- Tryon 1885; Man. Conch. 1:49; pl. 11, fig. 96 (shell).- Von Martens 1892; Biol. Cent. Amer.:102.- H. B. Baker 1941; Nautilus 55:60.

Type Locality.—Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Jalapa; Córdoba, 2625–3000 ft. alt. (H. B. Baker 1941).

**Taxa with Subturrite Shell**

***Streptostyla (Streptostyla) mohriana* (Pfeiffer 1862)**

*Spiraxis mohriana* Pfeiffer 1862; Malak. Blätt. 9:97.

*Streptostyla mohriana* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. I:65.- Von Martens 1892; Biol. Cent. Amer.:102.- Pilsbry 1907; Man. Conch. 19:160 (not figured).

Type Locality.—Cerro Borrego, near Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) pilsbryi* Richards 1937**

*Streptostyla pilsbryi* Richards 1937; Proc. Amer. Philos. Soc. 77:252; pl. 4, fig. 3 (shell).

Type Locality.—Near the ruins of San Gerbaio, Isla Cozumel, Quintana Roo. Holotype ANSP 167748.

Distribution.—QUINTANA ROO: only from the type locality.

***Streptostyla (Streptostyla) sargi sargi* Crosse & Fischer 1869**

*Streptostyla sargi* Crosse & Fischer 1875; Jour. de Conchyl. 23:225.- Strebel 1878:27; pl. 9, fig. 1 (shell).- Tryon 1885; Man. Conch. 1:49; pl. 11, figs. 78, 79 (shell).- Von Martens 1892; Biol. Cent. Amer.:102.- Hinkley 1920; Nautilus 34:51.

Type Locality.—Cobán, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Baja Verapaz: Senahu, 2800 ft. alt. (Von Martens 1892).

***Streptostyla (Streptostyla) sargi championi* Von Martens 1901**

*Streptostyla sargi* var. *championi* Von Martens 1901; Biol. Cent. Amer.:617; pl. 44, fig. 4.- Pilsbry 1907; Man. Conch. 19:159; pl. 29, fig. 85.

Type Locality.—Sabo, Dept. Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Streptostyla (Streptostyla) sargi pallidior* Crosse & Fischer 1876**

*Streptostyla sargi* var. *pallidior* Crosse & Fischer 1876; Jour. de Conchyl. 24:381; pl. 11, figs. 1b, 1c (shell).- Fischer & Crosse 1897:662; pl. 71, figs. 2, 2a.- Von Martens 1901; Biol. Cent. Amer.:617.- Pilsbry 1907; Man. Conch. 19:159; pl. 29, fig. 84 (shell).

Type Locality.—Cobán, Guatemala.

Distribution.—Known only from the type locality.

**Subgenus *Chersomitra* Von Martens 1860**

*Chersomitra* Von Martens 1860; in Albers, Die Heliceen:33.- Pilsbry 1907; Man. Conch. 19:145.

Type Species.—*Glandina nigricans* Pfeiffer 1845.

Distribution.—From central Veracruz south to Guatemala.

Taxonomy.—Six species are assigned to the subgenus.

***Streptostyla (Chersomitra) chiapensis* Pilsbry 1909**

*Streptostyla limnaeiformis* var. *parvula* Von Martens 1892; Biol. Cent. Amer.:100; pl. 5, fig. 24 (shell) (not *Spiraxis* [*Streptostyla*] *parvula* Pfeiffer 1856.)

*Streptostyla limnaeiformis chiapensis* Pilsbry 1909; Man. Conch. 20:111.- Bequaert 1957:217.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: Laguna Ocotal, 950 m alt. (Bequaert 1957).

***Streptostyla (Chersomitra) limneiformis* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) limneiformis* Shuttleworth 1852; Mit. Naturf. Ges. Bern 1852:206.

*Streptostyla limneiformis* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. I:39.- Pilsbry 1907; Man. Conch. 19:159.- Von Martens 1892; Biol. Cent. Amer.:100.

*Streptostyla lymneiformis* (Shuttleworth). Tryon 1885; Man. Conch. 1:49; pl. 11, fig. 77.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:5; pl. 1, figs. 5 (reproductive system), 6 (radula).-

Thompson 1967; Bull. Fla. St. Mus. 11:234.- Neubert & Gosteli 2003; Contributions to Natural History 1:34; pl. 11, fig. 4.

Type Locality.—Cordova [Córdoba], Veracruz, México; syntypes: Naturhistorische Museum Bern 18839 (Neubert & Gosteli 2003).

Distribution.—VERACRUZ: Córdoba; Sumidero (H. B. Baker 1941)

***Streptostyla (Chersomitra) lurida* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) lurida* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:205.

*Streptostyla (Chersomitra) lurida* (Shuttleworth). Fischer & Crosse 1870:48; pl. 2, figs. 6–6b (shell).- Tryon 1885; Man. Conch. 1:45; pl. 10, fig. 59 (shell).- Von Martens 1891:96.- Pilsbry 1907; Man. Conch. 19:150.- Neubert & Gosteli 2003; Contributions to Natural History 1:34; pl. 11, fig. 8 (shell).

*Streptostyla bocourti* Crosse & Fischer 1869; Jour. de Conchyl. 17:34.- Fischer & Crosse 1870:47; pl. 1, figs. 14, 14a (shell).- Strebel 1878:24; pl. 8, figs. 1–1b (shell).- Haas 1949; Nautilus 62:137.

Type Locality.—*Spiraxis lurida*: Cordova [Córdoba], Veracruz, México; syntypes: Naturhistorische Museum Bern 18838/2 (Neubert & Gosteli 2003). *Streptostyla bocourti*: Cobán, Guatemala.

Distribution.—VERACRUZ: Córdoba; Pacho; Orizaba. TABASCO: San Juan Bautista. GUATEMALA, Dept. Alta Verapaz: Cobán (Von Martens 1891). Dept. Sacatepéquez: Finca San Rafael (Haas 1949). Von Martens (1901) reports this species from COSTA RICA.

***Streptostyla (Chersomitra) mitraeformis* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) mitraeformis* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:205.

*Streptostyla mitraeformis* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:62; pl. 1, figs. 16, 16a (shell).- Tryon 1885; Man. Conch. 1:45; pl. 10, fig. 57 (shell).- Von Martens 1891:90–91.- Von Martens 1901; Biol. Cent. Amer.:614.

*Streptostyla mitraeformis* var. *minor* Strebel 1878; Beitrag. Mex. Land- und Süsw.-Conch. III:25; pl. 9, fig. 5 (shell).

*Streptostyla (Chersomitra) mitraeformis* (Shuttleworth). Neubert & Gosteli 2003; Contributions to Natural History 1:36–37; pl. 11, fig. 9.

Type Locality.—*Spiraxis mitraeformis*: Cordova [Córdoba], Veracruz, México; syntypes: Naturhistorische Museum Bern 18840/3. *Streptostyla mitraeformis minor*: Cobán, Guatemala.

Distribution.—TABASCO (Von Martens 1891). VERACRUZ: Córdoba; Toxpan, near Córdoba (Von Martens 1891). GUATEMALA, Dept. Petén: Lago de Petén. Dept. Alta Verapaz: Cobán (Von Martens 1891). Von Martens (1901:614) reports this species from Costa Rica.

***Streptostyla (Chersomitra) nigricans* (Pfeiffer 1845)**

*Glandina nigricans* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:75.

*Streptostyla nigricans* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:60; pl. 1, figs. 15, 15a (live animal).- Strebel 1878:24; pl. 9, figs. 3, 3a; pl. 12, fig. 11 (shell).- Tryon 1885; Man. Conch. 1:45; pl. 10, fig. 56 (shell).- Von Martens 1891; Biol.

Cent. Amer.:90.- Hinkley 1920; Nautilus 34:50.

*Streptostyla (Chersomitra) nigricans* (Pfeiffer). Thompson 1967; Bull. Fla. St. Mus. 11:234–235; text-figs. 1A (salivary glands), 1C (reproductive system), 1F (kidney).

Type Locality.—“Vera Cruz”. Von Martens (1891) suggested that this was in error for Vera Paz.

Distribution.—CHIAPAS:3.5 mi. S of Rayón, 5500 ft. alt. (Thompson 1967). TABASCO: 0.5–1 mi. E of Teapa (Thompson 1957). GUATEMALA, Dept. Alta Verapaz: Cobán (Von Martens 1891); Chejel, 2000 ft. alt. (Hinkley 1920). Dept. Petén: Lago de Petén (Von Martens 1891)

***Streptostyla (Chersomitra) physodes* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) physodes* Shuttleworth 1852; Mitt. Naturf. Ges. Bern 1852:207.

*Streptostyla physodes* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:54.- Strebel 1878:6, 22; pl. 7, fig. 1 (radula, shell); pl. 22, fig. 2 (animal).- Tryon 1885; Man. Conch. 1:49; pl. 11, fig. 80 (shell).- Von Martens 1892; Biol. Cent. Amer.:99.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:4–5; pl. 1, fig. 4 (reproductive system).- Thompson 1967; Bull. Fla. St. Mus. 11:234.- Neubert & Gosteli 2003; Contributions to Natural History 1:43; pl. 11, fig. 5.

*Spiraxis auriculacea* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:320.

*Streptostyla auriculacea* (Pfeiffer). Fischer & Crosse 1870:55.- Tryon 1885; Man. Conch. 1:49; pl. 11, fig. 82 (shell).

Type Localities.—*Spiraxis physodes*: Cordova [Córdoba], Veracruz, México; syntypes: Naturhistorische Museum Bern 18841/3 (Neubert & Gosteli 2003). *Spiraxis auriculacea*: Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Córdoba; near Córdoba (H. B. Baker 1941); Pacho, near Jalapa; Mirador; Huatusco (Von Martens 1892).

**Subgenus *Eustreptostyla* H. B. Baker 1927**

*Eustreptostyla* H. B. Baker 1927; Nautilus 41:21.- H. B. Baker 1941; Nautilus 55:53.- Zilch 1959; Handb. Palaoz., 6 (2):456.

Type Species.—*Spiraxis nicoleti* Shuttleworth 1852.

Distribution.—Northeastern México from Tamaulipas and San Luis Potosí south to Central Veracruz.

Taxonomy.—Six species and two subspecies are recognized. The shell of *Eustreptostyla* is characterized by having a strongly twisted columella and having strong growth threads below the suture. The type species is large with a thick, solid shell about 30–40 mm high.

***Streptostyla (Eustreptostyla) nicoleti nicoleti* (Shuttleworth 1852)**

*Spiraxis (Streptostyla) nicoleti* Shuttleworth 1852, Mittheilungen der naturforschenden Gessellschaft Bern, 249:204.

*Spiraxis nicoleti*, Pfeiffer 1853; Monogr. Helic. Viv., 3:477.

*Achatina nicoleti*, Pfeiffer, in Martini & Chemnitz, Syst. Conch.-Cab., ed. 2, *Achatina*, no. 47:325; pl. 26, figs. 18 19.

*Streptostyla nicoleti* Shuttleworth. Fischer & Crosse 1870; Miss. Sci. Mex. 1:23.- Strebel 1878:6, 12–14, 49; pl. 3 (anatomy); pl. 6, fig. 1 (radula); pl. 22, figs. 3, 3a–3d (living animal).- Tryon 1885; Man. Conch. 1:43; pl. 11, fig. 93.- Von Martens 1891:85.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:5;



pl. 1, fig. 9 (anatomy).- Zilch 1959:457, fig. 1621.- Neubert & Gosteli 2003; Contrib. Nat. Hist. 1:39; pl. 11, fig. 2.

*Streptosstyla (Eustreptosstyla) nicoleti nicoleti* Shuttleworth. Thompson 2009: Arch. Mollusk. 138:68–70; figs. 10–14.

Type Locality.—Cordova [Córdoba], Veracruz, México; syntypes: Naturhistorische Museum Bern 18842/2 (Neubert & Gosteli 2003).

Distribution.—OAXACA: limestone hill 0.5 km W of El Cedral (18.311° N, 96.303° W); Bosque Natural de Temascal, 0.5 km W of El Cedral, 100 m alt.; Bosque Natural de Temascal, 1 km SW of El Cedral, 100 m alt. (Thompson 2009). VERACRUZ: Coatepec; Jalapa (Von Martens 1891); Misantla; San Isidro (Strebel 1878); Sumidero (H. B. Baker 1943).

***Streptosstyla (Eustreptosstyla) nicoleti atypica* H. B. Baker 1941**

*Streptosstyla nicoleti* form A Strebel 1878:13; pl. 3, figs. 1–10 (anatomy); pl. 6, fig. 1 (radula); pl. 7, fig. 2 (shell).

*Streptosstyla nicoleti atypica* H. B. Baker 1941; Nautilus 55:55–56.- H. B. Baker 1943; Proc. Acad. Nat. Sci. Phila. 95:6.

Type Locality.—Rio Necaxa Gorge, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: type locality. VERACRUZ: San Juan Miahuatlán (Strebel 1877).

***Streptosstyla (Eustreptosstyla) nicoleti subovata* Von Martens 1891**

*Streptosstyla nicoleti* var. *subovata* Von Martens 1891; Biol. Cent. Amer.:85.

*Streptosstyla nicoleti* (Shuttleworth). Fischer & Crosse 1870; Miss. Sci. Mex. 1:23; pl. 1, figs. 2, 2a (shell).

*Streptosstyla nicoleti* (Shuttleworth) form B. Strebel 1875; Beitr. Mex. Land- und Süßw.-Conch. II:14; pl. 7, figs. 3 (shell).

Type Locality.—Toxpam, near Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Orizaba (Strebel 1875).

***Streptosstyla (Eustreptosstyla) bartschi* Dall 1908**

*Streptosstyla bartschi* Dall 1908; Proc. U. S. Nat. Mus. 35:178–179; pl. 29, fig. 1 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.- Correa-Sandoval 2000; Acta Zool. Mex. 79:9.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (79):237.

Type Locality.—Tamaulipas, México. Holotype USNM 19800.

Distribution.—SAN LUÍS POTOSÍ: 6 km. SW of Xilitla, 830 m alt. (21°23'10" N 99°03'56" W); Cueva El Salitre, 450 m alt. (21°22'55" N, 98°57'53" W); Cueva "El Salitre", Xilitla (21°22'55" N, 98°57'53" W); Las Pozas, Xilitla (21°24'08" N, 98°59'44" W); Xilitla (21°22'55" N, 98°59'44" W) (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities in the southern region of the state (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005). VERACRUZ: Rancho Altos y Bajos, 2 km NW of Barra de Cazonas (20°45'24" N, 97°15'00" W) (Correa-Sandoval 2000).

***Streptosstyla (Eustreptosstyla) jilitlana* Dall 1908**

*Streptosstyla jilitlana* Dall 1908; Proc. U. S. Nat. Mus. 35:179–180; pl. 29, fig. 8 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zol. Mex. (73):16.

Type Locality.—Jilitla [Xilitla], San Luis Potosí, México. Holotype USNM 107821.

Distribution.—SAN LUÍS POTOSÍ: km 140, E of Platanito, 1320 m alt. (22°28'02" N, 99°28'25" W); Cueva El Salitre, 450 m alt. (21°22'55" N, 98°57'53" W); Las Pozas (Xilitla), west side of arroyo, 540 m alt. (21°23'39" N, 98°59'44" W); Las Pozas, 520 m alt. (21°24'08" N, 98°59'44" W) (Correa-Sandoval et al. 1998).

***Streptosstyla (Eustreptosstyla) rupecula* Thompson 2009**

*Streptosstyla (Eustreptosstyla) rupecula* Thompson 2009; Arch. Mollusk. 138:68; figs. 8, 9.

Type Locality.—4 km northwest of Comalapa, Veracruz, México; 499 m alt. (18.7° N, 96.8667° W). Holotype UF 89102.

Distribution.—VERACRUZ: known only from the immediate vicinity of the type locality.

***Streptosstyla (Eustreptosstyla) toyuca* Dall 1908**

*Streptosstyla toyuca* Dall 1908; Proc. U. S. Nat. Mus. 35:179; pl. 29, fig. 6 (shell).

Type Locality.—Metlal Toyuca [Metlaltoyuca], Puebla, México (20.666° N, 97.816° W). Holotype USNM 107822.

Distribution.—Known only from the type locality.

***Streptosstyla (Eustreptosstyla) supracostata* Pilsbry 1910**

*Streptosstyla supracostata* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61:544–545; text-fig. 4 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):16.

Type Locality.—At a cave near San Dieguito, San Luis Potosí, México. Lectotype ANSP 99031a (H. B. Baker 1963:219).

Distribution.—SAN LUÍS POTOSÍ: a canyon below Las Canoas; El Ambra (Pilsbry 1909); 6 km SW of Xilitla, 830 m alt. (21°23'10" N 99°03'56" W); Cueva El Salitre, 450 m alt. (21°22' 55" N, 98°57'53" W); Las Pozas (arroyo), 520 m alt. (21°24'08" N, 98°59'44" W) (Correa-Sandoval et al. 1998).

**Subgenus *Peteniella* Pilsbry 1907**

*Petenia* Crosse & Fischer 1869; Jour. de Conchyl. 17:35.- Fischer & Crosse 1870:66. (Not *Peténia* Günther 1862, Pisces).

*Peteniella* Pilsbry 1907; Man. Conch. 19:161.

Type Species.—*Glandina ligulata* Morelet 1849.

Distribution.—Eastern Guatemala, Chiapas and Veracruz, México.

Taxonomy.—Two species are recognized.

***Streptosstyla (Peteniella) catenata* (Pfeiffer 1856)**

*Spiraxis catenata* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:378.

*Streptosstyla catenata* (Pfeiffer). Fischer & Crosse 1870; Miss. Sci. Mex. 1:63.- Strebel 1878: 27; pl. 12, fig. 5 (shell).- Tryon 1885; Man. Conch. 1:251; pl. 11, fig. 81 (shell).

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: exact locality unknown.

***Streptostyla (Peteniella) ligulata (Morelet 1849)***

*Glandina ligulata* Morelet 1849; Test. Noviss. I:12.- Morelet 1852:257; pl. 10, fig. 3 (shell).

*Peténia ligulata* (Morelet). Crosse & Fischer 1869; Jour. de Conchyl. 3:35.- Fischer & Crosse 1870:66–68; pl. 1, figs. 17–17a (shell).

*Streptostyla ligulata* (Morelet). Tryon 1885; Man. Conch. 1:50; pl. 11, fig. 87.- Von Martens 1892; Biol. Cent. Amer.:102.

*Streptostyla (Peteniella) ligulata* (Morelet). Pilsbry 1907; Man. Conch. 19:161.- Hinkley 1920; Nautilus 34:40.

Type Locality.—“Woods of Petén and Palenque”.

Distribution.—GUATEMALA, Dept. Izabal: Livingston (Hinkley 1920). Dept. Petén. CHIAPAS: Palenque. VERACRUZ: Ojo de Agua, near Córdoba (Von Martens 1892).

**Subfamily SPIRAXINAE H. B. Baker 1939**

Spiraxinae H. B. Baker 1939; Nautilus 53:9.- Thompson 2010; Rev. Biol. Trop. 58:195–197.

Type Genus.—*Spiraxis* C. B. Adams 1850.

Distribution.—*Spiraxis* is confined to the West Indies. The subgenera *Spiraxis s. s.*, *Repressaxis* H. B. Baker 1939, *Dignaxis* H. B. Baker 1939 and *Euspiraxis* Pfeiffer 1854 are known from Jamaica and Hispaniola. The subgenus *Ravenia* Crosse 1873 is confined to Los Roques. All mainland species are referred to different genera.

Taxonomy.—Five genera and seventy-seven species of Spiraxinae are recognized in the study area. Traditionally *Spiraxis* has been used as an all-inclusive genus for species of the Spiraxinae because of the difficulty of assigning species to different genera on the basis of shell morphology. H. B. Baker (1939b) discussed the anatomy of the subfamily. He emphasized that the subgenera and sections he recognized should more properly be ranked as genera and subgenera on the basis of anatomical differentiation. This ranking was followed by Zilch (1960) and is adapted here. The large number of species assigned to *Volutaxis* and *Pseudosubulina* remains arbitrary in many cases because of the lack of anatomical information. See Thompson (2010) for a more detailed discussion of the taxonomy of this subfamily.

**Genus *Mayaxis* Thompson 1995**

*Mayaxis* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:79–81.- Thompson 2010; Rev. Biol. Trop. 58:197.

Type Species.—*Myaxis leei* Thompson 1995.

Distribution.—Chiapas and Tabasco, Guatemala and northern Honduras.

Taxonomy.—Nine species are placed in the genus. Previously, three species, *Myaxis cilindrella*, *Myaxis porrecta* and *Myaxis stollii* were classified in *Subulina*. They are now placed in *Myaxis* on the basis of shell morphology and for biogeographic reasons

***Mayaxis chiapensis* (Pfeiffer 1856)**

*Achatina chiapensis* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:379.

*Subulina chiapensis* (Pfeiffer). Fischer & Crosse 1877:637; pl. 26, figs 2–2b (shell).

*Pseudosubulina chiapensis* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:119; pl. 7, fig. 17 (shell).- Tryon 1885; Man. Conch. 1:50; pl. 9, fig. 36.- Von Martens 1898; Biol. Cent. Amer.:303.- Pilsbry 1907; Man. Conch. 19:3.

*Mayaxis chiapensis* (Pfeiffer). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:82.

Type Locality.—Chiapas, México.

Distribution.—CHIAPAS: known from the type locality. A record of this species from Guatemala is questioned by Von Martens (1898:303).

***Mayaxis cilindrella* (Morelet 1851)**

*Achatina cilindrella* Morelet 1851; Test. Noviss. II:12.

*Subulina cilindrella* (Morelet). Fischer & Crosse 1878:634; pl. 25, fig. 13.- Von Martens 1898; Biol. Cent. Amer.:300.- Pilsbry 1906; Man. Conch. 18:226–27; pl. 39, figs. 26, 27.- Haas 1949; Nautilus 62:136, 138.

Type Locality.—Woods of Petén, near San Luis, Guatemala.

Distribution.—GUATEMALA, Dept. Chimaltenango: Finca Panajabal; Yabocapa. Dept. Escuintla: Zapote (Haas 1949).

***Mayaxis fortis* (Von Martens 1898)**

*Pseudosubulina fortis* Von Martens 1898; Biol. Cent. Amer.:304; pl. 17, fig. 17.- Pilsbry 1907; Man. Conch. 19:5; pl. 5, fig. 19.

*Myaxis fortis* (Von Martens). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:82.

Type Locality.—Restricted to El Reposo, western Guatemala, 800 ft. alt. (Thompson 1995).

Distribution.—GUATEMALA, Dept. Escuintla: Miramar. Dept. Jutiapa: Zapote. Dept. Quetzaltenango: Mercedes. Dept. Retalhuleu: near San Francisco (Von Martens 1898).

***Mayaxis leei* Thompson 1995**

*Myaxis leei* Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:84; figs. 51 (reproductive system), 52 (penis), 53 (radula), 54–56 (shell).

Type Locality.—Cerro Santa Barbara, Finca Las Quebradas, 3 km W of Nueva Esperanza, Dept. Santa Bárbara, Honduras; 1280 m alt. Holotype UF 193387.

Distribution.—HONDURAS: known only from the immediate vicinity of the type locality.

***Mayaxis lirifera* (Morelet 1851)**

*Achatina lirifera* Morelet 1851; Test. Noviss. II:12.

*Subulina lirifera* (Morelet). Crosse & Fischer 1878:633; pl. 25, fig. 12.

*Pseudosubulina lirifera* (Morelet). Von Martens 1898; Biol. Cent. Amer.:304–305; pl. 17, fig. 20 (shell).- Pilsbry 1907; Man. Conch. 19:2–3; pl. 5, figs. 14–17 (shell).

*Myaxis lirifera* (Morelet). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:83.

Type Locality.—Woods of Petén, near San Luis, Guatemala.

Distribution.—GUATEMALA, Dept. Petén: type

locality. Dept. Izabal: Livingston (Von Martens 1898).

***Mayaxis martensiana* (Pilsbry 1920)**

*Pseudosubulina martensiana* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:214; pl. 11, fig. 3.- Hinkley 1920; Nautilus 34:44.

*Myaxis martensiana* (Pilsbry). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:82.

Type Locality.—Mountains west of Livingston, Dept. Izabal, Guatemala.

Distribution.—GUATEMALA, Dept. Izabal: Las Escobas; mountains of Rio Cavech, above Cavech Village (Hinkley 1920).

***Mayaxis mitescens* (Von Martens 1898)**

*Pseudosubulina mitescens* Von Martens 1898; Biol. Cent. Amer.:304; pl. 17, figs. 18.- Pilsbry 1907; Man. Conch. 19:5–6; pl. 5, fig. 10.- Hinkley 1920; Nautilus 34:52.

*Myaxis mitescens* (Von Martens). Thompson 1995; Bull. Fla. Mus. Nat. Hist. 39:82.

Type Locality.—Dueñas, near Antigua, Dept. Sacatepeque, Guatemala; 5000 ft. alt.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920).

***Mayaxis porrecta* (Von Martens 1898)**

*Subulina porrecta* Von Martens 1898; Biol. Cent. Amer.:300; pl. 17, fig. 14 (shell).- Pilsbry 1906; Man. Conch. 18:226; pl. 39, figs. 23–25 (shell).

Type Locality.—Teapa, Tabasco, México.

Distribution.—Known only from the type locality.

***Mayaxis stollii* (Von Martens 1898)**

*Subulina stollii* Von Martens 1898; Biol. Cent. Amer.:300; pl. 17, fig. 15.- Pilsbry 1906; Man. Conch. 18:227; pl. 39, figs. 20–22 (shell).

Type Locality.—“Vera Paz”, Guatemala.

Distribution.—Known only from the type locality.

**Genus *Mirradula* H. B. Baker 1939**

*Mirradula* H. B. Baker 1939; Nautilus 53:10.- Thompson 2010; Rev. Biol. Trop. 56:196.

Type Species.—*Volutaxis similaris* Strebel 1882.

Distribution.—Southeastern México in the states of Puebla, Veracruz and Chiapas.

Taxonomy.—Two species are recognized.

***Mirradula miradorsis* (Strebel 1882)**

*Volutaxis miradorensis* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:12; pl. 17, figs. 23b, 25 (shell).

*Spiraxis miradorensis* (Strebel). Von Martens 1898; Biol. Cent. Amer.:309.- Pilsbry 1907; Man. Conch. 19:23; pl. 20, fig. 4 (shell).

*Spiraxis* (*Mirradula* ?) *miradorensis* (Strebel). H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Mirador, Veracruz, México.

Distribution.—VERACRUZ: Peñuela to Sumidero [14 km W of Córdoba], 2625–3000 ft. alt. (H. B. Baker 1940).

***Mirradula similaris* (Strebel 1882)**

*Volutaxis similaris* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:122; pl. 7, fig. 11; pl. 17, fig. 18 (shell).- Tryon 1885; Man. Conch. 1:51; pl. 9, fig. 40.

*Spiraxis similaris* (Strebel). Von Martens 1898; Biol. Cent. Amer.:310.

*Spiraxis* (*Mirradula*) *similaris* (Strebel). H. B. Baker 1939; Nautilus 53:12; pl. 4, fig. 6 (shell), figs. 7–8 (reproductive anatomy), fig. 9 (radula).- H. B. Baker 1940; Nautilus 53:93.

*Spiraxis similaris* (Strebel). Bequaert 1957:217.

Type Locality.—Pacho, near Jalapa, Veracruz, México.

Distribution.—CHIAPAS: Laguna Ocotol to El Censo, 600–700 m alt. (Bequaert 1957). PUEBLA: Necaxa (H. B. Baker 1939b). VERACRUZ: Peñuela to Sumidero, 2625–3400 ft. alt. (H. B. Baker 1940).

**Genus *Pseudosubulina* Strebel 1882**

*Pseudosubulina* Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:117.- Pilsbry 1907; Man. Conch. 19:1–2.- H. B. Baker 1939; Nautilus 53:11.- Thompson 2010; Rev. Biol. Trop. 58:197.

Type Species.—*Pseudosubulina berendti* Strebel 1882.

Distribution.—México and Guatemala; a single species, *Pseudosubulina exilis* (Pfeiffer 1839), occurs in Cuba.

Taxonomy.—Twenty-two species and four subspecies are recognized in the study area.

***Pseudosubulina arcuata* (H. B. Baker 1939)**

*Spiraxis* (*Pseudosubulina*) *arcuatus* H. B. Baker 1939; Nautilus 52:134; pl. 5, fig. 9 (shell).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Sumidero [14 km W of Córdoba], Veracruz, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Pseudosubulina berendti berendti* (Pfeiffer 1862)**

*Achatina berendti* Pfeiffer 1862; Malak. Blätt. 9:98.

*Subulina berendti* (Pfeiffer). Fischer & Crosse 1877:635; pl. 26, figs. 1–1b (shell).

*Pseudosubulina berendti* (Pfeiffer). Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:117–119; pl. 7, figs. 7, 7a; pl. 17, fig. 28 (shell); pl. 18, figs. 5–8 (radula), figs. 23A–C (reproductive system).- Tryon 1885; Man. Conch. 1:50; pl. 9, fig. 25.- Von Martens 1898; Biol. Cent. Amer.:303.- Pilsbry 1907; Man. Conch. 19:3.- H. B. Baker 1926b:9.- H. B. Baker 1939; Nautilus 53:13; pl. 3, figs. 7, 8 (reproductive anatomy), fig. 9 (cerebral ganglia), fig. 10 (kidney).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—PUEBLA: Necaxa, 3000–5500 ft. alt. (H. B. Baker 1940:94). VERACRUZ: Pacho; Soncoautla; Consolapa; Dos Arroyos; Las Vigas (Von Martens 1898).

***Pseudosubulina berendti gracilior* von Martens 1898**

*Pseudosubulina berendti* form B. Strebel 1882; Beitrag. Mex. Land- und Süsw.-Conch. V:119; pl. 7, fig. 7a.

*Pseudosubulina berendti* var. *gracilior* von Martens 1898; Biol. Cent. Amer.:303.

Type Locality.—Veracruz, Veracruz, México.



Distribution.—VERACRUZ: Miramar; Córdoba (von Martens 1898).

***Pseudosubulina berendti occidentalis* Pilsbry 1899**

*Pseudosubulina berendti occidentalis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:398.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:774; pl. 50, fig. 1 (shell).- Pilsbry 1907; Man. Conch. 19:3; pl. 5, fig. 11.- H. B. Baker 1926b:9; pl. 19, fig. 95 (radula).

Type Locality.—Uruapam [Uruapan], Michoacán, México. Syntypes ANSP 77161.

Distribution.—Known only from the type locality.

***Pseudosubulina borealis* (Pilsbry 1903)**

*Spiraxis* (?) *borealis* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:775; pl. 50, figs. 6, 6a (shell).- Pilsbry 1907; Man. Conch. 19:7-8; pl. 6, fig. 21-22 (shell).- Baker 1940; Nautilus 53:94.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Syntypes ANSP 77166.

Distribution.—Known only from the type locality. PUEBLA: Necaxa, 4600 ft. alt (H. B. Baker 1940).

***Pseudosubulina caduca* (H. B. Baker 1939)**

*Spiraxis* (*Pseudosubulina*) *caducus* H. B. Baker 1939a:133; pl. 4, figs. 3, 4 (shell).

Type Locality.—Las Tortolas [2 km. N of east end of] Córdoba, Veracruz, México; 2625-3600 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Pseudosubulina cheatumi* Pilsbry 1950**

*Pseudosubulina cheatumi* Pilsbry 1950; Nautilus 64:55-56 (not figured).

Type Locality.—Casa Grande Peak, Chisos Mountains, Texas. Holotype ANSP 186649.

Distribution.—Known only from the type locality. This species is included because of the proximity of the type locality to México.

***Pseudosubulina costata* (H. B. Baker 1939)**

*Spiraxis* (*Pseudosubulina*) *costatus* H. B. Baker 1939a:133-134; pl. 5, fig. 8 (shell).- H. B. Baker 1940:94.

Type Locality.—Atoyac, [20 km. ESE of] Córdoba, Veracruz, México; 1300 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: Atoyac to Córdoba, 1300-3000 ft. alt. (H. B. Baker 1940).

***Pseudosubulina eiseniana* (Cooper 1893)**

*Melaniella eiseniana* Cooper 1893; Proc. Cal. Acad. Sci. 3:339; pl. 13, fig. 3 (shell). Cooper 1894; Proc. Calif. Acad. Sci. 4:141; pl. 6, fig. 20 (shell).

*Pseudosubulina eiseniana* (Cooper). Dall 1896; Proc. U. S. Nat. Mus. 19:384.- Pilsbry 1907; Man. Conch. 19:8-9; pl. 6, fig. 32.- Smith, Miller, Christensen & Roth 1890:131-132; fig. 33 (map).

Type Locality.—Under stones, Cape region, Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: several

localities on southern tip of peninsula (Smith et al. 1990).

***Pseudosubulina evermanni* Dall 1926**

*Pseudosubulina evermanni* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:427-429; pl. 35, figs. 7-8 (shell).

Type Locality.—Cerro Evermann, Isla Socorro, Nayarit, México; 2000-2800 ft. alt. Holotype CAS 2191.

Distribution.—NAYARIT: known only from the type locality of Isla Socorro.

***Pseudosubulina insularis* Pilsbry 1930**

*Pseudosubulina insularis* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:255; pl. 17, fig. 4 (shell).

Type Locality.—Isla de Providencia, western slope below the cleft of Split Hill, Colombia. Holotype ANSP 150172.

Distribution.—COLOMBIA: known only from the immediate vicinity of the type locality, Isla de Providencia.

***Pseudosubulina irregularis irregularis* Pilsbry 1907**

*Pseudosubulina irregularis* Pilsbry 1907; Man. Conch. 19:7; pl. 6, fig. 24 (shell).

Type Locality.—Texola, Veracruz, México. Holotype ANSP 77147a.

Distribution.—Known only from the type locality.

***Pseudosubulina irregularis negligens* (H. B. Baker 1939)**

*Spiraxis* (*Pseudosubulina*) *irregularis negligens* H. B. Baker 1939a:132.- H. B. Baker 1939; Nautilus 53: pl. 5, fig. 10 (shell).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Necaxa, Puebla, México; 5000 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: known only from the vicinity of the type locality (H. B. Baker 1940).

***Pseudosubulina martensiana* Pilsbry 1920**

*Pseudosubulina martensiana* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:214; pl. 11, fig. 3 (shell).

Type Locality.—Mountains west of Livingston, [Dept. Izabal], Guatemala. Holotype ANSP 107535.

Distribution.—Known only from the type locality.

***Pseudosubulina orizabensis* Pilsbry 1907**

*Pseudosubulina orizabensis* Pilsbry 1907; Man. Conch. 19:7; pl. 2, fig. 26 (shell).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Orizaba, Veracruz, México. Holotype ANSP 61545.

Distribution.—VERACRUZ: Córdoba, 2625-3000 ft. alt. (H. B. Baker 1940).

***Pseudosubulina parva* (H. B. Baker 1939)**

*Spiraxis* (*Pseudosubulina*) *parvus* H. B. Baker 1939; Nautilus 52:134.- H. B. Baker 1939; Nautilus 53: pl. 9, fig. 6 (shell).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Necaxa, Puebla, México; 5000 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: known from the vicinity of the type locality (H. B. Baker 1940).

***Pseudosubulina robusta* von Martens 1898**

*Pseudosubulina robusta* von Martens 1898; Biol. Cent. Amer.:304; pl. 17, fig. 19. (shell).- Pilsbry 1907; Man. Conch. 19:4–5; pl. 5, fig. 20 (shell).

Type Locality.—Omiteme, Guerrero, México; 8000 ft. alt.

Distribution.—Known only from the type locality.

***Pseudosubulina ruthae* Pilsbry 1954**

*Pseudosubulina ruthae* Pilsbry 1954; Nautilus 67:81; pl. 8, fig. 1.

Type Locality.—On the beach at False Bay above high tide level, California. Holotype ANSP 190114.

Distribution.—BAJA CALIFORNIA NORTE(?): unknown.

***Pseudosubulina salvini* von Martens 1898**

*Pseudosubulina salvini* von Martens 1898; Biol. Cent. Amer.:305; pl. 17, fig. 21 (shell).- Pilsbry 1906; Man. Conch. 18: pl. 39, fig. 36 (shell).- Pilsbry 1907; Man. Conch. 19:6.- Hinkley 1920; Nautilus 34:52.

Type Locality.—Vera Paz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920).

***Pseudosubulina sargi* Crosse & Fischer 1877**

*Subulina sargi* Crosse & Fischer 1877; Jour. de Conchyl. 25:272.- Fischer & Crosse 1877:637; pl. 26, figs. 3–3b (shell).

*Pseudosubulina sargi* (Crosse & Fischer). Von Martens 1898; Biol. Cent. Amer.:303.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—GUATEMALA: type locality. TABASCO: Teapa (Von Martens 1898).

***Pseudosubulina splendens* Thompson 1959**

*Pseudosubulina splendens* Thompson 1959; Nautilus 72:115; pl. 12, fig. 4 (shell).

Type Locality.—Cobán-Sebol Road, 55 miles northeast of Cobán, Guatemala. Holotype UMMZ 195985.

Distribution.—Known only from the type locality.

***Pseudosubulina tastensis* (Cooper 1894)**

*Melaniella tastensis* Cooper 1894; Proc. Calif. Acad. Sci. 4:141; pl. 6, fig. 21 (shell).

*Pseudosubulina tastensis* (Cooper). Pilsbry 1907; Man. Conch. 19:9; pl. 6, fig. 33.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:132.

Type Locality.—Saltito Pass, just north of the Sierra El Taste, 3200 ft. alt., Baja California Sur, México.

Distribution.—BAJA CALIFORNIA SUR: numerous localities on southern tip of peninsula (Smith et al. 1990).

***Pseudosubulina texoloensis* Pilsbry 1899**

*Pseudosubulina texoloensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:398.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila.

55:774; pl. 50, fig. 2 (shell).

Type Locality.—Texolo, Veracruz, México. Holotype ANSP 77104a.

Distribution.—Known only from the type locality.

***Pseudosubulina trypanodes* (Pfeiffer 1856)**

*Achatina trypanodes* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:379.

*Pseudosubulina trypanodes* (Pfeiffer). Von Martens 1898; Biol. Cent. Amer.:303; pl. 17, figs. 16–16b (shell).- Pilsbry 1907; Man. Conch. 19:3–4; pl. 5, figs. 12–13 (shell).

Type Locality.—México.

Distribution.—Unknown.

***Pseudosubulina ventrosa* (H. B. Baker 1939)**

*Spiraxis (Pseudosubulina) ventrosus* H. B. Baker 1939; Nautilus 52:132–133.- H. B. Baker 1939; Nautilus 53: pl. 5, fig. 7 (shell).- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Tenango Hills [3 km S of] Necaxa, Puebla, México; 4000 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

**Genus *Micromena* H. B. Baker 1939**

*Micromena* H. B. Baker 1939; Nautilus 53:11.- Thompson 2010; Rev. Biol. Trop. 58:196.

Type Species.—*Spiraxis (Micromena) minutus* H. B. Baker 1939.

Distribution.—Jamaica and México.

Taxonomy.—Three species are recognized, two in the study area. Baker (1939) proposed *Micromena* as a subgenus of *Pseudosubulina*. Thompson (2010) raised it to full generic rank.

***Micromena minuscula* (H. B. Baker 1940)**

*Spiraxis (Micromena) minusculus* H. B. Baker 1940; Nautilus 53:92, 94; pl. 11, fig. 7 (shell).

*Pseudosubulina (Micromena) minuscule* (H. B. Baker). Thompson 2008: 651.

Type Locality.—Below Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: Necaxa. VERACRUZ: Córdoba, 2650 ft. alt.

***Micromena minuta* (H. B. Baker 1939)**

*Spiraxis (Micromena) minutus* H. B. Baker 1939; Nautilus 53:14–15; pl. 3, fig. 2 (shell), fig. 3 (kidney), figs. 4, 6 (reproductive system), fig. 5 (radula).- H. B. Baker 1940; Nautilus 53:94.

*Pseudosubulina (Micromena) minuta* (H. B. Baker). Thompson 2008:651.

Type Locality.—Below Necaxa, Puebla, México; 3000 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality (H. B. Baker 1940).

**Genus *Rectaxis* H. B. Baker 1926**

*Spiraxis (Rectaxis)* H. B. Baker 1926; Occasional papers of the Museum of Zoology, University of Michigan, (167):7–9.- H. B. Baker 1939; Nautilus 53:10–11.

*Rectaxis* H. B. Baker. Zilch 1959; Handbuch der Paleozoologie, 6 (2):448.- Thompson 2010; Rev. Biol. Trop. 58:196.

Type Species.—*Pseudosubulina (Rectaxis) decussatus* H. B. Baker 1926; (Venezuela).

Distribution.—Venezuela north to Veracruz.

Taxonomy.—Twelve species are recognized (Thompson 2010).

#### ***Rectaxis alvaradoi* (Goodrich & van der Schalie 1937)**

*Spiraxis alvaradoi* Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):23; pl. 1, fig. 1 (shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9.

Type Locality.—A limestone knoll; five miles north of El Paso de Los Caballos, Dept. Petén, Guatemala. Holotype in the UMMZ.

Distribution.—GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959).

#### ***Rectaxis canalizonalis* (Pilsbry 1930)**

*Pseudosubulina canalizonalis* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:345; pl. 29, fig. 7 (shell).

*Spiraxis canalizonalis* (Pilsbry). H. B. Baker 1940; Nautilus 53:92.- Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:218.- Thompson 2010; Rev. Biol. Trop. 58:198, 200; fig. 2.

Type Locality.—Roadside bank southeast of Empire, [Isla Barro Colorado], Panamá. Holotype ANSP 151350 (lost; see Thompson 2010).

Distribution.—COSTA RICA, Prov. Cartago Inter-American Agricultural Institute, Turrialba (Thompson 2010). PANAMÁ: in addition to the type locality, ruins of Old Panamá City (Pilsbry 1930). Prov. Darién 6.5 km W of Boca de Cope (Thompson 2010).

#### ***Rectaxis confertestriatus* (Strebel 1882)**

*Volutaxis confertestriatus* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:123; pl. 7, figs. 21, 33.

*Spiraxis confertestriatus* (Strebel). Von Martens 1898; Biol. Cent. Amer.:310.- Tryon 1885; Man. Conch. 1:52; pl. 9, fig. 454 (shell).

*Spiraxis (Rectaxis) confertestriatus* (Strebel).- H. B. Baker 1939; Nautilus 53:50.

Type Locality.—Mirador, Veracruz, México.

Distribution.—Known only from the type locality.

#### ***Rectaxis funibus* (Goodrich & van der Schalie 1937)**

*Spiraxis funibus* Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):23–24; pl. 1, fig. 2 (shell).- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):9.

Type Locality.—A limestone knoll, five miles north of El Paso de Los Caballos, Dept. Petén, Guatemala. Holotype in the UMMZ.

Distribution.—GUATEMALA, Dept. Petén: Tikal National Park (Basch 1959).

#### ***Rectaxis granum* (H. B. Baker 1939)**

*Spiraxis (Rectaxis) granum* H. B. Baker 1939; Nautilus 53:49–50; pl. 9, fig. 5 (shell).- H. B. Baker 1940; Nautilus 53:93; pl. 11,

fig. 9 (reproductive anatomy), fig. 10 (radula).

Type Locality.—Below Necaxa, Puebla, México. Holotype in the UMMZ.

Distribution.—PUEBLA. VERACRUZ: Peñuela, 2700 ft. alt. (H. B. Baker 1940).

#### ***Rectaxis intermedius* (Strebel 1882)**

*Volutaxis intermedius* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:123; pl. 17, figs. 22, 34 (shell).- Tryon 1885; Man. Conch. 1:51; pl. 9, figs. 43–44 (shell).

*Spiraxis intermedius* (Strebel). Von Martens 1898; Biol. Cent. Amer.:310.

*Spiraxis (Rectaxis) intermedius* (Strebel). H. B. Baker 1939; Nautilus 53:13.- H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Pacho, near Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Peñuela to Sumidero [14 km W of Córdoba], 2625–3000 ft. alt. (H. B. Baker 1940).

#### ***Rectaxis pagodus* Thompson 2010**

*Rectaxis pagodus* Thompson 2010; Rev. Biol. Trop. 58:198; fig. 1 (shell).

Type Locality.—La Lola Agriculture Experimental Station, 47 km W of Limón, Prov. Limón Costa Rica. Holotype UF 80842.

Distribution.—Known only from the type locality.

#### ***Rectaxis paulisculpta* (Rehder 1942)**

*Spiraxis (Rectaxis) paulisculpta* Rehder 1942; Jour. Wash. Acad. Sci. 32:350; fig. 18 (shell).

*Rectaxis paulisculpta* (Rehder). Thompson 2010; Rev. Biol. Trop. 58:200; fig. 3 (shell).

Type Locality.—Santa Maria, Prov. San José, Costa Rica; 1550 m alt. Holotype USNM 536016.

Distribution.—Known only from the type locality.

#### ***Rectaxis pittieri* (Von Martens 1898)**

*Spiraxis nitidus* var. *pittieri* Von Martens 1898; Biol. Cent. Amer.:310; pl. 18, fig. 2 (shell).- Pilsbry 1907; Man. Conch. 19:214; pl. 2, fig. 15 (shell).

Type Locality.—El Pital, in the valley of the Rio Naranjo, Costa Rica; 250 m alt.

Distribution.—COSTA RICA: type locality; Savana de Guacino, valley of the Rio Brus (Von Martens 1898).

#### ***Rectaxis rhabdus* (Pilsbry 1907)**

*Spiraxis rhabdus* Pilsbry 1907; Man. Conch. 19:27; pl. 6, figs. 25, 26.- H. B. Baker 1939; Nautilus 53:50.

Type Locality.—Texolo, Veracruz, México. Syntypes in the ANSP.

Distribution.—Known only from the type locality.

#### ***Rectaxis subnitidus* (H. B. Baker 1939)**

*Spiraxis (Rectaxis) subnitidus* H. B. Baker 1939; Nautilus 53:51; pl. 9, fig. 3 (radula), fig. 4 (shell).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Above Necaxa, Puebla, México; 5000 ft. alt. Holotype in the UMMZ.



Distribution.—Known only from the type locality.

***Rectaxis subtilis subtilis* (H. B. Baker 1939)**

*Spiraxis (Rectaxis) subtilis* H. B. Baker 1939; Nautilus, 53:50; pl. 9, fig. 1 (shell).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Las Tortolas [2 km. N of east end of], Córdoba, Veracruz, México; 2625–3000 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Rectaxis subtilis vitreus* (H. B. Baker 1939)**

*Spiraxis (Rectaxis) subtilis vitreus* H. B. Baker 1939; Nautilus 53:50–51; pl. 9, fig. 2 (shell).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Below Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

**Genus *Volutaxis* Strebel 1882**

*Volutaxis* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:119.- Pilsbry 1907; Man. Conch. 19:20. H. B. Baker 1939; Nautilus 53:10–11. Zilch 1960:448.- Thompson 2010; Rev. Biol. Trop. 58:196, 200.

Type Species.—*Bulimus sulciferus* Morelet 1851.

Distribution.—México, Central America and the Greater Antilles.

Taxonomy.—*Volutaxis* consists of three subgenera: *Volutaxis*, *Mirapex*, and *Versutaxis* (Thompson 2010).

**Subgenus *Volutaxis* Strebel 1882**

Distribution.—México and Guatemala south to Costa Rica. Additional species occur in Cuba, Jamaica and Hispaniola.

Taxonomy.—Twenty species and four subspecies occur in the study area.

***Volutaxis (Volutaxis) blandiana* (Pilsbry 1909)**

*Spiraxis blandi* Crosse & Fischer 1877; Jour. de Conchyl. 25; 217.- Fischer & Crosse 1878:616; pl. 25, figs. 11–11b (shell). Von Martens 1898; Biol. Cent. Amer.:311 (not *Spiraxis (Ravenia) blandi* Crosse 1873).

*Volutaxis blandi* (Crosse & Fischer). Tryon 1885; Man. Conch. 1: pl. 9, fig. 23 (shell).

*Spiraxis blandiana* Pilsbry 1909; Man. Conch. 20:111.

Type Locality.—State of Veracruz, México.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) cacahuamilpensis* (Herrera 1891)**

*Spiraxis cacahuamilpensis* Herrera 1891; Memorias y Revista de la Sociedad Científica “Antonia Alzat” 5:219; pl. 2, figs. 4, 5 (shell).- Pilsbry 1907; Man. Conch. 19:28; pl. 2, figs. 24, 25 (shell).

Type Locality.—Caves of Cacahuamilpa, Guerro, México.

Distribution.—Known only from the type locality.

Taxonomy.—The type specimen is a juvenile consisting only of the initial four whorls of the shell.

***Volutaxis (Volutaxis) confertecostatus* Strebel 1882**

*Volutaxis confertecostatus* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:122–123; pl. 7, fig. 12; pl. 17, fig. 19 (shell).- Tryon 1885; Man. Conch. 1: 51; pl. 9, figs. 41–42 (shell).

*Spiraxis confertecostatus* (Strebel). Von Martens 1898; Biol. Cent. Amer.:310.

Type Locality.—Pacho and Dos Arroyos, near Jalapa, Veracruz, México.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) delicatus* (Pilsbry 1907)**

*Spiraxis delicatus* Pilsbry 1907; Man. Conch. 19:27–28; pl. 6, fig. 23 (shell).

Type Locality.—Uruapam [Uruapan], Michoacán, México. Holotype ANSP 77099a.

Distribution.—MICHOCÁN: type locality. VERACRUZ: Texolo (Pilsbry 1907).

***Volutaxis (Volutaxis) eburneus* Thompson 2010**

*Volutaxis (Volutaxis) eburneus* Thompson 2010; Rev. Biol. Trop. 58:201–202; fig.4 (shell).

Type Locality.—Hitoy Cerera Biological Preserve, La Estrella, Prov. Limón, Costa Rica. Holotype UF 215408.

Distribution.—COSTA RICA: known only from the vicinity of the type locality.

***Volutaxis (Volutaxis) fallax* (H. B. Baker 1940)**

*Spiraxis (Volutaxis) fallax* H. B. Baker 1940; Nautilus 53:90; pl. 11, fig. 4 (shell).

Type Locality.—Las Tortolas, Córdoba; 3000 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: Peñuela to Córdoba, 2625–3000 ft. alt. PUEBLA: Necaxa (H. B. Baker 1940).

***Volutaxis (Volutaxis) linearis* (Pfeiffer 1866)**

*Spiraxis linearis* Pfeiffer 1866; Malak. Blätt. 13; 84.- Fischer & Crosse 1877:616; pl. 25, figs. 7–7b (shell).- Von Martens 1898; Biol. Cent. Amer.:311.

*Volutaxis linearis* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:124; pl. 12, fig. 10 (shell).- Tryon 1885; Man. Conch. 1:52; pl. 9, fig. 48.

Type Locality.—Veracruz, Veracruz, México; on the beach under pieces of wood cast ashore.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) livingstonensis* (Pilsbry 1920)**

*Spiraxis livingstonensis* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:213–214; pl. 11, fig. 1 (shell).- Hinkley 1920; Nautilus 34:44.

Type Locality.—Mountains west of Livingston [Dept. Izabal], Guatemala. Holotype ANSP 17537a.

Distribution.—GUATEMALA, Dept. Izabal: mountains of Rio Cavech, above Cavech Village (Hinkley 1920).

***Volutaxis (Volutaxis) longior* (Pilsbry 1920)**

*Spiraxis longior* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:214; pl. 11, fig. 2 (shell).- Hinkley 1920; Nautilus 34:44.

Type Locality.—Mountains west of Livingston, [Dept. Izabal], Guatemala. Holotype ANSP 107525.

Distribution.—GUATEMALA, Dept. Izabal: mountains of Rio Cavech, above Cavech Village (Hinkley 1920).

***Volutaxis (Volutaxis) maya* (Bequaert & Clench 1931)**

*Spiraxis (Volutaxis) maya* Bequaert & Clench 1931; Occ. Pap. Boston Soc. Nat. Hist. 5:423.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):529; pl. 68, figs. 1–2 (shell).

Type Locality.—Chichen Itza, Yucatán, México. Holotype MCZ 85799.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) nitidus nitidus* Strebel 1882**

*Volutaxis nitidus* Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:124; pl. 7, figs. 9, 13; pl. 17, figs. 20, 25, 36 (shell).- Tryon 1885; Man. Conch. 1:52; pl. 9, figs. 46–47 (shell).

*Spiraxis nitidus* (Strebel). Von Martens 1898; Biol. Cent. Amer.:310. *Spiraxis nitidus* var. *major* Von Martens 1898; Biol. Cent. Amer.:310; pl. 18, fig. 1.

*Spiraxis nitidus* var. *minor* Von Martens 1989:310.

Type Locality.—Pacho and Mirador, Veracruz, México.

Distribution.—VERACRUZ: Las Vigas; Camino de Obispo (Von Martens 1898).

Taxonomy.—Von Martens (1898:310) recognized var. *minor* Von Martens 1898 and var. *major* Von Martens 1898. The two names have been used numerous times in this and other families as descriptors of variation. Thus, they are not accorded formal taxonomic status.

***Volutaxis (Volutaxis) nitidus persulcatus* (H. B. Baker 1940)**

*Spiraxis (Volutaxis) nitidus persulcatus* H. B. Baker 1940; Nautilus 53:91–92, 94; pl. 11, fig. 8 (shell).

Type Locality.—Below Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: Necaxa. VERACRUZ: Peñuela 2625 ft. alt. (H. B. Baker 1940).

***Volutaxis (Volutaxis) rhoadsae* (Pilsbry 1899)**

*Opeas rhoadsae* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:399.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:775; pl. 50, fig. 4 (shell).- Naranjo-Garcia & Fahy 2010; Amer. Malaco. Bull., 28:66.

*Spiraxis rhoadsae* (Pilsbry). Pilsbry 1907; Man. Conch. 19:26; pl. 2, figs. 21–22 (shell).

Type Locality.—Diente, near Monterrey, Nuevo León, México. Lectotype ANSP 77103a (Baker 1963:219).

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) scalariopsis* (Morelet 1851)**

*Bulimus scalariopsis* Morelet 1851; Test. Noviss. II:11.

*Spiraxis scalariopsis* (Morelet). Fischer & Crosse, 1877:609; pl. 25, figs. 1–1b (shell).- Von Martens 1898; Biol. Cent. Amer.:308.- Pilsbry 1907; Man. Conch. 19:21; pl. 2, fig. 17 (shell).- Thompson 1957; Nautilus 70:101.- Bequaert 1957:217.

Type Locality.—Petén, Guatemala.

Distribution.—Known only from the type locality.

CHIAPAS: Monte Lebano to El Censo, 600–700 m alt. (Bequaert 1957). TABASCO: 0.5–1.0 mi. E of Teapa (Thompson 1957).

***Volutaxis (Volutaxis) scalella* (Von Martens 1898)**

*Spiraxis scalella* Von Martens 1898; Biol. Cent. Amer.:311; pl. 18, fig. 5 (shell).- Pilsbry 1907; Man. Conch. 19:22–23; pl. 2, fig. 16 (shell).

Type Locality.—El Pital, in the valley of the Rio Naranjo [Prov. Puntarenas?], Costa Rica; 200 m alt.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) strebeli* (Pilsbry 1907)**

*Spiraxis strebeli* Pilsbry 1907; Man. Conch. 19:27; pl. 6, figs. 27, 28 (shell).

Type Locality.—Texolo, Veracruz, México. Holotype ANSP 77165a.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) subulinus* (H. B. Baker 1940)**

*Spiraxis (Volutaxis) subulinus* H. B. Baker 1940; Nautilus 53:90–91; pl. 11, fig. 1 (shell).

Type Locality.—Above Necaxa, Puebla, México; 5000 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet 1851)**

*Bulimus sulciferus* Morelet 1851; Test. Noviss. II:12.

*Spiraxis sulciferus* (Morelet). Fischer & Crosse 1877:610; pl. 25, figs. 2–2b (shell).- Von Martens 1898; Biol. Cent. Amer.:308; pl. 18, fig. 4 (shell).- Haas & Solem 1960; Nautilus 73:130.

*Spiraxis (Volutaxis) sulciferus sulciferus* (Morelet). H. B. Baker 1926a:9–10; pl. 19, fig. 96 (radula).- H. B. Baker 1939; Nautilus 53:14; pl. 4, fig. 5 (reproductive anatomy).- H. B. Baker 1940; Nautilus 53:93.

*Volutaxis sulciferus* (Morelet). Strebel 1882; Beitrag. Mex. Land- und Süßw.-Conch. V:120; pl. 7, figs. 2–2b; pl. 17, fig. 12 (shell).

*Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet).- Thompson 2010; Rev. Biol. Trop. 58:201; fig. 5.

Type Locality.—Palenque, Chiapas, México.

Distribution.—BELIZE: Cayo Dist. Rio Frio Cave, 2 mi. from Augustine (Haas & Solem 1960). GUATEMALA, Dept. Retalhuleu: Retalhuleu (Von Martens 1898). CHIAPAS: Palenque. OAXACA: 9.2 km NE of Valle Nacional, 250 m alt. (Thompson 2010). VERACRUZ: localities near Misantla; Mirador (Von Martens 1898); Atoyac, [20 km. ESE of] Córdoba, 1300 ft. alt.; Potrero de Peñuela, 2150–2950 ft. alt. (H. B. Baker 1940).

***Volutaxis (Volutaxis) sulciferus atoyacensis* (H. B. Baker 1940)**

*Spiraxis (Volutaxis) sulciferus atoyacensis* H. B. Baker 1940; Nautilus 53:89; pl. 11, fig 3 (shell).

Type Locality.—Atoyac, Veracruz, México; 1300 ft. alt. Holotype in the UMMZ.

Distribution.—VERACRUZ: Atoyac, [20 km. ESE of];

Córdoba, 3000 ft. alt. (H. B. Baker 1940).

***Volutaxis (Volutaxis) sulciferus cobanensis* (Fischer & Crosse 1877)**

*Spiraxis sulciferus* var. *cobanensis* Fischer & Crosse 1877:610; pl. 25, figs. 3–3b (shell).- Von Martens 1898; Biol. Cent. Amer.:308.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) tenuecostatus tenuecostatus* Strebel 1882**

*Volutaxis (Volutaxis) tenuecostatus* Strebel 1882; Beitr. Mex. Land- und Süßw.-Conch. V:121; pl. 17, fig. 11 (shell).- Tryon 1885; Man. Conch. 1:51; pl. 9, fig. 39 (shell).

*Spiraxis (Volutaxis) tenuecostatus tenuecostatus* H. B. Baker 1940; Nautilus 53:94.

Type Locality.—Agua Caliente, near Misantla, Veracruz, México.

Distribution.—PUEBLA: Necaxa (H. B. Baker 1940). VERACRUZ: type locality.

***Volutaxis (Volutaxis) tenuecostatus obesus* (H. B. Baker 1940)**

*Spiraxis (Volutaxis) tenuecostatus obesus* H. B. Baker 1940; Nautilus 53:91, 94; pl. 11, fig. 6 (shell).

Type Locality.—Tenango Hills, near Necaxa, Puebla, México; 4600 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) tenuis* (Pfeiffer 1868)**

*Spiraxis tenuis* Pfeiffer 1868; Malak. Blätt. 15:84.- Fischer & Crosse 1877:614; pl. 25; figs. 5–5b (shell).

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Volutaxis (Volutaxis) uruapamensis* (Pilsbry 1899)**

*Spiraxis uruapamensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:398.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:775; pl. 50, fig. 9 (shell).- Pilsbry 1907; Man. Conch. 19:22; pl. 2, figs. 12–13 (shell).

Type Locality.—Uruapam [Uruapan], Michoacán, México. Holotype ANSP 77160a.

Distribution.—Known only from the type locality.

**Subgenus *Mirapex* H. B. Baker 1939**

*Mirapex* H. B. Baker 1939; Nautilus 53:13.- Thompson 2010; Rev. Biol. Trop. 58:200.

Type Species.—*Spiraxis (Mirapex) acus enigmaticus* H. B. Baker 1939.

Distribution.—Central Veracruz at moderate elevations near Córdoba.

Taxonomy.—*Mirapex* includes a single species.

***Volutaxis (Mirapex) enigmaticus* (H. B. Baker 1939)**

*Spiraxis (Mirapex) acus enigmaticus* H. B. Baker 1939; Nautilus 53:13–14; pl. 4, fig. 1 (shell), fig. 2 (reproductive anatomy).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Las Tortolas [2 km. N of east end of], Córdoba, Veracruz, México; 2650 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

**Subgenus *Versutaxis* H. B. Baker 1939**

*Versutaxis* H. B. Baker 1939; Nautilus 53:33.- Thompson 2010; Rev. Biol. Trop. 58:200.

Type Species.—*Spiraxis (Versutaxis) opeas* H. B. Baker 1939.

Distribution.—Central México, including Michoacán, Puebla, and Veracruz.

Taxonomy.—Seven species are recognized (Thompson 2010).

***Volutaxis (Versutaxis) arctatus* (H. B. Baker 1940)**

*Spiraxis (Versutaxis) arctatus* H. B. Baker 1940; Nautilus 53:84; pl. 11, fig. 5 (shell).

Type Locality.—Below Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Versutaxis) futilis* (H. B. Baker 1939)**

*Spiraxis (Versutaxis) futilis* H. B. Baker 1939; Nautilus 53:52; pl. 9, fig. 7 (shell).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Tenago Hill, Necaxa, Puebla, México; 4600 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality.

***Volutaxis (Versutaxis) opeas* (H. B. Baker 1939)**

*Spiraxis (Versutaxis) opeas* H. B. Baker 1939; Nautilus 53:13; pl. 3, fig. 1 (shell).- H. B. Baker 1940; Nautilus 53:93.

Type Locality.—Above Necaxa, Puebla, México; 5000 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Versutaxis) odiosus* (Pilsbry 1899)**

*Opeas odiosum* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:399.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:775; pl. 50, fig. 3 (shell).- Pilsbry 1907; Man. Conch. 19:25; pl. 2, figs. 19, 20 (shell).

*Spiraxis odiosus* (Pilsbry). H. B. Baker 1939; Nautilus 53:13.

Type Locality.—Patzcuaro, Michoacán, México. Holotype ANSP 77100a.

Distribution.—Known only from the type locality.

***Volutaxis (Versutaxis) patzcuarensis* (Pilsbry 1899)**

*Opeas patzcuarensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:399.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55: pl. 50, fig. 5 (shell).- Pilsbry 1907; Man. Conch. 19:26–27; pl. 2, fig. 23 (shell).- Naranjo-García & Fahy 2010; Amer. Malac. Bull., 28:66.

*Spiraxis patzcuarensis* (Pilsbry). H. B. Baker 1939; Nautilus 53:52.

Type Locality.—Patzcuaro, Michoacán, México. Syn-types ANSP 77151.

Distribution.—Known only from the type locality.



***Volutaxis (Versutaxis) subgranum* (H. B. Baker 1939)**

*Spiraxis (Versutaxis) subgranum* H. B. Baker 1939; Nautilus 53:51; pl. 9, fig. 8 (shell).

Type Locality.—Las Tortolas [2 km. N of east end of], Córdoba, Veracruz, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Versutaxis) subopeas* (H. B. Baker 1939)**

*Spiraxis (Versutaxis) subopeas* H. B. Baker 1939; Nautilus 53:52; pl. 9, fig. 9 (shell).

Type Locality.—Below Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Volutaxis (Mirapex) ? acus* (Shuttleworth 1852)**

*Spiraxis acus* Shuttleworth 1852:207.- Fischer & Crosse 1877:614.- Von Martens 1898; Biol. Cent. Amer.:309 (not figured).

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Córdoba.

Taxonomy.—*Spiraxis acus* Shuttleworth is a *nomen dubium*. It has not been recognized since its original description because of its vague description, because it has never been figured, and because the type specimen is lost (Neubert & Gosteli 2003:11). The name had been associated with *Mirapex* because of H. B. Baker's (1939b) designation of *Volutaxis enigmaticus* as a subspecies of *Spiraxis acus*.

***Volutaxis (Volutaxis) ? costatostratus* (Pfeiffer 1856)**

*Bulimus costatostratus* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:319. (Not figured).

*Volutaxis (?) costatostratus* (Pfeiffer). Pilsbry 1907; Man. Conch. 19:24-25.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—Known only from the type locality.

Taxonomy.—This is a *nomum dubium*. The species was poorly described, it remains unfigured, and it has not been reported since its original description.

**Superfamily STREPTAXOIDEA Gray 1860****Family STREPTAXIDAE Gray 1860****Subfamily ENNEINAE Bourguignat 1883****Genus *Sinoennea* Kobelt 1904**

*Sinoennea* Kobelt 1904; Nachr. Deut. Malak. Gezel. 36:28.

Type Species.—*Pupa strophiodes* Gredler 1881.

Distribution.—East Asia, including Japan, China, Vietnam, Malaysia, and southern India.

Taxonomy.—Two subgenera are recognized. One has been introduced into the study area.

**Subgenus *Indoennea* Kobelt 1904**

*Indoennea* Kobelt 1904; Nachr. Deut. Malak. Ges. 36:28

Type Species.—*Ennea blanfordiana* Godwin-Austin 1872.

Distribution.—Primarily southern India and the Himalayas. One species has been introduced extensively around the tropical and subtropical.

Taxonomy.—Numerous species in southern Asia. One species has been introduced into the study area.

***Sinoennea (Indoennea) bicolor* (Hutton 1834)**

*Pupa bicolor* Hutton 1834; Jour. Asian Soc. Bengal 3:86.

*Ennea (Huttonella) bicolor* (Hutton). Kobelt 1905; in Martini & Chemnitz System. Conchyl-Cabinet, Rhytididae & Enneidae, I:128-129; pl. 19, figs. 1-3.- Godwin-Austin, Fauna Brit. India; Mollusca 1:19-21; text-fig. 12.

*Gulella (Indoennea) bicolor* (Hutton). Pilsbry 1919; Bull. Amer. Mus. Nat. Hist. 40:223.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:98-99.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:345.- Correa-Sandoval 1999; Acta Zool. Mex. (78):179-181.

*Sinoennea (Indoennea) bicolor* (Hutton). Thompson 2008:666.

*Pupa largilliariti* Philippi 1844; Zeitschr. Malac., 165.

*Pupa mellita* Gould 1846; Boston Soc. Nat. Hist. 2:98.

*Ennea ceylonica* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:9.

*Pupa caffaeicola* Craven 1880; Proc. Zool. Soc. Lond. 48:215; pl. 22, fig. 10.

Type Locality.—“West Indies”.

Distribution.—Widely distributed throughout the tropical and subtropical regions of the world. The origin of the species is unknown, but is presumed to be in southern India. PANAMÁ: Cd. Panamá; Ancon; Isla Tobago (Pilsbry 1926). VERACRUZ: El Tajín (Correa-Sandoval 1999).

**Genus *Streptostele* Dohrn 1866**

*Streptostela* Dohrn 1866; Malak. Blätt. 13:128.

Type Species.—*Bulimus fastigiatus* Morelet 1848.

Distribution.—Africa and adjacent islands, but not Madagascar.

Taxonomy.—Four subgenera are recognized (Zilch 1960). One has been introduced into the study area.

**Subgenus *Tomostele* Ancey 1885**

*Tomostele* Ancey 1885; Bull. Soc. Malac. France 2:143.- Pilsbry 1919; Bull. Amer. Mus. Nat. Hist. 40:180-183.

Type Species.—*Achatina musaecola* Morelet 1860.

Distribution.—Tropical west Africa.

Taxonomy.—A few species, one of which has been widely introduced into tropical regions of the world.

***Streptostele (Tomostele) musaecola* (Morelet 1860)**

*Achatina musaecola* Morelet 1860; Jour. de Conchyl. 8:190.

*Streptostele (Tomostele) musaecola* (Morelet). Pilsbry 1919; Bull. Amer. Mus. Nat. Hist. 40:191; pl. 21, fig. 11.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:345-346; text-fig. 2.- Hausdors & Bermúdez 2003; Malacologia 45:185-187.- Thompson 2008:267.

*Luntia insignis* Smith 1898; Jour. Conch. 9:27.

*Leptinaria insignis* (Smith). López & Pérez 1966; Rev. Biol. Trop. 44:303.

Type Locality.—Gabon. Syntypes BMNH 1898.12.5.18 (3).

Distribution.—Native range from Guinea to the Congo (Pilsbry 1919); widely introduced in tropical regions around the world. COSTA RICA, Prov. Limón: La Lola, 28.3 mi.

W of Puerto Limón. NICARAGUA, Dept. Masatepe: El Arenal, El Mango, 455 m alt.; El Arenal, El Pochote, 455 m alt. (López & Pérez 1966). PANAMÁ, Prov. Colón: Mount Hope; Colón (Hausdorf & Bermúdez 2003:186).

**Superfamily RHYTIDOIDEA Pilsbry 1893**  
**Family SCOLODONTIDAE H. B. Baker 1925**

Scolodontinae H. B. Baker 1925; Nautilus 38:86–89.- Tillier 1880; Mem. Mus. Nat. d'Hist. Nat., 118.- Hausdorf 2003; Jour. Moll. Stud., 69:183.

Systrophiidae Thiele 1926. (Name not available from Thiele 1921, who used the vernacular name Systrophiiden).

Type Genus.—*Scolodonta* Döring 1875.

Distribution.—The Neotropical realm from southern Argentina north to eastern México and the Lesser Antilles.

Taxonomy.—Eight genera are recognized. Five occur in the study area.

**Genus *Drepanostomella* Bourguignat 1889**

*Drepanostomella* Bourguignat 1889:42.- H. B. Baker 1925a; Occ. Pap. Mus. Zool. Univ. Mich. (156):15, 17, 24–25.

Type Species.—*Helix (Drepanostomella) ammoniformis* Orbigny 1835.

Distribution.—Ecuador north to Guatemala.

Taxonomy.—Six species are recognized. Two occur in the study area.

***Drepanostomella pinchoti* Pilsbry 1930**

*Drepanostomella pinchoti* Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:346–347; text-figs. 3–3b (shell).- Pérez & López 2002:228–230.- Thompson 2008:668.

Type Locality.—Foothills near the Rio Madingo, Gulf of San Blas, Republic of Panamá. Holotype ANSP 152048.

Distribution.—Nicaragua: Dept. Boaco (Pérez & López 2002). PANAMÁ: only from the type locality.

***Drepanostomella stollii* (Von Martens 1892)**

*Hyalina stollii* Von Martens 1892; Biol. Cent. Amer.:118; pl. 6, figs. 15–15c (shell).- Martens 1901:619.

*Ammoniceris stollii* (Von Martens). Hinkley 1920; Nautilus 34:39, 51.

*Drepanostomella stollii* (Von Martens). Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:347; text-figs. 4–45 (shell).- Thompson 2008:668.

Type Locality.—Retalhuleu, Dept. Retalhuleu, Guatemala.

Distribution.—COSTA RICA: San José, 1135 m alt; Puerto Viejo (Martens 1892 1901); Cahuita (Pilsbry 1930). GUATEMALA, Dept. Alta Verapaz: Chamá (Hinkley 1920). Dept. Izabal: Quirigua (Hinkley 1920).

**Genus *Guestieria* Crosse 1872**

*Guestieria* Crosse 1872:290.- H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):14 18.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:347–349.

Type Species.—*Helix powesiana* Pfeiffer 1848.

Distribution.—Ecuador north to Panamá.

Taxonomy.—Six species are recognized. One occurs in the study area.

***Guestieria isthmica* Pilsbry 1930**

*Guestieria isthmica* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:347–349; text-fig. 5 (jaw), text-fig. 5a (radula), text-figs. 6–6b (shell).

Type Locality.—Foothills near Rio Madingo, Gulf of San Blas, Panamá. Holotype ANSP 152647.

Distribution.—Known only from the type locality.

**Genus *Miradiscops* H. B. Baker 1925**

*Miradiscops* H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):17, 34.- H. B. Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:254.- Pérez & López 2002:230.

Type Species.—*Miradiscops variolata* H. B. Baker 1925.

Distribution.—Venezuela north to eastern México.

Taxonomy.—Eight species are recognized. Seven occur in the study area.

***Miradiscops balboa* Pilsbry 1930**

*Miradiscops balboa* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:350; pl. 29, figs. 4–4b (shell).- Thompson 2008:669.

Type Locality.—Ruins of Old Panamá City, Panamá. Holotype ANSP 151302.

Distribution.—PANAMÁ: Isla Barro Colorado, Canal Zone (Pilsbry 1930).

***Miradiscops haplocochlion* Thompson 1967**

*Miradiscops haplocochlion* Thompson 1967; Bull. Fla. State Museum, 11:241–243; figs. 3, A-C (shell).

Type Locality.—8.1 miles southwest of Champotón, Campeche, México. Holotype UF 19058.

Distribution.—Known only from the type locality.

***Miradiscops maya* (Pilsbry 1920)**

*Pseudohyalina maya* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:216; pl. 11, figs 5, 5a (shell).- H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):12.- Thompson 2008:670.

Type Locality.—Maya farms, Quirigua, Dept. Izabal, Guatemala. Holotype ANSP 107511.

Distribution.—GUATEMALA: known only from the type locality. VENEZUELA (H. B. Baker 1925).

***Miradiscops opal* (Pilsbry 1920)**

*Pseudohyalina opal* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 71:216–217; pl. 11, figs. 7, 7a (shell).- H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):13.

*Miradiscops opal* (Pilsbry). H. B. Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:252–253; pl. 8, figs. 2–3 (reproductive anatomy), fig. 4 (radula).- Correa-Sandoval, García-Cubas & Reguero 1998:15.- Pérez & López 2002:231–232.- Thompson 2008:670.

Type Locality.—Polvón, Dept. Chinandega, Nicaragua. Holotype ANSP 48523.

Distribution.—NICARAGUA: various localities along the Pacific slope (Pérez & López 2002). PUEBLA: Necaxa

(H. B. Baker 1929a). SAN LUÍS POTOSÍ: numerous localities in the eastern part of the state (Correa-Sandoval et al. 1998). Venezuela (H. B. Baker 1925).

***Miradiscops panamensis* Pilsbry 1930**

*Miradiscops panamensis* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:350; pl. 29, figs. 3–3b.- Pérez & López 2002:233–234.- Thompson 2008:670.

Type Locality.—Ruins of Old Panamá City, Panamá. Holotype ANSP 151365.

Distribution.—NICARAGUA: numerous localities along the Pacific slope (Pérez & López 2002). PANAMÁ: only from the type locality.

***Miradiscops puncticipitis* (Pilsbry 1926)**

*Pseudohyalina puncticipitis* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:130–131; text-figs. 2 (shell).

*Miradiscops puncticipitis* (Pilsbry). H. B. Baker 1929; Proc. Acad. Nat. Sci. Phila. 82:253–254; pl. 8, fig. 5 (radula), fig. 6 (penis).- Correa-Sandoval, García-Cubas & Reguero 1998:19.- Thompson 2008:671.

Type Locality.—Chamá, Dept. Alta Verapaz, Guatemala. Holotype ANSP 45656.

Distribution.—GUATEMALA: Chama. PUEBLA: Necaxa (H. B. Baker 1929). SAN LUÍS POTOSÍ: Vega Larga, 5 km SW of Tamazunchale (21 14'03" N, 98 50'31" W) (Correa-Sandoval et al. 1998).

***Miradiscops ridicula* Pilsbry 1930**

*Miradiscops ridicula* Pilsbry 1930b; Proc. Acad. Nat. Sci. Phila. 82:256; text-figs. 11 (shell).

Type Locality.—Valley opening westward, north of High Peak, Isla de Providencia, Colombia. Holotype ANSP 150163.

Distribution.—Known only from the type locality.

**Genus *Occultator* Pilsbry 1926**

*Occultator* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:129–130.

Type Species.—*Occultator olssoni* Pilsbry 1926.

Distribution.—Costa Rica.

Taxonomy.—A single species is recognized.

***Occultator olssoni* Pilsbry 1926**

*Occultator olssoni* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:129–130; text-figs. 1 (shell).

Type Locality.—Cahuita, Dept. Limón, Costa Rica. Holotype ANSP 104675.

Distribution.—Known only from the type locality.

**Genus *Systrophia* Pfeiffer 1855**

*Systrophia* Pfeiffer 1855; Proc. Zool. Soc. Lond. 23:136.- H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):19.- Thiele 1927:310–311.- H. B. Baker 1928; Nautilus 41:124

*Scolodonta* Döring 1875:438.

Type Species.—*Systrophia*: *Helix systropha* Albers 1854. *Scolodonta*: *Scolodonta semperi* Döring 1875.

Distribution.—South America from Argentina north to

Costa Rica.

Taxonomy.—Three subgenera are recognized (Zilch 1960). One occurs in the study area.

**Subgenus *Systrophiella* H. B. Baker 1925**

*Systrophiella* H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):17, 31–33.- H. B. Baker 1925; Nautilus 38:86–88.- H. B. Baker 1926; Occ. Pap. Mus. Zool. Univ. Mich. (167):5–6.- H. B. Baker 1928b; Nautilus 41:125.

Type Species.—*Scolodonta* (*Systrophiella*) *eudiscus* H. B. Baker 1925

Distribution.—Northern and northwestern South America north to Costa Rica.

Taxonomy.—Numerous species. Three species occur in the study area.

***Systrophia* (*Systrophiella*) *costaricana* Rehder 1942**

*Systrophia* (*Systrophiella*) *costaricana* Rehder 1942; Jour. Wash. Acad. Sci. 32:352; figs. 13–15.- Thompson 2008:673.

Type Locality.—Coto, on the Golfo Dulce, Prov. Puntarenas, Costa Rica. Holotype USNM 536023.

Distribution.—Known only from the type locality.

***Systrophia* (*Systrophiella*) *zeteki* (Pilsbry 1920)**

*Scolodonta zeteki* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:195; text-figs. 1 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:101; text-fig. 25.

*Systrophia* (*Systrophiella*) *zeteki* (Pilsbry). Thompson 2008:673.

Type Locality.—Gamboa, Canal Zone, Panamá. Holotype ANSP 114079.

Distribution.—PANAMÁ: Gatún; Isla Barro Colorado; Gamboa (Pilsbry 1926).

***Systrophia* (?) *antoni* (Pfeiffer 1842)**

*Helix antoni* Pfeiffer 1842:22.

*Scolodonta antoni* (Pfeiffer). H. B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):30.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:101.

*Systrophia* (?) *antoni* (Pfeiffer). Thompson 2008:673.

Type Locality.—Panamá (?).

Distribution.—Known only from the type locality.

**Superfamily ACAVOIDEA Pilsbry 1895**

**Family MEGOMPHICIDAE Baker 1930**

Distribution.—Western North America from Montana and Idaho south to extreme northwestern México.

Taxonomy.—The family contains four genera. One genus occurs in México.

**Genus *Glyptostoma* Bland & Binney 1873**

*Glyptostoma* Bland & Binney 1873. Proc. Acad. Nat. Sci. Phila.:244.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:309.- Berry 1938; Jour. Ento. Zool. Pom. Coll., 30:55.- Pilsbry 1939; Land Moll. N. Amer. I:567.

Type Species.—*Helix newberryana* W. G. Binney 1858.

Distribution.—Los Angeles County, California, south to Ensanada, Baja California Norte.



Taxonomy.—The genus contains two species. A single species and subspecies occurs in México.

***Glyptostoma newberryanum depressum* Bryant 1902**

*Glyptostoma newberryanum depressum* Bryant 1902; Nautilus 16:70.- Berry 1928; Jour. Ent. Zool. Pom. Coll. 20:75.- Pilsbry 1939; Land Moll. N. Amer. 1:571; fig. 376d (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:132; text-fig. 33 (map).

Type Locality.—Bluffs north of Ensanada de Todo Santos, Baja California Norte, México. Holotype in the SDMNH.

Distribution.—BAJA CALIFORNIA NORTE: vicinity of the type locality; Cañada Macho Güero (Smith et al. 1990).

**Superfamily PUNCTOIDEA Morse 1864**

**Family PUNCTIDAE Morse 1864**

Punctidae Morse 1864.- Solem 1982.

Type Genus.—*Punctum* Morse 1864.

Distribution.—Holarctic, scattered localities in Africa, southern Australia, New Zealand, sub-Antarctic islands.

Taxonomy.—Numerous genera. One occurs naturally within the study area. A second genus from southern Australia has been introduced.

**Genus *Paralaoma* Iredale 1913**

*Paralaoma* Iredale 1913; Proc. Malacol. Soc. London 10:380.

Type Species.—*Paralaoma raoulensis* Iredale 1913.

Distribution.—Kermadec Group of islands. One species has been distributed widely by human agency.

Taxonomy.—A few species have been described.

***Paralaoma servilis* (Shuttleworth 1852)**

*Helix servilis* Shuttleworth 1852.

*Zonites diegoensis* Hemphill, in Binney 1862.

*Punctum conspectum* var. *pasadenae* Pilsbry 1896; Nautilus 10:21.

*Paralaoma caputspinulae* (Reeve). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:127.

*Paralaoma servilis* (Shuttleworth). Roth & Sadeghian 2006:42, 61.

Type Localities.—*Helix servilis*: Canary islands. *Zonites diegoensis*: near Julian City, San Diego County, California. *Punctum conspectum pasadenae*: Pasadena, California.

Distribution.—A non-native species that has been introduced widely throughout temperate regions of the world. Reported in México from BAJA CALIFORNIA SUR: San Javier, 1200–1500 ft. alt.; 1 km E of San Javier; 15.7 km W of San Javier (Smith et al. 1990). JALISCO (Roth & Sadeghian 2006).

**Genus *Punctum* Morse 1864**

*Punctum* Morse 1864:27. H. B. Baker 1930; Proc. Acad. Nat. Sci. Phila. 82:5.- Pilsbry 1948; Land Moll. N. Amer. 2:641.

Type Species.—*Helix minutissima* Lea 1841.

Distribution.—Holarctic in distribution south to Panamá in the New World; South Africa.

Taxonomy.—Zilch (1959) listed three subgenera.

**Subgenus *Punctum* Morse 1864**

Distribution.—As for the genus.

Taxonomy.—Numerous species. One species with three subspecies occurs in México.

***Punctum (Punctum) minutissimum minutissimum* (Lea 1841)**

*Helix minutissimus* Lea 1841:17.

*Punctum minutissimum* (Lea). Morse 1864:27; figs. 69–70; pl. II, fig. 1; pl. VIII, fig. 71 (shell).- H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):5.- Pilsbry 1948; Land Moll. N. Amer. 2:644–645; fig. 350 (shell).- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Thompson 2008:676.

*Punctum pygmaeum* (Draparnaud). Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:481.

Type Locality.—*Helix minutissimus*: vicinity of Cincinnati, Ohio, USA. Syntypes USNM 105694.

Distribution.—Widely distributed throughout temperate North America south to central México. NAYARIT: Isla Socorro, 2000 ft. alt. (Dall 1926). PUEBLA: Necaxa, 2025–5000 ft. alt. (H. B. Baker 1930a). SAN LUÍS POTOSÍ: numerous localities in the southeastern part of the state below 1320 m alt. (Correa-Sandoval et al. 1998).

***Punctum (Punctum) minutissimum rotundum* Dall 1926**

*Punctum pygmaeum* var. *rotundum* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:481.

*Punctum (Punctum) minutissimum rotundum* Dall. Thompson 2008:676.

Type Locality.—Isla Maria Magdalena, Islas Mariás, Nayarit, México. Holotype CAS 2203.

Distribution.—Known only from the type locality.

**Subgenus *Toltecia* Pilsbry 1926**

*Toltecia* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:116–117.- Pilsbry 1948; Land Moll. N. Amer. 2:649.- Roth 1985; Malac. Rev. 18:52.

Type Species.—*Thysanophora jaliscoensis* Pilsbry 1926 (= *Punctum conspectum jaliscoense*).

Distribution.—Central America and México from Panamá north to California.

Taxonomy.—Seven species are recognized. Six occur in the study area.

***Punctum (Toltecia) burringtoni* Pilsbry 1930**

*Punctum (Toltecia) burringtoni* Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:346; pl. 29, figs. 1–1b (shell).- Pérez & López 2001; Malac. Rev. 33/34:92.- Pérez & López 2002:236–237.- Thompson 2008:677.

Type Locality.—Guatemala. Holotype ANSP 132713.

Distribution.—GAUTEMALA: known only from the type locality. NICARAGUA, Dept. Chinandega (Pérez & López 2002). Dept. Grenada: Tepeyac. Dept. Managua: Managua. Dept. Matagalpa: La Cartuja; Cd. Dario (Pérez & López 2001).

***Punctum (Toltecia) coloba* (Pilsbry 1894)**

*Thysanophora coloba* Pilsbry 1894; Proc. Acad. Nat. Sci. Phila.

45:403; text-figs. (shell).- Pilsbry 1905; Proc. Acad. Nat. Sci. Phila. 55:763.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:117.

*Punctum coloba* (Pilsbry). Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:340; pl. 29, figs. 1–1b (shell).

*Punctum (Toltecia) coloba* (Pilsbry). Thompson 2008:677.

Type Locality.—Polvón, Dept. Chinandega, Nicaragua. Holotype ANSP 12162.

Distribution.—Known only from the type locality. This may be the species recorded from Nicaragua by Pérez and Lopéz (2003) as *Thysanophora crinita* Fulton 1917.

***Punctum (Toltecia) conspectum jaliscoensis* (Pilsbry 1926)**

*Thysanophora (Toltecia) jaliscoensis* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:124–125; text-fig. 39 (shell).

*Punctum (Toltecia) conspectum jaliscoensis* (Pilsbry). H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):5.- Pilsbry 1948; Land Moll. N. Amer. 2:652.- Thompson 2008:678.

Type Locality.—Guadalajara, Jalisco, México. Holotype ANSP 44927.

Distribution.—DISTRITO FEDERAL: Chapultepec Park (Pilsbry 1948). JALISCO: Guadalajara.

***Punctum (Toltecia) mazatlanica* (Pfeiffer 1856)**

*Helix mazatlanica* Pfeiffer 1856; Malak. Blätt. 3:43.- Binney & Bland, I 1869:82, fig. 144.

*Helix (Patula) mazatlanica* (Pfeiffer). Fischer & Crosse 1872:231. *Pseudohyalina mazatlanica* (Pfeiffer). Tryon 1866; Man. Conch. 1:266; pl. 19, fig. 59.

*Patula mazatlanica* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:127–128.

*Punctum (Toltecia) mazatlanica* (Pfeiffer). Thompson 2008:678.

Type Locality.—Mazatlán, Sinaloa, México.

Distribution.—SINALOA (?). It is not clear from earlier literature whether the type locality is Mazatlán, Sinaloa, or Mazatlán, Guerrero.

***Punctum (Toltecia) textilis* (Pilsbry 1920)**

*Thysanophora textilis* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:196; text-fig. 2 (shell).

*Thysanophora (Toltecia) textilis* Pilsbry. Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:117.

*Punctum (Toltecia) textilis* (Pilsbry). Thompson 2008:679.

Type Locality.—Chamá, Guatemala. Holotype ANSP 45653a (H. B. Baker 1963:240).

Distribution.—Known only from the type locality.

Taxonomy.—The shell characters suggest *Microconus* (Thysanophoridae). It is tentatively left in *Toltecia* where Pilsbry (1926) placed it.

***Punctum (Toltecia) vitreum* H. B. Baker 1930**

*Punctum (Toltecia) vitreum* H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):9; pl. 7, figs. 3–6 (shell).- Pilsbry 1948; Land Moll. N. Amer. 2:649–650; figs. 356 a-d (shell).- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Thompson 2008:679.

Type Locality.—Pleasure Gardens, New Braunfels,

Comal County, Texas. Holotype ANSP 150609.

Distribution.—Widely distributed in the eastern United States west to Texas, and south to Veracruz. NUEVO LEÓN: Iturbide (Correa-Sandoval 1997). TAMAULIPAS: Cañon del Novillo (23°41'37" N, 99°10'40" W) (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Sumidero, 3400 ft. alt. (H. B. Baker 1930a).

**Family CHAROPIDAE Hutton 1884**

Charopidae Hutton 1884.- Solem 1982.

Type Genus.—*Charopa* Albers 1860.

Distribution.—Widely distributed on the southern continents and Pacific islands.

Taxonomy.—Five subfamilies are recognized (Solem 1982). All New World Charopidae belong in the subfamily Rotadiscinae.

**Subfamily ROTADISCINAE H. B. Baker 1927**

Rotadiscinae H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:228–230.- Solem 1982:70.

Type Genus.—*Rotadiscus* Pilsbry 1926.

Distribution.—Western North America south through South America. One genus is present on islands in the Western Pacific and Australia. Other rotadiscids occur in Western Australia (Solem 1982).

Taxonomy.—Six neotropical genera belong in this subfamily (Solem 1982).

**Genus *Chanomphalus* Strebel 1880**

*Chanomphalus* Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:19–20.- H. B. Baker 1928; Nautilus 41:123.

Type Species.—*Helix elegantula* Pfeiffer 1867 (= *Thysanophora pilsbryi* H. B. Baker 1922).

Distribution.—Widely distributed from Costa Rica north in México to Nayarit along the Pacific coast, and to Tamaulipas along the east coast.

Taxonomy.—Three species are placed in the genus. Two are provisionally assigned here, pending further study.

***Chanomphalus pilsbryi* (H. B. Baker 1927)**

*Helix elegantula* Pfeiffer 1867; Malak. Blätt. 14:196 (not *Helix elegantula* Cristophri & Jan 1832).

*Chanomphalus elegantulus* (Pfeiffer). Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:20, pl. 4, fig. 11 (shell).

*Pseudohyalinea elegantula* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:125–126.

*Zonitoides elegantulus* (Pfeiffer). Hinkley 1907; Nautilus 21:77.- Hinkley 1920; Nautilus 34:39, 51.

*Thysanophora pilsbryi* H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):54; pl. 17, figs. 11–14 (shell).

*Planogyra (Chanomphalus) pilsbryi* (H. B. Baker). H. B. Baker 1927, Proc. Acad. Nat. Sci. Phila. 79:233–234; pl. 20, fig. 51 (radula), fig. 52 (pallial organs).

*Chanomphalus pilsbryi* (H. B. Baker). H. B. Baker 1928; Nautilus 41:123.- H. B. Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:265.- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Correa-Sandoval 1999:8.- Pérez & López 2002:241–242.- Thompson

2008:680.

*Punctum planatum* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:482; pl. 36, figs. 12–14 (shell).

Type Localities.—*Helix elegantula*: near Veracruz, Veracruz, México. *Thysanophora pilsbryi*: Hacienda Cuatotolapam, Veracruz, México. Holotype in the UMMZ. *Punctum planatum*: near village on east side of island, Isla María Madre, Islas Marías, Nayarit, México. Holotype CAS 2205.

Distribution.—COSTA RICA: Tierra Blanca, on the southern slope of Volcán Irazú (Von Martens 1892). NICARAGUA: various localities along the Pacific slope (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Izabal: Maya Farms, Quirigua (Hinkley 1920). Dept. Petén: Tikal (Basch 1959). CHIAPAS: Laguna Ocotal, 950 m alt. (Bequaert 1957). NAYARIT: Isla María Madre, Islas Marías. PUEBLA: Necaxa 3000 ft. alt. (H. B. Baker 1930a). SAN LUÍS POTOSÍ: various localities (Correa-Sandoval et al. 1998). TAMAULIPAS: river drift from near Tampico (Hinkley 1907); various localities in the southern part of the state (Correa-Sandoval & Rodriguez 2002). VERACRUZ: environs of Veracruz (Von Martens 1892); Sunidero, 3400 ft. alt. (H. B. Baker 1930a); Carr. Tuxpan- Poza Rica, km 234 (20°49'11" N, 97°30'00" W); El Cedral, carr. Poza Rica-Tajín (20°29'11" N, 97°25'23" W) (Correa-Sandoval 1999).

#### ***Chanomphalus cidarisca* (Von Martens 1892)**

*Pseudohyalina cidarisca* Von Martens 1892; Biol. Cent. Amer.:126; pl. 7, figs. 1–1d (shell).

*Chanomphalus cidarisca* (Von Martens). Thompson 2008:681.

Type Locality.—Palenque, Chiapas, México. Syntype(s) in the British Museum of Natural History.

Distribution.—Known only from the type locality.

Taxonomy.—This species is provisionally referred to the genus until the microsculpture of the syntypes is reexamined.

#### ***Chanomphalus tatei* Pilsbry 1903**

*Helix blakeana* Tate 1870; Amer. Jour. Conch. 3:155; pl. 6, fig. 3 (not *Helix blakeana* Newcomb 1861).

*Thysanophora tatei* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:764; pl. 49, figs. 3–3b (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:116.- Thompson 2008:682.

Type Locality.—Chontales forest, Nicaragua. Holotype ANSP 58065.

Distribution.—Known only from the type locality.

Taxonomy.—The shell is similar in size and shape to *Chanomphalus pilsbryi*.

#### **Genus *Radiodiscus* Pilsbry & Ferriss 1906**

*Radiodiscus* Pilsbry & Ferriss 1906; ANSP, 58:154.- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:230.

Type Species.—*Radiodiscus millicostatus* Pilsbry & Ferriss 1906.

Distribution.—Western North America from Idaho south through Arizona and New Mexico and south to Argentina.

Taxonomy.—Three subgenera are recognized. One subgenus occurs within the study area.

#### **Subgenus *Radiodiscus* Pilsbry & Ferriss 1906**

Distribution.—As for the genus.

Taxonomy.—About a dozen species are recognized, two in the study area. One is represented by two subspecies.

#### ***Radiodiscus (Radiodiscus) millicostatus millicostatus* Pilsbry & Ferriss 1906**

*Radiodiscus millicostatus* Pilsbry & Ferriss 1906, Proc. Acad. Nat. Sci. Phila. 58:154; fig. 10 (shell). Pilsbry 1926, Proc. Acad. Nat. Sci. Phila. 78:132; text-fig. 4a.- Pilsbry 1948, Land Moll. N. Amer. 2:656–657; figs. 61 (shell).- Pérez & López 2002:238–240.

*Radiodiscus millicostatus millicostatus* Pilsbry & Ferriss. Thompson 2008:683.

Type Locality.—Carr Canyon, Huachuca Mountains, Cochise County, Arizona. Holotype ANSP 89224.

Distribution.—Widely distributed in Arizona and New Mexico, south to Nicaragua. NICARAGUA: Dept. León (Pérez & López 2002). CHIHUAHUA: Sierra de Breña, 11 mi, from Pearson, 7000 ft. alt. (Pilsbry 1948). MICHOACAN: Patzcuaro; Morelia (Pilsbry 1948).

#### ***Ragiodiscus (Radiodiscus) millicostatus costaricanus* Pilsbry 1926**

*Ragiodiscus millicostatus costaricanus* Pilsbry 1926:132; text-fig. 4b.- H. B. Baker 1927:230–231; pl. 17, figs. 21–22 (reproductive anatomy), fig. 23 (radula), fig. 24 (pallial organs).- Thompson 2008:683.

Type Locality.—Rio Banana [Prov. Limón], Costa Rica. Holotype ANSP 140676a (H. B. Baker 1963:232).

Distribution.—Known only from the type locality. PUEBLA: near Necaxa (H. B. Baker 1927).

#### ***Radiodiscus (Radiodiscus) proameri* H. B. Baker 1930**

*Radiodiscus proameri* H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):13; pl. 7, figs. 7–9.- Thompson 2008:683.

Type Locality.—Necaxa, Puebla, México. Holotype in the UMMZ.

Distribution.—PUEBLA: Necaxa. VERACRUZ: Sumidero (H. B. Baker 1930a).

#### **Genus *Rotadiscus* Pilsbry 1926**

*Rotadiscus* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:132.

Type Species.—*Helix hermanni* Pfeiffer 1866.

Distribution.—Southeastern México south to Costa Rica; possibly Brasil.

Taxonomy.—Two species are recognized. One is represented by two subspecies. A third species, "*Entodonta*" *discoidea* Thiele 1927, from Brasil, may also be a *Rotadiscus* (H. B. Baker 1928b:128).

#### ***Rotadiscus hermanni hermanni* (Pfeiffer 1866)**

*Helix hermanni* Pfeiffer 1866; Malak. Blätt. 13:79.



*Helix (Patula) hermanni* Pfeiffer. Fischer & Crosse 1873; Miss. Sci. Mex. 1:233; pl. 10, figs. 4, 5a–5b (shell).

*Patula hermanni* (Pfeiffer). Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:29; pl. 4, fig. 8.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:314.- Von Martens 1892; Biol. Cent. Amer.:128.

*Rotadiscus hermanni* (Pfeiffer). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:132.- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:228–230; pl. 16, figs. 13, 14 (reproductive anatomy), figs. 15, 16 (jaw & radula), figs. 17–20 (pallial organs).

*Rotadiscus hermanni hermanni* (Pfeiffer). Thompson 2008:694.

Type Locality.—Mirador, Veracruz, México.

Distribution.—GUATEMALA, Dept. Huehuetenango: Volcan de Agua (Von Martens 1892). MICHOACÁN: Morelia; Patzcuaro; Uruapan (Pilsbry 1903). PUEBLA: Necaxa (H. B. Baker 1927). VERACRUZ: Mirador; Orizaba (Von Martens 1892).

#### ***Rotadiscus hermanni nivatus* H. B. Baker 1930**

*Rotadiscus hermanni nivatus* H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):12–13; unfigured.- Thompson 2008:684.

Type Locality.—Between La Venta and El Desierto de los Leones, México State; 9700–9850 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

#### ***Rotadiscus pilsbryi* Rehder 1942**

*Rotadiscus pilsbryi* Rehder 1942; Jour. Wash. Acad. Sci. 32:352; figs. 10–12.

Type Locality.—Santa Maria, Prov. San José, Costa Rica; 1550 m alt. Holotype USNM 536018 (destroyed).

Distribution.—Known only from the type locality.

#### **Species provisionally referred to the CHAROPIDAE “*Punctum*” *baschi* Thompson 1962**

*Punctum baschi* Thompson 1962:23–25, fig. 1.

Type Locality.—Cobán-Sebal road, 55 miles northeast of Cobán, Dept. Alta Verapaz, Guatemala. Holotype UMMZ.

Distribution.—Known only from the type locality.

#### **Family DISCIDAE Thiele 1931**

Patulidae Tryon 1866.

Goniodiscinae Wagner 1927.

Discidae Thiele 1931.- Zilch 1959:227.- Solem 1982.

Type Genus.—*Discus* Fitzinger 1833.

Distribution.—The family is confined to North America, Europe, Madeira, and the Canary Islands.

Taxonomy.—Patulidae Tryon 1866 is the oldest name that has been proposed for this family. Solem (1982) rejected the name Patulidae because at the time it was proposed the type genus *Patula* was associated with *Oreohelix* (Oreohelicidae). Discidae is conserved under ICZN Art. 40.2 because of prevailing usage (Bouchet & Rocroi 2005:268).

#### **Genus *Discus* Fitzinger 1833**

*Discus* Fitzinger 1833:99.- Pilsbry, Land Moll. N. Amer. 1948:508.- Zilch 1959:227–229.

Type Species.—*Helix rudrata* H. & A. Adams (H. B.

Baker 1932).

Distribution.—Holarctic Realm.

Taxonomy.—Nine subgenera are recognized (Zilch 1959). The genus contains numerous species.

#### **Subgenus *Discus* Fitzinger 1833**

Distribution.—Holarctic Realm.

Taxonomy.—Numerous species. One occurs in the study area.

#### ***Discus (Discus) whitneyi* (Newcomb 1864)**

*Patula whitneyi* Newcomb 1864:118.

*Discus whitneyi* (Newcomb). Roth 1987; Malacological Review 20:129–130.- Thompson 2008:686.

*Patula cronkhitei* Newcomb 1865:180.

*Discus cronkhitei* (Newcomb). Pilsbry, Land Moll. N. Amer. II 1948:600–605; figs. 328 a-d (shell).

Type Localities.—*Patula whitneyi*: Near Lake Tahoe, California, 6100 ft. alt.; lectotype University of California Museum of Paleontology 10619 (Roth 1987). *Patula cronkhitei*: Klamath Valley, Oregon; location of 5 syntypes CU 26391.

Distribution.—Widely distributed in North America, extending south into northern México. CHIHUAHUA: Sierra de Breña (Bequaert & Miller 1973).

#### **Subgenus *Goniodiscus* Fitzinger 1833**

*Goniodiscus* Fitzinger 1833:98.

*Mexicodiscus* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:133.

Type Species.—*Goniodiscus: Helix perspectivus* Muhfeldt 1810 (not *Helix perspectivus* Say 1817). *Mexicodiscus: Pyramidula victoriana* Pilsbry 1904.

Distribution.—Europe and North America.

Taxonomy.—Several species. One occurs in México

#### ***Discus (Goniodiscus) victorianus* (Pilsbry 1904)**

*Pyramidula victorianus* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:769; pl. 49, figs. 1–1b (shell).

*Goniodiscus (Mexicodiscus) victorianus* (Pilsbry). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:132.- Correa-Sandoval 1999:14.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.

*Goniodiscus (Mexicodiscus) victorianus* (Pilsbry). H. B. Baker 1930:14.

*Discus (Goniodiscus) victorianus* (Pilsbry). Thompson 2008:687.

Type Locality.—Canyon 4 miles west of [Ciudad] Victoria, Tamaulipas, México. Holotype ANSP 86907.

Distribution.—PUEBLA: Necaxa, 3000 ft. alt. (H. B. Baker 1930a). SAN LUÍS POTOSÍ: numerous localities in southeastern part of state below 1320 m alt. (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Rancho El Sol, Naranjos (21°20'00" N, 97°43'16" W) (Correa-Sandoval 1999).

#### **Family HELICODISCIDAE H. B. Baker 1927**

Helicodiscinae H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila.

79:226.

Helicodiscidae Solem 1982.

Type Genus.—*Helicodiscus* Pilsbry & Ferriss 1906.

Distribution.—North America south to northern México.

Taxonomy.—A single genus is recognized.

### Genus *Helicodiscus* Morse 1864

Type Species.—*Helix lineata* Say 1817 (= *Helicodiscus paralellus* Say 1821; not *Helix lineata* Olivi 1792).

Distribution.—Generally spread over North America from eastern México, Chihuahua and Arizona to Canada, and the West Indies on Cuba and Jamaica.

Taxonomy.—Three subgenera are recognize (Zilch 1959). Two occur in México.

#### Subgenus *Helicodiscus* Morse 1864

Distribution.—Continental North America.

Taxonomy.—About twenty species are recognized. One occurs in México.

#### *Helicodiscus (Helicodiscus) eiganmanni* Pilsbry 1900

*Helicodiscus eiganmanni* Pilsbry 190:11.- H. B. Baker 1930:14.- Pilsbry 1948; Land Moll. N. Amer. 2:630–632; figs. 342 a-c (shell).- Bequaert & Miller 1978:151–152.- Thompson 2008:688.

Type Locality.—Beaver Cave, near San Marcos, Comal County, Texas. Holotype ANSP 78730.

Distribution.—Western United States from South Dakota, Utah, Colorado, Arizona, New Mexico and Texas south to México. CHIHUAHUA: canyon above Colonia Juarez; Sierra de Breña, 11 mi. from Pearson; on Rio Piedras Verdes, near Pacheco (Pilsbry 1948). PUEBLA: near Necaxa, 4600 ft. alt. (H. B. Baker 1930a). SONORA: San Bernardino (Pilsbry 1948).

#### Subgenus *Lucilla* Lowe 1852

*Lucilla* Lowe 1852; Ann. Mag. Nat. Hist. ser. 2, 9:275.

*Hebetodiscus* H. B. Baker 1929; Nautilus 42:86.- Pilsbry 1948:635.

Type Species.—*Luilla: Zonites singeyanus* Pilsbry 1890.

*Hebetodiscus: Helicodiscus singleyanus inermis* H. B. Baker 1929.

Distribution.—Eastern United States south to Puebla and Baja California Sur.

Taxonomy.—Three species are recognized. One occurs in México.

#### *Helicodiscus (Lucilla) singleyanus* (Pilsbry 1889)

*Zonites singleyana* Pilsbry 1889; Proc. Acad. Nat. Sci. Phila. 41:84.

*Zonitoides singleyana* (Pilsbry). Hinkley 1907; Nautilus 21:77.

*Helicodiscus (Hebetodiscus) singleyanus singleyanus* (Pilsbry). H. B. Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:264; pl. 10, figs. 13–15.- Pilsbry 1948; Land Moll. N. Amer. 2:636–637; text-fig. 346 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:127.

*Lucilla singleyana* (Pilsbry). Roth & Sadeghian 2006; Santa Barbara Mus. Nat. Hist. Contrib. Sci., (3):9.

*Helicodiscus (Lucilla) singleyanus* (Pilsbry). Thompson 2008:689.

Type Locality.—New Braunfels, Comal County, Texas. Holotype ANSP 160058.

Distribution.—Widely distributed in North America east of the Rocky Mountains and south into northern México. Widely introduced elsewhere. BAJA CALIFORNIA SUR: 0.3 km SSE of San José del Cabo; Isla Santa Catalina (Smith et al. 1990). PUEBLA: near Necaxa (H. B. Baker 1930a). TAMAULIPAS: Tampico (Hinkley 1907).

### Family OREOHELICIDAE Pilsbry 1939

Distribution.—Western North America from Alberta, Canada south to northern México.

Taxonomy.—Two genera are recognized.

#### Genus *Oreohelix* Pilsbry 1904

*Oreohelix* Pilsbry 1904; Nautilus 17:131.- Pilsbry 1905; Proc. Acad. Nat. Sci. Phila. 57:268.- Pilsbry 1916; Proc. Acad. Nat. Sci. Phila. 68:340.- Henderson and Daniels 1916; Proc. Acad. Nat. Sci. Phila. 68:315.- Pilsbry 1917; Proc. Acad. Nat. Sci. Phila. 69:42.- Henderson 1918; Proc. Malac. Soc. London 13:21.- Henderson 1924; Univ. Colorado Studies, 13:109.- Pilsbry 1934; Proc. Acad. Nat. Sci. Phila. 85:383.- Henderson 1936; Univ. Colorado Studies, 23:87.- Pilsbry 1939; Land Moll. N. Amer. 1:412–540.

Type Species.—*Helix strigosa* Gould 1846.

Distribution.—Southern Saskatchewan and British Colombia south through the mountain states to northern Sonora and from Saskatchewan eastward to North Dakota.

Taxonomy.—Twenty-six species and numerous subspecies are recognized. A single species occurs in México.

#### *Oreohelix concentrata concentrata* (Dall 1895)

*Patula strigosa* var. *concentrata* Dall 1895; Proc. U. S. Nat. Mus. 18:1.- Dall 1896; Proc. U. S. Nat. Mus. 19:336.

*Oreohelix strigosa concentrata* (Dall). Pilsbry 1905; Proc. Acad. Nat. Sci. Phila. 57:273; pl. 24, figs. 25–32, pl. 25, fig. 60 (shells).

*Oreohelix concentrata* (Dall). Pilsbry 1916; Proc. Acad. Nat. Sci. Phila. 68:352; pl. 22, fig. 9 (reproductive system).- Pilsbry 1939; Land Moll. N. Amer. 1:501–505; 326, 327, 329 (shell), 328 (reproductive system).

*Pyramidula strigosa huachucana* Pilsbry 1902. Proc. Acad. Nat. Sci. Phila. 54:511.

*Oreohelix strigosa huachucana* (Pilsbry). Pilsbry 1905; Proc. Acad. Nat. Sci. Phila. 57:275; pl. 24, figs. 1–24; pl. 25, figs. 33–43 (shell).

*Oreohelix concentrata huachucana* (Pilsbry). Pilsbry 1916; Proc. Acad. Nat. Sci. Phila. 68:354.- Pilsbry and Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:95; fig. 11.

*Oreohelix concentrata concentrata* (Dall). Bequaert and Miller 1973; Moll. Arid SW:130.- Thompson 2008:690.

Type Locality.—*Patula strigosa* var. *concentrata*: Summit of Huachuca Mountains, Arizona. Holotype USNM 129999. *Pyramidula strigosa huachucana*: Holotype ANSP 83370.

Distribution.—Southeastern Arizona and immediately adjacent Sonora. Another subspecies, *Oreohelix concentrata grahamensis* Gregg and Miller 1972, occurs in the Pinaleño

Mountains, Arizona. SONORA: Sierra San José 5–6 mi. S of the Arizona border, E of Rio San Pedro (Bequaert & Miller 1973).

#### **Genus *Radiocentrum* Pilsbry 1905**

*Radiocentrum* Pilsbry 1905; Proc. Acad. Nat. Sci. Phil., 57:283.- Pilsbry 1939; Land Moll. N. Amer. 1:540.- Bubrakkzai, Miller and Ward 1975; Bull. Amer. Malac. Union, 40:10.

Type Species.—*Oreohelix chiricahuana* Pilsbry 1905.

Distribution.—Southern New Mexico and Arizona south to Tamaulipas, Coahuila, Chihuahua, and Baja California Sur. Possibly also Santa Catalina Island, California.

Taxonomy.—Twelve species are recognized Seven occur in México.

#### ***Radiocentrum almoloya* (Drake 1949)**

*Oreohelix (Radiocentrum) almoloya* Drake 1949; Nautilus 62:110–112; pl. 8.- Miller 1973; Veliger 15:332.

*Radiocentrum almoloya* (Drake). Thompson 2008:692.

Type Locality.—Rocky cactae and bush covered hillside in the steep foothills of the Sierra Almoloya, within a five mile radius northwest of Cuevo Diablo, a limestone sink two miles northwest of Salaces, Chihuahua, México; ca. 5200 ft. alt. Holotype ANSP 185106.

Distribution.—Known only from the type locality.

#### ***Radiocentrum caenosa* (Pilsbry 1953)**

*Oreohelix (Radiocentrum) caenosa* Pilsbry 1953; Proc. Acad. Nat. Sci. Phila. 100:198–199; pl. 13, figs. 7–7a (shell).

*Radiocentrum caenosa* (Pilsbry). Thompson 2008:692.

Type Locality.—Below a cliff at 6200 ft. alt. on the western slope of a mountain about 4.5 mi. southeast of Pearson (Mata Ortiz), Chihuahua, México. Holotype ANSP 166154.

Distribution.—Known only from the type locality.

#### ***Radiocentrum discus* Christensen & Miller 1976**

*Radiocentrum discus* Christensen & Miller 1976; Veliger. 18:378–380; figs. 1–3 (shell), 4 (reproductive system).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:132; fig. 34 (map).- Thompson 2008:692.

Type Locality.—Along the road from Valle Perdido to ranch at Bajada del Molino, in rockslide on north-facing slope of large arroyo south of the road, Baja California Sur (23°42' N, 110°10' W); 425 m alt. Holotype CAS (Geology) 55827.

Distribution.—BAJA CALIFORNIA SUR: known only from the vicinity of the type locality.

#### ***Radiocentrum exorbitans* (Miller 1973)**

*Oreohelix (Radiocentrum) exorbitans* Miller 1973; Veliger 15:332–334; figs. 1–3 (shell), 4 (reproductive system).

*Radiocentrum exorbitans* (Miller). Christensen and Miller 1976; Veliger 18:378.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:132; fig. 34 (map).- Thompson 2008:692.

Type Locality.—Sierra de La Gigante, in rock slides immediately south of Misión San Javier, approximately

37 km by road southwest of Loreto, Baja California Sur, México; 400–450 m alt. (25°47' N, 111°31' W). Holotype CAS (Geology) 532676.

Distribution.—BAJA CALIFORNIA SUR: known only from the type locality and 1 km SE of San Bartolo.

#### ***Radiocentrum labrenana* (Pilsbry 1948)**

*Oreohelix (Radiocentrum) labrenana* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:199; pl. 13, fig. 8 (shell).

*Radiocentrum labrenana* (Pilsbry). Thompson 2008:693.

Type Locality.—Sierra de La Breña in a rock slide above the road from Pearson [Mata Ortiz] to Pacheco, Chihuahua, México; 7000 ft. alt. Holotype ANSP 166587.

Distribution.—Known only from the type locality.

#### ***Radiocentrum orientalis* Metcalf 1980**

*Radiocentrum orientalis* Metcalf 1980; Nautilus 94:16–17; figs. 1–3 (shell).- Thompson 2008:693.

Type Locality.—Upper end of Cañon El Bonito, Serranias del Burro, Mcpo. de Villa Acuna, Coahuila, México; 1680 m alt. (29°00'30" N, 102°05'55" W). Holotype USNM 758820.

Distribution.—COAHUILA: known only from the type locality as late Pleistocene and Recent shells.

#### ***Radiocentrum victoriana* (Pilsbry 1904)**

*Pyramidula victoriana* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:796; pl. 49, figs. 1–1b (shell).

*Goniodiscus victorianus* (Pilsbry). Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):238.

*Radiocentrum victoriana* (Pilsbry). Thompson 2008:693.

Type Locality.—Canyon 4 miles west of Ciudad Victoria, Tamaulipas, México. Lectotype ANSP 85907 (H. B. Baker 1963:233).

Distribution.—TAMAULIPAS: numerous records in southern part of state (Correa-Sandoval & Rodriguez 2002).

Remarks.—Assignment of this species to *Radiocentrum* is arbitrary. It is known only from dead shells. Its embryonic shell sculpture is consistent with *Radiocentrum*.

### **Superfamily SAGDOIDEA Pilsbry 1895**

#### **Family SAGDIDAE Pilsbry 1895**

#### **Genus *Hojeda* H. B. Baker 1926**

*Hojeda* H. B. Baker 1926; Occ. Pap. Mus. Zool. Univ. Mich. 167:15.

Type Species.—*Thysanophora vanattai* H. B. Baker 1924.

Distribution.—The West Indian region from Curaçao to the Bahamas, and Florida The exact distribution of the genus is poorly known.

Taxonomy.—Two species are recognized.

#### ***Hojeda vanattai* (H. B. Baker 1924)**

*Thysanophora vanattai* H. B. Baker 1924 Occ. Pap. Mus. Zool. Univ. Mich. 152:79; pl. 14, figs. 50–51; pl. 15, fig. 57.

*Thysanophora (Hojeda) vanattai* H. B. Baker 1926; Occ. Pap. Mus. Zool. Univ. Mich. 167:13–15; pl. 12, fig. 62 (pallial organs); figs. 63–64 (reproductive system).



*Hojeda vanattai* (H. B. Baker). Thompson 2008:694.  
Type Locality.—Aruba, Dutch West Indies.  
Distribution.—Known only from the type locality.

### Genus *Hyalosagda* Albers 1860

*Hyalosagda* Albers 1860; in Von Martens, Die Heliceen..., 2:77.  
Type Species.—*Helix similis* C. B. Adams 1849.  
Distribution.—Jamaica, Hispaniola, Cuba, and southern Guatemala.  
Taxonomy.—The genus includes a few species.

### Subgenus *Aerotrochus* Pilsbry 1926

*Aerotrochus* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:120.  
Type Species.—*Helix subpyramidalis* C. B. Adams 1845.  
Distribution.—Hispaniola, Cuba, Jamaica, and the Dept. Petén, Guatemala.  
Taxonomy.—A single species occurs in the study area.

### *Hyalosagda (Aerotrochus) turbonella* (Morelet 1851)

*Helix turbonella* Morelet 1851; Test. Noviss. II:9.  
*Helix (Patula) turbonella* Morelet. Fischer Crosse 1872:229; pl. 12, figs. 2–2c (shell).- Strebler & Pfeffer 1880:31.  
*Patula turbonella* (Morelet). Von Martens 1892; Biol. Cent. Amer.:129; pl. 7, figs. 2–2b (shell).  
*Hyalosagda turbonella* (Morelet). Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):11.  
*Hyalosagda (Aerotrochus) turbonella* (Morelet). Thompson 2008:695.  
Type Locality.—Forests of Petén, Guatemala.  
Distribution.—BELIZE: Cayo Dist.: Mountain Pine Ridge Forest Reserve (17°04' N 88°42' W) (UF 419942; Leg. J. Grego). GUATEMALA, Dept. Petén: Tikal (Basch 1959).  
Taxonomy.—The generic assignment of this species is problematic.

### Genus *Xenodiscula* Pilsbry 1919

*Xenodiscula* Pilsbry 1919:206.- Goodrich & Van der Schalie 1937; Misc. Publ. Mus. Zool. Univ. Mich. (34):27.  
Type Species.—*Xenodiscula venezuelensis* Pilsbry 1919.  
Distribution.—Venezuela north to eastern México.  
Taxonomy.—Two species are recognized. One occurs in the study area.

### *Xenodiscula taintori* Goodrich & Van der Schalie 1937

*Xenodiscula taintori* Goodrich & Van der Schalie 1937; Misc. Publ. Mus. Zool. Univ. Mich. (34):26–27; pl. 1, figs. 5–5b.- Pérez & López 2001; Malac. Rev. 33/34:94.- Thompson 2008:696.  
Type Locality.—Woodland just east of El Paso de Los Caballos, Dept. Petén, Guatemala. Holotype in the UMMZ.  
Distribution.—GUATEMALA, Dept. Alta Verapaz; Dept. Petén (Goodrich & van der Schalie 1937). NICARAGUA, Dept. Boaca: El Caracol; Dept. Matagalpa: Cd. Dario; Selva Negra; Fuente Pura. Dept. Rio San Juan: Almendro (Pérez & López 2001).

### Superfamily HELICARIONOIDEA Baurguignat 1877 Family HELICARIONIDAE Baurguignat 1877 Subfamily EUCONULIDAE H. B. Baker 1928

Distribution.—Palearctic realm, southeast Asia, Pacific islands, North America, Central America, and South America.  
Taxonomy.—Numerous genera are recognized (Zilch 1959:271–282). Thirty species of Helicarionidae, subfamily Euconulinae are recognized in México and Central America.

### Genus *Euconulus* Reinhardt 1883

*Euconulus* Reinhardt 1883; Beitrage zur Landeskunde Oesterreichs, 9:94.- Pilsbry 1946; Land Moll. N. Amer. 2:234–235.  
Type Species.—*Helix fulvus* Müller 1774.  
Distribution.—Holarctic realm in general, Hawaii, and Tahiti.  
Taxonomy.—Six subgenera are recognized. Only one occurs in the study area.

### Subgenus *Euconulus* Reinhardt 1883

Distribution.—Holarctic realm in general.  
Taxonomy.—Numerous species. A single species occurs in the study area.

### *Euconulus fulvus* (Müller 1774)

*Helix fulva* Müller 1774; Hist. Vermium, 2:56.  
*Euconulus fulvus* (Müller). Pilsbry 1908; Nautilus 22:25.- Pilsbry 1926; Nautilus 40:68.- Baker 1930; Proc. Acad. Nat. Sci. Phila. 80:9–11; pl. 1, fig. 6 (pallial organs), figs. 7–8 (reproductive anatomy).- Pilsbry 1946; Land Moll. N. Amer. 2:235–238; fig. 116a (radula), fig. 116b, 116c (reproductive anatomy), fig. 116d (pallial organs); figs. 117a–d (shell).- Bequaert & Miller 1973:143–144.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:129.- Thompson 2008:697.  
Type Locality.—Fredrichsdal, Denmark.  
Distribution.—Almost throughout the Holarctic realm (Pilsbry 1946). The species barely enters México along its northern border with Arizona and California. BAJA CALIFORNIA NORTE: Sierra San Pedro Mártir, 2700–2800 m alt. (Smith et al. 1990). CHIHUAHUA: NW part of state (Bequaert & Miller 1973). SONORA: ESE part of Sierra Alamos, Arroyo Las Piedras (26°59'37"N, 108°56'36"W) (Naranjo-Garcia 1991).

### Genus *Habroconus* Fischer & Crosse 1872

*Habroconus* Fischer & Crosse 1872:154.- Baker 1928c: Proc. Acad. Nat. Sci. Phila. 80:11.- Zilch 1959:279, 280.  
Type Species.—*Helix selenkai* Pfeiffer 1866.  
Distribution.—South America, the West Indies and Central America north to México.  
Taxonomy.—Five subgenera are recognized. All occur in the study area

### Subgenus *Habroconus* Fischer & Crosse 1872.

Distribution.—Northern South America, Central America, México, and the West Indies.  
Taxonomy.—Five species and one subspecies occur in the study area.

***Habroconus (Habroconus) championi* (Von Martens 1892)**

*Guppya championi* Von Martens 1892; Biol. Cent. Amer.:119; pl. 6, figs. 16, 16a-c (shell).- Von Martens 1901; Biol. Cent. Amer.:619.- van der Schalie 1940; Occasional papers Museum of Zoology, University of Michigan, (413):4.

*Habroconus championi* (Von Martens). Pérez & López 2002:173–174.

*Habroconus (Habroconus) championi* (Von Martens). Thompson 2008:698.

Type Locality.—Purula [Purulha], towards the head of the Polochic Valley, Dept. Baja Verapaz, Guatemala.

Distribution.—COSTA RICA, Prov. Cartago: Hacienda El Roble, between Irazu and Turrialba. Prov. San José: environs of San José (Von Martens 1892); San Cristobal; Tarbaca; 1500–1800 m alt. (Von Martens 1901). NICARAGUA, Dept. Leon (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Panzamala (van der Schalie 1940). Dept. Baja Verapaz: Purulja. Dept. Huehuetenango: Chohhuitz (Von Martens 1892).

***Habroconus (Habroconus) costaricanus costaricanus* (Pilsbry 1920)**

*Guppya costaricana* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:4; text-fig. 2 (shell).

*Habroconus (Habroconus) costaricanus costaricanus* (Pilsbry). Thompson 2008:699.

Type Locality.—Alajuela, Prov. Alajuela, Costa Rica; 3200 ft alt. Holotype ANSP 105285.

Distribution.—Known only from the type locality.

***Habroconus (Habroconus) costaricanus elatior* (Pilsbry 1920)**

*Guppya costaricana elatior* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:5; text-fig. 3 (shell).

*Habroconus (Habroconus) costaricanus elatior* (Pilsbry). Thompson 2008:699.

Type Locality.—Brook near the Rio Reventazón, Juan Viñas, Costa Rica; 2500 ft. alt. Holotype ANSP 105276.

Distribution.—Known only from the type locality.

***Habroconus (Habroconus) elegans* Strebel 1880**

*Habroconus elegans* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:24; pl. 4; figs. 1b, 1c (shell).

*Stenopus elegans* (Strebel). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:312.

*Guppya elegans* (Strebel). Von Martens 1892; Biol. Cent. Amer.:120.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.

*Habroconus (Habroconus) elegans* Strebel. Thompson 2008:699.

Type Locality.—Woods of Pacho, near Jalapa, Veracruz, México.

Distribution.—GUATEMALA, Dept. Baja Verapaz: Salama (Von Martens 1892). VERACRUZ: Orizaba (Pilsbry 1891).

***Habroconus (Habroconus) selenkai* (Pfeiffer 1866)**

*Zonites selenkai* Pfeiffer 1866; Malak. Blätt. 12:77.

*Zonites (Habroconus) selenkai* (Pfeiffer). Fischer & Crosse 1872:171; pl. 7, figs. 9, 9a-b (shell).

*Habroconus selenkai* (Pfeiffer). Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:28; pl. 4, figs. 1, 1a (shell); pl. 9, fig. 9 (radula).- Baker 1930a; Occasional papers of the Museum of Zoology, University of Michigan, (220):24; pl. 7, figs. 12, 13 (shell).- Pérez & López 2002:175–176.

*Habroconus (Habroconus) selenkai* (Pfeiffer). Thompson 2008:700. Type Locality.—Mirador, Veracruz (Baker 1930a:24).

Distribution.—NICARAGUA: various localities in the Pacific versant (Pérez & López 2002). PUEBLA: below Necaxa Falls, 2215–2625 ft. alt. (Baker 1930a). VERACRUZ: Jalapa; Hacienda Mirador, near Jalapa; Agua Caliente, near Misantla (Strebel 1880); Atoyac, 1300–1475 ft. alt. (Baker 1930a).

***Habroconus (Habroconus) trochulinus* (Morelet 1851)**

*Helix trochulina* Morelet 1851; Test. Noviss. II:10.

*Zonites (Habroconus) trochulinus* (Morelet). Fischer & Crosse 1872:172.

*Guppya trochulina* (Morelet). Von Martens 1892; Biol. Cent. Amer.:120; pl. 6, figs. 17, 17a-d (shell).- Von Martens 1901; Biol. Cent. Amer.:619.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.

*Guppya (Habroconus) trochulina* (Morelet). Baker 1922; Occasional papers of the Museum of Zoology, University of Michigan, (106):47–48; pl. 17, fig. 4 (radula), fig. 5 (jaw).

*Habroconus (Habroconus) trochulinus* (Morelet). Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:13–14; pl. 2, figs. 4, 5 (reproductive anatomy).- Baker 1930; Occasional papers of the Museum of Zoology, University of Michigan, (220):22–23; pl. 7, figs. 10, 11 (shell).- Bequaert 1957; Bull. Mus. Comparative Zoology, 116:219–220.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.- Thompson 2008:700.

Type Locality.—Woods of Petén, near San Luis, Dept. Petén, Guatemala.

Distribution.—Venezuela north to Veracruz and Puebla (Baker 1930a). COSTA RICA, Prov. Alajuela: San Cristobal; La Palma (Von Martens 1901). Prov. Limón: Puerto Viejo; between Mokri and Ukatschka, Alta Talamanca (Von Martens 1901). Prov. San José: environs of San José, near the streamlet Atajuleta, 1135 m alt. (Von Martens 1892); San Francisco de Guadalupe. Prov. Puntarenas: El Pital, valley of the Rio Naranjo, 200 m alt.; Quebrada de Java, in the valley of the Rio Brus, 900 m alt. (Von Martens 1901). GUATEMALA, Dept. Petén: San Luis (Von Martens 1892); Tikal National Park (Basch 1959). CHIAPAS: Selva Lacandona, Laguna Ocotal to El Censo, 700–1000 m alt.; El Real, 600 m. alt. (Bequaert 1957). MICHOACAN: Patzcuaro; Morelia (Pilsbry 1904). PUEBLA: Necaxa, 2625–4925 ft. alt. (Baker 1930a). VERACRUZ: Texolo (Pilsbry 1904); Coatotolapam; Lago de Catemaco (Baker 1922); Peñuela to Sumidero, 2625–3400 ft. alt. (Baker 1930a).

**Subgenus *Cocosconus* Baker 1941**

*Cocosconus* Baker 1941; Bull. Bernice P. Bishop Museum (166):223.

Type Species.—*Guppya hopkinsi* Dall 1900.

Distribution.—Isla del Coco, Costa Rica. Holotype USNM 108524.

Taxonomy.—A single species is recognized.

***Habroconus (Cocosconus) hopkinsi* (Dall 1900)**

*Guppya hopkinsi* Dall 1900; Proc. Acad. Nat. Sci. Phila. 52:97; pl. 8, figs. 5–7 (shell).- Pilsbry 1900; Proc. Acad. Nat. Sci. Phila. 52:105; text-fig. (reproductive anatomy).

*Guppya pacifica* (Pfeiffer). Ancey 1903; Jour. de Conchyl. 51:101.  
*Habroconus (Cocosconus) hopkinsi* (Dall 1900). Baker 1941; Bull. Bernice P. Bishop Museum (166):225; pl. 44, fig. 5 (radula), fig. 6 (reproductive anatomy).

Type Locality.—Isla del Coco, Costa Rica.

Distribution.—Known only from the type locality.

**Subgenus *Cocoslens* H. B. Baker 1941**

*Cocoslens* Baker 1941; Bull. Bernice P. Bishop Museum (166):223.

Type Species.—*Habroconus (Cocoslens) pallidaus* H. B. Baker 1941.

Distribution.—Isla del Coco, Costa Rica.

Taxonomy.—A single species is recognized.

***Habroconus (Cocoslens) pallidaus* H. B. Baker 1941**

*Habroconus (Cocoslens) pallidaus* H. B. Baker 1941; Bull. Bernice P. Bishop Museum (166):224–225; pl. 60, figs. 10–12 (shell); pl. 444, fig. 3 (reproductive anatomy), fig. 4 (radula).

Type Locality.—Wafer Bay, Isla del Coco, Costa Rica.

Holotype ANSP 170394.

Distribution.—Known only from the type locality.

**Subgenus *Ernstia* Jousseau 1889**

*Ernstia* Jousseau 1889; Mem. Soc. Zool. France, 2:232–258.- H. B. Baker 1928; Proc. Acad. Nat. Sci. Phila. 80:12.

Type Species.—*Ernstia ernsti* Jousseau 1889.

Distribution.—Northern South America and Central America north to México.

Taxonomy.—Two species occur in the study area. Others occur in South America.

***Habroconus (Ernstia) elegantulus* (Pilsbry 1919)**

*Guppya elegantula* Pilsbry 1919; Proc. Acad. Nat. Sci. Phila. 71:215; text-fig. 4.- Hinkley 1920; Nautilus 34:39, 48, 51.

*Euconulus elegantulus* (Pilsbry). H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):49–50; pl. 17, fig. 6 (radula).

*Habroconus (Ernstia) elegantulus* (Pilsbry). H. B. Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:13–13; pl. 1, fig. 9 (penis).- H. B. Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):22.- Haas 1949; Nautilus 62:137, 138.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.- Thompson 2008:703.

Type Locality.—Canyon and falls below Valles, San Luis Potosí, México. Holotype in the ANSP.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cama (Hinkley 1920). Dept. Chimaltenango: Finca Montserrat; Yepocapa (Haas 1949). Dept. Escuintla: Zapote (Haas 1949). Dept. Izabal: Jocolo; Maya Farms, Quirigua (Hinkley 1920). Dept. Petén: Tikal National Park (Basch 1959). Dept. Sacatepéquez: Finca San Rafael (Haas 1949). JALISCO: Guadalajara (Pilsbry 1919). MICHOACAN:

Uruapan (Pilsbry 1919). MORELOS: Yauatepec Pilsbry 1919). NUEVO LEÓN: Diente, near Monterrey (Pilsbry 1919). PUEBLA: Necaxa, 2215–5550 ft. alt. (H. B. Baker 1928 1930). NUEVO LEÓN: Iturbide (Correa-Sandoval 1997); Santiago, Montemorelos, Zaragoza (Correa-Sandoval & Salazar, (2005). SAN LUIS POTOSÍ: Valles; numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: canyon 4 mi. W of Ciudad Victoria, 3000 ft. alt. (Pilsbry 1919). VERACRUZ: Orizaba (Pilsbry 1919); Coatotolapam (H. B. Baker 1922). Atoyac to Sumidero, 1300–3400 ft. alt. (H. B. Baker 1930a).

***Habroconus (Ernstia) zeteki* Pilsbry 1930**

*Habroconus (Ernstia) zeteki* Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:350–351; pl. 29, figs. 5, 6 (shell).- Morrison 1946; Smiths. Misc. Coll. 106:42.- Thompson 2008:704.

Type Locality.—Ruins of Old Panamá City, Panamá. Holotype ANSP 151367.

Distribution.—PANAMÁ, Archipiélago de las Perlas: Isla San José (Morrison 1964). Prov. Panamá: Old Panamá City.

**Subgenus *Pseudoguppya* H. B. Baker 1925.**

*Pseudoguppya* H.B. Baker 1925; Occ. Pap. Mus. Zool. Univ. Mich. (156):10.

Type Species.—*Helix cassiquiensis* Pfeiffer 1853.

Distribution.—Northern South America and Central America.

Taxonomy.—Five species occur in the study area. Others occur in northern South America.

***Habroconus (Pseudoguppya) browni* (Pilsbry 1910)**

*Guppya browni* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:509; text-fig. 6 (shell).

*Euconulus (Pseudoguppya) browni* (Pilsbry). H.B. Baker 1925a:11.- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:100.

*Habroconus browni* (Pilsbry). Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:351.

*Habroconus (Pseudoguppya) browni* (Pilsbry). Thompson 2008:704.

Type Locality.—Between Tabernillo and San Pablo, Canal Zone, Panamá. Holotype ANSP 101319.

Distribution.—Known only from the type locality.

***Habroconus (Pseudoguppya) calverti* (Pilsbry 1920)**

*Guppya calverti* Pilsbry 1920; Proc. Acad. Nat. Sci. Phila. 72:3; text-fig. 1 (shell).

*Habroconus (Pseudoguppya) calverti* (Pilsbry). Thompson 2008:704.

Type Locality.—Stream near the railroad west of Juan Viñas, Costa Rica; 330 ft. alt. Holotype ANSP 105266.

Distribution.—Known only from the type locality.

***Habroconus (Pseudoguppya) pacificus* (Pfeiffer 1846)**

*Helix pacifica* Pfeiffer 1846; Symbolae, 3:66.

*Patula (Trochomorpha) pacifica* (Pfeiffer). Tryon 1887; Man. Conch. 3:78; pl. 14, fig. 28.

*Guppya hopkinsi conulus* Von Martens 1902; Sitz. Ges. Naturf. Berlin:59.



*Guppya fultoni* Gude 1903; Proceedings Malacological Society, 5:265; pl. 7, figs. 18–20 (shell).

*Habroconus (Pseudoguppya) pacificus* (Pfeiffer). H. B. Baker 1941; Bull. Bernice P. Bishop Museum (166):226; pl. 60, fig. 13 (shell); pl. 44, fig. 7 (reproductive anatomy).- Thompson 2008:705.

Type Locality.—Isla del Coco, Costa Rica.

Distribution.—Known only from the type locality.

#### ***Habroconus (Pseudoguppya) pittieri* (Von Martens 1892)**

*Guppya pittieri* Von Martens 1892; Biol. Cent. Amer.:121; pl. 6, figs. 18 18a-d (shell).

*Euconulus (?) pittieri* (Von Martens). H. B. Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):48–49.

*Habroconus pittieri* (Von Martens). Thompson 1967; Bull. Fla. St. Mus. 11:243.

*Euconulus pittieri* (Von Martens). Pérez & López 2002:167–169.

*Habroconus (Pseudoguppya) pittieri* (Von Martens). Thompson 2008:705.

Type Locality.—San Francisco de los Rios, near San José; 1100 m alt., Costa Rica.

Distribution.—COSTA RICA, Prov. San José: San Francisco de los Rios; Urraca, near San José, 1135 m alt. (Von Martens 1892). NICARAGUA: numerous localities along the Pacific versant (Pérez & López 2002). CAMPECHE:5.1 mi. NNW of Dzilbachen; 8.1 mi. SW of Champoton; 7.1 mi. S of Pixtun; 19.2 mi. E of Silvituc (Thompson 1967). QUINTANA ROO:4.0 mi. E of Xpujil, Campeche; 7.1 mi. NNW Xiatil (Thompson 1967). VERACRUZ: Catamaco (H. B. Baker 1922). YUCATÁN: 0.8 mi. NE of Becanthen (Thompson 1967).

#### ***Habroconus (Pseudoguppya) utillensis* (Ancey 1886)**

*Conulus utillensis* Ancey 1866; Ann. de malac. 2:238 (not figured).

*Guppya utillensis* (Ancey). Von Martens 1892; Biol. Cent. Amer.:122.

*Habroconus (Pseudoguppya) utillensis* (Ancey). Thompson 2008:706.

Type Locality.—Isla de Útila, Dept. Islas de la Bahía, Honduras.

Distribution.—Known only from the type locality.

#### **Genus *Guppya* Mörch 1867**

Type Species.—*Helix vaccus* Mörch (*error* for *Conulus vacan* Guppy 1866, in part) = *Helix gundlachi* Pfeiffer 1840 (*see* Baker 1925:7–8).

Distribution.—Central America, México, southern United States, and the West Indies.

Taxonomy.—Numerous species are placed in *Guppya*, but the generic allocations of many are doubtful because anatomical characteristics of only a few are known. Thirteen species are recognized in the study area.

#### ***Guppya angasi* Von Martens 1892**

*Stenopus guildingi* Angas 1879; Proc. Zool. Soc. Lond. 47:484; pl. 40, fig. 14 (shell). (not *Stenopus guildingi* Bland 1865).

*Guppya angasi* Von Martens 1892; Biol. Cent. Amer.:120 (substitute

name for *Stenopus guildingi* Angas).- Von Martens 1901; Biol. Cent. Amer.:619.- Thompson 2008:706.

Type Locality.—Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: between Mokri and Ukatschka, Alta Talamanca (Von Martens 1901). Prov. Puntarenas: Quebrada de Java, 900 m alt.; Cañas Gordas (Von Martens 1901).

#### ***Guppya biolleyi* Von Martens 1892**

*Guppya biolleyi* Von Martens 1892; Biol. Cent. Amer.:121; pl. 6, figs. 19 19a-d (shell).- Von Martens 1901; Biol. Cent. Amer.:620.- Fluck 1905; Nautilus 19:78.- H. B. Baker 1928c; Pro. Cad. Nat. Sci. Phila. 80:7–8; pl. 1, fig. 1 (pallial organs), fig. 2 (posterior foot), figs. 3, 4 (reproductive anatomy).- H. B. Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. 220:21.- Thompson 2008:707.

Type Locality.—Hacienda Helvetia, Costa Cuca, Dept. Quetzaltenango, Guatemala (H. B. Baker 1930a).

Distribution.—COSTA RICA, Prov. Limón: Sarapiquí (Von Martens 1901). Prov. San José: La Urraca; San Francisco de Los Rios (Von Martens 1892). NICARAGUA: Rama Key, Bluefields Lagoon (Fluck 1905). GUATEMALA: Hacienda Helvetia, Costa Cuca (Von Martens 1892). PUEBLA: Necaxa, 2625–5500 ft. alt. (H. B. Baker 1930a).

#### ***Guppya capsula* Dall 1926**

*Guppya capsula* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:479–480 (not figured).- Thompson 2008:707.

Type Locality.—North slope of Cerro Evermann, Isla Socorro, Nayarit, México; 2000–2800 ft. alt. Holotype CAS 2202.

Distribution.—Known only from the type locality.

#### ***Guppya fulvoidea* (Morelet 1851)**

*Helix fulvoidea* Morelet 1851; Test. Noviss. II:9.

*Zonites (Hyalinia) fulvoidea* (Morelet). Fischer & Crosse 1872:177.

*Guppya gundlachi* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:122 (in part).

*Guppya fulvoidea* (Morelet). Thompson 2008:708.

Type Locality.—Isla de Carmen, at the head of the Laguna de Terminos, Campeche, México.

Distribution.—Known only from the type locality.

#### ***Guppya gundlachi gundlachi* (Pfeiffer 1840)**

*Helix pusilla* Pfeiffer 1839; Archiv für Naturg. 1:351 (not *Helix pusilla* Lowe 1833).

*Helix gundlachi* Pfeiffer 1840; Archiv für Naturg. 1:250 (substitute name for *Helix pusilla* Pfeiffer).

*Guppya gundlachi* (Pfeiffer). Tate 1870; American Journal of Conchology, 5:155.- Von Martens 1892; Biol. Cent. Amer.:122–123.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.- Hinkley 1920; Nautilus 34:39, 48, 51.- H. B. 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):45; pl. 17, fig. 1 (jaw), fig. 3 (radula).- Pilsbry 1926a; Proc. Acad. Nat. Sci. Phila. 78:100.- Pilsbry 1930d; Proc. Acad. Nat. Sci. Phila. 82:351.- Richards 1938; 172.- Pilsbry 1946; Land Moll. N. Amer. 2:244–245; fig. 120a (shell).- Basch 1958:11.- Thompson 1967c:243.- Correa-Sandoval 1999:8.- Correa-Sandoval & Rodriguez 2002; Acta

Zool. Mex. (86):236.- Pérez & López 2002:170–172.

*Guppya gundlachi gundlachi* (Pfeiffer). Thompson 2008:708.

*Helix simulans* C. B. Adams 1849; Contributions to Conchology, 2:35.

Type Localities.—*Helix pusilla*: Cuba. *Helix simulans*: Jamaica.

Distribution.—Florida and Texas south to Panamá, Venezuela and Trinidad, and the West Indies. PANAMÁ: Canal Zone: Isla Barro Colorado; Juan Mina (Pilsbry 1926a); Mt. Hope (Pilsbry 1930d). Prov. Panamá; Cd. Panamá (Pilsbry 1926a); ruins of Old Panamá City (Pilsbry 1930d). NICARAGUA: numerous localities along the Pacific versant (Pérez & López 2002). Dept. Chontales (Tate 1870). Dept. Rio San Juan (Tate 1870). HONDURAS: Isla de Roatán, between Coxen Hole and French Harbor (Richards 1938). GUATEMALA, Dept. Alta Verapaz: Chama (Hinkley 1920). Dept. Izabal: Cavech; Esmeralda; Jocolo (Hinkley 1920). Dept. Petén: Tikal National Park (Basch 1958). CAMPECHE: 8.1 mi. SW of Champoton (Thompson 1967). TAMAULIPAS: near Ciudad Victoria; canyon 4 mi. W of Ciudad Victoria (Pilsbry 1904). QUINTANA ROO: 4.0 mi. E of Xpujil, Campeche; 1.5 km. NNE of San Miguel, Isla Cozumel (Thompson 1967). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Coatotolapam (H. B. Baker 1922); Naranja (21°20'00" N, 97°42'16" W); El Cedral, road from Poza Rica to Tajin (20°29'11" N, 97°25'23" W) (Correa-Sandoval 1999).

#### ***Guppya gundlachi orosciana* Von Martens 1892**

*Guppya orosciana* Von Martens 1892; 123; pl.6, figs. 20, 20a-d (shell).

*Guppya gundlachi orosciana* Von Martens. H. B. Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:8–9; pl. 1, fig. 5 (reproductive anatomy.- H. B. Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):23.- Basch 1959; Occ. Pap. Mus. Zool. Univ. Mich. (612):12.- Thompson 2008:709.

Type Locality.—Calera de San Ramón, Costa Rica.

Distribution.—COSTA RICA: type locality. GUATEMALA; Dept. Alta Verapaz: Cobán (Von Martens 1892). Dept. Petén: Tikal National Park (Basch 1959). PUEBLA; Necaxa (Baker 1928). VERACRUZ: Córdoba; Sumidera, 2625–3400 ft. alt. (H. B. Baker 1930a).

#### ***Guppya jalisco* Pilsbry 1919**

*Guppya jalisco* Pilsbry 1919; Proc. Acad. Nat. Sci. Phila. 71:216; pl. 11, fig. 6 (shell) .- Thompson 2008:709.

Type Locality.—Guadalajara, Jalisco, México. Holotype ANSP 44830.

Distribution.—JALISCO: Guadalajara.

#### ***Guppya micans* (Angas 1879)**

*Stenopus micans* Angas 1879; Proc. Zool. Soc. Lond. 47:485; pl. 40, fig. 15 (shell).

*Guppya micans* (Angas). Von Martens 1892; Biol. Cent. Amer.:121–122.- Von Martens 1901; Biol. Cent. Amer.:620; pl. 44, fig. 3 (shell).- Thompson 2008:710.

Type Locality.—Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: Bruschik; Alta Tararia (Von Martens 1901).

#### ***Guppya micra* Pilsbry 1904**

*Guppya micra* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:769; pl. 49, figs. 5, 5a, 5b (shell).- Correa-Sandoval 1999:8.- Thompson 2008:710.

Type Locality.—Patzcuaro, Michoacán, México. Lectotype ANSP 85913a (Baker 1963:236).

Distribution.—MICHOCAN: Patzcuaro (Pilsbry 1904). TAMAULIPAS: canyon 4 mi. W of Cd. Victoria (Pilsbry 1904). VERACRUZ: Cazonas (20°42'42" N, 97°11'32" W)(Correa-Sandoval 1999).

#### ***Guppya montanica* Dall 1926**

*Guppya montanica* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:479; pl. 35, figs. 10–11 (shell).- Thompson 2008:710.

Type Locality.—North slope of Cerro Evermann, Isla Socorro, Nayarit, México; 2000–2800 ft. alt. Holotype CAS 2201.

Distribution.—Known only from the type locality.

#### ***Guppya perforata* Dall 1926**

*Guppya perforata* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:478; pl. 36, figs. 12–13 (shell).- Thompson 2008:710.

Type Locality.—Isla María Madre, Islas Marias, Nayarit, México. Holotype CAS 2198.

Distribution.—NAYARIT: known only from Isla María Madre and Isla Maria Magdalena (Dall 1926).

#### ***Guppya socorroana* Dall 1926**

*Guppya socorroana* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:478–479; pl. 35, figs. 14–15.- Thompson 2008:711.

Type Locality.—Isla Socorro, Nayarit, México; 2000 ft alt. Holotype CAS 2199.

Distribution.—NAYARIT: Isla Socorro; Isla Maria Magdalena (Dall 1926).

#### ***Guppya spirulata* (Pfeiffer 1845)**

*Helix sirulata* Pfeiffer 1845; Monogr. Helic. Vivent., 1:37.

*Guppya (?) spirulata* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:123–124.

*Guppya spirulata* (Pfeiffer). Thompson 2008:711.

Type Locality.—Realejo, Dept. Chinandega, Nicaragua.

Distribution.—Known only from the type locality.

#### ***Guppya sterkii punctum* H. B. Baker 1930**

*Guppya sterkii punctum* Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):21–22; pl. 7, figs. 14, 15, 16 (shell).- Thompson 2008:711.

Type Locality.—Near Necaxa, Puebla, México; 2625 ft. alt. Holotype in the UMMZ.

Distribution.—PUEBLA: known only from the immediate vicinity of the type locality.

**Genus *Ovachlamys* Habe 1948**

*Ovachlamys*, Habe 1946; Venus, 14:167.

Type Species.—*Macroclamys fulgens* Gude 1900.

Distribution.—Japan. Widely introduced throughout the tropical regions of the world.

Taxonomy.—Two species are recognized. One is introduced into the study area.

***Ovachlamys fulgens* (Gude 1900)**

*Macroclamys fulgens* Gude 1900; Proc. Malacol. Soc. London 4:70–80.

*Ovachlamys fulgens* (Gude 1900).- Habe 1946; Venus, 14:167.- Azuma 1982; Colored Illustrations Land Snails Japan [in Japanese]:177; pl. 27, fig. 328.- Barrientos 1998; Rev. Biol. Trop. 46:369–384 (life history).- Barrientos 2000; Rev. Biol. Trop. 48; 71–87 (ecology, distribution).- Thompson 2008:712. Type Locality.—Japan.

Distribution.—Japan. Widely introduced in the tropical Pacific region and in the American tropics. COSTA RICA: Humid tropical zones throughout the country (Barrientos 2000).

**Genus *Velifera* W. G. Binney 1879**

*Velifera* Binney 1879; Ann. New York Acad. Sci. 1:257.

Type Species.—*Velifera gabbi* W. G. Binney 1879.

Distribution.—Costa Rica.

Taxonomy.—The genus is monotypic.

***Velifera gabbi* W. G. Binney 1879**

*Velifera gabbi* Binney 1879; Ann. New York Acad. Sci. 1:257–258, pl. 11, figs A–D (living animal, shell and radula); Binney 1881; *ibid.*, 3:86; pl. 2, fig. H (radula).- Thompson 2008:712.

Type Locality.—Central Costa Rica, on the banks of the Rio Blanco, 3000 ft. alt.

Distribution.—Known only from the type locality.

**Superfamily GASTRODONTOIDAE Tryon 1866****Family GASTRODONTIDAE Tryon 1866**

Distribution.—This is a Nearctic family consisting of six genera. Two occur in México and Central America.

**Genus *Striatura* Morse 1864**

*Striatura* Morse 1864; Jour. Portland Soc. Nat. Hist. 1:17.- Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:33.- Pilsbry 1946; Land Moll. N. Amer. 2:487–488.

Type Species.—*Helix milium* Morse 1859.

Distribution.—North America, Hawaiian Islands.

Taxonomy.—Three subgenera are recognized. One subgenus occurs in México and Central America.

**Subgenus *Striatura* Morse 1864.**

Distribution.—North America south to Nicaragua.

Taxonomy.—Two species occur in México and Central America.

***Striatura (Striatura) meridionalis* (Pilsbry & Ferriss 1906)**

*Vitrea milium meridionalis* Pilsbry & Ferriss 1906; Proc. Acad. Nat.

Sci. Phila. 58:152.

*Striatura (Pseudohyalina) meridionalis* (Pilsbry & Ferriss). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):36–39; pl. 11, figs. 2, 4 (reproductive anatomy), fig. 5 (radula).

*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss). Pilsbry 1946; Land Moll. N. Amer. 2:493–495; fig. 270 (shell); figs. 271a, 271b (reproductive anatomy), fig. 271c (radula).- Thompson 2008:713.

*Striatura meridionalis* (Pilsbry & Ferriss). Bequaert & Miller 1973:146.- Pérez & López 2002:185–187.

Type Locality.—Along the Guadalupe River above New Braunfels, Texas. Holotype ANSP 90724.

Distribution.—NICARAGUA, Dept. Leon (Pérez & López 2002). CHIHUAHUA: Sierra de Breña, 7000 ft. alt. (Bequaert & Miller 1973). NUEVO LEÓN: Pablillo. PUEBLA: Necaxa (Baker 1930a). VERACRUZ: Córdoba (Pilsbry 1946).

***Striatura (Striatura) pugetensis* (Dall 1895)**

*Patulastra? pugetensis* Dall 1895; Nautilus 8:130. Pilsbry 1896; Nautilus 9:18.

*Striatura milium pugetensis* (Dall). Pilsbry 1927; Proc. Calif. Acad. Sci. 16:169.

*Striatura pugetensis* (Dall). Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220); 38; pl. 11, fig. 3 (penis).- Pilsbry 1946; Land Moll. N. Amer. 2:492–493; fig. 269 (shell).

*Striatura (Pseudohyalis) pugetensis* (Dall). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:129.

*Striatura (Striatura) pugetensis* (Dall). Thompson 2008:714.

Type Locality.—Seattle, Washington. Holotype USNM 107541.

Distribution.—Found from British Columbia and Montana south to southern California and Baja California. BAJA CALIFORNIA NORTE: Isla Guadalupe, hills above Northeast Anchorage, 300 m alt.; 3.2 km N of S end of island on E side (Smith et al. 1990).

**Genus *Zonitoides* Lehmann 1862**

*Zonitoides* Lehmann 1862; Malak. Blätter 9:111.

Type Species.—*Helix nitidus* Müller 1774.

Distribution.—Throughout most of the temperate Holarctic realm.

Taxonomy.—Three subgenera are recognized. One subgenus occurs in the study area.

**Subgenus *Zonitella* Baker 1828**

*Zonitella* Baker 1828; Proc. Acad. Nat. Sci. Phila. 80:33, 39–40.- Pilsbry 1946; Land Moll. N. Amer. 2:475, 480.

Type Species.—*Helix arboreus* Say 1816.

Distribution.—North America south to Costa Rica.

Taxonomy.—Seven species occur in the study area. Aside from *Zonitoides arboreus* and *Z. hoffmanni*, the taxonomic status of the others remains to be determined.

***Zonitoides (Zonitella) arboreus* (Say 1816)**

*Helix arboreus* Say 1816; [Nicholson's] American Edit. British Encycl., 2: Conchology, sp. no. 2; pl. 4, fig. 4 (shell).



*Hyalinia arborea* (Say). Von Martens 1892; Biol. Cent. Amer.:116–117; pl. 6, figs. 13–13c (shell).

*Zonitoides (Zonitella) arboreus* (Say 1816). Pilsbry 1946; Land Moll. N. Amer. 2:480–483; fig. 260:7–8 (reproductive anatomy); fig. 261 (shell), fig. 262 (live animal).- Haas 1949; Nautilus 62:137, 138.- Correa-Sandoval, Gutierrez, & Reza 1998:14.- Thompson 2008:715.

Type Locality.—Probably Philadelphia, Pennsylvania (Baker 1930a).

Distribution.—Throughout North America south to Costa Rica, Cuba, Hispaniola, Jamaica, and the Lesser Antilles. Introduced widely by its association with live plants. GUATEMALA, Dept. Chimaltenango: Finca Montserrat (Haas 1949). Dept. Zacapa: Santa Clara, N of Cabañas, Sierra de las Minas (Haas 1949). PUEBLA: Necaxa (Baker 1930a). SAN LUIS POTOSÍ: km 48 on road from Cd. Valles-Agua Buena, 900 m alt. (21°52'55" N, 99°22'06" W); Las Pozas (arroyo), 520 m alt. (21°24'08" N, 98°59'44" W); 0.3 km NE of Las Pozas, 600 m alt. (21°24'38" N, 99°00'15" W) (Correa-Sandoval et al. 1998). VERACRUZ: Córdoba (Baker 1930a).

#### ***Zonitoides (Zonitella) hoffmanni* (Von Martens 1892)**

*Hyalina hoffmanni* Von Martens 1892; Biol. Cent. Amer.:115, pl. 6, figs. 11, 11a, 11b, 11c (shell).

*Zonitoides hoffmanni* (Von Martens). Pilsbry 1920:5.- Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:255–256; pl. 8, fig. 8 (radula).- Thompson 2008:716.

Type Locality.—Quebrada Honda, Costa Rica.

Distribution.—COSTA RICA, Prov. Cartago: Hacienda El Roble, between Volcan Irazu and Volcan Turrialba (Von Martens 1892). Prov. Limón: bank of the Rio Reventazon, Cachi, 3300 ft. alt. (Pilsbry 1920). Prov. San José: San José (Von Martens 1892). PANAMÁ, Canal Zone. Prov. Chiriquí: Boquete (Pilsbry 1926a).

#### ***Zonitoides (Zonitella) glomerulus* (Von Martens 1892)**

*Hyalina glomerula* Von Martens 1892; Biol. Cent. Amer.:115; pl. 6, figs. 14–14c (shell).

*Zonitoides (Zonitella) glomerulus* (Von Martens). Thompson 2008:716.

Type Locality.—San Luis, Dept. Petén, Guatemala.

Distribution.—Known only from the type locality.

#### ***Zonitoides (Zonitella) multivolvis* Pilsbry 1926**

*Zonitoides multivolvis* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:131; text-fig. 3 (shell).- Thompson 2008:716.

Type Locality.—Cahuitta, Prov. Limón, Costa Rica. Holotype ANSP 140311.

Distribution.—Known only from the type locality.

#### ***Zonitoides (Zonitella) nitidopsis* (Morelet 1851)**

*Helix nitidopsis* Morelet 1851; Test. Noviss. II:8.

*Zonites (Hyalinia) nitidopsis* (Morelet). Fischer & Crosse 1872:178. *Hyalinia nitidopsis* (Morelet). Von Martens 1892; Biol. Cent. Amer.:115; pl. 6, figs. 9–9c.

*Zonitoides (Zonitella) nitidopsis* (Morelet). Thompson 2008:717.

Type Locality.—Salama, Dept. Baja Verapaz, Guatemala.

Distribution.—Known only from the type locality.

#### ***Zonitoides (Zonitella) ostauri* Pilsbry 1926**

*Zonitoides ostauri* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:100–101; text-fig. 24 (shell).- Thompson 2008:717.

Type Locality.—Drift of San Juan Creek, Prov. Bocas del Toro, Panamá. Holotype ANSP 140714.

Distribution.—Known only from the type locality.

#### ***Zonitoides (Zonitella) tehuantepecensis* (Crosse & Fischer 1870)**

*Zonites tehuantepecensis* Crosse & Fischer 1870; Jour. de Conchy. 18:297.

*Zonites (Hyalinia) tehuantepecensis* Crosse & Fischer. Fischer & Crosse 1872:174; pl. 10, figs. 1, 1a (shell).

*Hyalinia tehuantepecensis* (Crosse & Fischer). Von Martens 1892; Biol. Cent. Amer.:116.

*Zonitoides (Zonitella) tehuantepecensis* (Crosse & Fischer). Thompson 2008:717.

Type Locality.—Tehuantepec, Oaxaca, México.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Senahu (Von Martens 1892). OAXACA: Tehuantepec.

### **Superfamily ZONITOIDEA Mörch 1864**

#### **Family ZONITIDAE Mörch 1864**

#### **Subfamily ZONITINAE Mörch 1864**

Distribution.—North America and Europe.

Taxonomy.—The subfamily contains many genera (Zilch 1959:242–258). Twenty-eight (28) species of Zonitidae are recognized in México and Central America.

#### **Genus *Glyphyalinia* Von Martens 1892**

*Glyphyalinia* Von Martens 1892; Biol. Cent. Amer.:117.- Baker 1928; Proc. Acad. Nat. Sci. Phila. 80:19.- Pilsbry 1946; Land Moll. N. Amer. 2:255, 288.

Type Species.—*Helix indentata* Say 1822 (Pilsbry 1946).

Distribution.—North and Middle America.

Taxonomy.—Seven species are recognized. One species and two subspecies occur in the study area.

#### ***Glyphyalinia indentata indentata* (Say 1822)**

*Helix indentata* Say 1822:372.

*Hyalinia (Glyphyalinia) indentata* (Say). Von Martens 1892; Biol. Cent. Amer.:117.

*Vitrea indentata* (Say). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.

*Retinella (Glyphyalinia) indentata* (Say). Baker 1930b; Proc. Acad. Nat. Sci. Phila. 82:209–210.- Pilsbry 1946; Land Moll. N. Amer. 2:288–290; figs. 146 (shell); figs. 127 (6, 7) (reproductive anatomy), fig. 127 (8) (pallial organs).- Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Pérez & López 2002:180–182.

*Glyphyalinia indentata* (Say). Naranjo-García 1991:168, 169.- Correa-Sandoval, García-Cubas & Reguero 1998:41.- Thompson 2008:719.

Type Locality.—Not specified. Say gave localities in northern Philadelphia and New Jersey.

Distribution.—Generally distributed in the temperate part of the eastern United States. NICARAGUA: Pacific versant of the country (Pérez & López 2002). MICHOACÁN: Uruapan (Pilsbry 1904). MORELOS: Yautepec (Pilsbry 1891). NAYARIT: Isla Socorro; Isla Clarión (Dall 1926). NUEVO LEÓN: Iturbide (Correa-Sandoval 1997); Montemorelos, Zaragosa (Correa-Sandoval & Salzar (2005); Santiago (Correa-Sandoval 1993). SAN LUÍS POTOSÍ: Río Gallinas, Ej. El Carpintero (21°54'08" N, 99°15'47" W) (Correa-Sandoval et al. 1998). SONORA: numerous localities in the eastern part of the state (Naranjo-García 1991).

Remarks.—Some Central American and Mexican records may pertain to the following subspecies.

#### ***Glyphyalinia indentata paucilirata* (Morelet 1849)**

*Helix paucilirata* Morelet 1851; Test. Noviss. II:8.

*Zonites (Hyalinia) paucilirata* (Morelet). Fischer & Crosse 1872:173.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:312.

*Hyalinia paucilirata* (Morelet). Von Martens 1892; Biol. Cent. Amer.:118; pl 6, figs. 12–12c (shell).

*Retinella (Glyphyalinia) indentata paucilirata* (Morelet). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):24.- Baker 1930b, Proc. Acad. Nat. Sci. Phila. 82:210–211; pl. 11, fig. 6 (jaw), fig. 7 (radula), fig. 8 (reproductive anatomy).- Pilsbry 1946; Land Moll. N. Amer. 2:291–292; figs. 146b (shell); fig. 139:6–8 (same figures as in Baker).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:129.

*Zonites indentatus* var. *umbilicatus* Cocherell 1893; British Nat., 3:81.

*Glyphyalinia indentata paucilirata* (Morelet). Thompson 2008:219.

Type Localities.—*Helix paucilirata*: Salama, Dept. Baja Verapaz, Guatemala. *Zonites indentatus* var. *umbilicatus*: Lee Co., Texas.

Distribution.—Widely distributed in the mid-west and central United States to Arizona, New Mexico and Texas south to Guatemala. GUATEMALA, Dept. Alto Verapaz: Salama. BAJA CALIFORNIA SUR: Sierra Laguna; Sierra de la Giganta, ca. 1.6 km from Pie de la Cuesta, along trail to Guajademi, 640–750 m alt.; 19 km SW of San Miguel Comondú; San Javier; along road from Valle Perdido to Bajada del Molino, 430 m alt.; summit of trail from La Burrera to La Laguna, 2100 m alt.; La Laguna 1980 m alt. (Smith et al. 1990). DIST. FEDERAL: San Juan Teotihuacan, 7510 ft. alt. (Baker 1930a). PUEBLA: Necaxa, 4430–5000 ft. alt. (Baker 1930a). Pilsbry (1946) recorded this snail from DURANGO, JALISCO, MICHOACAN, and MORELOS but did not provide specific localities.

#### **Genus *Nesovitrea* Cooke 1921**

*Nesovitrea* Cooke 1921; Occasional Pap. Bernice Bishop Museum, 7:271.- Baker 1941; Bulletin Bernice P. Bishop Museum, 166:328.

*Perpolita* Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:15.- Pilsbry 1946; Land Moll. N. Amer. 2:255, 256.

Type Species.—Types by original designations. *Nesovitrea: Vitrea pauxillus* Gould 1846. *Perpolita: Helix electrina* Gould 1841.

Distribution.—Palearctic realm and Hawaiian islands.

Taxonomy.—Many Palearctic, Nearctic and Hawaiian species. One species with two subspecies occurs in México.

#### ***Nesovitrea subhyalina subhyalina* (Pfeiffer 1867)**

*Helix subhyalina* Pfeiffer 1867; Malak. Blätt. 14:196.

*Hyalinia subhyalina* (Pfeiffer). Strebel 1880:18; pl. 4, fig. 14 (shell). *Zonites (Hyalinia) subhyalina* (Pfeiffer). Fischer & Crosse 1872; 172.- Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:312.

*Hyalinia subhyalina* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:117.

*R[etinella] (Perpolita) subhyalina subhyalina* (Pfeiffer). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. 220:28.- Baker 1930b; Proc. Acad. Nat. Sci. Phila. 82:199; pl. 9, fig. 13 (radula).

*Retinella (Nesovitrea) subhyalina* (Pfeiffer). Baker 1941; Bulletin Bernice P. Bishop Museum, 166:329.

*Nesovitrea subhyalina subhyalina* (Pfeiffer). Thompson 2008:720.

Type Locality.—Uncertain; Mirador or near Vera Cruz, Veracruz, México (Strebel & Pfeiffer 1880).

Distribution.—PUEBLA: Necaxa, 4265–5000 ft. alt. (Baker 1930a). VERACRUZ: Orizaba (Baker 1930a).

#### ***Nesovitrea subhyalina socorroensis* (Dall 1926)**

*Zonitoides socorroensis* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:484; pl. 36, figs. 9–11.

*Retinella ((Perpolita) subhyalina socorroensis* (Dall). Baker 1930b; Proc. Acad. Nat. Sci. Phila. 82:200.

*Nesovitrea subhyalina socorroensis* (Dall). Thompson 2008:721.

Type Locality.—Cerro Evermann, Isla Socorro, Nayarit, México; 2000–2600 ft. alt. Holotype CAS 2206.

Distribution.—Known only from the type locality.

#### **Genus *Hawaia* Gude 1911**

*Hawaia* Gude 1911; Proc. Malac. Soc. London 9:272.- Baker 1930a; Occasional Papers of the Museum of Zoology, University of Michigan, (220):34–35.- Pilsbry 1930b; Proc. Acad. Nat. Sci. Phila. 82:247.- Pilsbry 1946; Land Moll. N. Amer. 2:418–420.

*Pseudovitrea* Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:24–25.

Type Species.—*Hawaia: Helix kawaiensis* Pfeiffer 1854 (*Helix minuscula* Binney 1840) (see Pilsbry 1930b:247). *Pseudovitrea: Helix minuscula* Binney 1840.

Distribution.—North America from Alaska and Maine to Florida and south to Costa Rica, Cuba, Hispaniola, Jamaica, Puerto Rico, and the Virgin Islands.

Taxonomy.—The genus contains two or more species and several subspecies. Two species occur in the study area.

#### ***Hawaia minuscula minuscula* (Binney 1840)**

*Helix minuscula* Binney 1840; Boston Journal of Natural History, 3:435.

*Chanomphalus minusculus* (Binney). Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:19.

*Pseudohyalina minuscula* (Binney). Von Martens 1892; Biol. Cent. Amer.:124–125.

*Zonitoides minusculus* (Binney). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.- Hinkley 1920; Nautilus 34:39.

*Pseudovitrea minuscula* (Binney 1840). Baker 1928c; Proc. Acad. Nat. Sci. Phila. 80:25–27; pl. 5, figs. 1, 3, 4 (reproductive

anatomy), fig. 2 (radula).

*Hawaiiia minuscula* (Binney 1840). Bequaert & Clench 1938; Pub. Carnegie Inst. Wash. (491):253, 254.- Pilsbry 1946; Land Moll. N. Amer. 2:420–424; figs. 228a (lectotype shell), figs. 227a, 227c, 227d (reproductive anatomy), fig. 227 b (radula).- Bequaert & Miller 1973:145.- Correa-Sandoval 1997; Rev. Biol. Trop. 44/45:140.- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Correa-Sandoval 1999:8.- Correa-Sandoval & Rodríguez 2002; Acta Zool. Mex. (86):236.- Pérez & López 2002:183–184.

*Hawaiiia minuscula minuscula* (Binney). Thompson 2008:721.

Type Locality.—Ohio. Lectotype ANSP (Pilsbry 1946:421).

Distribution.—Widely distributed as for the genus. NICARAGUA: Pacific versant of the country (Pérez & López 2002) GUATEMALA; Dept. Izabal: Izabal; Quirigua (Hinkley 1920). Dept. Petén: Tikal National Park (Basch 1959). CAMPECHE: Isla de Carmen; Palizada (Von Martens 1892). CHIAPAS: Palenque. CHIHUAHUA, SONORA and BAJA CALIFORNIA (Bequaert & Miller 1973). NUEVO LEÓN: Topo Chico, near Monterrey (Pilsbry 1904); Iturbide (Correa-Sandoval 1997). SAN LUÍS POTOSÍ: numerous localities in eastern part of state (Correa-Sandoval et al. 1998). SONORA: ca. 4.2 mi. from Cerro de Oro (29°38.9' N, 110°36.6' W) (Naranjo-García 1991). TAMAULIPAS: numerous localities (Correa-Sandoval & Rodríguez 2002). YUCATÁN: Sazich Cave, Calcehtok (Bequaert & Clench 1938). VERACRUZ: Rancho El Sol, Naranjos (21°20'00" N, 97° 43'16" W); 1 km E of Poza Rica (20°49'11" N, 97°30'00" W); Ruinas El Tajín (20°26'29" N, 97°22'30" W) (Correa-Sandoval 1999).

#### *Hawaiiia minuscula neomexicana* (Cockerell & Pilsbry 1900)

*Zonitoides neomexicans* Cockerell & Pilsbry 1900; Nautilus 13:114. *Pseudovitrea minuscula neomexicana* (Cockerell & Pilsbry). Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:262; pl. 10, figs. 7–9 (anatomy).

*Hawaiiia minuscula neomexicana* (Cockerell & Pilsbry). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):35.- Pilsbry 1946; Land Moll. N. Amer. 2:424–425; figs. 7–9 (shell).- Thompson 2008:722.

*Punctum pygmaeum* var. *albeolum* Dall 1926; Proceedings California Academy of Sciences, ser. 4, 15:481–482.

Type Localities.—*Zonitoides neomexicanus*: Dripping Spring, Organ Mountains, Texas. *Punctum pygmaeum* var. *albeolum*: Isla María Magdalena, Islas Marías, Nayarit, México. Holotype CAS 2203.

Distribution.—Texas and New Mexico south to Nayarit and Puebla, México; Colombia. NAYARIT: Isla María Magdalena; Mt. Evermann, Isla María Madre, 2000–2800 ft. alt. (Dall 1926). PUEBLA: Necaxa (Baker 1930a). COLOMBIA: Isla de Providencia (Pilsbry 1930).

#### *Hawaiiia minuscula permodesta* (Strebel 1880)

*Hyalina permodesta* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:19; pl. 4, fig. 9 (shell).

*Pseudovitrea minuscula permodesta* (Strebel). Baker 1929; Proc. Acad. Nat. Sci. Phila. 81:262–263; pl. 10, figs. 10–12 (shell).

?*Hawaiiia minuscula permodesta* (Strebel 1880). Pilsbry 1946; Land Moll. N. Amer. 2:423–424; figs. 228b; figs. 229 (10–12).- Thompson 2008:723.

*Hawaiiia minuscula* subsp. Thompson 1967c:243; fig. 3 D-F (shell). Type Locality.—Mirador, Veracruz, México.

Distribution.—CAMPECHE: 8.1 mi. SW of Champoton; 7.2 mi. SW of Pixtun (Thompson 1967). VERACRUZ: Mirador.

Taxonomy.—The identification of specimens from various regions of the study area is problematic. Thompson (1967) could not assign specimens from Campeche to subspecies; and Smith et al. (1990) hesitated to assign specimens from Baja California Sur to species.

#### *Hawaiiia pentagyra* (Pilsbry 1907)

*Zonitoides pentagyra* Pilsbry 1907; Nautilus 21:28; pl. 3, figs. 6, 7, 8 (shell).- Hinkley 1907; Nautilus 21:

*Hawaiiia pentagyra* (Pilsbry). Thompson 2008:724.

Type Locality.—River drift, Tampico, Tamaulipas, México. Holotype ANSP 93796.

Distribution.—Known only from the type locality.

#### Genus *Mesomphix* Rafinesque 1819

*Mesomphix* Rafinesque 1819; Jour. de Physique, 88:125.- Pilsbry 1911; Proc. Acad. Nat. Sci. Phila. 63:478.- Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):24.- Pilsbry 1946, Land Moll. N. Amer. 2:305, 319.

*Omphix* Pilsbry 1911; Proc. Acad. Nat. Sci. Phila. 63:479.

*Micromphix* Pilsbry 1911; Proc. Acad. Nat. Sci. Phila. 63:479.

Type Species.—*Mesomphix: Helix laevigatus* Rafinesque 1819 (= *Mesomphix perlaevis vulgatus* Baker 1933; not *Helix laevigatus* Linnaeus 1766. *Omphix: Helix inornatus* Say 1821. *Micromphix: Helix subplatus* Binney 1842.

Distribution.—Eastern North America from Ontario and Quebec to Guatemala, in regions of moderate or high humidity (Pilsbry 1946).

Taxonomy.—Four subgenera are recognized. Three occur in the study area. The subgenus *Mesomphix* is an Appalachian group primarily, with some species extending outward from the mountains into adjacent regions. It does not occur in the study area.

#### Subgenus *Omphalina* Rafinesque 1831

*Omphalina* Rafinesque 1831; Enumeration and account ...:3.- Pilsbry 1894; Proc. Acad. Nat. Sci. Phila. 46:14.- Pilsbry 1911; Proc. Acad. Nat. Sci. Phila. 63:469–470. Von Martens 1892; Biol. Cent. Amer.:104.- Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):26.

Type Species.—*Omphalina cuprea* Rafinesque.

Distribution.—Eastern North America from Quebec south to Guatemala.

Taxonomy.—*Omphalina* includes nine species, five of which occur in México and Central America.

#### *Mesomphix (Omphalina) lucubratus lucubratus* (Say 1829)

*Helix lucubratus* Say 1829; New Harmony Disseminator, II:229.

*Hyalina lucubratus* (Say). Tryon 1866; Man. Conch. 2:247; pl. 18,



fig. 14 (shell).

*Omphalina lucubrata* (Say). Von Martens 1892; Biol. Cent. Amer.:106–107; pl. 6, figs. 1, 1a, 1b, 2, 2a, 2b, 3, 5 (shell).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:767.

*Mesomphix (Omphalina) lucubratus lucubratus* (Say). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):27.- Thompson 2008:725.

Type Locality.—México.

Distribution.—OAXACA. VERACRUZ: Las Vigas; Córdoba (Von Martens 1892), Texolo (Pilsbry 1904).

***Mesomphix (Omphalina) lucubratus caducus*  
(Pfeiffer 1846)**

*Helix caduca* Pfeiffer 1846; Malak. Blätt. 3:159.

*Zonites caducus* Binney & Bland; land and freshwater shells of North America, 1:286; fig. 513 (shell).- Fischer & Crosse 1872:163; pl. 7, figs. 3, 3a (shell); pl. 8, figs. 13–16 (radula).

*Moreletia caduca* (Pfeiffer). Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:6; pl. 1, figs. 1b, 7a–c (shell); pl. 8, figs. 1 (anatomy), figs. 9, 9a (shell); pl. 9, figs. 1 (radula), fig. 17 (jaw).

*Omphalina caduca* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:108.

*Mesomphix (Omphalina) lucubratus caducus* (Pfeiffer). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):26–28.- Thompson 2008:725.

Type Locality.—Córdoba, Veracruz (Baker 1930:27).

Distribution.—VERACRUZ: Quilate, near Misantla; Soncoautla, near Coatepec; San Antonia Huatusco; Cerro de Palmas, near Córdoba; Córdoba; Orizaba; Mirador; Jalapa (Von Martens 1892); Peñuela to Sumidero, 2625–3400 ft. alt. (Baker 1930a).

***Mesomphix (Omphalina) lucubratus deppianus*  
(Von Martens 1892)**

*Omphalina lucubrata deppiana* Von Martens 1892; Biol. Cent. Amer.:107; pl. 6, figs. 4, 4a, 4b (shell).

*Mesomphix (Omphalina) lucubratus deppianus* (Von Martens). Thompson 2008:726.

Type Locality.—Orizaba, Veracruz, México.

Distribution.—Known only from the type locality.

***Mesomphix (Omphalina) lucubratus fasciatus* (Fischer  
& Crosse 1872)**

*Zonites (Moreletia) caducus* var.  $\beta$  *fasciata* Fischer & Crosse 1872:163; pl. 7, fig. 3b (shell).

*Moreletia angiomphala* Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:8, 92; pl. 1, figs. 2a–f, 3a–c, 7a–b, 8 a–d (shell); pl. 8, figs. 2, 3 (anatomy), figs. 8, 8a (shell); pl. 9, figs. 2–4 (radula), fig. 16 (jaw).

*Omphalina lucubrata fasciata* (Fischer & Crosse). Von Martens 1892; Biol. Cent. Amer.:107.

*Mesomphix (Omphalina) lucubratus fasciatus* (Fischer & Crosse). Thompson 2008:726.

Type Localities.—*Zonites fasciata*: Jacale, near the Volcán de Orizaba, México. *Moreletia angiomphala*: not specified.

Distribution.—VERACRUZ: Cajetas; San Antonia del Monte, near Neolingo; Cuautlatitlan, between Jico and

Perote; Ixhuacan, between Jalapa and Quimistla; Coatepec, near jalapa (Strebel 1880); Jalapa; Jacale; Mirador (Von Martens 1892).

Remarks.—Baker (1930a:2) stated that *angiostomus* might be a distinct species.

***Mesomphix (Omphalina) lucubratus olivarius* (Fischer  
& Crosse 1872)**

*Zonites (Moreletia) lucubratus olivaria* Fischer & Crosse 1872:161; pl. 7, figs. 4, 4a (shell).

*Omphalina lucubrata olivaria* (Fischer & Crosse). Von Martens 1892; Biol. Cent. Amer.:107–108.

*Mesomphix (Omphalina) lucubratus olivarius* (Fischer & Crosse). Thompson 2008:727.

Type Locality.—Tepanasacualco, Oaxaca, México.

Distribution.—Known only from the type locality.

***Mesomphix (Omphalina) lucubratus strebelianus*  
(Von Martens 1892)**

*Moreletia fuliginosa* form B. Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:6; pl. 8, figs. 7, 7a (shell).

*Omphalina caduca strebeliana* Von Martens 1892; Biol. Cent. Amer.:108.

*Mesomphix (Omphalina) lucubratus strebelianus* (Von Martens). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):28.- Thompson 2008:727.

Type Locality.—Near Misantla, Veracruz, México (Baker 1930:28).

Distribution.—PUEBLA: Necaxa (Baker 1930a). VERACRUZ: Quilate; Hirial; Palpoala; Misantla; Cajetas, near San Juan Miahuatlan, between Jalapa and Misantla (Von Martens 1892).

***Mesomphix (Omphalina) martensianus* (Pilsbry 1903)**

*Omphalina martensiana* Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:766–767; pl. 48, figs. 7, 7a, 7b (shell); text-fig. (radula).

*Mesomphix (Omphalina) martensianus* (Pilsbry). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):28.- Thompson 2008:727.

Type Locality.—Huehuetenango, Guatemala. Holotype ANSP 85521.

Distribution.—Known only from the type locality.

***Mesomphix (Omphalina) paradensis* (Pfeiffer 1860)**

*Helix paradensis* Pfeiffer 1860; Malak. Blätt. 7:233.

*Zonites (Moreletia) paradensis* (Pfeiffer). Fischer & Crosse 1872:158; pl. 7, figs. 7, 7a (shell).

*Moreletia paradensis* (Pfeiffer). Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:10; pl. 1, fig. 6 (shell); pl. 2, figs. 4, 7 (shell).

*Moreletia dohrnii* Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:93; pl. 15, figs. 1 (radula and anatomy).

*Mesomphix (Omphalina) paradensis* (Pfeiffer). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):28.- Thompson 2008:728.

Type Locality.—*Helix paradensis*: Parada, Oaxaca, México. *Moreletia dohrnii*: not specified.

Distribution.—OAXACA: Parada. VERACRUZ:

Cajetes, near San Juan Miahuatlan; Consolapa, near Coatepec; Coautlatitlan (Strebel 1880).

***Mesomphix (Omphalina) pittieri* (Bartsch 1909)**

*Omphalina pittieri* Bartsch 1909:322; pl. 33, figs. 2, 7, 8 (shell).

*Mesomphix (Omphalina) pittieri* (Bartsch). Thompson 2008:728.

Type Locality.—In the vicinity of Secanquim, Dept. Alta Verapaz, Guatemala. Holotype USNM 207783.

Distribution.—Known only from the type locality.

***Mesomphix (Omphalina) zonites* (Pfeiffer 1845)**

*Helix zonites* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:127.

*Zonites (Moreletia) metonomasticus* Fischer & Crosse 1872:157; pl. 7, fig. 2a, 2(?)

*Moreletia metonomastica* (Fischer & Crosse). Strebel 1880:5.

*Omphalina (Moreletia) zonites* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:106.

*Mesomphix (Omphalina) zonites* (Pfeiffer). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):28.- Thompson 2008:729.

Type Localities.—*Helix zonites*: not stated. *Zonites metonomasticus*: Tuxtla [Gutierrez], Chiapas, México.

Distribution.—CHIAPAS: Tuxtla Gutierrez.

**Subgenus *Moreletia* Gray 1855**

*Moreletia* Gray 1855; Catalogue of the pulmonata or air breathing Mollusca in the collection of the British Museum:148.

Type Species.—*Helix euryomphala* Pfeiffer 1845.

Distribution.—Guatemala.

Taxonomy.—The subgenus contains a single species.

***Mesomphix (Moreletia) euryomphala* (Pfeiffer 1845)**

*Helix euryomphala* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:127.

*Zonites (Moreletia) euryomphala* (Pfeiffer). Gray 1855; Catalogue of the Pulmonata or air-breathing Mollusca in the collection of the British Museum:148.- Fischer & Crosse 1872:155; pl. 7, figs 1, 1a, 1b; pl. 8, figs. 1-9 (anatomy).

*Moreletia euryomphala* (Pfeiffer). Von Martens 1875; Proc. Zool. Soc. Lond. 43:648.- Strebel 1880:5.

*Mesomphix euryomphala* (Pfeiffer). van der Schalie 1940:4.

*Omphalina (Moreletia) euryomphala* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:106.

*Helix cymbalum* Morelet 1849; Test. Noviss. I:7.

*Mesomphix (Moreletia) euryomphala* (Pfeiffer). Thompson 2008:229.

Type Localities.—*Helix euryomphala*: Cobán, Dept. Alta Verapaz, Guatemala. *Helix cymbalum*: mountain forests of Vera Paz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: mountains of Alta Verapaz; Cobán (Von Martens 1892).

**Subgenus *Zonyalina* Von Martens 1865**

*Zonyalina* Von Martens 1865; Malak. Blätt. 12:16.- Baker 1930a; Occas. Pap. Mus. Zool., Univ. Michigan, (220):29.- Zilch 1959:242.

Type Species.—*Helix bilineata* Pfeiffer 1845.

Distribution.—Eastern México

Taxonomy.—Three species are recognized.

***Mesomphix (Zonyalina) bilineatus* (Pfeiffer 1845)**

*Helix bilineata* Pfeiffer, 1845; Proc. Zool. Soc. Lond. 13:128.

*Hyaline (Zonyalina) bilineata* (Pfeiffer). Von Martens, Malak. Blätt. 12:16.

*Zonites (Moreletia) bilineatus* (Pfeiffer). Fischer & Crosse 1872:167.

*Zonyalina bilineatus* (Pfeiffer). Strebel 1880:11; pl. 2, figs. 3, 12, 14 (shell); pl. 8, figs. 4 (anatomy); pl. 9, figs. 5, 6 (radula); fig. 19 (jaw).

*Omphalina bilineata* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:109; pl. 6, fig. 6 (variety *apicalis*).- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:707.- Bequaert 1957; Bull. Mus. Comp. Zool. 116:220.

*Zonites (Zonyalina) bilineatus* (Pfeiffer). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:312.

*Mesomphix (Zonyalina) bilineatus* (Pfeiffer). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):26, 28-30; pl. 9, fig. 2 (radula), figs. 3, 4 (reproductive anatomy).- Thompson 2008:730.

Type Locality.—Not stated.

Distribution.—CHIAPAS: Laguna Ocotal, 950 m alt. (Bequaert 1957). VERACRUZ: Córdoba; Mirador; Misantla; Jalapa; Pacho, near Jalapa; Cuautlatitlan; Orizaba (Von Martens 1892); Córdoba to Sumidero, 2625-3400 ft. alt. (Baker 1930a).

***Mesomphix (Zonyalina) modestus* (Von Martens 1892)**

*Zonites (Moreletia) bilineatus* form  $\beta$  Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:13; pl. 2, fig. 14a.

*Omphalina modesta* Von Martens 1892; Biol. Cent. Amer.:110-111; pl. 6, figs. 7, 7a, 7b (shell).- Von Martens 1901; Biol. Cent. Amer.:617.

*Mesomphix (Zonyalina) modestus* (Strebel). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):29.- Thompson 2008:731.

Type Locality.—Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Jalapa; Las Vigas, NW of Jalapa; Nacimiento de Quilate, near Misantla (Von Martens 1892). COSTA RICA, Prov. San José: La Palma, 1600 m alt.; La Paz, 750 m alt.

Remarks.—Von Martens (1901:617) recorded this species from Costa Rica, on the basis of a report by Biolley (1897:7). This record needs to be confirmed.

***Mesomphix (Zonyalina) tuxtensis* (Crosse & Fischer 1870)**

*Zonites tuxtlaensis* Crosse & Fischer 1870; Jour. de Conchyl. 18:237. Fischer & Crosse 1872:166; pl. 7, figs. 6, 6a (shell).

*Omphalina tuxtensis* (Crosse & Fischer). Von Martens 1892; Biol. Cent. Amer.:110.

*Mesomphix (Zonyalina) tuxtensis* (Crosse & Fischer). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):29.- Thompson 2008:731.

Type Locality.—Tuxtla [San Andres Tuxtla ?], Veracruz, México.

Distribution.—Known only from the type locality.

**Genus *Patulopsis* Strebel 1880**

*Patulopsis* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:16.

Type Species.—*Patulopsis carinata* Strebel 1880.

Distribution.—Eastern México in the states of Veracruz and Puebla.

Taxonomy.—Two subgenera are recognized.

#### **Subgenus *Patulopsis* Strebel 1880**

Distribution.—Eastern México from the states of Puebla and Veracruz.

Taxonomy.—A single species is recognized.

#### ***Patulopsis (Patulopsis) carinatus* Strebel 1880**

*Patulopsis carinatus* Strebel. 1880:16; pl. 4, figs. 15, 15a, 15b (shell); pl. 8, fig. 6 (anatomy); pl. 9, fig. 8 (radula), fig. 20 (jaw).

*Omphalina (Patulopsis) carinata* (Strebel). Von Martens 1892; Biol. Cent. Amer.:113.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:708.

*Mesomphix (Patulopsis) carinatus* (Strebel). Baker 1930a; Occasional papers of the Museum of Zoology, University of Michigan, (220); 33–34; pl. 10, figs. 5, 6 (reproductive anatomy).

*Patulopsis (Patulopsis) carinatus* Strebel. Thompson 2008:732.

Type Locality.—Woods of Pacho, near Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Jalapa; Pacho, near Jalapa; Coatepec (Von Martens 1892). PUEBLA: above Necaxa, 4700–5500 ft. alt. (Baker 1930a).

#### **Subgenus *Omphalinella* Baker 1930**

*Omphalinella* Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (220):26, 29.

Type Locality.—*Helix veracruzensis* Pfeiffer 1856.

Distribution.—México from the states of Nuevo León, Tamaulipas, Puebla, Veracruz and Guerrero.

Taxonomy.—Four species and two subspecies are assigned to this subgenus.

#### ***Patulopsis (Omphalinella) montereyensis montereyensis* (Pilsbry 1899)**

*Omphalina montereyensis* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:395.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:767–768; pl. 48, figs. 6, 6a, 6b (shell).

*Mesomphix (Omphalinella) montereyensis montereyensis* (Pilsbry). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):31.

*Mesomphix montereyensis* (Pilsbry). Correa-Sandoval 1993; Rev. Biol. Trop. 41:675.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.

*Patulopsis (Omphalinella) montereyensis montereyensis* (Pilsbry). Thompson 2008:733.

Type Locality.—Diente, near Monterrey, Nuevo León, México. Holotype ANSP 77110.

Distribution.—NUEVO LEÓN: Diente; Santiago (Correa-Sandoval 1993). TAMAULIPAS: numerous localities in the west part of the state (Correa-Sandoval & Rodriguez 2002).

#### ***Patulopsis (Omphalinella) montereyensis victorianus* (Pilsbry 1903)**

*Omphalina montereyensis victoriana* Pilsbry 1903; Proc. Acad. Nat.

Sci. Phila. 55:798; pl. 48, figs. 5, 5a, 5b (shell).

*Mesomphix (Omphalinella) montereyensis victorianus* (Pilsbry). Baker 1930a, (220):31.- Solem 1954; Nautilus 68:7.- Correa-Sandoval, García-Cubas & Reguero 1998:14.- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. (86):236.

*Patulopsis (Omphalinella) montereyensis victorianus* (Pilsbry). Thompson 2008:733).

Type Locality.—Cañon 4 miles west of Ciudad Victoria, Tamaulipas, México. Holotype ANSP 85912a.

Distribution.—SAN LUIS POTOSÍ; Cd. del Maíz-El Naranjo, km 35 (22°30'00" N, 99°22'06" W) (Correa-Sandoval et al. 1998). NUEVO LEÓN: numerous localities in southern part of state (Correa-Sandoval & Salazar 2005). TAMAULIPAS: Ranch del Cielo, 7 km N of Gomez Farias; 20 km N of Chamal (Solem 1954); numerous localities (Correa-Sandoval & Rodriguez 2002).

#### ***Patulopsis (Omphalinella) salleana* (Von Martens 1892)**

*Zonites veracruzensis* Fischer & Crosse 1872:159; pl. 7, figs. 8a, 8b (shell) (not *Helix veracruzensis* Pfeiffer 1856).

*Omphalina salleana* Von Martens 1892; Biol. Cent. Amer.:112. (Substitute name for *Zonites veracruzensis* Fischer & Crosse 1872).

*Mesomphix (Omphalinella) salleana* (Von Martens). Baker 1930a; Occ. pa. Mus. Zool. Univ. Mich. (220):31.

*Patulopsis (Omphalinella) salleana* (Von Martens). Thompson 2008:734.

Type Locality.—Córdoba, Veracruz, México.

Distribution.—Known only from the type locality.

#### ***Patulopsis (Omphalinella) sculptus* (Von Martens 1892)**

*Omphalina sculptus* Von Martens 1892; Biol. Cent. Amer.:113; pl. 6, figs. 10, 10a, 10b (shell).

*Mesomphix (Omphalinella) sculptus* (Von Martens). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):31.

*Patulopsis (Omphalinella) sculptus* (Von Martens). Thompson 2008:734.

Type Locality.—Omiteme, Guerrero, México.

Distribution.—Known only from the type locality.

#### ***Patulopsis (Omphalinella) verecruzensis veracruzensis* (Pfeiffer 1856)**

*Helix veracruzensis* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:318.- Von Martens 1892; Biol. Cent. Amer.:111; pl. 6, figs. 8, 8a, 8b (shell).

*Mesomphix (Omphalinella) verecruzensis veracruzensis* (Pfeiffer). Baker 1930a; Occasional papers of the Museum of Zoology, University of Michigan, (220):31–32; pl. 10, figs. 1, 3 (reproductive anatomy), fig. 2 (pallial organs), fig. 4 (radula).

*Patulopsis (Omphalinella) verecruzensis veracruzensis* (Pfeiffer). Thompson 2008:734.

Type Locality.—Cordova [Córdoba], Veracruz, México.

Distribution.—VERACRUZ: Córdoba; Atoyac to Sumidero, 1300–3400 ft. alt. (Baker 1930a)

#### ***Patulopsis (Omphalinella) veracruzensis jalapensis* (Strebel 1880)**

*Zonyalina jalapensis* Strebel 1880; Beitrag. Mex. Land- und Süßw.-



Conch. IV:15; pl. 2, figs. 11, 11a (shell); pl. 8, fig. 5 (anatomy); pl. 9, fig. 7 (radula), fig. 19 (jaw).

*Omphalina veracruzensis jalapensis* (Strebel). Von Martens 1892; Biol. Cent. Amer.:111.

*Mesomphix (Omphalinella) veracruzensis jalapensis* (Strebel). Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan, (220):31.

*Patulopsis (Omphalinella) veracruzensis jalapensis* (Strebel). Thompson 2008:725.

Type Locality.—Jalapa, Veracruz, México.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. VERACRUZ: Jalapa; environs of Jalapa; Pacho; Consolapa; Soneautla; Coatepec; Dos Arroyos, between Jalapa and Naoling (Von Martens 1892).

### Genus *Pycnogyra* Strebel 1880

*Pycnogyra* Strebel 1880; Beitrag. Mex. Land- und Süsw.-Conch. IV:20.- Baker 1928; Proc. Acad. Nat. Sci. Phila. 80:27.- Zilch 1959:240.

Type Species.—*Helix berendti* Pfeiffer 1861.

Distribution.—Eastern México from the states of Veracruz and Puebla.

Taxonomy.—The genus is monotypic.

### *Pycnogyra berendti* (Pfeiffer 1861)

*Helix berendti* Pfeiffer 1861; Malak. Blätt. 8:72.

*Pycnogyra berendti* (Pfeiffer). Strebel 1880:20; pl. 4, fig. 5 (shell); pl. 9, fig. 12 (radula).- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:768.- Baker 1928; Proc. Acad. Nat. Sci. Phila. 80:27-29; pl. 5, figs. 5, 7, 10 (reproductive anatomy), fig. 6 (pallial organs), fig. 8 (jaw), fig. 9 (radula).- Zilch 1959:240; fig. 846 (shell).

*Pseudohyalina berendti* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:126.

Type Locality.—Hacienda Mirador, near Jalapa, Veracruz, México.

Distribution.—VERACRUZ: Mirador; Coatepec; Consolapa; Dos Arroyos (Von Martens 1892); Texolo (Pilsbry 1904). PUEBLA: Necaxa (Baker 1928).

## Superfamily LIMACOIDEA Lamarck 1801

### Family LIMACIDAE Lamarck 1801

Distribution.—Western Palearctic region. Three genera have been introduced widely through human agency. A single genus, *Deroceras*, occurs naturally in North America.

### Genus *Limax* Linnaeus 1758

Type Species.—*Limax maximus* Linnaeus 1758.

Distribution.—Europe, adjacent Asia, and Africa. Introduced widely in temperate and tropical areas of the world.

Taxonomy.—Numerous species, two of which have been introduced into the study area.

### *Limax maximus* Linnaeus 1758

Type Locality.—Sweden.

Distribution.—Europe, Asia Minor, and Algeria. MÉXICO: Guajimalpa to El Desierto de Leones, 8525–9850 ft. alt. (H. B. Baker 1930a).

### *Limax flavus* Linnaeus 1758

Type Locality.—Western Europe.

Distribution.—PUEBLA: Huachinango, 4300 ft. alt. (H. B. Baker 1930)4580ft. alt. (H. B. Baker 1930a).

### Genus *Deroceras* Refineque 1920

Type Species.—*Limax laevis* Müller 1774.

Distribution.—Entire Palearctic region and both North America and South America. Widely disseminated by human activities.

Taxonomy.—Over 70 species have been described, but fewer than half are recognizably described. Three occur in the study area, two of doubtful validity.

### *Deroceras cobanensis* (Crosse & Fischer 1872)

*Limax cobanensis* Crosse & Fischer 1872; Jour. de Conchyl. 20:159.- Von Martens 1898; Biol. Cent. Amer.:349.

*Deroceras cobanensis* (Crosse & Fischer). H. B. Baker 1930a; Occas. Pap. Mus. Zool. Univ. Michigan (220):42.- Thompson 2008:737.

Type Locality.—Cobán, Dept. Alta Verapaz, Guatemala.

Distribution.—Known only from the type locality.

Taxonomy.—The taxonomic status of this species is questionable (H. B. Baker 1930a).

### *Deroceras costaricensis* (Cockerell 1890)

*Agriolimax californicus* subsp. *costaricensis* Cockerell 1890; Ann. & Mag. Nat. Hist. 6:278-279.

*Agriolimax costaricensis* Cockerell. Von Martens 1898; Biol. Cent. Amer.:345.

*Deroceras costaricensis* (Cockerell). Thompson 2008:737.

Type Locality.—Costa Rica.

Distribution.—Known only from the type locality.

Taxonomy.—The taxonomic status of this species requires further study.

### *Deroceras laeve* (Müller 1774)

*Limax laevis* Müller 1774; Verm. Terr. et Fluv., II:1.

*Limax (Hyrolimax) laevis* Müller. Von Martens 1898; Biol. Cent. Amer.:347-349.

*Deroceras laeve* (Müller). H. B. Baker 1930; Occ. Pap. Mus. Zool. Univ. Mich. (320):41-45; ; pl. 11, figs. 1 (radula), 6 (penis), 7 (terminal genitalia).- Pilsbry 1948; Land Moll. N. Amer. 2:539-552; figs. 280-291.- Pérez & López 2002:164-165.. Thompson 2008:739.

Type Locality.—Denmark

Distribution.—North America generally, from the Arctic to Central America. The southern limit is not determined. Von Martens (1898) gives the following records. COSTA RICA, Prov. San José: Borubeta, on the Rio Uren. NICARAGUA, Dept. Chontales: Javali, in Chontales. Dept. Managua: (Pérez & López 2002). Dept. León (Pérez & López 2002). GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Guatemala: Guatemala City. Dept. Sacatepéquez: Antigua. Dept. Totonicapan: Plateau of Totonicapan. VERACRUZ: Jalapa

Taxonomy.—H. B. Baker (1930a) lists the following names from the study area as probable synonyms of *Deroceras laeva*: *Limax gracilis* Rafinesque 1820; *Limax campestris* Binney 1841; *Limax semitectus* Möch 1857; *Krynichia americana* Tata 1870; *Limax guatemalensis* Crosse & Fischer 1870; *Limax stenurus* Strebel & Pfeffer 1880; *Limax jalapensis* Strebel & Pfeffer 1880; *Limax berendti* Strebel & Pfeffer 1880; *Adriolimax motaguensis* Cockerell 1914; and *Agriolimax berendti* var. *pictus* Cockerell 1897.

### Genus *Milax* Gray 1855

Type Species.—*Limax gagatus* Draparnaud.

Distribution.—Europe, particularly in the Mediterranean region.

Taxonomy.—About 20 species are recognized. A single species has been introduced into the study area.

#### *Milax gagatus* (Draparnaud 1801)

Type Locality.—Not stated.

Distribution.—Reported for México from a limited area, but can be expected to have been introduced widely in México and elsewhere. MÉXICO: Desierto de Los Leones, 9850 ft. alt. (H. B. Baker 1930a).

### Superfamily ARIONOIDEA Gray 1840

#### Family BINNEYIDAE Cockerell 1891

##### Subfamily BINNEYINAE Cockerell 1891

Distribution.—Pacific coastal region of North America.

Taxonomy.—Two genera are recognized. One occurs in Baja California Norte.

#### Genus *Binneya* Cooper 1863

*Binneya* Cooper 1863; Proc. Calif. Acad. Sci. 3:62.- Pilsbry & Vanatta 1898; Proc. Acad. Nat. Sci. Phila. 50:229.- Pilsbry 1948; Land Moll. N. Amer. 2:732–735.

Type Species.—*Binneya notabilis* Cooper 1863.

Distribution.—Small islands off the coast of southern California and Baja California Norte.

Taxonomy.—Two subgenera are recognized. Both occur in Baja California Norte.

#### Subgenus *Binneya* Cooper 1863

Distribution.—CALIFORNIA: Santa Barbara Island; San Nicolas Island (fossil). Baja California Norte (?).

Taxonomy.—The subgenus is monotypic.

#### *Binneya* (*Binneya*) *notabilis* Cooper 1863

*Binneya notabilis* Cooper 1863; Proc. Calif. Acad. Sci. 3:62; fig. 15.- Pilsbry & Vanatta 1908; Proc. Acad. Nat. Sci. Phila. 50:231.- Pilsbry 1948; Land Moll. N. Amer. 2:735–737; fig. 394, A (radula), B (reproductive system), C (jaw); fig. 395, a-c (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:127–128; fig. 30 (distribution map).

*Binneya* (*Binneya*) *notabilis* Cooper. Thompson 2008:740.

Type Locality.—Santa Barbara Island, California.

Distribution.—CALIFORNIA: Santa Barbara Island,

San Nicolas Island. BAJA CALIFORNIA NORTE: hills north of Bahia San Quintin.

Taxonomy.—The identity of the Mexican population is uncertain, and it may involve a distinct species (Pilsbry 1948).

#### Subgenus *Alluthyra* Pilsbry 1948

*Alluthyra* Pilsbry 1948; Land Moll. N. Amer. 2:737.

Type Species.—*Binneya guadalupensis* Pilsbry 1927.

Distribution.—Endemic to Isla Guadalupe, Baja California Norte.

Taxonomy.—A single species is recognized.

#### *Binneya* (*Alluthyra*) *guadalupensis* Pilsbry 1927

*Binneya guadalupensis* Pilsbry 1927; Proc. Calif. Acad. Sci. 16:169; pl. 6, figs. 2, 4, 5 (shell), figs. 3, 6–9 (animal); pl. 9, figs. 2, 2a–2d (reproductive anatomy), 3 (jaw).- Pilsbry 1948; Land Moll. N. Amer., 2:737; fig. 394 d-k (anatomy); fig. 395 B, C (shell), D, E (animal).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:128.- Thompson 2008:741.

Type Locality.—3 miles south of Northeast Anchorage, Isla Guadalupe, Baja California Norte, México. Syntypes CAS 2566–2573.

Distribution.—BAJA CALIFORNIA NORTE: Isla Guadalupe.

### FAMILY PHILOMYCHIDAE Gray 1847

Distribution.—East Asia, North America south to Colombia.

Taxonomy.—Four genera generally are recognized. *Philomycus*, *Pallifera* and *Megapallifera* are New World genera. *Pallifera* is the only genus that occurs in the study area.

#### Genus *Pallifera* Morse 1864

*Pallifera* Morse 1864; Jour. Portland Soc. Nat. Hist. 1:8.- Pilsbry 1948; Land Moll. N. Amer. 2:759.

Type Species.—*Philomycus dorsalis* Binney 1842.

Distribution.—Eastern North America, eastern and Central México, Costa Rica, Colombia.

Taxonomy.—Seven species are recognized. One species and three subspecies are recorded from the study area. Two other species are considered *nomina dubia*.

#### *Pallifera costaricensis costaricensis* (Mörch 1858)

*Philomycus costaricensis* Mörch 1858, in Vidensk. Meddelelser Kjobenh. 1857:341. Mörch 1860; Malak. Blätt. 6:109.- Von Martens 1898; Biol. Cent. Amer.:346.- Cockerell 1913; Nautilus 27:3.

*Tebennophorus costaricensis* (Mörch). Binney 1879; Ann. New York Acad. Sci. 1:261; pl. 11, fig. M (animal), fig. N (radula).- Binney 1884; Ann. New York Acad. Sci. 3:87; pl. 8, fig. N (radula).

*Pallifera costaricensis* (Mörch). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:99.- Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. 9220:15.- Thompson 2008:741.

Type Locality.—Central Costa Rica, 2000 ft. alt.

Distribution.—COSTA RICA: the type locality. PANAMÁ, Prov. Bocas del Toro: Bocas del Toro (Cockerell 1913).

***Pallifera costaricensis alticola* Baker 1930**

*Pallifera costaricensis alticola* Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. 220:15–18; pl. 8, fig. 2 (jaw), figs. 3, 6 (reproductive anatomy), fig. 4 (pallial organs).

Type Locality.—On a rotten Douglas-fir log near Desierto de Los Leones, México; 9850 ft. alt. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

***Pallifera costaricensis crosseana* (Strebel 1880)**

*Tebennophorus crosseana* Strebel 1880; 25; pl. 10, fig. 6 (animal); pl. 9, figs. 13 (radula), fig. 22 (jaw).

*Philomychus crosseanus* (Strebel). Von Martens 1898; Biol. Cent. Amer.:346.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:770.

*Pallifera costaricensis crosseana* (Strebel & Pfeffer). Baker 1930a; Occ. Pap. Mus. Zool. Univ. Mich. (220):18–21; pl. 8, fig. 1 (radula), fig. 5 (jaw).- Thompson 2008:742.

Type Locality.—Not given.

Distribution.—PUEBLA: Necaxa, 4265–5200 ft. alt. (Baker 1930a). VERACRUZ: Córdoba, 625–3400 ft. alt.; Las Tortolas, 2 km NE of Córdoba, 2625–3000 ft. alt.; Sumidero, 3400 ft. alt. (Baker 1930a); Texolo (Pilsbry 1904).

***Pallifera sallei* (Crosse & Fischer 1869)**

*Philomychus sallei* Crosse & Fischer 1869; Jour. de Conchyl. 17:190.- Fischer & Crosse 1872:191; pl. 9, figs. 6 (animal), fig. 7 (jaw), figs. 8–11 (radula).- Von Martens 1898; Biol. Cent. Amer.:346.- Thompson 2008:743.

Type Locality.—Playa Vicente, Veracruz, México.

Distribution.—Known only from the type locality.

Taxonomy.—Referred to *Pallifera* but considered a *nomen dubium* by Baker (1930a:18–19).

***Pallifera auratus* (Tate 1870)**

*Tebennophorus auratus* Tate 1870; Amer. Jour. Conch. 5:153.

*Philomychus auratus* (Tate). Von Martens 1898; Biol. Cent. Amer.:340.- Thompson 2008:743.

Type Locality.—Javali, Dept. Chontales, Nicaragua.

Distribution.—Known only from the type locality.

Taxonomy.—Referred to *Pallifera* but considered a *nomen dubium* by Baker (1930a:18–19).

**Superfamily HELICOIDEA Rfinesque 1815**

**Family CAMAENIDAE Pilsbry 1895**

**Subfamily PLEURODONTINAE Ihering 1912**

**Genus *Labyrinthus* Beck 1837**

*Labyrinthus* Beck 1837.- Solem 1966; Fieldiana: Zoology 50:37–44.

Type Species.—*Helix otis* Lightfoot 1786 (= *Helix labyrinthus* Deshayes 1838) (Herrmannsen 1846).

Distribution.—Southeastern Nicaragua south to Madre de Dios, Peru, east to Caracas, Venezuela and the confluences of the Rio Tapajóz and the Rio Amazon in Pará, Brazil. Sea level to 2200 m alt.

Taxonomy.—About thirty species and ten subspecies are recognized in *Labyrinthus* (Solem 1966). Five species and

seven subspecies occur in the study area.

***Labyrinthus otis orthorhinus* (Pilsbry 1910)**

*Pleurodonte (Labyrinthus) otis orthorhinus* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 61:502, 505; pl. 37, figs. 1–4 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:75.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:339.

*Labyrinthus otis orthorhinus* (Pilsbry). Solem 1966; Fieldiana: Zoology 50:108–113; figs. 30c, 31c (shell) .- Thompson 2008:746.

Type Locality.—North shore of naval base, Prov. Colón, Panamá. Holotype ANSP 101308a (Baker 1963:246).

Distribution.—COLOMBIA, Dept. Chocó: Acandí; mountains near mouth of Rio Atrato (Solem 1966). PANAMÁ, Prov. Darién: Pintupo; Tacarcuna. Comarco de San Blas: forest near Armila; hills near Rio Mandingo, head of Golfo de San Blas. Prov. Panamá: mountains near Gasasalama, Rio Mamoni; Rio Indio, near Madden Lake; between Chepo and Rio Plantanal; along ridge of Rio Chico, fork of Rio Pequení and Rio Bosquerón; La Aneida, near Tucuman Airport, 9 km from Cerro Azul; slope of Cerro Cabra; hills above Arraiján; Cerro Trinidad; Cerro Campana. Canal Zone: between Tabernillo and San Pablo; near Empire; near Gorgona; Alhajuela; Gatun; Isla Barro Colorado; Rio Piquení; shore of Lake Madden. Prov. Colón: Santa Isabel; Quebrada Querquera, 15 mi. NE of Colón; near Quipo; San Juanito, near Pegero, Coclé del Norte. Prov. Coclé: El Valle. Prov. Veraguas: Azuero Peninsula, Tres Puntas; Avacada; Mangillo. COSTA RICA, Prov. San José: Santa Maria de Dota, 1500 m alt.

***Labyrinthus quadridentatus quadridentatus* (Broderip 1832)**

*Caracolls quadridentata* Broderip 1832; Proc. Zool. Soc. Lond. :30.

*Labyrinthus quadridentatus* (Broderip). Von Martens 1892; Biol. Cent. Amer.:176–177.- Von Martens 1901; Biol. Cent. Amer.:628–629.

*Labyrinthus quadridentatus quadridentatus* (Broderip). Solem 1966; Fieldiana: Zoology 50:51–52; figs. 10b, 11b.- Thompson 2008:744.

Type Locality.—Golfo Dulce, Costa Rica.

Distribution.—PANAMÁ, Prov. Comarca de Baru: Puerto Armuelles (Solem 1966). COSTA RICA, Prov. Puntarenas: Coto; Quebrada de la Palma, Rio Coto basin (Solem 1966); Térraba, 200–300 m alt.; Alto de Mano Tigre, near Térraba, 690–700 m alt.; El Pozo, Rio Grande de Térraba; El Pital, Rio Naranjo valley, 200 m alt.; Quebrada Chenarria, Golfito (Von Martens 1901).

***Labyrinthus quadridentatus biolliyi* Solem 1966**

*Labyrinthus quadridentatus biolliyi* Solem 1966; Fieldiana: Zoology 50:52–53; figs. 10c, 11c (shell).- Thompson 2008:744.

Type Locality.—Guaitil de Pirris, Prov. San José, Costa Rica. Holotype Carnegie Museum 62.575.

Distribution.—COSTA RICA, Prov. Alajuela: Piedras Negras. Prov. Cartago: Azahar de Cartago. Prov. San José: Guaitil de Pirris (Solem 1966).



***Labyrinthus triplicatus* (Von Martens 1868)**

*Helix triplicata* Von Martens 1868; Malak. Blätt. 15:156.

*Helix (Labyrinthus) triplicata* (Von Martens). Pilsbry 1889; Man. Conch. 5:165–166; pl. 41, figs. 17–19 (shell).

*Labyrinthus triplicatus* (Von Martens). Von Martens 1892; Biol. Cent. Amer.:176; pl. 10, figs. 2a-c (shell).- Von Martens 1901; Biol. Cent. Amer.:628.- Solem 1966; Fieldiana: Zoology 50:47–48; fig. 10a, 11a (shell) .- Thompson 2008:745.

*Helix aesopus* Angas 1878; Proc. Zool. Soc. Lond. 46:72–73; pl. 5, figs. 11, 12 (shell).

*Helix (Labyrinthus) triplicatus* var. *aesopus* Angas.- Pilsbry 1889; Man. Conch. 5:166; pl. 64, figs. 27, 28 (shell).

*Pleurodonte (Labyrinthus) aesopus* (Angas). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:127.

Type Localities.—*Helix triplicata*: Costa Rica. *Helix aesopus*: Buena Vista, [Prov. Alajuela?], Costa Rica.

Distribution.—PANAMÁ. COSTA RICA, Prov. Cartago: Turrialba; Navarro; Platanillo, 600 m alt.; Cervantes, 1480 m alt.; Valle de Tuis, 620 m alt.; Tuis, 650 m alt.; Talamanca valley (Solem 1966). Prov. Heredia: Sarapiquí (Von Martens 1892). Prov. Limón: Cahuita; hills of Urén (Solem 1966).

***Labyrinthus subplanatus sipunculatus* (Forbes 1850)**

*Helix labyrinthus* var. *sipunculata* Forbes 1850; Proc. Zool. Soc. Lond. 18:53; pl. 9, figs. 4a, 4b (shell).

*Pleurodonte (Labyrinthus) otis sipunculata* (Forbes). Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:504.

*Pleurodonte (Labyrinthus) sipunculata* (Forbes). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:74; pl. 9, fig. 4.

*Labyrinthus subplanatus sipunculatus* (Forbes). Solem 1966; Fieldiana: Zoology 50:119–122; figs. 33b, 34a, 35 (shell); fig. 59 (map) .- Thompson 2008:745.

*Helix annulifera* Pfeiffer 1852; Conch. Icon., *Helix*:100; fig. 555 (shell).

*Helix (Labyrinthus) labyrinthus annulifera* Pfeiffer. Pilsbry 1889; Man. Conch. 5:162; pl. 42, figs. 32, 33 (shell).

*Pleurodonte (Labyrinthus) sipunculata annulifera* (Forbes). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:74.

*Pleurodonte (Labyrinthus) goldmani* Dall 1912; Smiths. Misc. Coll. 59:1–2; pl. 2, figs. 1, 2 (shell).

Type Localities.—*Helix labyrinthus* var. *sipunculatus*: Panamá. *Helix annulifera*: Panamá. *Pleurodonte (Labyrinthus) goldmani*: Pirri Range, Darién, Panamá.

Distribution.—COLOMBIA, Dept. Chocó: Finca La Victoria, Boca del Pepe, Rio Baudo; Nucuí; mountains near mouth of Rio Atrato (Solem 1966). PANAMÁ, Prov. Darién: Pirri Range; Paya; Rio Tucutí. Prov. Panamá: Cerro Campana; Sierra Chucanti 1800 ft. alt. (Solem 1966).

***Labyrinthus uncigerus uncigerus* (Petit 1838)**

*Caracolla uncigera* Petit 1838; Guerin's Mag. de Zool.:113.

*Helix (Labyrinthus) uncigera* (Petit). Pilsbry 1889; Man. Conch. 5:164–165; pl. 4; figs. 23–26 (shell).

*Pleurodonte (Labyrinthus) uncigera* (Petit). Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:501; fig. 1 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:75–76; fig. 6c; pl. 9, fig. 6 (shell).

*Labyrinthus uncigerus* (Petit). Von Martens 1892; Biol. Cent. Amer.:177.

*Labyrinthus unciger* (Petit). Solem 1966; Fieldiana: Zoology 50:95–

96, 97–100; figs. 29e, 29f (shell).- Thompson 2008:747.

*Helix uncigera* var. *conoidea* Ancey 1890; Bull. Soc. Malac. France 7:152.

*Helix uncigera anopla* Ancey 1890; Bull. Soc. Malac. France 7:152.

*Pleurodonte (Labyrinthus) tenaculum* Dall 1909; Smiths. Misc. Coll. 52:360–362; text-fig. 64; pl. 37, figs. 5, 6, 11, 12 (shell).

Type Localities.—*Caracolla uncigera*: Panamá. *Helix uncigera* var. *conoidea*: Colombia. *Helix uncigera* var. *anopla*: Colombia. *Pleurodonte (Labyrinthus) tenaculum*: Mountains near mouth of Rio Atrato, “Sierra Darién, Panamá”.

Distribution.—COLOMBIA, Dept. Chocó; Arquíá, 1.5 hrs. walk from Unguía; Acandi; Golfo de Urabá; mountains near mouth of Rio Atrato (Solem 1966). PANAMÁ, Canal Zone: Rio Pequení; Salamanca Hydrographic Station, Rio Pequení. Prov. Darién: Rio Puerco. Prov. Panamá: mountains around Gaspsalama, upper Rio Mamoni; half-way from Cerro Azul to Mandingo; Cerro Campana. Comarco de San Blas: Puerto Olvaldia (Solem 1966).

***Labyrinthus uncigerus chiriquiensis* (Pilsbry 1910)**

*Pleurodonte (Labyrinthus) uncigera chiriquiensis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:506–507; fig. 2 (shell).

*Pleurodonte (Labyrinthus) chiriquiensis* Pilsbry. Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:76; fig. 6b; pl. 9, fig. 5 (shell).

*Labyrinthus unciger* form *chiriquiensis* (Pilsbry 1910). Solem 1966; Fieldiana: Zoology 50:97–100; figs. 27a, 27b, 29c, 29d (shell).

*Labyrinthus unciger* form *chiriquiensis* (Pilsbry).- Thompson 2008:747.

Type Locality.—Chiriquí Lagoon, Prov. Chiriquí, Panamá. Lectotype ANSP 1612a (Baker 1963:244).

Distribution.—PANAMÁ, Canal Zone: near Madden Lake. Prov. Chiriquí: Chiriquí Lagoon. Prov. Coclé: El Valle; El Valle, 2400 ft. alt.; trail to Las Minas; Club Campestre, El Valle. Prov. Panamá: Cerro Campana (Solem 1966).

***Labyrinthus uncigerus tau* (Pilsbry 1926)**

*Pleurodonte (Labyrinthus) uncigera tau* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:76; fig. 6a.

*Labyrinthus unciger* form *tau* (Pilsbry). Solem 1966; Fieldiana, Zoology:50:96–97; fig. 29a (shell).

*Labyrinthus uncigera tau* (Pilsbry). Thompson 2008:748.

Type Locality.—Archipiélago de Bocas del Toro, Prov. Bocas del Toro, Panamá.

Distribution.—COLOMBIA, Dept. Chocó: Acandi (Solem 1966). PANAMÁ, Prov. Colón: Rio Salud. Prov. Coclé: El Valle. Prov. Bocas del Toro: Archipiélago de Bocas del Toro; Mono Creek, Almirante (Solem 1966).

**Genus *Zachrysia* Pilsbry 1894**

*Zachrysia* Pilsbry 1894; Man. Conch. Ser. 2, 9:97

Type Species.—*Helix auricoma* Férussac 1821.

Distribution.—Cuba.

Taxonomy.—Four subgenera are recognized. One has been introduced into the study area.

**Subgenus *Zachrysia* Pilsbry 1894**

Taxonomy.—Several species are native to Cuba. One

species, with two subspecies, has been introduced into the study area.

***Zachrysia auricoma auricoma* (Férussac 1821)**

*Helix* (*Helicogena*) *auricoma* Férussac 1821.

*Helix* (*Thelidomus*) *auricoma* Férussac. Pilsbry 1889; Man. Conch. 5:62–63; pl. 3, figs. 26–30 (shell).

*Pleurodonte* (*Zachrysia*) *auricoma* (Férussac). Pilsbry 1894; Man. Conch. 9:96.

*Zachrysia auricoma* (Férussac). Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):64.

Type Locality.—Cuba.

Distribution.—PANAMÁ, Prov. Panamá: Cd. Panamá (Bequaert & Clench 1936).

***Zachrysia auricoma havanensis* (Pilsbry 1894)**

*Pleurodonte* (*Zachrysia*) *auricoma havanensis* Pilsbry 1894; Man. Conch. 9:97; pl. 23, figs. 19–23 (anatomy).

*Zachrysia auricoma havanensis* Pilsbry. Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:76–77; fig. 7 (shell).- Bequaert & Clench 1936; Pub. Carnegie Inst. Wash. (457):64.- Thompson 2008:749.

Type Locality.—Havana, Cuba. Lectotype ANSP 77459a (Pilsbry 1926:76; H. B. Baker 1963:245).

Distribution.—A Cuban species that has been widely introduced to other tropical regions. PANAMÁ, Prov. Panamá: Cathedral Plaza, Cd. Panamá (Pilsbry 1926). YUCATÁN: Quinta; Merida (Bequaert & Clench 1936).

**Family SOLAROPSIDAE Nordsieck 1986**

**Genus *Psadara* K. Miller 1878**

*Psadara* Miller 1878; Malac. Blätt. 25:162.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:112.

Type Species.—*Helix selenostoma* Pfeiffer; 1852.

Distribution.—Southern Brazil, Bolivia, and Peru north to Guayana and Colombia; Costa Rica.

Taxonomy.—Many species. One occurs in the study area.

***Psadara tiloriensis* (Angas 1879)**

*Helix* (*Solaropsis*) *tiloriensis* Angas 1879; Proc. Zool. Soc. Lond. 47:477; pl. 40, fig. 2.- Von Martens 1892; Biol. Cent. Amer.:159.- Von Martens 1901; Biol. Cent. Amer.:626.

*Psadara tiloriensis* (Angas). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:112–113.- Thompson 2008:750.

Type Locality.—Between the rivers Tilorio and Zhorquin [Prov. Limón], Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: Puerto Viejo de Talamanca, at the confluence of the Rio Viejo and the Rio Sarapiquí (Von Martens 1901).

**Family HUMBOLDTIANIDAE Pilsbry 1939**

Distribution.—Southern Texas south to Puebla and Veracruz.

Taxonomy.—Two genera are recognized.

**Genus *Bunnya* H. B. Baker 1942**

*Bunnya* H. B. Baker 1942; Nautilus 56:37–41.- Miller 1987; Veliger

29:308–312.

Type Species.—*Bunnya bernadinae* H. B. Baker 1942.

Distribution.—Western México: States of Durango, Jalisco, México, Nayarit, and Sinaloa.

Taxonomy.—Two species are recognized.

***Bunnya bernadinae* H. B. Baker 1942**

*Bunnya bernadinae* H. B. Baker 1942; Nautilus 56:37–40; pl. 5, figs. 1–2 (shell), fig. 3 (mantle collar), fig. 4 (radula), fig. 5 (jaw), figs. 6–9 (genitalia).- Miller 1987; Veliger 29:308–312.- Thompson 2008:750.

Type Locality.—Walls of old monastery, Desierto de Leones, Distrito Federal, México. Holotype in the UMMZ.

Distribution.—JALISCO: in addition to the type locality it is known from Temexcaltgepec.

***Bunnya naranjoae* Miller 1987**

*Bunnya naranjoae* Miller 1987; Veliger 29:308–312; fig. 1 (shell), fig. 2 (genitalia).- Thompson 2008:751.

Type Locality.—Along road from El Chante to Guizár, 1.5 km south of Rancho Manantlán, (or 16 km south of El Chante), Sierra Manantlán, Jalisco, México (19°36.5'00" N, 104°12.3'00" W), 1390 m alt. Holotype SBMNH 34369.

Distribution.—Western slopes of the Sierra Madre Occidental from the vicinity of Mazatlán, Sinaloa in the north to the Sierra de Manantlán in southwestern Jalisco. DURANGO: ravine along the Mazatlán-Durango highway 3 km E of Santa Lucia (15 km west of Loberas summit). JALISCO: type locality. NAYARIT: ravine along the Tepic-Puerto Vallarta highway at km 42 marker from Tepic; in riparian valley of Rio Manantlan from the type locality to 1.1 km upstream in the vicinity of the abandoned sawmill at Rincon de Manantlan.

**Genus *Humboldtiana* Von Ihering 1892**

*Humboldtiana* Ihering 1892; Zoologie 54:472.- Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:165–166.- Pilsbry 1939; Land Moll. N. Amer. 1:395–399.- Burch & Thompson 1957; Occ. Pap. Mus. Zool., 590:1; map 1.- Solem 1974; Veliger 16:359–364.- Nordsieck 1987; Arch. für Mollusk. 118:23.- Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:50–51.

Type Species.—*Helix humboldtiana* Pfeiffer 1847.

Distribution.—Southern Texas south to the states of México and Veracruz.

Taxonomy.—Six subgenera are recognized. The genus contains 54 species of which 43 have been described from México.

**Subgenus *Aglotrochus* Thompson 2006**

*Aglotrochus* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:92.

Type Species.—*Humboldtiana tanyastix* Thompson 2006.

Distribution.—Chihuahua, México.

Taxonomy.—This subgenus contains a single known species.

***Humboldtiana* (*Aglotrochus*) *tanyastix* Thompson 2006**

*Humboldtiana tanyastix* Thompson 2006; Bull. Fla. Mus. Nat.

Hist. 46:92–97; figs. 70–75 (shell), figs. 76–77 (reproductive anatomy).

*Humboldtiana (Aglostrochus) tanymastix* Thompson. Thompson 2008:751.

Type Locality.—Sierra Santo Domingo, 4 km west-southwest of Francisco Portillo, Chihuahua, México (28°36' N, 105°54' W) 1970 m alt. Holotype UF 21324.

Distribution.—Known only from the type locality.

#### Subgenus *Clydonacme* Thompson 2006

*Clydonacme* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:75.

Type Species.—*Humboldtiana regula* Thompson 2006.

Distribution.—Chihuahua, México.

Taxonomy.—This subgenus contains six species.

#### *Humboldtiana (Clydonacme) hogeana* (von Martens 1892)

*Helix humboldtiana hogeana* von Martens 1892; Biol. Centr. Amer.:148; pl. 7, figs. 20, 21 (shell).

*Humboldtiana hogeana* (von Martens).- Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:179.- Pilsbry 1935; Nautilus 48:2; pl. 1, fig. 9 (shell).- Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:2; pl. 1, fig. 9 (shell).- Pilsbry 1939; Land Moll. N. Amer.:402.- Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:202.

*Humboldtiana hogeana* (von Martens). Solem 1954; Nautilus 68:5.- Solem 1974; Veliger 16:363.- Thompson 1967; Nautilus 81:25.- Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:90–92; figs. 63–69 (shell).

*Humboldtiana (Clydonacme) hogeana* (von Martens). Thompson 2008:752.

Type Locality.—“Chihuahua”. Lectotype BMNH 1901–6–22–657 (Thompson 2006).

Distribution.—CHIHUAHUA. Von Martens (1892) described this species from “Chihuahua”. It is not clear whether the type locality is the city or the state. Whether the species actually occurred in Cd. Chihuahua can no longer be determined. The city has expanded since the Eighteenth Century from being a small pueblo of less than 1,500 people then to a vast metropolis of 840,000 people now, and nothing remains there that resembles a natural habitat that could harbor a *Humboldtiana*.

#### *Humboldtiana (Clydonacme) oberon* Thompson 2006

*Humboldtiana oberon* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:85–86; figs. 46–49 (shell), figs. 52–53 (reproductive anatomy).

*Humboldtiana (Clydonacme) oberon* Thompson. Thompson 2008:753.

Type Locality.—Sierra Victorino, 17 km west of Nueva Majalca, Chihuahua, México (28°47.4' N, 106°27.7' W) 1900–2000 m alt. Holotype UF 317164.

Distribution.—Known only from the type locality.

#### *Humboldtiana (Clydonacme) princeps* Thompson 2006

*Humboldtiana princeps* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:87–90; figs. 54–59 (shell), figs. 60–62 (reproductive anatomy).

*Humboldtiana (Clydonacme) princeps* Thompson. Thompson

2008:753.

Type Locality.—13 km southwest of Cd. Chihuahua, Chihuahua, México (28°37' N, 106°10' W); 1540 m alt. Holotype UF 350039.

Distribution.—Known only from the type locality.

#### *Humboldtiana (Clydonacme) regula* Thompson 2006

*Humboldtiana regula* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:76–79 (shell); figs. 27–31 (shell); figs. 32–33 (reproductive system).

*Humboldtiana (Clydonacme) regula* Thompson. Thompson 2008:753.

Type Locality.—Sierra de la Catarina, highway pass ca. 12 km northeast of Ignacio Zaragoza, Chihuahua, México (29°46.0' N, 107°37.8' W); 2250 m alt. Holotype UF 320069.

Distribution.—CHIHUAHUA: known only from the immediate vicinity of the type locality: 21.6 km NE of Ignacio Zaragoza, 2280 m alt. (29°46.4' N, 107°37.5' W); 11 km NE of Ignacio Zaragoza, 2320 m alt. (29°46.0' N, 107°38.2' W).

#### *Humboldtiana (Clydonacme) spectabile* Thompson 2006

*Humboldtiana spectabile* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:79–80; figs. 36–39 (shell); 34–35 (reproductive anatomy).

*Humboldtiana (Clydonacme) spectabile* Thompson. Thompson 2008:754.

Type Locality.—Rocky outcrop in the foothills of the Sierra La Catarina, Buenaventura, Chihuahua, México (29°40' N, 107°30' W); 1850 m alt. Holotype UF 25129.

Distribution.—CHIHUAHUA: known from the type locality in the foothills of the Sierra La Catarina, which lies about 20 km southwest of Buenaventura. The range is oriented north-south, and is about 60 km long and about 10 km wide near its middle.

#### *Humboldtiana (Clydonacme) titania* Thompson 2006

*Humboldtiana titania* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:82–85; figs. 42–45 (shell); figs. 50–51 (reproductive anatomy).

*Humboldtiana (Clydonacme) titania* Thompson. Thompson 2008:754.

Type Locality.—Sierra Victorino, 0.6 km southeast of Cumbres Majalca Visitors Center, Chihuahua, México (28°48.1' N, 106°28.8' W), ca. 21 km west of Nueva Majalca; 2060 m alt. Holotype UF 358679.

Distribution.—Known only from the type locality.

#### Subgenus *Gymnopallax* Thompson 2006

*Gymnopallax* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:72.

Type Species.—*Humboldtiana cicatricosa* Thompson 2006.

Distribution.—Chihuahua, México.

Taxonomy.—Three species are recognized.

#### *Humboldtiana (Gymnopallax) cicatricosa* Thompson 2006

*Humboldtiana cicatricosa* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:72–75; figs. 19–23 (shell), figs. 24–26 (reproductive anatomy); fig. 41 (animal).



*Humboldtiana (Gymnopallax) cicatricosa* Thompson. Thompson 2008:755.

Type Locality.—4 km north-northeast of Rancho Blanco, ca. 31 km NNE of San Juanito, along highway from La Junta to Creel, Chihuahua, México (28°10.7' N, 107°23.5' W); 2180 m alt. Holotype UF 317169;

Distribution.—Known only from the type locality.

***Humboldtiana (Gymnopallax) ootamorum* Mejia, Naranjo-Garcia & Polaco 2009**

*Humboldtiana ootamorum* Mejia, Naranjo-Garcia & Polaco 2009; Nautilus 123:315–316; figs. 9–12 (shell), 15 (reproductive anatomy).

Type Locality.—Mesa el Campanero (= Mesa de Enmedio), Barrana El Salto (West side of Mesa), Sonora, México (26°2'20" N, 109°02'05" W); 2060 m alt. Holotype CNMO 1188.

Distribution.—SONORA: Known only from the immediate vicinity of the type locality.

***Humboldtiana (Gymnopallax) sylvania* Thompson & Mejia 2006.**

*Humboldtiana sylvania* Thompson & Mejia 2006; Nautilus 120:28–29; figs. 6–10 (shell), figs. 13–14 (reproductive anatomy).

*Humboldtiana (Gymnopallax) sylvania* Thompson & Mejia. Thompson 2008:755.

Type Locality.—Corareachi, 4.4 km north, 0.4 km west of Baqueachi, Chihuahua, México (27°28.45' N, 107°30.93' W); 2000 m alt. Holotype UF 353714.

Distribution.—Known only from the type locality.

**Subgenus *Humboldtiana* von Ihering 1892**

Distribution.—Southern Texas south to the states of México and Veracruz.

Taxonomy.—The subgenus contains 38 species and subspecies, with 31 species in México.

***Humboldtiana (Humboldtiana) balanites* Thompson 2006**

*Humboldtiana balanites* Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:68–72; figs. 12–16 (shell), figs. 17–18 (reproductive anatomy), fig. 40 (animal).

*Humboldtiana (Humboldtiana) balanites* Thompson. Thompson 2008:756.

Type Locality.—0.3 km north of San Ignacia Arareco, ca. 5 km south of Creel, Chihuahua, México; 2280 m alt. (27°43.9' N, 107°37.4' W). Holotype UF 317170.

Distribution.—CHIHUAHUA: known from the type locality and a near-by locality: 6.6 km E of San Ignacio Arareco, ca. 6 km south, 8 km east of Creel (27°43.9' N, 107°23.5' W), 2280 m alt. (UF 317171, UF 317172).

***Humboldtiana (Humboldtiana) bicincta* Thompson & Brewer 2000**

*Humboldtiana bicincta* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:59–62; figs. 19–24 (shell), 25–29 (reproductive anatomy).

*Humboldtiana (Humboldtiana) bicincta* Thompson & Brewer.

Thompson 2008:756.

Type Locality.—Sierra de Mascarón, Cuesta de Judas, 4 km south by road from Las Crucitas, Zacatecas, México 2500 m alt. (24°41.7' N, 101°39.0' W). Holotype UF 268291.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) buffoniana* (Pfeiffer 1845)**

*Helix buffoniana* Pfeiffer 1845; Zeit. für Malak. 2:152; Syst. Conch. Cab., 92:151; pl. 92, figs. 11–13.- Pfeiffer, in Philippi 1847; Abb. II:183; pl. 9, fig. 2.

*Helix humboldtiana* var. *buffoniana* Pfeiffer.- Fischer & Crosse 1872; Miss. Sci. Mex. I:240; pl. 11, fig. 2.- von Martens 1892; Biol. Cent. Amer.:148.

*Helix (Lysinoe) humboldtiana* Pfeiffer.- von Martens 1892; Biol. Cent. Amer.:147.

*Helix matronula* Uhde, in von Martens 1892; Biol. Cent. Amer.:148.

*Humboldtiana buffoniana* (Pfeiffer).- Pilsbry 1927; Proc. Acad. Nat. Sci., 79:170–173; text-fig. 2 (radula); pl. 2, figs. 2–4d (genitalia); pl. 12, fig. 5 (shell), pl. 13, fig. 1 (shell).- Pilsbry 1939, Land Moll. N. Amer. I:396; fig. 264 (genitalia), fig. 265c (jaws), fig. 266, 2–4d (genitalia).- Solem 1974; Veliger 16:362.

*Humboldtiana (Humboldtiana) buffoniana* (Pfeiffer). Thompson 2008:757.

Type Locality.—Rio Frio, northern slope of Volcán Ixtaccihuatl, on the road to Puebla, México; 2600 m alt.

Distribution.—MÉXICO, DISTRITO FEDERAL: at high altitudes in mountains forming the western border of the Distrito Federal and along the southeastern border of the State of México. ESTADO DE MÉXICO: Desierto de Los Leones (near and above La Venta and Guajimalpa or “Coaximalpán”, about 22 km SW of México City, ca. 3,000 m alt.; Santa Rosa, 2600 m alt.

***Humboldtiana (Humboldtiana) chrysogona* Pilsbry 1948**

*Humboldtiana chrysogona* Pilsbry 1948; Proc. Nat. Sci. Phila. 100:189–190; pl. 14, fig. c (shell), text-fig. 2b (genitalia).

*Humboldtiana (Humboldtiana) chrysogona* Pilsbry. Thompson 2008:757.

Type Locality.—Low limestone bluff at lower border of the village Aranzazu, Concepción del Oro, Zacatecas, México; 8,500 ft. alt. Holotype ANSP 164055.

Distribution.—ZACATECAS: known only from the immediate vicinity of the type locality.

***Humboldtiana (Humboldtiana) corruga* Thompson & Mejia 2006**

*Humboldtiana corruga* Thompson & Mejia 2006; Nautilus 120:25–28; figs. 1–5 (shell), figs. 11–12 (reproductive anatomy).

*Humboldtiana (Humboldtiana) corruga* Thompson & Mejia. Thompson 2008:757.

Type Locality.—0.8 km south and 0.3 km west of Norogachi, Chihuahua, México (27°15.9' N, 107°7.7' W). Holotype UF 358872.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) durangoensis* Solem 1954**

*Humboldtiana durangoensis* Solem 1954; Nautilus 68:4–6, pl. 1, figs. 2, 6 (shell).- Solem 1955; Nautilus 69:41–42.

*Humboldtiana (Humboldtiana) durangoensis* Solem. Thompson 2008:757.

Type Locality.—Pine woods at 8000 ft., Laguna del Progreso, 30 miles north northwest of Los Coyotes and 25 miles north northwest of El Salto, Durango, México. Holotype UMMZ 169746.

Distribution.—DURANGO: Sierra Madre Occidental from the drainage basin of the Rio Mezquital near Durango City, N to the Rio Mayo in SW Chihuahua, and eastern Sinaloa (Solem 1955). CHIHUAHUA: no locality given. DURANGO: 2.5 mi. W of San Luís; 8000 ft. alt.; El Boneto, SW of Santiago Papasquiaro, 8000 ft. alt. (24°55' N, 105°42' W); Tepehuanes (25°22' N, 105°42' W); on trail from Pueblo Nueva to Aseradero Metates, 9000 ft. alt. (23°24' N, 105°24' W). SINALOA: 13.4 mi. NE of Santa Lucia, 7100 ft. alt. (UF 130599).

***Humboldtiana (Humboldtiana) edesma* Thompson & Brewer 2000**

*Humboldtiana edesma* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:62–66; figs. 30–34; figs. 30–34 (shell), figs. 36–41 (reproductive anatomy).

*Humboldtiana (Humboldtiana) edesma* Thompson & Brewer. Thompson 2008:758.

Type Locality.—Sierra San Francisco de Desmontes, east slope of Cerro La Mota, Cueva Ahumada 5 km southwest of Los Fierros, Nuevo León, México; 1,200 m alt. (25°41.2' N, 100°42.9' W). Holotype UF 244468.

Distribution.—NUEVO LEÓN: known from the Sierra San Francisco de Desmontes. The sierra is a low, dry limestone range that is aligned NE-SW across the Nuevo León-Coahuila border east of Saltillo. The type locality is at the northeast end of the range. A population from the southwest end of the range is referred to this species. COAHUILA: Cuesta de Büey, 5 km NE of Mesón del Norte, 1450 m alt. (25°37.7' N, 100°55.2' W).

***Humboldtiana (Humboldtiana) eulaliae* Metcalf 1983**

*Humboldtiana eulaliae* Metcalf 1983b; Nautilus 98:145–147; figs. 1–4 (shell).- Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:97.

*Humboldtiana (Humboldtiana) eulaliae* Metcalf. Thompson 2008:758.

Type Locality.—A canyon on the west side of the Sierra Santa Eulalia 1.3 km east of El Pinolero and 7.5 km north and 1.5 km east of Penoles, Chihuahua, México; 1250 m alt. (27°12'00" N, 103°47'36" W). Holotype USNM 820297.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) fasciata* Burch & Thompson 1957**

*Humboldtiana fasciata* Burch & Thompson 1957; Occ. Pap. Mus. Zool., 590:2–5; pl. I, figs. A1–A4, D (shell); pl. II (genitalia); pl. III figs. a, c, d (genitalia); pl. V, figs. A, B, a, b, f (genitalia).

*Humboldtiana (Humboldtiana) fasciata* Burch & Thompson. Thompson 2008:759.

Type Locality.—Minerál del Monte, Hidalgo, México; 9,300 ft. alt. Holotype UMMZ 191473.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) fortis* Pilsbry 1940**

*Humboldtiana fortis* Pilsbry 1940; Nautilus 53:140.- Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:193–195; pl. 12, figs. 9–11 (shell); text-figs. 4 (genitalia).- Koestner & Schneider 1940; Nautilus 54:47–49.

*Humboldtiana (Humboldtiana) fortis* Pilsbry. Thompson 2008:759.

Type Locality.—Cerro Potosí, northwest of Galeana, Municipio de Galeana, Nuevo León, México; 10,000–12,000 ft. alt. Holotype ANSP 164045.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) globosa* Burch & Thompson 1957**

*Humboldtiana globosa* Burch & Thompson 1957; Occ. Pap. Mus. Zool., 590:5–6; pl. I, figs. C, F (shell); pl. III, figs. B, b, f (genitalia); pl. V, figs. C, c, f (genitalia).

*Humboldtiana (Humboldtiana) globosa* Burch & Thompson. Thompson 2008:759.

Type Locality.—Three miles east of Perote, La Molina, Veracruz, México; 8,000 ft. alt. Holotype UMMZ 191476.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) gradyi* Thompson & Brewer 2000**

*Humboldtiana gradyi* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:51–55; figs. 1–6 (shell), 7–9 (reproductive anatomy).

*Humboldtiana (Humboldtiana) gradyi* Thompson & Brewer. Thompson 2008:760.

Type Locality.—Area near the Dos de Diciembre Microwave Tower, 2 km southeast, 5 km east of Dos de Diciembre, Durango, México; 2080 m alt. (24°44.6' N, 103°32.7' W). Holotype UF 267738.

Distribution.—DURANGO; known only from the vicinity of the type locality.

***Humboldtiana (Humboldtiana) humboldtiana* (Pfeiffer 1847)**

*Helix humboldtiana* “Valenciennes” Pfeiffer 1847, Symb. Hist. 2:37; Zeit. f. Malak.:152; pl. 92, figs. 18 19 (shell).- Pfeiffer in Philippi 1847; Abb.: III, pl. 6, fig. 7 (shell).- Fischer 1899; Jour. de Conchyl. 47:297–304, figs. 1–3 (shell).

*Helix badiocincta* Weigmann, in Pfeiffer 1845; Symbolae Hist. 2:37. (A *nomum nudum*, but described as equivalent to *H. humboldtiana*.)

*Helix (Pomatia) humboldtiana* (Pfeiffer).- Fischer & Crosse 1872; Miss. Sci. Mex.:240; pl. 11, figs. 1, 1a (shell).

*Helix (Lysinoe) humboldtiana* var. *hegewishi* von Martens 1892; Biol. Cent. Amer.:147.

*Humboldtiana humboldtiana* (Pfeiffer). Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 80:173–176; pl. 12, fig. 4 (shell); pl. 13, fig. 3 (shell).

*Humboldtiana (Humboldtiana) humboldtiana* (Pfeiffer). Thompson 2008:760.

Type Locality.—Desierto de Leones, State of México. Pilsbry (1927:174) expressed doubt about this locality.

Distribution.—Unknown.

***Humboldtiana (Humboldtiana) inferior* Pilsbry 1948**

*Humboldtiana montezuma inferior* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:188; pl. 12, figs. 3–8 (shell), text-fig. 1b (genitalia).

*Humboldtiana inferior* Pilsbry. Thompson 2006; Nautilus 120:23.-Thompson 2008:760.

Type Locality.—About 3 km from Hacienda Encinal, near Pablillo, on the trail to Alamar, Municipio de Galeana, Nuevo León, México, 6,000 ft. alt. Holotype ANSP 164043.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) iversoni* Thompson 2006**

*Humboldtiana iversoni* Thompson 2006; Nautilus 120:21–24; figs. 1–4 (shell), figs. 5–6 (reproductive anatomy).

*Humboldtiana (Humboldtiana) iversoni* Thompson. Thompson 2008:761.

Type Locality.—Highway 68 at km post 116, Las Noria, Nuevo León, México (24°11.0' N, 99°53.0' W), 3 km south of Antejitos; 1800 m alt. Holotype UF 130588.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) latizona* Thompson & Brewer 2000**

*Humboldtiana latizona* Thompson and Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43; 66; figs. 42–47, 35 (shell).

*Humboldtiana (Humboldtiana) latizona* Thompson & Brewer. Thompson 2008:761.

Type Locality.—Sierra San Lorenzo, Mesitas Coloradas, 7.5 km east of Pedriceña 1850 m alt., Durango, México (25°04.4' N, 103°41.5' W). Holotype UF 271009.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) malenae* Metcalf 1983**

*Humboldtiana malenae* Metcalf 1983a; Nautilus 97:70–72; figs. 1–4.

*Humboldtiana (Humboldtiana) malenae* Metcalf. Thompson 2008:761.

Type Locality.—Boundary area between Municipios Ocampo and Muzquiz, on Coahuila State Highway 53, 6.2 km slightly north of east from Tres Caminos (village) above head of north branch of Cañada La Virgen, Chihuahua, México; 1625 m alt. (28°43'55" N, 102°30'39" W). Holotype USNM 784768.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) montezuma* Pilsbry 1940**

*Humboldtiana montezuma* Pilsbry 1940; Nautilus 53:140.-Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 105:186–188; pl. 12, figs. 1, 2 (shell); text-fig. 1a (genitalia).

*Humboldtiana (Humboldtiana) montezuma* Pilsbry. Thompson 2008:762.

Type Locality.—Summit of El Infiernillo, a mountain near Pablillo, Municipio de Galeana, Nuevo León, México; 10,000 ft. alt. Holotype ANSP 164062.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) nuevoleonis* Pilsbry 1927**

*Humboldtiana humboldtiana nuevoleonis* Pilsbry 1927; Proc. Acad.

Nat. Sci. Phila. 79:176–177; pl. 12, figs. 1–3 (shell), pl. 13, fig. 2 (shell).

*Humboldtiana nuevoleonis*.-Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:190–193; pl. 14, figs. 2a, b (shell), text-fig. 3 (genitalia).

*Lysinoe humboldtiana buffoniana* (Pfeiffer).-Pilsbry 1903; Proc. Acad. Nat. Sci. Phila. 55:762.

*Humboldtiana (Humboldtiana) nuevoleonis* Pilsbry. Thompson 2008:762.

Type Locality.—Diente, near Monterey, Nuevo León, México. Holotype ANSP 85596.

Distribution.—COAHUILA: San Lorenza Canyon, SE of Saltillo, 7200 ft. alt.; Carneros Pass, 8,300 ft. alt.; Sierra Guadalupe, La Cuchilla. NUEVO LEÓN: mountains around Monterrey; Alamar Canyon; 2–3 km from Alamar on trail to Pablillo. SAN LUÍS POTOSÍ: Catorce; Santana, 9700 ft. alt.

***Humboldtiana (Humboldtiana) pergranulosa* Solem 1955**

*Humboldtiana pergranulosa* Solem 1955; Nautilus 69:42–43; pl. 3, figs. 1–3 (shell).

*Humboldtiana (Humboldtiana) pergranulosa* Solem. Thompson 2008:762.

Type Locality.—San José Range of mountains in northeast Durango, México. Exact location unspecified. Restricted to near Jaralito (Solem 1974). Holotype ANSP 194820.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) pilsbryi* Solem 1954**

*Humboldtiana pilsbryi* Solem 1954; Nautilus 68:8–9; pl. 1, figs. 3, 4 (shell).

*Humboldtiana (Humboldtiana) pilsbryi* Solem. Thompson 2008:763.

Type Locality.—A humid pine-oak-madroño-yucca forest, two miles by road west of Ojitos Mine, about 4 miles west of Chihue, a few miles east of China [? Chinas, 23.8667 N, 99.4667 W], northwest of Ciudad Victoria, Tamaulipas, México; 8600 ft. Holotype UMMZ 181280.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) pinicola* Thompson & Brewer 2000**

*Humboldtiana pinicola* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:55–59; figs. 10–15 (shell), figs. 16–18 (reproductive anatomy).

*Humboldtiana (Humboldtiana) pinicola* Thompson & Brewer. Thompson 2008:763.

Type Locality.—Southeast side of Cerro Puerto El Pino, limestone outcrop in an oak-pine forest ca. 6 km by road southwest of Pinal de Amoles, Querétaro, México; 2650 m alt. (21°07.5' N, 99°38.2' W). Holotype UF 268441.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) potosiana* Pilsbry 1927**

*Pomatia humboldtiana* “Valenciennes”. W. G. Binney 1879; Bull. Mus. Comp. Zool. 5:336; pl. 2, figs. J (genitalia), k (radula).-W. G. Binney 1884; Ann. N. Y. Acad. Sci.:108; pl. 8, fig. A



(radula).

*Humboldtiana potosiana* Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:177–179; text-figs. 7a (genitalia), 7k (radula); pl. 12, fig. 6 (shell).

*Humboldtiana (Humboldtiana) potosiana* Pilsbry. Thompson 2008:673.

Type Locality.—Sierra de San Miguelito, south of Cd. San Luis Potosí, San Luis Potosí, México. Holotype ANSP 31836.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) queretaroana (Dall 1897)***

*Helix (Lysinoe) queretaroana* Dall 1897; Nautilus 11:73.

*Humboldtiana queretaroana* (Dall). Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:177.- Solem 1955; Nautilus 69:41; pl. 3, figs. 4–6 (shell).

*Humboldtiana (Humboldtiana) queretaroana* (Dall). Thompson 2008:764.

Type Locality.—Pinal de Amoles, Querétaro, México; 8,000–9,000 ft. Holotype USNM 134691.

Distribution.—QUERÉTARO: known only from the immediate vicinity of the type locality.

***Humboldtiana (Humboldtiana) riskindi Fullington & Zimmerman 1977***

*Humboldtiana riskindi* Fullington & Zimmerman 1977; Veliger 20:134–136; figs. 1–3 (shell), fig. 7 (genitalia).

*Humboldtiana (Humboldtiana) riskindi* Fullington & Zimmerman. Thompson 2008:764.

Type Locality.—Sierra de La Gloria, Cañon Oscuro Chiquillo, 17 km east of Castaños, Coahuila, México; 1300 m alt. (26°47'25" N, 101°17'45" W). Holotype Dallas Museum Natural History 5357.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) salviahispanica Mejía, Naranjo-García & Polaco 2009***

*Humboldtiana (Humboldtiana) salviahispanica* Mejía, Naranjo-García & Polaco 2009; Nautilus 123:313–314; figs. 1–4 (shell), 13 (reproductive anatomy).

Type Locality.—4.1 km south and 6.8 km west of Huichapan, Hiedalgo, México (20°20'15" N, 99°42'45" W), 2290 m alt. Holotype: Coleccion Malacologica de la Subdireccion de Laboratorios y Apoyo Academico del INAH, México (DP) 691.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) striata Burch & Thompson 1957***

*Humboldtiana striata* Burch & Thompson 1957; Occ. Pap. Mus. Zool. Univ. Mich. (590):6–8; pl. I, figs. B, E (shell); pl. IV (genitalia); pl. V, figs. D, d, e (genitalia).

*Humboldtiana (Humboldtiana) striata* Burch & Thompson. Thompson 2008:764.

Type Locality.—Paso Cortez, Distrito Federal, México; 10,500 ft. alt. Holotype UMMZ 192247.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) taylori Drake 1951***

*Humboldtiana taylori* Drake 1951; Rev. Soc. Malacol:93–96; pl. 13, figs. 1–4 (shell).- Metcalf & Riskind 1979; Veliger 15:179–181; figs. 1–5 (shell).

*Humboldtiana (Humboldtiana) taylori* Drake. Thompson 2008:765.

Type Locality.—From the surface of cultural deposits of archeological site C96, Cañon Media Luna, Fronteriza Range (Serranias del Burro), 16 miles south of Boquillas, northern Coahuila, México. Corrected by Metcalf and Riskind (1979) to a canyon on the west flank of the Sierra Maderas del Carmen, Coahuila, in the vicinity of 29°00' N, 102°36' W. Holotype USNM 596939.

Distribution.—COAHUILA: known only from the vicinity of the type locality: Sierra Madera del Carmen, Municipio de Villa Ocampo, ca. 2 km NNW of Loomis Peak on an eastern exposure; ca. 2500 m alt. (28°59'00" N, 102°33'00" W).

***Humboldtiana (Humboldtiana) tescola Thompson 1967***

*Humboldtiana tescola* Thompson 1967; Nautilus 81:22–27; text figs. A, B (genitalia), figs. 1–4 (shell).

*Humboldtiana (Humboldtiana) tescola* Thompson. Thompson 2008:765.

Type Locality.—Knoll 15.7 miles southwest of San Tiburcio, Zacatecas, México; 7600 ft. alt. Holotype UF 19752.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) thompsoni Mejía, Naranjo-García & Polaco 2009***

*Humboldtiana (Humboldtiana) thompsoni* Mejía, Naranjo-García & Polaco 2009; Nautilus 123:314–315; figs. 5–8 (shell), 134 (reproductive anatomy).

Type Locality.—Canon de Carretas, 11.1 km north and 4.4 km west of San Josecito, Nuevo León, México (24°04'11" N, 99°56'58" W) 1740 m alt. Holotype: Coleccion Malacologica de la Subdireccion de Laboratorios y Apoyo Academico del INAH, México (DP) 692.

Distribution.—Known only from the type locality.

***Humboldtiana (Humboldtiana) torrei Pilsbry 1935***

*Humboldtiana torrei* Pilsbry 1935; Proc. Acad. Nat. Sci. Phila. 87:1; 2; pl. 1, fig. 10 (shell).- Thompson 2006; Bull. Fla. Mus. Nat. Hist. 46:97; figs. 78–81.

*Humboldtiana (Humboldtiana) torrei* Pilsbry. Thompson 2008:765.

Type Locality.—San Antonio y Santa Rosalia [now Ciudad Camargo; 27°40' N, 105°10' W], near and south of Cd. Chihuahua, Chihuahua, México. Holotype ANSP 162325.

Distribution.—Known only from the type locality.

**Subgenus *Oreades* Thompson & Brewer 2000**

*Oreades* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:66.

Type Species.—*Humboldtiana porterae* Thompson & Brewer 2000.

Distribution.—Cañón de García, in southwestern Nuevo

León, México.

Taxonomy.—A single species is recognized.

***Humboldtiana (Oreades) porterae* Thompson & Brewer 2000**

*Humboldtiana porterae* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:68–71; figs. 48–51 (shell), 52–54 (reproductive anatomy).

*Humboldtiana (Oreades) porterae* Thompson & Brewer. Thompson 2008:766.

Type Locality.—Cañon de Garcia, 7 km northeast of Villa de Garcia, Nuevo León, México; 950 m alt. (25°50.5' N, 100°31.5' W). Holotype UF 39938.

Distribution.—Known only from the type locality.

**Subgenus *Polyomphala* Thompson & Brewer 2000**

*Polyomphala* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:71.

Type Species.—*Humboldtiana oreina* Thompson & Brewer 2000.

Distribution.—Sierra La Encantada, northwestern Coahuila, México.

Taxonomy.—Two species are recognized.

***Humboldtiana (Polyomphala) oreina* Thompson & Brewer 2000**

*Humboldtiana oreina* Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:71–75; figs. 55–59, 68 (shell), figs. 61–64 (reproductive anatomy).

*Humboldtiana (Polyomphala) oreina* Thompson & Brewer. Thompson 2008:767.

Type Locality.—Sierra La Encantada, La Ventana, Cañon de Boquilla, 27 km WNW of Hacienda La Babia, 91 km NW of Melchor Musquíz, Coahuila, México; 1150 m alt. (28°39.1' N, 102°19.5' W). Holotype UF 271518.

Distribution.—Known only from the type locality.

***Humboldtiana (Polyomphala) plana* Metcalf & Riskind 1976**

*Humboldtiana plana* Metcalf & Riskind 1976; Nautilus 90:99–100; figs. 1–3 (shell).

*Humboldtiana (Polyomphala) plana* Metcalf & Riskind. Thompson & Brewer 2000; Bull. Fla. Mus. Nat. Hist. 43:75–77; figs. 60, 65–67 (shell). Thompson 2008:767.

Type Locality.—Sierra de Santa Rosa near the summit of Rincón de Maria, in a sheltered mesic cleft with a northern exposure in a massive limestone cliff, Mcpo. de Muzquíz, Coahuila, México. Holotype Delaware Museum of Natural History 106681.

Distribution.—Known only from the type locality.

**Family HELMINTHOGLYPTIDAE Pilsbry 1939**  
**Subfamily HELMINTHOGLYPTINAE Pilsbry 1939**  
**Genus *Cahuillus* Roth 1996**

*Cahuillus* Roth 1996; Veliger 39:40.

Type Species.—*Sonorella walcottiana* Bartsch 1903.

Distribution.—Southern California and adjacent northwestern México.

Taxonomy.—Three species are recognized. Two occur in

México.

***Cahuillus greggi* (Miller 1967)**

*Sonorella greggi* Miller 1967; Nautilus 80:114–116; pl. 6, figs. A–F (shell); pl. 7, figs. A–F (genitalia).

*Cahuillus greggi* (Miller).- Roth 1996; Veliger 39:40.- Thompson 2008:768.

Type Locality.—Sierra Purica, Sonora, México, in igneous rock outcroppings in northeastern-facing ravine, on south bank of large canyon which runs easterly from saddle between the two highest peaks at the south end of the range (30°31' N, 109°45' W); 6300 ft. alt. Holotype ANSP 310363.

Distribution.—Known only from the type locality.

***Cahuillus mexicanus* (Pilsbry & Lowe 1934)**

*Microarionta rowelli mexicana* Pilsbry & Lowe 1934; Nautilus 48:67.- Pilsbry 1939; Land Moll. N. Amer. I:230.

*Cahuillus mexicanus* (Pilsbry & Lowe).- Roth 1996:40–41.- Thompson 2008:768.

Type Locality.—Sierra San Francisco, in a range of granite mountains just south of the trail to Punta Peñasco, 12 miles south of Sonoyta, Sonora, México. Holotype not cited.

Distribution.—Known only from the type locality.

**Genus *Eremarionta* Pilsbry 1913**

*Eremarionta* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:382.- Pilsbry 1939; Land Moll. N. Amer. I:226–227.- Bequaert & Miller 1973; Moll. Arid SW:106.- Roth 1996; Veliger 39:41.

Type Species.—*Micrarionta desertorum* Pilsbry & Ferriss 1908.

Distribution.—California and Arizona in low mountain ranges in the Mohave, Colorado and Yuma Deserts; northwestern Sonora and northeastern Baja California.

Taxonomy.—Numerous species and subspecies. Four species and one subspecies occur in México.

***Eremarionta ellipsostoma* (Pilsbry 1894)**

*Epiphragmophora ellipsostoma* Pilsbry 1894; Nautilus 8:81–82.- Pilsbry 1916; Nautilus 29:102; pl. 2, fig. 6 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:142.

*Eremarionta ellipsostoma* (Pilsbry). Thompson:2008:769.

Type Locality.—“San Juan del Norte, probably on the east coast of Lower California.” The original label accompanying the holotype bears the inscription “...SE Nicaragua”, which was later scratched over in pencil. Holotype ANSP 10745.

Distribution.—The geographic occurrence and the generic affinities of this species remain unknown.

***Eremarionta indioensis* (Yates 1890)**

*Helix (Arionta) carpenteri* variety *indioensis* Yates 1890; Nautilus 4:63.

*Sonorella indioensis* (Yates). Bartsch 1904; Smiths. Misc. Coll. 47:189; pl. 33, fig. 1 (shell).

*Micrarionta indioensis* (Yates). Berry 1922; Proc. Acad. Nat. Sci. Phila. 74:93.- Willett 1930; Nautilus 43:115.- Pilsbry 1939; Land Moll. N. Amer. I:246–247; fig. 125 c, f (shell).- Smith,

Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:138; fig. 35 (map).

*Eremarionta indioensis* (Yates). Thompson 2008:768.

Type Locality.—On the south side of the canyon among granite talus, Indio, Riverside County, California. Holotype ANSP 62145.

Distribution.—Riverside Co., California south to northwestern México. BAJA CALIFORNIA NORTE: Cañon de Guadalupe, Sierra Juárez; canyon ca. 16 km S of Cañon de Guadalupe; E side of Sierra Juárez ca. 0.25 mi. above fork of Cañon Carrizo.

#### ***Eremarionta rowelli rowelli* (Newcomb 1865)**

*Helix rowelli* Newcomb 1865; Proc. Calif. Acad. Sci. 3:181.

*Sonorella rowelli* (Newcomb). Bartsch 1904; Smiths. Misc. Coll. 47:119 (*in part*).

*Micrarionta rowelli* (Newcomb). Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:99; pl. 3, figs. 6–7.- Pilsbry 1939; Land Moll. N. Amer. I:228–230; figs. 14 (shell).

*Eremarionta rowelli rowelli* (Newcomb). Bequaert & Miller 1973; Moll. Arid SW:106–107.- Thompson 2008:769.

Type Locality.—Tinajas Atlas, in Tinajas Atlas Mountains, 26 miles south of Wellton and ca. 45 miles east of the Colorado River, Yuma Co., Arizona (32°18' N, 114°03' W); 1300 ft. alt. (Bequaert & Miller 1973). Holotype Newcomb Collection 27517, Cornell University.

Distribution.—Tinajas Atlas Mountains and the Sierra Pinta in Yuma County, Arizona and in adjacent México. SONORA: Sierra del Tuseral just south of the International Border, 50 mi. SE of Wellton; Sierra Tinajas Atlas, along Hwy. 2, 8.9 mi. W of El Puerto.

#### ***Eremarionta rowelli bechteli* (Emerson & Jacobson 1964)**

*Micrarionta (Eremarionta) rowelli bechteli* Emerson & Jacobson 1964; Trans. San Diego Soc. Nat. Hist. 16: Trans. San Diego Soc. Nat. Hist. 13:327–328; fig. 5 (shell).

*Eremarionta rowelli bechteli* (Emerson & Jacobson 1964).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47: Proc. Calif. Acad. Sci. 47:139; fig. 35 (map).- Thompson 2008:770.

Type Locality.—In rock slide, Isla San Esteben, Sonora, México. Holotype CAS 36377.

Distribution.—Known only from the type locality.

#### ***Eremarionta ultima* (Pilsbry 1916)**

*Sonorella ultima* Pilsbry 1916; Nautilus 29:101–102; pl. 2, figs. 5 (shell).

*Eremarionta ultima* (Pilsbry). Thompson 2008:770.

Type Locality.—Sinaloa, México. Holotype ANSP 58124.

Distribution.—SINALOA. Not known from a specific locality.

#### **Genus *Greggelix* Miller 1972**

*Greggelix* Miller 1972; Nautilus 85:128.

Type Species.—*Helix indigena* Mabilles 1895.

Distribution.—Endemic to Baja California Sur.

Taxonomy.—Three species are recognized.

#### ***Greggelix indigena* (Mabilles 1895)**

*Helix indigena* Mabilles 1895; Bull. Soc. Philomath. Paris., 8th ser., 7:64.

*Helix digueti* Mabilles 1895; Bull. Soc. Philomath. Paris., 8th ser., 7:65.

*Greggelix indigena* (Mabilles).- Miller 1972; Nautilus 85:128–135; pl. 1, figs. A-F (shell); text-fig. 1 (genitalia).- Miller 1981; Proc. Biol. Soc. Wash. 94:737; text-fig. 2B (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:140; text-fig. 39 (map).- Thompson 2008:771.

*Sonorella loheii lioderma* Pilsbry 1904; Nautilus 18:59.- Pilsbry 1916; Nautilus 29:98–99; pl. 2, fig. 7.

Type Localities.—Above 800 m on peaks of the Sierra, throughout most of the central part of the Peninsula of California. *Helix digueti*: unspecified. *Sonorella loheii lioderma*: near Muleje [Mulegég], Baja California Sur, México; holotype ANSP 58107.

Distribution.—BAJA CALIFORNIA SUR: San José Comondú; 19 km SW San Miguel Comondú; Mesa de San Alejo, NW of San Javier, Sierra de La Gigante, 800 m alt.; Arroyo de La Purísima, 4.8 km E of San Isidro, along road to Caripolé; near Mulegég.

#### ***Greggelix loehrii* (Gabb 1867)**

*Helix lohrii* Gabb 1867; Amer. Jour. Conch. 3:236; pl. 16, fig. 2 (shell).

*Sonorella lohrii* (Gabb). Pilsbry 1900; Proc. Acad. Nat. Sci. Phila.:561.- Bartsch 1904; Proc. U. S. Nat. Mus. 47:197; pl. 32, fig. 1.- Pilsbry 1916; Nautilus 29:98; pl. 2, fig. 8.

*Sonorella loehrii* (Gabb). Miller 1972; Nautilus 85:128–129.

*Greggelix loehrii* (Gabb). Miller 1981; Proc. Biol. Soc. Wash. 94:736–737; figs. 2C (shell), fig. 4 (genitalia).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:140–141; text-fig. 39 (map).- Thompson 2008:771.

*Helix steganella* Mabilles 1895; Bull. Soc. Philomath. Paris., 8th ser., 7:64.

*Helix invecta* Mabilles 1895; Bull. Soc. Philomath. Paris., 8th ser., 7:65.

Type Locality.—*Helix lohrii*: higher table lands from near Moleje [Mulegég], Baja California Sur, México; holotype ANSP 58106. *Helix steganella*: above 800 m on peaks of the Sierra, throughout most of the central part of the Peninsula of California. *Helix invecta*: Lower California.

Distribution.—BAJA CALIFORNIA SUR: known only from the immediate vicinity of the type locality and San Javier.

#### ***Greggelix punctata* Miller 1981**

*Greggelix punctata* Miller 1981; Proc. Biol. Soc. Wash. 94:732–737; text-figs. 1 (shell), 3 (genitalia).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:141; text-fig. 39 (map).- Thompson 2008:772.

Type Locality.—Gulf slope of Sierra de la Gigante, southwest of Muleje [Mulegég], 2.9 miles south of El Potrero, along trail from Pie de La Cueta to Guajademi, in rock slide about 1.5 miles from Pie de La Cueta, Baja California Sur,



México; ca. 2450 m alt. Holotype USNM 792140.

Distribution.—Known only from the type locality.

### Genus *Helminthoglypta* Ancey 1887

*Helminthoglypta* Ancey 1887; Conchologist's Exchange, 1:76.- Pilsbry 1895; Man. Conch. 9:193 (in part).- Pilsbry 1939; Land Moll. N. Amer. 1:63–69.- Roth 1996; Veliger 39:32.

Type Species.—*Helix tudiculata* Binney 1843.

Distribution.—Southwest Oregon south to Baja California Norte.

Taxonomy.—Three subgenera are recognized (Roth 1996). Two occur in México.

### Subgenus *Helminthoglypta* Ancey 1887

Distribution.—Southwest Oregon south to Baja California Norte.

Taxonomy.—Numerous species and subspecies. One occurs in México.

### *Helminthoglypta (Helminthoglypta) tudiculata* (Binney 1843)

*Helix tudiculata* Binney 1843; Boston Jour. Nat. Hist. 4:360; pl. 20 (shell).

*Helminthoglypta tudiculata* (Binney). Berry 1928; Jour. Ento. Zool. Pomona Coll. 20:79.- Ingles 1935; Proc. Malac. Soc. Lond., 21:268; pl. 29, figs. 2–3 (genitalia).- Pilsbry 1939; Land Moll. N. Amer. 1:70–72; figs. 33a (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:133.- Thompson 2008:773.

*Helix tudiculata* var. *binneyi* Hemphill 1890, in Binney; Terr. Moll. N. A., 3rd suppl.:219.

Type Localities.—*Helix tudiculata*: San Diego, San Diego County, California; types destroyed by fire. *Helix tudiculata* var. *binneyi*: mountains of San Diego County, California; holotype CAS 2481.

Distribution.—Los Angeles and San Bernardino Counties, California, and adjacent México. BAJA CALIFORNIA NORTE: near Bajia de Todos Santos; Cañada Macho Güero; Punta Banda; San Antonia Canyon, ca. 8 km N of Johnson Ranch; Johnson Ranch.

### Subgenus *Charodotes* Pilsbry 1939

*Charodotes* Pilsbry 1939; Land Moll. N. Amer. 1:170–171.- Roth and Hochberg 1992; Veliger 35:339–341.- Roth 1996; Veliger 39:32.

Type Species.—*Helix traskii* Newcomb 1861.

Distribution.—Southern California south to Baja California Norte.

Taxonomy.—About 16 species are recognized. Five species and three subspecies occur in México.

### *Helminthoglypta (Charodotes) coelata* (Bartsch 1916)

*Epiphragmophora traskii coelata* Bartsch 1916; Proc. U. S. Nat. Mus. 51:617; pl. 115, figs. 7–9 (shell); pl. 117, fig. 10 (shell).

*Helminthoglypta traskii coelata* (Bartsch). Pilsbry 1939; Land Moll. N. Amer. 1:175; figs. 85h (shell).

*Helminthoglypta (Charodotes) coelata* (Bartsch). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:133.-

Thompson 2008:774.

Type Locality.—The Mesa, back of Pacific Beach, San Diego County, California. Holotype USNM 124747.

Distribution.—Along the coast of San Diego County California south to extreme northwestern México. BAJA CALIFORNIA NORTE: 11 km S of Tijuana.

### *Helminthoglypta (Charodotes) hannai hannai* Pilsbry 1927

*Helminthoglypta hannai* Pilsbry 1927; Proc. Calif. Acad. Sci. 16:165–167; pl. 7, figs. 8–8b (shell); text-fig. 2 (genitalia).

*Helminthoglypta (Charodotes) hannai hannai* Pilsbry. Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:133.- Thompson 2008:774.

Type Locality.—Pine Ridge, Isla Guadalupe, Baja California Norte, México; 900 m alt. Holotype CAS 2561.

Distribution.—BAJA CALIFORNIA NORTE: known only from Isla Guadalupe.

### *Helminthoglypta (Charodotes) hannai diodon* Pilsbry 1927

*Helminthoglypta hannai diodon* Pilsbry 1927; Proc. Calif. Acad. Sci. 16:167–168; pl. 10, figs. 23–26 (shell).

*Helminthoglypta (Charodotes) hannai diodon* Pilsbry. Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:133.- Thompson 2008:774.

Type Locality.—Northeast Anchorage, Isla Guadalupe, Baja California Norte, México. Holotype CAS 2562.

Distribution.—BAJA CALIFORNIA NORTE: known only from the immediate vicinity of the type locality.

### *Helminthoglypta (Charodotes) misiona* Chase 1937

*Helminthoglypta traskii misiona* Chase 1937; Nautilus 51:60; pl. 4, fig. 2 (shell).- Pilsbry, Land Moll. N. Amer. 1:174–175; figs. 47 (shell).

*Helminthoglypta (Charodotes) misiona* Chase. Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:134.- Thompson 2008:775.

Type Locality.—A rockslide near the San Diego-Ensanada highway about 40 miles [64 km] south of Tijuana, Baja California Norte, México. Holotype in LACM.

Distribution.—Known only from the vicinity of the type locality. BAJA CALIFORNIA NORTE: rockslide on S side of valley, seaward side of bridge, La Misión Valley, along Tijuana-Ensanada highway; El Progreso, Sandoval Ranch area, ca. 48 km S of Tijuana.

### *Helminthoglypta (Charodotes) reederi* Miller 1981

*Helminthoglypta reederi* Miller 1981; Veliger 24:46–48; fig. 1 (genitalia), figs. 2–4 (shell).

*Helminthoglypta (Charodotes) reederi* Miller. Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:134; text-fig. 35 (map).- Thompson 2008:775.

Type Locality.—Sierra San Pedro Mártir, in rock outcrops in a small canyon which crosses the road to the astronomical observatory, at a distance of about 2.5 km below the observatory housing area, Baja California Norte, México; 2575 m alt. Holotype CAS 19732.

Distribution.—Known only from the type locality.

***Helminthoglypta (Charodotes) traskii coronadoensis*  
(Bartsch 1916)**

*Epiphragmophora traskii coronadoensis* Bartsch 1916; Proc. Calif. Acad. Sci. 51:617; pl. 115, figs. 10–12 (shell); pl. 117, fig. 9 (shell).

*Helminthoglypta traskii coronadoensis* (Bartsch). Pilsbry 1939; Land Moll. N. Amer. 1:176–177; figs. 85g (shell).

*Helminthoglypta (Charodotes) traskii coronadoensis* (Bartsch). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:134; text-fig. 35 (shell).

*Epiphragmophora traskii chrysotherma* Berry 1920; Proc. Calif. Acad. Sci. 10:55; pl. 4, figs. 2a–2c (shell).

*Helminthoglypta (Charodotes) traskii coronadoensis* (Bartsch). Thompson 2008:776.

Type Localities.—*Epiphragmophora traskii coronadoensis*: Isla Los Coronados, Baja California Norte, México; holotype in the USNM. *Epiphragmophora traskii chrysotherma*: Isla Coronado Sur, among loose talus on higher portion of south end; holotype in the CAS.

Distribution.—BAJA CALIFORNIA NORTE: known only from Isla Los Coronados, and Isla Coronado Sur.

**Genus *Herpeteros* Berry 1947**

*Herpeteros*, Berry 1947; Leaflets Malac., 1:11–12.- Miller 1972; Nautilus 85:134. Roth 1996; Veliger 39:33.

Type Species.—*Micrarionta (Eremarionta) inglesiana* Berry 1928.

Distribution.—Baja California Norte and Baja California Sur.

Taxonomy.—Five species are placed in the genus. Only two are known anatomically. The generic assignment of the other three is provisional.

***Herpeteros chacei* (Willett 1940)**

*Micrarionta (Eremarionta) chacei* Willett 1940; Bull. Calif. Acad. Sci. 39:81–82; pl. 12.

*Sonorelix (Herpeteros) chacei* (Willett). Smith, Miller, Christensen & Roth; Proc. Calif. Acad. Sci. 47:139; text-fig. 38 (map).

*Herpeteros chacei* (Willett). Thompson 2008:776.

Type Locality.—Lower end of El Tigre Canyon, about 9 miles [14.4 km] north of Ensanada, Baja California Norte, México.

Distribution.—Known only from the type locality.

***Herpeteros evermanni* (Pilsbry 1927)**

*Micrarionta evermanni* Pilsbry 1927; Proc. Calif. Acad. Sci. 4th ser., 14:182–183; pl. 12, figs. 4–6 (shell).- Bequaert & Miller 1973; Moll. Arid SW:110.

*Sonorelix (Herpeteros) evermanni* (Pilsbry). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47: Proc. Calif. Acad. Sci. 47:140; text-fig. 38 (map).

*Herpeteros evermanni* (Pilsbry). Thompson 2008:777.

Type Locality.—Turtle Bay [Bajia Tortugas], Baja California Norte, México. Holotype CAS 2618.

Distribution.—Known only from the type locality.

***Herpeteros inglesiana* (Berry 1928)**

*Micrarionta (Eremarionta) inglesiana* Berry 1928; Jour. Ent. Zool.

Pomona Coll. 20:76–79; pl. 2, figs. 10–18.

*Sonorelix (Herpeteros) inglesiana* (Berry). Berry 1947; Leaflets Malacol., 1:11–12.- Miller 1972; Nautilus 85:134.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:139; text-fig. 38 (map).

*Herpeteros inglesiana* (Berry). Thompson 2008:777.

Type Locality.—On moist north slope of the Red Rock [Peña Colorado] under rocks, about 3 miles [4.8 km] from the sea and 0.5 miles [0.8 km] from Hamilton Ranch, west of Santo Domingo, Baja California Norte, México. Holotype in the SBMNH.

Distribution.—BAJA CALIFORNIA NORTE: known only from the vicinity of the type locality.

***Herpeteros merrilli* (Bartsch 1904)**

*Sonorella merrilli* Bartsch 1904; Smiths. Misc. Coll. 47:192–193; pl. 32, figs. 5 (shell).- Pilsbry 1916; Nautilus 29:102.

*Sonorelix (Herpeteros) merrilli* (Bartsch). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:140; text-fig. 38 (map).

*Herpeteros merrilli* (Bartsch). Thompson 2008:778.

Type Locality.—Below San Quintin, Baja California Norte, México. Holotype USNM 125260.

Distribution.—Known only from the type locality.

***Herpeteros peninsularis* (Pilsbry 1916)**

*Sonorella peninsularis* Pilsbry 1916; Nautilus 29:100–101; pl. 2, fig. 4 (shell).

*Micrarionta peninsularis* (Pilsbry). Hanna 1927; Proc. Calif. Acad. Sci. 12:503–504; pl. 8, figs. 14–15; pl. 11, fig. 1 (shell).

*Sonorelix (Herpeteros) peninsularis* (Pilsbry). Miller 1972; Nautilus 85:134; text-fig. 3 (genitalia).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:140; text-fig. 38 (map).

*Herpeteros peninsularis* (Pilsbry). Thompson 2008:778.

Type Locality.—“Trinidad”, on the west coast near [60 km south of] San Borgia [Borja], Baja California Norte, México (Hanna 1927:503). Holotype ANSP 58127.

Distribution.—Widely distributed in the southern half of BAJA CALIFORNIA NORTE, and extreme northern BAJA CALIFORNIA SUR.

**Genus *Martirelix* Miller 1982**

*Martirelix* Miller 1982; Veliger 24:345.- Roth 1996; Veliger 39:33.

Type Species.—*Greggeliix babrakzaii* Miller 1982.

Distribution.—Known only from Baja California Norte.

Taxonomy.—Two species are recognized.

***Martirelix babrakzaii* (Miller 1982)**

*Greggeliix babrakzaii* Miller 1982; Veliger 24:345–348; figs. 1–2 (genitalia), figs. 3–5 (shell).- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:141; text-fig. 39 (map).- Thompson 2008:779.

Type Locality.—Cañon Diablito, about 1 km up the canyon from its mouth, east slope of the Sierra San Pedro Martir, Baja California Norte, México; 700 m alt. (31°05.1' N, 115°23.5' W). Holotype CAS 025103.

Distribution.—Known only from the type locality.

***Martirelix huertai* (Miller & Roth 1990)**

*Greggeliix huertai* Miller & Roth 1990; Proc. Calif. Acad. Sci.

47:102–104; figs. 5–7 (shell), text-figs. 8 (genitalia), 39 (map).- Thompson 2008:779.

Type Locality.—Cerro de La Mina de San José, in rock piles on north side of entrance to the mine; Baja California Norte, México; 1300 m alt. (28°42.5' N, 113°34.7' W). Holotype SBMNH 35113.

Distribution.—Known only from the type locality.

### Genus *Micrarionta* Ancey 1880

*Micrarionta* Ancey 1880; Le Naturaliste, 1:334.- Pilsbry 1939; Land Moll. N. Amer. I:201–204.- Pearce 1990; Malac. Rev. 23:1–37.

Type Species.—*Helix facta* Newcomb 1864.

Distribution.—Islands off southern California; Isla Guadalupe, Baja California Norte, México.

Taxonomy.—Eleven species are recognized. One occurs in México.

### *Micrarionta guadalupiana* (Dall 1898)

*Epiphragmophora* (*Micrarionata*) *guadalupiana* Dall, in Pilsbry & Vanatta 1898; Proc. Acad. Nat. Sci. Phila.:68–70; pl. 1, fig. 11 (genitalia).- Dall 1900; Proc. Acad. Nat. Sci. Phila.:101–102; pl. 8, figs. 14–15.

*Micrarionta guadalupiana* (Dall). Pilsbry 1927; Proc. Calif. Acad. Sci. 17:163–165; pl. 8, figs. 1–1a, 3–3a (genitalia), 3b (jaw); text-fig. 1 (shell). (Name amended to *guadalupiana*.) Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:134.- Pearce 1990; Malac. Rev. 23:7.- Thompson 2008:780.

Type Locality.—Isla Guadalupe, Baja California Norte, México. Holotype USNM 129999.

Distribution.—BAJA CALIFORNIA NORTE: confined to Isla Guadalupe.

### Genus *Xerarionta* Pilsbry 1913

*Xerarionta* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:382.- Pilsbry 1939; Land Moll. N. Amer. I:214.- Miller 1981; Veliger 24:46.

Type Species.—*Arionta veitchi* Tryon 1866 (= *Helix canescens* Adams and Reeve 1848).

Distribution.—Southwestern California south to Baja California Sur, México.

Taxonomy.—Two subgenera are recognized (Roth 1996:32).

### Subgenus *Xerarionta* Pilsbry 1913

Type Species.—*Arionta veachi* Newcomb.

Distribution.—Southwestern California south to Baja California Sur, México.

Taxonomy.—Seven species and four subspecies. Three species and three subspecies occur in México.

### *Xerarionta* (*Xerarionta*) *areolata* (Pfeiffer 1845)

*Helix areolata* “Sowerby” Pfeiffer 1845; Zeitschr. für Malak., 2:145.- Fischer & Crosse 1872; Miss. Sci. Mex. I:262; pl. 11, fig. 4 (shell).

*Epiphragmophora* (*Micrarionta*) *areolata* (Sowerby). Pilsbry 1898; Proc. Acad. Nat. Sci. Phila.:69, 70; pl. 1, figs. 5–6 (genitalia).

*Epiphragmophora areolata* (Sowerby). Dall 1900; Proc. Acad. Nat. Sci. Phila.:100.

*Micrarionta areolata* (“Sowerby” Pfeiffer). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:390–391; pl. 16, figs. 25–33 (shell); text-figs. 2a-d (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. 4<sup>th</sup> ser., 16:180–182; pl. 6, fig. 10 (pallial organs); pl. 9, figs. 1–1b (genitalia); pl. 11, figs. 1–5 (shell). - Miller 1972; Nautilus 85:134; pl. 2, fig. 4 (genitalia).

*Xerarionta areolata* (Pfeiffer 1845). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:136; fig. 36 (map).

*Helix areolata* var. *albida* Hemphill 1890; Cat. N. A. shells. (*Nomum nudum*)

*Helix areolata* var. *examinata* Cooper 1892; Proc. Calif. Acad. Sci. 3:216; pl. 14, fig. 7.

*Micrarionta areolata examinata* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:392.

*Micrarionta areolata* var. *arida* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:391; pl. 16, figs. 39–41 (shell).- H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:248.

*Micrarionta areolata* var. *scammoni* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:392; pl. 16, figs. 34–36.- H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 114:249.

*Micrarionta aspersa* var. *aspersa* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:392; pl. 16, figs. 37–38 (shell).- H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:248.

*Xerarionta* (*Xerarionta*) *areolata* (Pfeiffer). Thompson 2008:780.

Type Localities.—*Helix areolata*: California; restricted to Magdalena Bay, Baja California Sur (Pilsbry 1913:319). *Helix areolata* var. *examinata*: Isla Espíritu Santo, Baja California Sur, México. *Micrarionta areolata* var. *arida*: Magdalena Bay, Baja California Sur, México; lectotype ANSP 76208a (H. B. Baker 1963:249). *Micrarionta areolata* var. *scammoni*: Magdalena Bay, Baja California Sur, México; lectotype ANSP 10302a (H. B. Baker 1963:249). *Micrarionta aspersa* var. *aspersa*: Magdalena Bay, Baja California Sur, México; lectotype ANSP 10265a (H. B. Baker 1963:249).

Distribution.—BAJA CALIFORNIA SUR: Smith et al. (1990:136) list numerous localities for extant populations along the Pacific Coast. Known as a fossil from the central and the eastern regions.

### *Xerarionta* (*Xerarionta*) *levis levis* (Pfeiffer 1845)

*Helix levis* Pfeiffer 1845; Zeitschr. f. Malak., 2:152. Syst. Conch. Cab., *Helix*:249; pl. 36, fig. 17 (type).

*Epiphragmophora levis* (Pfeiffer). Dall 1900; Proc. Acad. Nat. Sci. Phila.:100.

*Micrarionta levis* (Pfeiffer). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:387–389; pl. 16, figs. 42–45, 48–52 (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. 4<sup>th</sup> ser., 16:179–180.

*Xerarionta levis levis* (Pfeiffer). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:136–138; text-fig. 37 (map).

*Xerarionta* (*Xerarionta*) *levis levis* (Pfeiffer). Thompson 2008:782.

Type Locality.—California; restricted to Puerto San Bartolomé, Baja California Norte (Pilsbry 1919:288).

Distribution.—BAJA CALIFORNIA NORTE; known from numerous localities along the Pacific Coast.

### *Xerarionta* (*Xerarionta*) *levis canescens* (Adams & Reeve 1848)

*Helix canescens* Adams & Reeve 1848; Voy. Samarang:62; pl. 16, fig. 10 (shell).



*Micrarionta veatchii canescens* (Adams & Reeve). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:386–387; text-fig. 1 (shell).

*Micrarionta canescens* (Adams & Reeve). Pilsbry 1927; Proc. Calif. Acad. Sci. 16:178; pl. 11, figs. 6–10 (shell).

*Xerarionta levis canescens* (Adams & Reeve). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:138; fig. 37 (map).

*Helix veitchii* ‘Newcomb’ Tryon 1866; Amer. Jour. Conch. 2:316; pl. 22, fig. 19 (shell).- Tryon 1867; Amer. Jour. Conch. 3:162.- Stearns 1867; Proc. Calif. Acad. Sci. 3:328.

*Epiphragmophora (Micrarionta) veitchii* (Newcomb). Pilsbry & Vanatta 1898; Proc. Acad. Nat. Sci. Phila.:69; pl. 1, figs. 2–3 (genitalia).

*Micrarionta veatchii* (‘Newc.’ Tryon). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:384–386; pl. 15, figs. 1–16 (shell).

*Micrarionta canescens veatchii* (‘Newc.’ Tryon). Pilsbry 1927; Proc. Calif. Acad. Sci. 4th ser., 16:178–179; pl. 11, figs. 11–15 (shell).

*Helix areolata* var. *cedroensis* Hemphill 1890; Cat. N. A. shells. (A *nomem nudum*.)

*Epiphragmophora leucanthea* Dall 1900; Proc. Acad. Nat. Sci. Phila.:99; pl. 8, figs. 18, 20 (shell).

*Micrarionta levis globosa* Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:389; pl. 16, figs. 46–47 (shell).- H. B. Baker 1963; Proc. Acad. Nat. Sci. Phila. 115:248.

*Xerarionta (Xerarionta) levis canescens* (Adams & Reeve). Thompson 2008:782.

Type Localities.—*Helix canescens*: “Africa”. *Helix veitchii*: “Cerros” Island, Baja California Norte, México. *Epiphragmophora leucanthea*: east side of “Cerros” Island, Baja California Norte, México; syntypes USNM 107627. *Micrarionta levis globosa*: Isla Cedros, Baja California Norte, México; lectotype ANSP 10304 (H. B. Baker 1963:248).

Distribution.—BAJA CALIFORNIA NORTE: numerous localities on Isla Cedros. BAJA CALIFORNIA SUR: Isla Navidad.

#### ***Xerarionta (Xerarionta) levis crassula* (Dall 1900)**

*Epiphragmophora crassula* Dall 1900; Proc. Acad. Nat. Sci. Phila.:100–101; pl. 8, fig. 3 (shell).

*Micrarionta levis crassula* (Dall). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:389; pl. 16, figs. 49, 50 (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. 4th ser., 16:180; pl. 10, figs. 17–22.

*Xerarionta levis crassula* (Dall). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:138; text-fig. 37 (map).

*Xerarionta (Xerarionta) levis crassula* (Dall). Thompson 2008:783.

Type Locality.—Isla Navidad, Baja California Sur, México. Holotype in the USNM.

Distribution.—BAJA CALIFORNIA SUR: living colonies are known only from Isla Navidad; sub-fossil on Isla San Geronimo.

#### ***Xerarionta (Xerarionta) pandorae* (Forbes 1850)**

*Helix pandorae* Forbes 1850; Proc. Zool. Soc. Lond. 18:55; pl. 9, figs. 3–3b (shell).

*Epiphragmophora pandorae* (Forbes). Dall 1900; Proc. Acad. Nat. Sci. Phila.:101.

*Micrarionta pandorae* (Forbes). Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:382–384; pl. 15, figs. 17–23 (shell).- Pilsbry 1927; Proc.

Calif. Acad. Sci. 16:179; pl. 10, figs. 1–16.

*Xerarionta pandorae* (Forbes). Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:138; text-fig. 37 (map).

*Helix demascensis* Gould 1856; Proc. Boston Soc. Nat. Hist. 6:11.- Johnson 1964; Bull. U. S. Nat. Mus. 239:65; pl. 36, fig. 2 (shell).

*Epiphragmophora (Micrarionta) pandorae bonitosensis* Pilsbry 1898; Proc. Acad. Nat. Sci. Phila.:70; pl. 1, figs. 4–5 (genitalia).- Pilsbry 1913; Proc. Acad. Nat. Sci. Phila.:384; pl. 15, fig. 17.

*Xerarionta (Xerarionta) pandorae* (Forbes), Thompson 2008:783.

Type Locality.—*Helix pandorae*: unknown. *Helix demascensis*: desert region east of California; lectotype Cornell Univ. Paleo. Coll. 27244. *Epiphragmophora (Micrarionta) pandorae bonitosensis*: Las Bonitos Island, off Lower California; holotype ANSP 66092a.

Distribution.—BAJA CALIFORNIA NORTE: Isla San Benito.

#### **Subgenus *Plesarionta* Pilsbry 1939**

*Plesarionta* Pilsbry 1939; Land Moll. N. Amer. I:212.- Miller 1981; Veliger 24:46.- Roth 1996; Veliger 39:32.

Type Species.—*Helix stearnsiana* Gabb 1867.

Distribution.—Pacific coastal zone of Baja California Norte and southern California.

Taxonomy.—Two species are recognized.

#### ***Xerarionta (Plesarionta) orcutti* (Dall 1900)**

*Epiphragmophora orcutti* Dall 1900; Proc. Acad. Nat. Sci. Phila.:104–105; pl. 8, fig. 19 (shell).

*Epiphragmophora traski tularensis* ‘Hemphill’ Pilsbry 1895; Nautilus 9:82–83. (*A nomum nudum*, not *Arionta tudiculata tularensis* Hemphill 1892.)

*Epiphragmophora traski tularica* Bartsch 1916; Proc. U. S. Nat. Mus. 51:615; pl. 116, figs. 1–3.

*Plesarionta orcutti* (Dall). Roth 1982; Bull. South. Calif. Acad. Sci. 81:101–105; figs. 1–6.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci.; 47:134–135; fig. 36 (map).

*Xerarionta (Plesarionta) orcutti* (Dall). Thompson 2008:784.

Type Locality.—Rosario Mesas, Baja California Norte, México. Holotype in the USNM.

Distribution.—BAJA CALIFORNIA NORTE: mesa about 2.4 km N of El Rosario; El Rosario, 30 m alt.

#### ***Xerarionta (Plesarionta) stearnsiana* (Gabb 1868)**

*Helix stearnsiana* Gabb 1867; Amer. Jour. Conch. 3:235; pl. 16, fig. 1 (shell).- Binney 1969; Land & Fr. W. Sh. N. Amer., 1:177; fig. 310 (shell).- Fischer & Crosse 1872; Miss. Sci. Mex. 1:248; pl. 11, figs. 5–5a (shell).

*Epiphragmophora (Micrarionta) stearnsiana* (Gabb). Pilsbry 1898; Proc. Acad. Nat. Sci. Phila.:70; pl. 1, figs. 8–10 (genitalia).

*Micrarionta stearnsiana* (Gabb). Hanna 1925; Proc. Calif. Acad. Sci. 14:247.- Berry 1928; Jour. Entom. Zool. Pomona Coll. 20:75–76; pl. 1, figs. 1–9 (shell).- Pilsbry 1927; Proc. Calif. Acad. Sci. 16:178.- Pilsbry 1939; Land Moll. N. Amer. I:212–213; figs. 107a–f (shell), 102A (genitalia).

*Plesarionta stearnsiana* (Gabb). Smith, Miller, Christensen & Roth 1990; Calif. Acad. Sci. 47:135–136; fig. 36 (map).

*Xerarionta (Plesarionta) stearnsiana* (Gabb). Thompson 2008:785.

Type Locality.—San Tomás to a little beyond [El]

Rosario, Baja California Norte, México. Lectotype ANSP 10831 (Pilsbry 1939).

Distribution.—San Diego Co., California south to Baja California Norte. BAJA CALIFORNIA NORTE: Numerous localities along Pacific Coast south to El Rosario (Smith, Miller, Christensen & Roth 1990); La Zonja, Sierra San Pedro Martir.

### Subfamily SONORELLINAE Pilsbry 1939

#### Genus *Sonorella* Pilsbry 1900

*Sonorella* Pilsbry 1900; Proc. Acad. Nat. Sci. Phila.:556.- Pilsbry 1939; Land Moll. N. Amer. I:267–273.- Bequaert & Miller 1973:110–112.

*Masculus* Pilsbry 1939; Land Moll. N. Amer. I:377.

*Sonoranax* Pilsbry 1939; Land Moll. N. Amer. I:391.

Type Species.—*Sonorella*: *Epiphragmophora hachitana* Dall 1895. *Masculus*: *Sonorella viridis* Pilsbry 1905. *Sonoranax*: *Sonorella dalli* Bartsch 1904).

Distribution.—Arid southwestern United States in Arizona, New Mexico and Texas south to Chihuahua and Sonora, México.

Taxonomy.—Two subgenera are recognized, *Sonorella s. s.* and *Sonoranax* (Roth 1996:32). Only the former occurs in México. Twenty species and one subspecies are reported from México.

#### *Sonorella (Sonorella) burgessi* Naranjo-Garcia 1988

*Sonorella burgessi* Naranjo-Garcia 1988; Veliger 31:80–82; fig. 1 (shell), fig. 2 (genitalia).

*Sonorella (Sonorella) burgessi* Naranjo-Garcia. Thompson 2008:786.

Type Locality.—Sierra el Viejo, at base of northeast facing limestone cliff on ridge southwest of canyon junction where road from west turns north, ca. 7 km east of El Plomito, Sonora, México; 640 m alt. (30°19' N 112°20' W). Holotype SBMNH 34933.

Distribution.—Known only from the type locality.

#### *Sonorella (Sonorella) cananea* Naranjo-Garcia 1988

*Sonorella cananea* Naranjo-Garcia 1988; S. W. Nat., 33:81–84; figs. 1 (shell), 2 (genitalia).

*Sonorella (Sonorella) cananea* Naranjo-Garcia. Thompson 2008:786.

Type Locality.—Sierra Elenita, in igneous rock slide along right bank of creek approximately 0.1 mi. (0.16 km) southeast of Highway 2, along arroyo “El Quince”, which crosses Highway 2 at 2.1 mi. (approximately 3.38 km) west of Puerto Cananea, a pass approximately 8 mi. (approximately 12.88 km) west of Cananea, Sonora (31°00.5' N, 110°24.0' W).

Distribution.—SONORA: known from the Sierra Elenita and two localities in the Sierra Mariquita. SONORA: Sierra Mariquita, 31°03.5' N, 110°02.0' W and 31°02.0' N, 110°22.4' W.

#### *Sonorella (Sonorella) goldmani* Bartsch 1904

*Sonorella goldmani* Bartsch 1904; Smiths. Misc. Coll. 47:192; pl.

32, fig. 6.- Bequaert & Miller 1973; Moll. Arid SW:125.

*Sonorella (Sonorella) goldmani* Bartsch. Thompson 2008:787.

Type Locality.—Mountains near Lago de Santa Maria, Chihuahua, México. Holotype: USNM 174933.

Distribution.—Known only from the type locality.

#### *Sonorella (Sonorella) hachitana hachitana* (Dall 1895)

*Epiphragmophora hachitana* Dall 1895; Proc. U. S. Nat. Mus. 18:2.- Dall 1896; Bull. U. S. Nat. Mus. 19:338–339 (in part).

*Sonorella hachitana* (Dall). Pilsbry 1901; Proc. Acad. Nat. Sci. Phila.:556.- Bartsch 1904; Smiths. Misc. Coll. 47:190; pl. 31, fig. 2 (shell); pl. 29 (shell).- Pilsbry 1905; Proc. Acad. Nat. Sci. Phila.:257 (in part).- Pilsbry & Ferriss 1915; Proc. Acad. Nat. Sci. Phila.:327; pl. 5, figs. 4–4b (shell); text-fig. 2 (genitalia).- Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila.:65.- Pilsbry 1939; Land Moll. N. Amer. I:273–275; figs. 143 (shell), 144 (genitalia).- Bequaert & Miller 1973; Moll. Arid SW:125.

*Sonorella (Sonorella) hachitana hachitana* (Dall). Thompson 2008:787. - Land & Gilbertson 2010; Proc. Biol. Soc. Wash. 123:67–70.

Type Locality.—Big Hatchet Peak, Big Hatchet Mountains, Hidalgo Co., New Mexico. Holotype USNM 130004.

Distribution.—Known only from the Big Hatchet Mountains in New Mexico. Bequaert and Miller (1973:125) report this species from Sonora without giving a specific locality. Presumably this is also in the Sierra Hacheta Grande. Other subspecies occur in New Mexico and Texas.

#### *Sonorella (Sonorella) madreana* Naranjo-Garcia 1989

*Sonorella madreana* Naranjo-Garcia 1989; Veliger 32:87; fig. 4A (shell), fig. 5 (genitalia).

*Sonorella (Sonorella) madreana* Naranjo-Garcia. Thompson 2008:788.

Type Locality.—Sierra Las Minitas, ca. 2 km southeast of Rancho Jucaral buildings, Sonora, México; 1400 m alt. (31°11.1' N, 109°04.7' W). Holotype SBMNH 34952.

Distribution.—SONORA: known only from the immediate vicinity of the type locality.

#### *Sonorella (Sonorella) magdalenensis* (Stearns 1890)

*Helix magdalenensis* Stearns 1890; Proc. U. S. Nat. Mus. 13:207–208; pl. 15, figs. 7, 11, 13 (shell).

*Sonorella magdalenensis* (Stearns). Bequaert & Miller 1973; Moll. Arid. SW:121–122.

*Sonorella tumamocensis* Pilsbry & Ferriss 1915; Proc. Acad. Nat. Sci. Phila.:401; pl. 10, figs. 4–4b (shell), pl. 13, figs. 5, 8 (genitalia).- Pilsbry 1939; Land Moll. N. Amer. I:344–345; fig. 214 (shell).

*Sonorella sitchensis arida* Pilsbry & Ferriss 1915; Proc. Acad. Nat. Sci. Phila.:409; pl. 8, figs. 6–6b (shell).

*Sonorella arida* Pilsbry & Ferriss.- Pilsbry 1939; Land Moll. N. Amer. I:341–344; figs. 209–210, 212–213 (shell), 211 (genitalia).

*Sonorella hinkleyi* Pilsbry & Ferriss 1919; Nautilus 33:19.- Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:87; pl. 3, figs. 1, 4 (shell); pl. 8, fig. 7 (genitalia).

*Sonorella hinkleyi fraterna* Ferriss 1919; Nautilus 33:38 (A *nomum nudum*).

*Sonorella hinkleyi tumacacori* Pilsbry & Ferriss 1919; Nautilus 33:19.

*Sonorella cayetanensis* Pilsbry & Ferriss 1919; Nautilus 33:19.

*Sonorella hinkleyi cayetanensis* Pilsbry & Ferriss. Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75: pl. 3, fig. 5 (shell); text-fig. 9 (genitalia).

*Sonorella linearis* Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:68; pl. 1, fig. 12 (shell).

*Sonorella tumamocensis linearis* Pilsbry & Ferriss. Pilsbry 1939; Land Moll. N. Amer. I:345–346; figs. 215 (shell).

*Sonorella (Sonorella) magdalenensis* (Stearns). Thompson 2008:788.

Type Localities.—*Helix magdalenensis*: restricted to Sierra Magdalena, ca. 1 mi. north of Magdalena; 3650 ft. alt. (Bequaert & Miller 1973); holotype USNM. *Sonorella tumamocensis*: Tumamoc Hill at west city limits of Tucson, Arizona; 2750 ft. alt.; holotype ANSP 112245. *Sonorella sitchensis arida*: south end of Cerro Colorado, ca. 2 mi. from Cerro Colorado Mine, Pima County, Arizona; holotype ANSP 112160. *Sonorella hinkleyi*: San Cayetana Mountains on southern most peak [Mt. Shibell], 2 mi. above Calabasa, Santa Cruz County, Arizona; holotype ANSP 43735. *Sonorella cayetanensis*: from near the top to rather low on the highest peak of the Cayetano Mountains, Santa Cruz County, Arizona, fide Pilsbry 1939; holotype ANSP 43737. *Sonorella linearis*: North end of Santa Rita Mountains on west side of saddle overlooking Helvetia, Pima County, Arizona; holotype ANSP 130996.

Distribution.—Southeastern Arizona south to 29°25' N. SONORA: Sierra Pajaritos ca. 24 mi. by road E of Ures, 3000 ft. alt.

#### ***Sonorella (Sonorella) mearnsi* Bartsch 1904**

*Sonorella mearnsi* Bartsch 1904; Smiths. Misc. Coll. 47:194–195; pl. 32, fig. 2 (shell).- Bequaert & Miller 1973; Moll. Arid SW:125.

*Sonorella (Sonorella) mearnsi* Bartsch. Thompson 2008:789.

Type Locality.—Sierra San José, Sonora, México, about four miles south of the Arizona border and a few miles east of the Rio San Pedro. Holotype USNM 130003.

Distribution.—Known only from the type locality.

#### ***Sonorella (Sonorella) mormonorum mormonorum* Pilsbry 1948**

*Sonorella mormonorum* Pilsbry 1939; Land Moll. N. Amer. I:271 (a *nomum nudum*).- Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:196–198; pl. 13, fig. 6 (shell); text fig. 5A (genitalia).- Miller 1967; Nautilus 81:3; text-fig. C (genitalia).

*Sonorella (Sonorella) mormonorum mormonorum* Pilsbry. Thompson 2008:789.

Type Locality.—Canyon on the Rio Piedras Verdes 3.5 miles above Colonia Juaraz, in talus of cliffs on south side of river, Chihuahua, México; 5200 ft. alt. Holotype ANSP 166160.

Distribution.—Known only from the immediate vicinity of the type locality.

#### ***Sonorella (Sonorella) mormonorum huasabensis* Miller 1967**

*Sonorella mormonorum huasabensis* Miller 1967; Nautilus 81:2–3; pl.

1, figs. a-c (shell); text-figs. A, B, F (genitalia). - Thompson 2008:790.

Type Locality.—In northwest facing rockslides about five miles east of Huasabas, along the road from Huasabas to Bavispe, Sonora, México; ca. 3600 ft. alt. Holotype ANSP 312763.

Distribution.—Known only from the type locality.

#### ***Sonorella (Sonorella) nelsoni* Bartsch 1904**

*Sonorella nelsoni* Bartsch 1904; Smiths. Misc. Coll. 47:191–192; pl. 31, fig. 3 (shell).- Bequaert & Miller 1973; Moll. Arid SW:125.

*Sonorella (Sonorella) nelsoni* Bartsch. Thompson 2008:790.

Type Locality.—Mountains near Lago de Santa Maria, Chihuahua, México. Holotype USNM 174934.

Distribution.—Known only from the type locality.

#### ***Sonorella (Sonorella) nixonii* Miller 1967**

*Sonorella nixonii* Miller 1967; Nautilus 80:116–117; pl. 6, figs. G-I (shell); pl. 7, figs. G-I (genitalia).

*Sonorella (Sonorella) nixonii* Miller. Thompson 2008:790.

Type Locality.—La Angustura, Sonora, in rocks just south of the main road at the village, overlooking the west rim of La Angustura Dam on the Rio Bavispe, Sonora, México; 3100 ft. alt. Holotype ANSP 310361.

Distribution.—SONORA: rockslide on mountain south of road from El Tajo to La Anustura, 8.4 mi. from El Tajo, 4600 ft. alt; Pilares de Nacozari, ca. 1 mi. E of Nacozari; 4200 ft. alt.

#### ***Sonorella (Sonorella) pennelli* Pilsbry 1948**

*Sonorella pennelli* Pilsbry 1939; Land Moll. N. Amer. I:271 (A *nomum nudum*).- Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:195–196; pl. 13, fig. 5 (shell); text-fig. 5B (genitalia).

*Sonorella (Sonorella) pennelli* Pilsbry. Thompson 2008:791.

Type Locality.—Sierra de La Breña, a steep rock slide above the road from Pearson [Mata Ortiz] to Pacheco, Chihuahua, México; 7000 ft. alt. Holotype ANSP 164081.

Distribution.—Known only from the type locality.

#### ***Sonorella (Sonorella) perhirsuta* Miller 1967**

*Sonorella perhirsuta* Miller 1967; Nautilus 81:4–6; pl. 1, figs. D-F (shell); text-figs. D, E, H (genitalia).

*Sonorella (Sonorella) perhirsuta* Miller. Thompson 2008; 791.

Type Locality.—In granite rock piles in a ravine on the north-east face of the high peak, in mountains between Moctezuma and Huasabas, about 2 miles north of the Moctezuma-Huasabas road at a point 16.6 road miles east of Moctezuma, Sonora, México; 4650 ft. alt. Holotype ANSP 312765.

Distribution.—Known only from the type locality.

#### ***Sonorella (Sonorella) pratti* Naranjo-Garcia 1988**

*Sonorella pratti* Naranjo-Garcia 1988; Veliger 31:82–83; figs. 3 (shell), 4 (genitalia).

*Sonorella (Sonorella) pratti* Naranjo-Garcia. Thompson 2008:791.

Type Locality.—Sierra El Viejo, in north-facing limestone rockpile at base of cliffs, at mouth of large central



canyon, running westerly, at point 9.5 road miles (15.2 km) north and 4.5 road miles (7.2 km) east of El Plomito, Sonora (30°20' N, 112°20.8' W); 500 m alt. Holotype SBMNH 34936.

Distribution.—Known only from the type locality.

***Sonorella (Sonorella) rothi* Naranjo-Garcia 1988**

*Sonorella rothi* Naranjo-Garcia 1988; Veliger 31:83–84; fig. 5 (shell), fig. 6 (genitalia).

*Sonorella (Sonorella) rothi* Naranjo-Garcia. Thompson 2008:792.

Type Locality.—Northwest end of Sierra Pico, in igneous rocks at base of cliffs, along road from El Plomito to Puerto Libertad, 14.9 miles (23.8 km) from El Plomito, Sonora, México; 365 m alt. (30°00.5' N, 112°27' N). Holotype SBMNH 34934.

Distribution.—Known only from the type locality.

***Sonorella (Sonorella) sasabe* Naranjo-Garcia 1989**

*Sonorella sasabe* Naranjo-Garcia 1989; Veliger 32:86–87; figs. 1B (shell), 3 (genitalia).

*Sonorella (Sonorella) sasabe* Naranjo-Garcia. Thompson 2008:792.

Type Locality.—Sierra Pozo Verde, on east flank of Cerro El Sasabe, 4 km south of Sasabe on road to Altar, Sonora, México; 1050 m alt. (31°26.3' N, 111°33.8' W). Holotype SBMNH 34954.

Distribution.—Known only from the type locality.

***Sonorella (Sonorella) seri* Naranjo-Garcia 1988**

*Sonorella seri* Naranjo-Garcia 1988; Veliger 31:84–85; fig. 7 (shell), fig. 8 (genitalia).

*Sonorella (Sonorella) seri* Naranjo-Garcia. Thompson 2008:792.

Type Locality.—Sierra El Viejo, in north-facing limestone piles at north end of range, Sonora, México; 550 m alt. (30°24.1' N, 112°22.5' W). Holotype SBMNH 34935.

Distribution.—Known only from the type locality.

***Sonorella (Sonorella) sitiens montezuma* Pilsbry & Ferriss 1919**

*Sonorella sitiens montezuma* Pilsbry & Ferriss 1919; Nautilus 33:20.- Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:79; pl. 2, fig. 8; pl. 6, fig. 10.- Pilsbry 1939; Land Moll. N. Amer. I:351–352; fig. 221 (genitalia), fig. 222 (shell).

*Sonorella (Sonorella) sitiens montezuma* Pilsbry & Ferriss. Thompson 2008:793.

Type Locality.—South end of Huachuca Mountains in a deep double gulch west of last rock fronted mountain on south side of Montezuma Canyon, Cochis Co., Arizona.

Distribution.—Huachuca Mountains and Patagonia Mountains in southern Arizona, and in México. SONORA: Sierra Pajaritos, 25 mi. E of Ures (29°25' N, 110°10' W), 3300 ft. alt.

***Sonorella (Sonorella) torreonica* Naranjo-Garcia 1989**

*Sonorella torreonica* Naranjo-Garcia 1989; Veliger 32:85–86; fig. 1A (shell), fig. 2 (genitalia).

*Sonorella (Sonorella) torreonica* Naranjo-Garcia. Thompson 2008:793.

Type Locality.—Sierra El Torreón 17 road miles (27

km) southeast of Magdalena, on road to Cucurpe, Sonora, México; 1050 m alt. (30°27.8' N, 110°48.5' W). Holotype SBMNH 34951.

Distribution.—Known only from the type locality.

***Sonorella (Sonorella) walkeri walkeri* Pilsbry & Ferriss 1915**

*Sonorella walkeri* Pilsbry & Ferriss 1915; Proc. Acad. Nat. Sci. Phila.:395; pl. 9, figs. 4–4b (shell).- Pilsbry 1939; Land Moll. N. Amer. I:286–289; fig. 156 (shell), fig. 157 (1–3, 5–5a) (genitalia).

*Sonorella walkeri walkeri* Pilsbry & Ferriss. Bequaert & Miller 1973; Moll. Arid SW:115.

*Sonorella montana* Pilsbry & Ferriss 1919; Nautilus 33:19.

*Sonorella walkeri montana* Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:68; pl. 1, fig. 11 (shell); text-fig. 1 (genitalia).

*Sonorella walkeri aguacalientensis* Pilsbry & Ferriss 1923; Proc. Acad. Nat. Sci. Phila. 75:68.

*Sonorella (Sonorella) walkeri walkeri* Pilsbry & Ferriss. Thompson 2008:793.

Type Locality.—*Sonorella walkeri*: Walnut Branch, Agua Caliente Canyon, Santa Rita Mountains, Santa Cruz County, Arizona; holotype ANSP 112164. *Sonorella montana*: Montana Mine, Montana Peak, in Bear Canyon, Pajarito Mountains, Santa Cruz Co., Arizona; holotype ANSP 43724.

Distribution.—SONORA: known from the Santa Rita Mountains and the Pajarito Mountains, which extend across the International Border from Arizona into Sonora.

***Sonorella (Sonorella) walteri* Naranjo-Garcia 1989**

*Sonorella walteri* Naranjo-Garcia 1989; Veliger 32:87–88; fig. 4B (shell), fig. 6 (genitalia).

*Sonorella (Sonorella) walteri* Naranjo-Garcia. Thompson 2008:794.

Type Locality.—Cerro Gallardo, in north facing rheolite rock piles below cliffs, ca. 1.5 km south of Rancho Gallardo buildings, Sonora, México; 1500 m alt. (31°17.8' N, 109°23.4' W). Holotype SBMNH 34953.

Distribution.—Known only from the type locality.

**Family XANTHONICHIDAE Strebel & Pfeffer 1880**

Distribution.—The Neotropical realm. Within the study area the family is widely distributed from Panamá north to Tamaulipas, México on the east coast, and to Sonora on the west coast.

Taxonomy.—The Xanthonichidae includes ten Mexican and Central American genera. Nordsieck (1997) and Schileyko (1998) proposed various subfamilies and tribes to accommodate the genera. The phylogeny and suprageneric taxonomy of the Middle American helicids is controversial, because anatomical data are not available for many species, and the proposed classifications do not allow for convergent evolution within reproductive anatomies, as surely has happened in several instances. The classification of the Xanthonichidae requires further investigations (Miller & Naranjo-Garcia 1991).

**Subfamily LEPTARIONTINAE Nordsieck 1987  
Genus *Leptarionta* Fischer & Crosse 1872**

*Leptarionta* Fischer & Crosse 1872:253.- Pilsbry 1927; Proc. Acad.

Nat. Sci. Phila. 79:136–137.- Zilch 1960:651.

Type Species.—*Helix bicincta* Pfeiffer 1841.

Distribution.—Central Veracruz south to Chiapas, Tabasco, Belize, Guatemala, Honduras, Costa Rica, Panamá, and Colombia.

Taxonomy.—Eight species and eight subspecies are recognized. *Leptarionta maxwellsmithi* is included because it occurs in an immediate adjacent region in Colombia. A Peruvian species, *Leptarionta woytkowskii* Weyrauch 1960, appears to be an *Helicina*.

#### ***Leptarionta adela* (Angas 1878)**

*Helix adela* Angas 1878; Proc. Zool. Soc. Lond. 46:72; pl. 5, figs. 8–10 (shell).

*Helix (Oxychona) adela* Angas. Von Martens 1892; Biol. Cent. Amer.:158.- Von Martens 1901; Biol. Cent. Amer.:625.

*Oxychona adela* (Angas 1878). Pilsbry 1894; Man. Conch. 9:189.

*Leptarionta adela* (Angas). Thompson 2008:795.

Type Locality.—Navarro, [Prov. Cartago], Costa Rica.

Distribution.—COSTA RICA, Prov. Cartago: Azahar, 1500 m alt. (Von Martens 1901).

#### ***Leptarionta altispira* (Von Martens 1892)**

*Helix (Oxychona) altispira* Von Martens 1892; Biol. Cent. Amer.:156–157; pl. 9, figs. 10, 10a, 10b (shell).

*Oxychona altispira* (Von Martens 1892). Pilsbry 1894; Man. Conch. 9:191.

*Leptarionta altispira* (Von Martens). Thompson 2008:795.

Type Locality.—Honduras.

Distribution.—Known only from the type locality.

#### ***Leptarionta bicincta* (Pfeiffer 1841)**

*Helix bicincta* Pfeiffer 1841; Symbolae Hist. Helic., 1:38.

*Helix (Leptarionata) bicincta* Pfeiffer. Fischer & Crosse 1872:253; pl. 10, figs. 7, 7a (shell).- Tryon 1888; Man. Conch. 4:75–76; pl. 19, fig. 78 (shell).

*Corasia bicincta* (Pfeiffer). Strebel 1880:51; pl. 13, fig. 17 (juvenile shell).

*Helix (Oxychona) bicincta* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:157.- Pilsbry 1894; Man. Conch. 9:191.

*Leptarionta bicincta* (Pfeiffer 1841). Zilch 1960:651; fig. 2279 (shell).- Thompson 2008:796.

Type Locality.—Oaxaca, México.

Distribution.—OAXACA: Juquila; Panistlahuaca (Von Martens 1892). VERACRUZ: Soledad between Córdoba and Orizaba (Von Martens 1892).

#### ***Leptarionta costaricensis* (Roth 1856)**

*Helix costaricensis* Roth, in Pfeiffer 1856; Novitates Conchologicae 1:78; pl. 21, figs. 15–17.

*Helix boucardi* Angas 1878; Proc. Zool. Soc. Lond. 46:72; pl. 5, figs. 5–7 (shell).- Angas 1879; Proc. Zool. Soc. Lond. 47:476.

*Helix costaricensis* var. *steiniana* Ancy 1890; Bull. Soc. Malac. France 7:155.

*Helix costaricensis* var. *virginea* Ancy 1890; Bull. Soc. Malac. France 7:156.

*Helix (Oxychona) costaricensis* (Roth). Pilsbry 1889; Man. Conch. 5:134–135; pl. 18, figs. 23–25; pl. 60, figs. 1–9 (shell).- Von

Martens 1892; Biol. Cent. Amer.:158.- Von Martens 1901; Biol. Cent. Amer.:626.

*Leptarionta costaricensis* (Roth). Thompson 2008:796.

Type Locality.—Costa Rica.

Distribution.—COSTA RICA, Prov. Cartago: Navarro; Cachi; Valle de Tuís (Von Martens 1901). Prov. Limón: Cabecar (Von Martens 1892); Puente de Tierra, on the road to Sarapiquí; Santa Clara, 250 m alt.; between Mokri and Ukatschka; between Mokri and Uiskar; Alta Talamanca (Von Martens 1901).

#### ***Leptarionta guillarmodi* (Shuttleworth 1852)**

*Helix guillarmodi* Shuttleworth 1852. Mitt. Naturf. Ges. Bern:199.

*Helix (Corasia) guillarmodi* Shuttleworth. Fischer & Crosse 1872:296; pl. 10, figs. 8, 8a (shell).

*Corasia guillarmodi* (Shuttleworth). Strebel 1880:50.

*Helix (Oxychona) guillarmodi* Shuttleworth. Pilsbry 1889; Man. Conch. 5:133–134; pl. 57, figs. 32, 33 (shell).- Von Martens 1892; Biol. Cent. Amer.:158–159.

*Leptarionta guillarmodi* (Shuttleworth). Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:187–189; pl. 14, fig. 7 (foot); text-figs. 13a (reproductive system), fig. 13b, 13c (radula), fig. 13d (jaw).- Neubert & Gosteli 2003; Contributions to Natural History 1:27–28; pl. 13, fig. 3.- Thompson 2008:797.

Type Locality.—Córdoba, Veracruz, México. Syntypes: Naturhistorisches Museum Bern 19080/3 (Neubert & Gosteli 2003:27–28).

Distribution.—VERACRUZ: Córdoba; Toxpam, near Córdoba; Cerro de Palmas, near Córdoba (Von Martens 1892); Las Tortolas, in limestone foothills ca. 2 km N of Córdoba (Pilsbry 1927).

#### ***Leptarionta maxwellsmithi* Pilsby 1930**

*Leptarionta maxwellsmithi* Pilsbry 1930; Nautilus 43:116–117; text-figs. 1 (shell).- Thompson 2008:797.

Type Locality.—Acandí, Dept. Chocó, Colombia. Holotype ANSP 150243.

Distribution.—Known only from the type locality.

#### ***Leptarionta trigonostoma trigonostoma* (Pfeiffer 1844)**

*Helix trigonostoma* Pfeiffer 1844; in Phillipi, Abbildungen neuer Conch. 1:154; pl. 4, fig. 8 (shell).

*Helix (Geotrochus) trigonostoma* Pfeiffer. Fischer & Crosse 1872:291; pl. 11, fig. 6 (shell).

*Helix (Oxychona) trigonostoma* Pfeiffer. Pilsbry 1889; Man. Conch. 5:132–133; pl. 14, figs. 1–4 (shell); pl. 15, figs. 1, 2 (shell).- Von Martens 1892; Biol. Cent. Amer.:154.

*Leptarionta trigonostoma* (Pfeiffer). Bequaert 1957:223–224.

*Leptarionta trigonostoma trigonostoma* (Pfeiffer). Thompson 2008:798.

Type Locality.—Dept. Alta Verapaz, Guatemala.

Distribution.—HONDURAS (von Marten 1892). GUATEMALA, Dept. Alta Verapaz: Senahu (von Marten 1892). Dept. Chimaltenango: Yepocapa (Bequaert 1957). Dept. Petén (Von Martens 1892). Dept. Solola: Finca Montequina, Atitlan (Bequaert 1957). CHIAPAS: Laguna Ocotal, 950 m alt.; El Censo to Laguna Ocotal, 700–1000 m alt.; Monte Libano to El Censo, 600–700 m alt. (Bequaert 1957). TABASCO.

***Leptarionta trigonostoma elevatoconica* (Fischer & Crosse 1872)**

*Helix trigonostoma* var. *elevato-conica* Fischer & Crosse 1872:291; pl. 11, fig. 6a (shell).

*Helix* (*Oxychona*) *trigonostoma* var. *elevatoconica* Fischer & Crosse. Von Martens 1892; Biol. Cent. Amer.:154.

*Oxychona trigonostoma elevatoconica* (Fischer & Crosse). Pilsbry 1894; Man. Conch. 9:190.

*Leptarionta trigonostoma elevatoconica* (Fischer & Crosse). Thompson 2008:798.

Type Locality.—Mountains of the Dept. Vera Paz, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Guatemala: near Cd. Guatemala, 5000 ft. alt. (Von Martens 1892).

***Leptarionta trigonostoma freytagiana* (Von Martens 1892)**

*Helix trigonostoma* var. *freytagiana* Von Martens 1892; Biol. Cent. Amer.:155; pl. 9, figs. 8, 8a, 9, 9a (shell).

*Oxychona trigonostoma freytagiana* (Von Martens). Pilsbry 1894; Man. Conch. 9:191.

*Leptarionta trigonostoma freytagiana* (Von Martens). Thompson 2008:798.

Type Locality.—Honduras.

Distribution.—Known only from the type locality.

***Leptarionta trigonostoma intermedia* (Fischer & Crosse 1872)**

*Helix trigonostoma* var. *intermedia* Fischer & Crosse 1872:291; pl. 11, fig. 6b (shell).- Von Martens 1892; Biol. Cent. Amer.:155, pl. 9, figs. 1, 1a (shell).

*Oxychona trigonostoma intermedia* (Fischer & Crosse). Pilsbry 1894; Man. Conch. 9:190.

*Leptarionta trigonostoma intermedia* (Fischer & Crosse). Thompson 2008:799.

Type Locality.—San Agustín, Dept. San Marcos, Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Senahu (Von Martens 1892). Dept. Quetzaltenango: Cerro Zunil (Von Martens 1892). Dept. San Marcos: San Agustín.

***Leptarionta trigonostoma salleana* (Pfeiffer 1849)**

*Helix salleana* Pfeiffer 1849; Mon. Heliceorum Vivantium, 3:173.

*Helix trigonostoma* var. *salleana* Pfeiffer. Fischer & Crosse 1872:291.

*Helix trigonostoma* var. *obscura* Fischer & Crosse 1872:291; pl. 11, fig. 6d (shell).

*Helix* (*Oxychona*) *trigonostoma* var. *salleana* Pfeiffer. Von Martens 1892; Biol. Cent. Amer.:154.

*Leptarionta trigonostoma salleana* (Pfeiffer). Thompson 1957; Nautilus 70:101.- Thompson 2008:799.

Type Locality.—Along the Rio San Juan, Guatemala.

Distribution.—GUATEMALA, Dept. Izabal: Sierra del Mico, south of the Golfo Dulce (Von Martens 1892). Dept. San Marcos: San Agustín (Von Martens 1892). TABASCO: 0.5–1.0 mi. E of Taepa (Thompson 1957).

***Leptinaria trigonostoma stolliana* (Von Martens 1892)**

*Helix trigonostoma* var. *stolliana* Von Martens 1892; Biol. Cent.

Amer.:155; pl. 9, figs. 2, 2a–7, 7a (shell), 11, 12 (animal).

*Oxychona trigonostoma stolliana* (Von Martens). Pilsbry 1894; Man. Conch. 9:191; pl. 45, figs. 9, 10 (live animal).

*Leptinaria trigonostoma stolliana* (Von Martens). Thompson 2008:799.

Type Locality.—Not designated.

Distribution.—GUATEMALA, Dept. Escuintla: Buenavista; Miramar; Hacienda Helvetia; Hacienda San Francisco (Von Martens 1892). Dept. Quetzaltenango: Cerro Zunil (Von Martens 1892). Dept. Retalhuleu: El Reposo (Von Martens 1892). Dept. San Marcos: San Agustín (Von Martens 1892).

***Leptarionta venusta venusta* Gude 1903**

*Leptarionta venusta* Gude 1903; Proc. Malac. Soc. London 5:263; pl. 7, figs. 8–11 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:73; text-fig. 4 (shell).

*Leptarionta venusta venusta* Gude. Thompson 2008:800.

Type Locality.—Chiriquí, Panamá.

Distribution.—Known only from the type locality.

***Leptarionta venusta albata* Rehder 1942**

*Leptarionta venusta albata* Rehder 1942:352; figs. 4–6, 7–9 (shell).- Thompson 2008:800.

Type Locality.—Prov. Chiriquí, Panamá. Holotype USNM 536030.

Distribution.—Known only from the type locality.

***Leptarionta zhorquinensis* (Angas 1879)**

*Helix zhorquinensis* Angas 1879; Proc. Zool. Soc. Lond. 47:475; pl. 40, fig. 1 (shell).

*Helix* (*Oxychona*) *zhorquinensis* Angas. Pilsbry 1889; Man. Con., 5:133; pl. 60, fig. 12.- Von Martens 1892; Biol. Cent. Amer.:157.

*Oxychona zhorquinensis* (Angas). Pilsbry 1894; Man. Conch. 9:190.

*Leptarionta zhorquinensis* (Angas). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:127. Thompson 2008:800.

Type Locality.—Along the Rio Zhorquin, Costa Rica.

Distribution.—COSTA RICA, Prov. Limón: Monkey Point (Pilsbry 1926).

**Genus *Tryonigens* Pilsbry 1927**

*Tryonigens* Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:189–191.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):12.

Type Species.—*Helix rémondi* Tryon 1862.

Distribution.—Coastal western México from Sonora south to Colima.

Taxonomy.—A single species is recognized.

***Tryonigens rémondi* (Tryon 1863)**

*Helix rémondi* Tryon 1863; Proc. Acad. Nat. Sci. Phila. 15:281.

*Arionta rémondi* (Tryon). Tryon 1866; Amer. Jour. Conch. 2:318, 325; pl. 22, fig. 18 (shell).

*Helix verrilli* Ancey 1887; Conchologist's Exchange, 2:63.

*Helix trypanomphala* var. *rémondi* Tryon. Von Martens 1892; Biol. Cent. Amer.:143.

*Tryonigens rémondi* (Tryon). Pilsbry 1927; Proc. Acad. Nat. Sci. Phila. 79:191; text-fig. 14a (tail), fig. 14b (radula), fig. 14c (reproductive anatomy).- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (610):12–13.- Thompson 2008:801.



Type Locality.—*Helix rémondi*: near Mazatlán, Sinaloa, México; holotype ANSP 58122. *Helix verrilli*: Ventanas, Durango, México.

Distribution.—CHIHUAHUA: Rio Mayo, Guasaremos (Solem 1959). COLIMA: Manzanillo (Pilsbry 1927). DURANGO: Ventanas. GUERRERO: Agua de Obispo (Solem 1959). JALISCO: Sayul (Von Martens 1892); Puebla de Santa Catarina (Solem 1959). MICHOACÁN: Cerro Guzman, Coalcoman (Solem 1959). NAYARIT: Tepic; Rio Tepic, 5 mi. below Tepic (Solem 1959). SINALOA: Mazatlán; Rosario; Panuco 1800 ft. alt. (Solem 1959). SONORA: Guaymas (Tryon 1866).

#### Subfamily LYSINOINAE Hoffmann 1928

Taxonomy.—A single genus is placed in this subfamily.

#### Genus *Lysinoe* H. Adams & A. Adams 1855

*Lysinoe* H. Adams & A. Adams 1855; Genera of Recent Mollusca (2):203.- Pilsbry 1894; Man. Conch. 9:191–192.

Type Species.—*Helix ghiesbreghti* Nyst 1841.

Distribution.—Chiapas, Guatemala, El Salvador and Honduras. A species from Jalisco is included in the genus, but it's phylogenetic affinities are questionable.

Taxonomy.—Four species and six subspecies are recognized.

#### *Lysinoe eximia eximia* (Pfeiffer 1844)

*Helix eximia* Pfeiffer 1844; in Philippi, Abbildungen neuer Conchyl., 1:153; pl. 5, fig. 6 (shell).

*Helix (Odontura) eximia* Pfeiffer. Fischer & Crosse 1872:242–245; pl. 11, figs. 3, 3a, 3d (shell); 206–210; pl. 13. fig. 7 (jaw), figs. 8, 9 (radula), figs. 10, 11 (reproductive anatomy) fig. 13 (nervous system).

*Odontura eximia* (Pfeiffer). Strebel 1880:36.

*Helix (Lysinoe) eximia* Pfeiffer. Von Martens 1892; Biol. Cent. Amer.:149–150.

*Lysinoe eximia* (Pfeiffer). Pilsbry 1894; Man. Conch. 9:192; pl. 60, fig. 9 (jaw).

*Lysinoe eximia eximia* (Pfeiffer). Thompson 2008:802.

Type Locality.—Not given.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Cobán. Dept. Huehuetenango: upper Chalhuitz; near San Martin, ca. 6000 ft. alt. (Von Martens 1892). Dept. Sacatepéquez: Dueñas (Fischer & Crosse 1872).

#### *Lysinoe eximia stollii* (Von Martens 1892)

*Helix (Odontura) eximia* Pfeiffer. Fischer & Crosse 1873; Miss. Sci. Mex. I:242; pl. 11, figs. 3b, 3c (shell).

*Helix (Lysinoe) eximia* var. *stollii* Von Martens 1892; Biol. Cent. Amer.:149–150.

*Lysinoe eximia stollii* (Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:803.

Type Locality.—“Vera Paz”, Guatemala.

Distribution.—Known only from the type locality.

#### *Lysinoe ghiesbreghti ghiesbreghti* (Nyst 1841)

*Helix ghiesbreghti* Nyst 1841; Bull. Acad. Bruxelles, 7:343; fig. 2

(shell).

*Helix (Odontura) ghiesbreghti* Nyst. Fischer & Crosse 1872:245, pl. 10, fig. 9 (shell); 206–210 (anatomy); pl. 13, fig. 1 (jaw), figs. 2, 3, 4, 5 (radula), fig. 6 (reproductive anatomy).

*Odontura ghiesbreghti* (Nyst). Strebel 1872:37.

*Helix (Lysinoe) ghiesbreghti* Nyst. Von Martens 1892; Biol. Cent. Amer.:150–152; pl. 8, figs. 3, 3a, 4 (shell).

*Lysinoe ghiesbreghti* (Nyst). Pilsbry 1894; Man. Conch. 9:192; pl. 60, fig. 8 (reproductive anatomy).

*Lysinoe ghiesbreghti ghiesbreghti* (Nyst). Thompson 2008:803.

Type Locality.—Chiapas, México.

Distribution.—GUATEMALA: Dept. Alta Verapaz: Cobán. Dept. Baja Verapaz: Purulha. CHIAPAS: (no specific locality).

#### *Lysinoe ghiesbreghti bizonata* (Von Martens 1892)

*Helix (Odontura) ghiesbreght* var.  $\delta$  Fischer & Crosse 1872:245, 247.

*Helix (Lysinoe) ghiesbreghti* var. *bizonata* Von Martens 1892; Biol. Cent. Amer.:151.

*Lysinoe ghiesbreghti bizona* (Von Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:804.

Type Locality.—Cordierra de San Marcos, Honduras; ca. 2660 m alt.

Distribution.—Known only from the type locality.

#### *Lysinoe ghiesbreghti fulvostraminea* (Von Martens 1892)

*Helix (Odontura) ghiesbreghti* var.  $\gamma$  Fischer & Crosse 1872:245; pl. 10, fig. 9a (living animal).

*Helix (Lysinoe) ghiesbreghti* var. *fulvo-straminea* Von Martens 1892; Biol. Cent. Amer.:151.

*Lysinoe ghiesbreghti fulvostraminea* (Von Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:804.

Type Locality.—Tolimán, in the hills above San Lucas, near Lago de Atitlán, Dept. Solola, Guatemala.

Distribution.—Known only from the type locality.

#### *Lysinoe ghiesbreghti rufozonata* (Von Martens 1892)

*Helix (Odontura) ghiesbreghti* var.  $\beta$  Fischer & Crosse 1872:247.

*Helix (Lysinoe) ghiesbreghti* var. *rufo-zonata* Von Martens 1892; Biol. Cent. Amer.:151.

*Lysinoe ghiesbreghti rufozonata* (Von Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:804.

Type Locality.—Not given.

Distribution.—GUATEMALA (?).

#### *Lysinoe ghiesbreghti subaurantia* (Von Martens 1892)

*Helix (Lysinoe) ghiesbreghti* var. *subaurantia* Von Martens 1892; Biol. Cent. Amer.:151; pl. 8, figs. 1, 1a–1d (shell).

*Lysinoe ghiesbreghti subaurantia* (Von Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:805.

Type Locality.—Purulha [Purulha], Dept. Baja Verapaz, Guatemala.

Distribution.—GUATEMALA, Dept. Baja Verapaz: Purulha. Dept. Quetzaltenango: Cerro Zunil (Von Martens 1892).

#### *Lysinoe ghiesbreghti strubelli* (Von Martens 1892)

*Helix (Lysinoe) ghiesbreghti* var. *strubelli* Von Martens 1892; Biol.

Cent. Amer.:151; pl. 8, fig. 2 (shell).

*Lysinoe ghiesbreghtii strubelli* (Von Martens). Pilsbry 1894; Man. Conch. 9:192.- Thompson 2008:805.

Type Locality.—Cabo Gracias a Dios, Honduras.

Distribution.—Known only from the type locality.

#### ***Lysinoe sebastiana* (Dall 1897)**

*Helix* (*Lysinoe*) *sebastiana* Dall 1897:73–74.

*Lysinoe sebastiana* (Dall). Solem 1955; Occ. Pap. Mus. Zool. Univ. Mich. (566):43–44; pl. 3, figs. 7–9.- Solem 1956:140.- Thompson 2008:805.

Type Locality.—Near San Sebastian, Jalisco, México. Holotype in the USNM.

Distribution.—JALISCO: Sierra Autlán, ca. 20 mi. SSE of Autlán, Jalisco (Solem 1955).

Taxonomy.—The generic affinities of this species need to be verified anatomically.

#### ***Lysinoe starretti* Thompson 1963**

*Lysinoe starretti* Thompson 1963; Proc. Biol. Soc. Wash. 76:27–31; pl. 1, figs. 1–4 (shell); text-figs. 1 A, B (radula, jaw); text-figs. 1, C-D, a-f (reproductive anatomy).

Type Locality.—Hacienda Monte Cristo, Metapan, Dept. Santa Ana, El Salvador; 2200 m alt. Holotype UMMZ 195327.

Distribution.—Known only from the type locality.

#### **Subfamily TRICHODISCININAE Schileyko 1998**

Distribution.—México from Sinaloa on the Pacific coast, and from Tamaulipas on the east coast south to Panamá.

Taxonomy.—Three genera are included. The subfamily Miraveralliinae Schileyko 1998 is a synonym.

#### **Genus *Averellia* Ancey 1887**

*Coelospira* Ancey 1886; Conch. Exchange, 1:20 (not *Coelospira* Hall 1864: Brachiopoda).

*Averellia* Ancey 1887; Conch. Exchange, 1:54. Pilsbry 1894; Man. Conch. 9:197–198.

Type Species.—*Helix mac-neili* Crosse 1873.

Distribution.—Southern Costa Rica and northwestern Panamá.

Taxonomy.—A single species is recognized.

#### ***Averellia macneili* (Crosse 1873)**

*Helix mac-neili* Crosse 1873; Jour. de Conchyl. 21:67.- Crosse 1874; Jour. de Conchyl. 22:71; pl. 2, fig. 3 (shell).

*Helix* (*Averellia*) *macneili* (Crosse). Pilsbry 1889; Man. Conch. 5:96; pl. 49, figs. 59–61 (shell).- Von Martens 1892; Biol. Cent. Amer.:137–138.- Von Martens 1901; Biol. Cent. Amer.:623.

*Epiphragmophora* (*Averellia*) *macneili* (Crosse). Pilsbry 1895; Man. Conch. 9:197.

*Averellia macneili* (Crosse). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:73.- Thompson 2008:806.

Type Locality.—Chiriquí Lagoon, Costa Rica [Panamá].

Distribution.—PANAMÁ, Prov. Bocas del Toro: drift of San San Creek. Prov. Chiriquí: Chiriquí Lagoon (Pilsbry 1926). COSTA RICA, Prov. Cartago: Tuís, 600 m

alt. (Von Martens 1901). Prov. Limón: coastal region and lower foothills from Parismina to the hills of Zhorquin (Von Martens 1892). Prov. Puntarenas: Alto de Mano Tigre, 690 m alt.; Terraba (Von Martens 1892).

#### **Genus *Miraverellia* Baker 1922**

*Miraverellia* Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):60.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):1–2.

Type Species.—*Helix sumichrasti* Crosse & Fischer 1872.

Distribution.—Southern México in the states of Chiapas, Oaxaca, Guerrero, Michoacán and Veracruz.

Taxonomy.—Four species are recognized.

#### ***Miraverellia inflata* (Thompson 1859)**

*Averellia* (*Miraverellia*) *inflata* Thompson 1959; Occ. Pap. Mus. Zool. Univ. Mich. (610):1–8; pl. 1 (shell); text-fig. 1A (pallial organs), figs. 1B, 1C (jaw), fig. 1D (radula); text-fig. 2 (reproductive anatomy).

*Miraverellia inflata* (Thompson). Thompson 2008:807.

Type Locality.—El Fuente, south slope of Volcán San Martín, Sierra de las Tuxtlas, Veracruz, México; 1170 m alt. Holotype UMMZ 196002.

Distribution.—Known only from the type locality.

#### ***Miraverellia sargi* (Crosse & Fischer 1872)**

*Helix sargi* Crosse & Fischer 1872; Jour. de Conchyl. 20:146–147.- Von Martens 1874; Proc. Zool. Soc. Lond. 42:648.

*Helix* (*Aglaiia*) *sargi* Crosse & Fischer. Crosse & Fischer 1873; Jour. de Conchyl. 21; 277–278; pl. 9, fig. 2 (shell).- Fischer & Crosse 1902:664; pl. 71, figs. 6, 6a, 6b (shell).

*Helix* (*Trichodiscina*) *sargi* Crosse & Fischer. Von Martens 1892; Biol. Cent. Amer.:157.

*Trichodiscina sargi* (Crosse & Fischer). Hinkley 1920; Nautilus 34:50.

*Averellia* (*Miraverellia*) *sargi* (Crosse & Fischer 1872). Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):2–3; pl. 1, figs. 13–15 (shell).

*Miraverellia sargi* (Crosse & Fischer). Thompson 2008:809.

Type Locality.—Tamahú, [Dept. Alta Verapaz], Guatemala.

Distribution.—GUATEMALA, Dept. Alta Verapaz: Tamahú; Cobán (Von Martens 1892); Chejel (Hinkley 1920).

#### ***Miraverellia sumichrasti* (Crosse & Fischer 1872)**

*Helix sumichrasti* Crosse & Fischer 1872; Jour. de Conchyl. 20:146.

*Helix* (*Trichia*) *sumichrasti* Crosse & Fischer 1873; Jour. de Conchyl. 21:265; pl. 9, figs. 4, 4a (shell).- Fischer & Crosse 1902, 2:664–665; pl. 71, figs. 7a, 7b (shell).

*Helix* (*Trichodiscina*) *sumichrasti* Crosse & Fischer. Von Martens 1892; Biol. Cent. Amer.:137.

*Averellia* (*Miraverellia*) *sumichrasti* (Crosse & Fischer). Baker 1922; Occ. Pap. Mus. Zool. Univ. Mich. (106):58–60; pl. 17, fig. 8 (radula), fig. 10 (jaw).- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):3–4; pl. 1, figs. 7, 8, 9 (shell).

*Miraverellia sumichrasti* (Crosse & Fischer). Thompson. 2008:808.

Type Locality.—[Santiago] Laollaga, Isthmus of

Tehuantepec, Oaxaca (16.58° N, 95.2° W) (Solem 1959).

Distribution.—OAXACA: Laollaga.

Remarks.—Records by Solem (1959) from Veracruz and Michoacán are doubtful.

### *Miraverellia verdensis* (Dall 1910)

*Epiphragmophora* (*Trichodiscina*) *verdensis* Dall 1910; *Nautilus* 24:35–36 (not illustrated).

*Averellia* (*Miraverellia*) *sumichrasti* (Crosse & Fischer). Solem 1959; *Occ. Pap. Mus. Zool. Univ. Mich.* (611):3–4 (in part).

*Miraverellia verdensis* (Dall). Thompson 2008:809.

Type Locality.—Near the hot springs, along the Rio Verde, Oaxaca, México. Further restricted to Rio Verde, Oaxaca (17.057° N, 94.751° W) (Solem 1959). Holotype USNM 212318.

Distribution.—Known only from the type locality.

### Genus *Trichodiscina* Von Martens 1892

*Trichodiscus* Strebel 1880; *Beitrag. Mex. Land- und Süßw.-Conch.* IV:32 (not *Trichodiscus* Ehrenberg 1830, Protozoa).

*Trichodiscina* Von Martens 1892; *Biol. Cent. Amer.*:133.- Pérez & López 2002:187–188.

Type Species.—*Helix coactiliata* Férussac 1838.

Distribution.—Venezuela north through Central America to Tamaulipas and Sinaloa.

Taxonomy.—Six species and one subspecies are recognized. *Trichodiscina crinita* Fulton 1917 belongs in *Thysanophora* (*Setidiscus*).

### *Trichodiscina coactiliata* (Férussac 1838)

*Helix coactiliata* Deshayes 1839, in Férussac, *Hist. Nat. Moll. Terrestres*, 1:18; pl. 72, figs. 1–5 (shell).

*Helix (patula) coactiliata* (Férussac). Fischer & Crosse 1872:234.

*Trichodiscus coactiliata* (Férussac). Strebel 1880:34.- Pérez & López 2002:188–190.- Thompson 2008:809.

*Patula coactiliata* (Férussac). Pilsbry 1889; *Proc. Acad. Nat. Sci. Phila.* 43:314.

*Helix (Trichodiscina) coactiliata* (Férussac). Von Martens 1892; *Biol. Cent. Amer.*:133–135,

*Epiphragmophora coactiliata* (Férussac). Pilsbry 1895; *Man. Conch.* 9:191.- Fluck 1905; *Nautilus* 19:78.

*Averellia (Trichodiscina) coactiliata* (Férussac). Hinkley 1907; *Nautilus* 21:71.- Baker 1922; *Occ. Pap. Mus. Zool. Univ. Mich.* (106):57–58; pl. 27, fig. 7 (radula), fig. 9 (jaw).- Baker 1926; *Occ. Pap. Mus. Zool. Univ. Mich.* (167):22.- Pilsbry 1926; *Proc. Acad. Nat. Sci. Phila.* 78:73.- Bequaert & Clench 1933; *Pub. Carnegie Inst. Wash.* (431):531.- Bequaert & Clench 1936; *Pub. Carnegie Inst. Wash.* (457):64.- Richards 1937; *Proc. Amer. Philos. Soc.* 77:252.- Richards 1938:172.- Morrison 1946; *Smiths. Misc. Coll.* 106:44.- Haas 1949; *Nautilus* 62:138.- Harry 1950; *Occ. Pap. Mus. Zool. Univ. Mich.* (524):11.- Bequaert 1957:224.- Basch 1959; *Occ. Pap. Mus. Zool. Univ. Mich.* (612):11.- Haas & Solem 1966; *Nautilus* 73:131.- Thompson 1967; *Bull. Fla. Sta. Mus.*, 11:253.

*Helix nystiana* Pfeiffer 1845; *Proc. Zool. Soc. Lond.* 13:130.

*Helix bridgesi* Tryon 1866; *Amer. Jour. Conch.* 2:303; pl. 20, figs. 9, 10 (shell).

*Helix parkeri* Tryon 1867; *Amer. Jour. Conch.* 3:106.

Type Localities.—*Helix coactiliata*: not given. *Helix*

*nystiana*: Realejo, Nicaragua. *Helix bridgesi*: Nicaragua.

*Helix parkeri*: Nicaragua.

Distribution.—Eastern México from Tamaulipas south through Central America to Trinidad and Venezuela (Baker 1926). PANAMÁ, Archipiélago de las Perlas: Isla San José (Morrison 1946). Prov. Los Santos: Tonosí (Pilsbry 1926). NICARAGUA, Pacific versant, common (Pérez & López 2002). Dept. Chinandega: Realejo (Von Martens 1892). Reg. Aut. Atlántico Norte: Weilawas Hill, near Wani (Fluck 1905). HONDURAS, Isla de Roatán: between Coden Hole and French Harbor; North Side; West End (Richards 1938). BELIZE: Rio Frio Cave (Haas & Solem 1966). GUATEMALA, Dept. Escuintla: Zapote (Haas 1949). Dept. Izabal: near Livingston. Dept. Petén: Tikal National Park (Basch 1959). CAMPECHE:5.1 mi. NNE of Dzibalchen; 3.6 mi. S of Hopelchen; 6.1 mi. E of Seyaplaya; 7.2 mi. S of Pixtun; 10.2 mi. E of Escarcega; 19.2 mi. E of Silvituc (Thompson 1967). CHIAPAS: Laguna Ocotol, 950 m alt.; El Real, 600 m alt. (Bequaert 1957). QUINTANA ROO: Isla Cozumel, 3 mi. N of San Miguel (Richards 1937); Chetumal (Haas & Solem 1966); 4.0 mi. E of Xpujil, Campeche (Thompson 1967). TAMAULIPAS: Tampico (Hinkley 1907). VERACRUZ: Coatotolapam (Baker 1922). YUCATÁN: Tablas; Labna (Pilsbry 1891); Chichen Itza (Bequaert & Clench 1933); Xtolok Cenote, near Chichen Itza (Bequaert & Clench 1936); 8 mi. NW of Chichen Itza (Harry 1950).

### *Trichodiscina cordovana* (Pfeiffer 1858)

*Helix corovana* Pfeiffer 1856; *Proc. Zool. Soc. Lond.* 24:318.

*Helix (Patula) coactiata* var. *cordovana* Pfeiffer. Fischer & Crosse 1872:234; pl. 12, figs. 4, 4a, 4b, 4c (shell).

*Trichodiscus cordovana* Strebel 1880:32; pl. 3, fig. 5 (shell); pl. 11, figs. 1 (radula), fig. 10 (jaw), fig. 17 (pallial organs).- Tryon 1887; *Man. Conch.* 3:49; pl. 5, figs. 99–1 (shell).- Thompson 2008:811.

*Helix (Trichodiscina) cordovana* (Pfeiffer). Von Martens 1892; *Biol. Cent. Amer.*:135.

*Averellia (Trichodiscina) cordovana* (Pfeiffer). Baker 1927; *Proc. Acad. Nat. Sci. Phila.* 79:242–243; pl. 20, figs. 53, 54, 56, 57 (reproductive anatomy); fig. 55 (pallial organs).

*Trichodiscina cordovana* (Dall). Correa-Sandoval 1993; *Rev. Biol. Trop.* 41:675.- Correa-Sandoval, Garcia-Cubas & Reguero 1998:17.- Correa-Sandoval 2000:9. Correa-Sandoval & Rodriguez 2002; *Acta Zool. Mex.* (86):238.

Type Locality.—Tuspan [Tuxpam], south of Tampico, Veracruz, México.

Distribution.—GUERRERO: Omilteme (Von Martens 1892). NUEVO LEÓN: Santiago (Correa-Sandoval 1993). SAN LUÍS POTOSÍ: numerous localities (Correa-Sandoval et al. 1998). TAMAULIPAS: numerous localities in southern part of state (Correa-Sandoval & Rodriguez 2002). VERACRUZ: Nacimiento de Quilate, Cerro de Espadilla, Rancho Guerrero, all in the vicinity of Misantla; numerous localities in the vicinity of Jalapa; hacienda Mirador; Soledad; Almolonga; Córdoba (Von Martens 1892); km 234, 1 km SE of Tuxpam (20°49'11" N, 97°30'00" W); La Ordeña, Papantla (20°29'43" N, 97°18'27" W); Ruinas El Tajín (20°26'29" N,



97°22'30" W) (Correa-Sandoval 2000).

***Trichodiscina hinkleyi* Pilsbry 1919**

*Trichodiscina hinkleyi* Pilsbry 1919:217; text-fig. 5 (shell).-  
Thompson 2008:812.

*Averellia hinkleyi* (Pilsbry). Hinkley 1920; Nautilus 34:43, 48.

Type Locality.—Livingston, [Dept. Izabal], Guatemala.

Holotype ANSP 107533.

Distribution.—GUATEMALA, Dept. Izabal: mountains of Rio Cavech, and those back of Cavech Village; across the Rio Dulce from Livingston, Jocola (Hinkley 1920).

***Trichodiscina oajacensis* (Kock 1842)**

*Helix oajacensis* Kock, in Pfeiffer 1842; Symbolae ad Historiam  
Heliciorum, 2:35.

*Helix (Discus) oajacensis* Kock. Fischer & Crosse 1872:237.

*Trichodiscus oajacensis* (Kock). Strebel 1880:35.- Tryon 1887;  
Man. Conch. 3:50; pl. 5, figs. 6, 7 (shell).- Thompson 2008:812.

*Epiphragmophora (Trichodiscina) oajacensis* (Kock). Pilsbry 1895;  
Man. Conch. 9:199.

*Helix (Trichodiscina) oajacensis* (Kock). Von Martens 1892; Biol.  
Cent. Amer.:136–137.

Type Locality.—Oaxaca, México.

Distribution.—Known only from the type locality.

***Trichodiscina sinaloa* Pilsbry 1954**

*Trichodiscina sinaloa* Pilsbry 1954; Nautilus 67:81; text-fig. 2.-  
Thompson 2008:812.

Type Locality.—Drift of the Rio Fuerte, San Blas,  
Sinaloa, México. Holotype ANSP 166601.

Distribution.—Known only from the type locality.

***Trichodiscina suturalis suturalis* (Pfeiffer 1846)**

*Helix suturalis* Pfeiffer 1846; Proc. Zool. Soc. Lond. 14:37.- Reeve  
1851; Conch. Icon., *Helix*: pl. 61, fig. 301 (shell); pl. 110, fig.  
626 (shell).

*Helix (Patula) coactiliata* var.  $\gamma$  *suturalis* Pfeiffer. Fischer & Crosse  
1872:234.

*Helix (Trichodiscus) suturalis* Pfeiffer. Tryon 1887; Man. Conch.  
3:49; pl. 5, fig. 3 (shell).

*Helix (Trichodiscina) suturalis* Pfeiffer. Von Martens 1892; Biol.  
Cent. Amer.:136.

*Averellia (Trichodiscina) suturalis* (Pfeiffer). Baker 1922; Occ. Pap.  
Mus. Zool. Univ. Mich. (106):58.

*Averellia suturalis* (Pfeiffer). Goodrich & van der Schalie 1937:28.-  
Thompson 1957; Nautilus 70:101.- Thompson 1967c:254.

*Trichodiscina suturalis suturalis* (Pfeiffer). Thompson 2008:813.

Type Locality.—Honduras.

Distribution.—HONDURAS. GUATEMALA (Goodrich  
& van der Schalie 1937). Dept. Baja Verapaz: San Gerónimo,  
near Salama. Dept. Petén: San Luis (Von Martens 1892).  
CAMPECHE:5.1 mi. NNW of Dzibalchen; 19.2 mi. E of  
Silvituc (Thompson 1967c). QUINTANA ROO:4.0 mi. E of  
Xpujil, Campeche; 2.3 mi. SSE of Xiatil (Thompson 1967c).  
TABASCO: 0.5–1.0 mi. E of Teapa (Thompson 1957).  
VERACRUZ: Cuatolapam (Baker 1922).

***Trichodiscina suturalis pressula* (Morelet 1851)**

*Helix pressula* Morelet 1851; Test. Noviss. II:8.

*Helix (Patula) pressula* Morelet. Fischer & Crosse 1872:236; pl. 12,  
figs. 5–5c (shell).

*Trichodiscus pressula* (Morelet). Strebel 1880:34.

*Helix (Trichodiscus) pressula* Morelet. Tryon 1887; Man. Conch.  
3:50; pl. 5, figs. 4, 5 (shell).

*Helix (Trichodiscina) suturalis* var. *pressula* Morelet. Von Martens  
1892; Biol. Cent. Amer.:136; pl. 7, figs. 4, 4a, 4b (shell).

*Averellia pressula* (Morelet). Haas 1949; Nautilus 62:137.

*Helix almonte* Tristram 1863; Proc. Zool. Soc. Lond. 31:411.

*Helix almonteana* “Tristram”, Fischer & Crosse 1872:231.

*Trichodiscina suturalis pressula* (Morelet).- Thomposn 2008:813.

Type Locality.—Istapa, near San José, Dept. Escuintla,  
Guatemala.

Distribution.—COSTA RICA, Prov. San José:  
Uruca. GUATEMALA, Dept. Baja Verapaz: Purulha.  
Dept. Chimaltenango: Finca Montserrat, W slope of  
Volcán Acatenango (Haas 1949). Dept. Guatemala:  
limestone mountain La Pedrera N of Cd. Guatemala. Dept.  
Quetzaltenango: Las Mercedes (Von Martens 1892).

**Subfamily XANTHONICHINAE Strebel  
& Pfeffer 1880**

Xanthonicinae Strebel & Pfeffer, in Strebel 1880; Beitrag. Mex.  
Land- und Süßw.-Conch. IV:25.

Metastracini Nordseick 1978; Arch. für Molluskenkunde, 118:22–  
23.

Distribution.—México and Central America.

Taxonomy.—Four genera are recognized.

**Genus *Cryptostracon* Binney 1879**

*Cryptostracon* Binney 1879; Ann. New York Acad. Sci. 1:258.-  
Pilsbry 1900; Proc. Malac. Soc. London 4:27–28.- Cuzzo  
1997; Amer. Malac. Bull., 14:7.

Type Species.—*Cryptostracon gabbi* Binney 1879.

Distribution.—Costa Rica.

Taxonomy.—Two species are recognized.

***Cryptostracon corcovadensis* Cuzzo 1997**

*Cryptostracon corcovadensis* Cuzzo 1997; Amer. Malac. Bull.,  
14:2–8; fig. 1 (animal), fig. 2 (viscera), figs. 3, 4 (shell), fig. 5  
(pallial organs), figs. 6–10 (reproductive anatomy), figs. 11–14  
(radula).- Thompson 2008:814.

Type Locality.—Costa Rica, Prov. Puntarenas, Cor-  
covado National Park, Estacion Sirena, along Rio Los Patos;  
10 m alt. Holotype UCR-INBIO 648087.

Distribution.—COSTA RICA: known only from the  
vicinity of the type locality.

***Cryptostracon gabbi* Binney 1879**

*Cryptostracon gabbi* Binney 1879; Ann. New York Acad. Sci.  
1:258; pl. 11, fig 1.- Von Martens 1897:244.- Baker 1963; Proc.  
Acad. Nat. Sci. Phila. 115:248.- Cuzzo 1997; Amer. Malac.  
Bull., 14:108.- Thompson 2008:815.

Type Locality.—Flanks of Pico Blanco, 5000–7000 ft.  
elevation. Lectotype ANSP 246310 (Baker 1963:248).

Distribution.—Known only from the type locality.

**Genus *Metastracon* Pilsbry 1900**

*Metastracon* Pilsbry 1900; Proc. Malac. Soc. London 4:24–26.

Type Species.—*Metastracon mima* Pilsbry 1900.

Distribution.—Michoacán, México.

Taxonomy.—A single species is recognized.

***Metastracon mima* Pilsbry 1900**

*Metastracon mima* Pilsbry 1900; Proc. Malac. Soc. London 4:27; pl. 3, fig. 1 (animal), figs. 2, 3 (kidney), fig. 4 (retractor muscles), figs. 5, 6, 7 (shell), fig. 8 (reproductive anatomy), fig. 9 (jaw), fig. 10 (radula), fig. 11 (digestive system).- Thompson 2008:815.

Type Locality.—Morelia, Michoacán, México. Holotype ANSP 77245.

Distribution.—MICHOCÁN: Morelia; Uruapan (Pilsbry 1900).

**Genus *Semiconchula* Naranjo-Garcia, Polaco & Pearce 2000**

*Semiconchula* Naranjo-Garcia, Polaco & Pearce 2000; Archiv für Molluskenkunde 128:156.

Type Species.—*Semiconchula custepecana* Naranjo-Garcia, Polaco & Pearce 2000.

Distribution.—Southern Chiapas, México.

Taxonomy.—Two species are recognized.

***Semiconchula breedlovei* Naranjo-Garcia 2003**

*Semiconchula breedlovei* Naranjo-Garcia 2003; Proc. Calif. Acad. Sci. 54:225–230.- Thompson 2008:816.

Type Locality.—West of San Cristobal de Las Casas; steep, heavily wooded slope near the summit of Mukta vits (Cerro Huitepec), Chiapas, México. Holotype CAS 77540.

Distribution.—Known only from the type locality.

***Semiconchula custepecana* Naranjo-Garcia, Polaco & Pearce 2000**

*Semiconchula custepecana* Naranjo-Garcia, Polaco & Pearce 2000. Archiv für Molluskenkunde 128:153–161; figs. 1 (shell), fig. 2 (animal), fig. 3 (reproductive anatomy), fig. 4 (radula).- Thompson 2008:816.

Type Locality.—North side of Sierra Madre de Chiapas, east bank of Rio Custepec, ca. 4 km north by road from Finca Custepec toward Jaltenango, Chiapas, México, ca. 15°45'45" N, 92°57'45" W; elev. ca. 1040 m. Among riparian vegetation. Holotype Coleccion Nacional de Moluscos, Universidad Nacional Autonoma de México 326.

Distribution.—CHIAPAS: known from four localities within 10 km of the type locality.

**Genus *Xanthyx* Crosse & Fischer 1867**

*Xanthyx* Crosse & Fischer 1867; Jour. de Conchyl. 15:223.- Fischer & Crosse 1872:192.- Strebel 1880:26.

Type Species.—*Vitrina sumichrasti* Brot 1867.

Distribution.—Eastern México from San Luis Potosí

south to Chiapas.

Taxonomy.—Five species are recognized.

***Xanthyx chiapensis* (Pfeiffer 1856)**

*Simpulopsis chiapensis* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:377.- Reeve, 13, (*Simpulopsis*): pl. 1, fig. 1 (shell).

*Xanthyx chiapensis* (Pfeiffer). Fischer & Crosse 1872:203.- Thompson 2008:217.

Type Locality.—Chiapas, México.

Distribution.—Known only from the type locality.

***Xanthyx cordovanus* (Pfeiffer 1856)**

*Simpulopsis cordovanus* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:319; pl. 25, figs. 15, 16 (shell).

*Xanthyx cordovanus* (Pfeiffer). Crosse & Fischer 1867; Jour. de Conchyl. 15:225.- Fischer & Crosse 1872:200; pl. 10, figs. 3, 3a (shell).- Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:27; pl. 2, figs. 1f–1g; pl. 9, fig. 14 (radula), fig. 21 (jaw); pl. 10, fig. 7 (embryonic shell), 7A–7B (animal), fig. 7C (pallial organs), fig. 7D (buccal mass), fig. 7E (foot), fig. 7F, 7G (reproductive anatomy).- Naranjo-Garcia, Polaco & Pearce 2000, Arch. für Mollusk. 128:160.- Thompson 2008:817.

Type Locality.—Córdoba, Veracruz, México. Syntypes BMNH 1992132 (Naranjo-Garcia et al. 2000:160).

Distribution.—VERACRUZ: Córdoba; San Antonio de Monte, between Jalapa and Misantla (Strebel 1880).

***Xanthyx potosiana* Dall 1905**

*Xanthyx potosiana* Dall 1905; Smithsonian Miscellaneous Collections, 48:190; pl. 44, figs. 1, 2, 7 (shell).- Correa-Sandoval & Rodriguez 2002; Acta Zool. Mex. 2(86):61.- Correa-Sandoval & Salazar 2005; Acta Zool. Mex. 21:61.- Correa-Sandoval et al. 2007; Acta Zool. Mex. 23:162.- Thompson 2008:217.

Type Locality.—Sierra Álvarez, San Luis Potosí, México; 7900 ft. alt. Holotype USNM 110396.

Distribution.—NUEVO LEÓN: El Salto, Zaragoza (Correa-Sandoval & Salazar 2005). SAN LUÍS POTOSÍ: Sierra Álvarez. TAMAULIPAS: Aniceto Medrono (Correa-Sandoval & Rodriguez 2002); El Cielo Biosphere Reserve (Correa-Sandoval & Rodriguez 2005).

***Xanthyx salleanus* (Pfeiffer 1856)**

*Simpulopsis salleana* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:319; pl. 25, figs. 15, 16 (shell).

*Xanthyx salleanus* (Pfeiffer).- Crosse & Fischer 1867; Jour. de Conchyl. 15:225.- Fischer & Crosse 1872:199; pl. 10, figs. 2, 2a (shell).- Strebel 1880:26; pl. 2, figs. 1a–e (shell); pl. 10, fig. 8 (embryonic whorls).- Von Martens 1897:343.- Pilsbry 1900; Proc. Malac. Soc. London 4:27–28; pl. 3, 12 (animal), fig. 13 (pallial organs), fig. 14 (reproductive anatomy), fig. 15 (retractor muscles).- Naranjo-Garcia, Polaco & Pearce 2000, Arch. für Mollusk. 128:160.- Thompson 2008:818.

Type Locality.—Córdoba, Veracruz, México. Syntypes BMNH 1992131 (Naranjo-Garcia et al. 2000:160).

Distribution.—OAXACA (Von Martens 1897). VERACRUZ: Córdoba; Pacho, near Jalapa (Strebel 1880).

***Xanthyx sumichrasti* (Brot 1867)**

*Vitrina sumichrasti* Brot 1867; Jour. de Conchyl. 15:70; pl. 4, fig. 2 (shell).

*Xanthyx sumichrasti* (Brot). Crosse & Fischer 1867; Jour. de Conchyl. 15:214; pl. 10, figs. 1–4 (anatomy).- Fischer & Crosse 1872:201; pl. 9, figs. 14–19 (anatomy).- Naranjo-Garcia, Polaco & Pearce 2000; Arch. für Mollusk. 128:160.- Thompson 2008:818.

Type Locality.—México. Holotype Museum d'Historie Naturelle de Geneve 993/213 (Naranjo-Garcia et al. 2000:160).

Distribution.—MÉXICO: without nearer indication of locality.

**Family POLYGYRIDAE Pilsbry 1895**  
**Subfamily POLYGYRINAE Pilsbry 1895**

Distribution.—Temperate North America south to northern Central America. One species has been widely introduced to other tropical and subtropical regions.

Taxonomy.—Emberton (1995) listed twelve genera belonging to this subfamily.

**Genus *Ashmunella* Pilsbry & Cockerell 1899**

*Ashmunella* Pilsbry & Cockerell 1899; Nautilus 12:107.- Pilsbry & Cockerell 1899; Proc. Acad. Nat. Sci. Phila. 51:188.- Ancey & Mordoch 1901; Jour. Malac., 8:73.- Pilsbry 1905; Proc. Acad. Nat. Sci. Phila.:223.- Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 61:503.- Pilsbry & Ferriss; 1910; Proc. Acad. Nat. Sci. Phila. 62:95.- Pilsbry & Ferriss 1917; Proc. Acad. Nat. Sci. Phila. 69:88.- Pilsbry 1940; Land Moll. N. Amer. I:912–918.- Bequaert & Clench 1973; Moll. Arid S.W.:37–40, 130–135.

Type Species.—*Polygyra miorhyssa* Dall 1898 (Pilsbry 1905:223).

Distribution.—Western Texas, New Mexico, and southeastern Arizona, south into Chihuahua, México.

Taxonomy.—Numerous species. Five occur in México.

***Ashmunella intricata* Pilsbry 1948**

*Ashmunella intricata* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:203; pl. 13, fig. 4 (shell).

Type Locality.—Mountain side about 4.5 miles southeast of Pearson [Mata Ortíz], among stones at the base of a cliff, Chihuahua, México; 6200 ft. alt. Holotype ANSP 166324.

Distribution.—Known only from the type locality.

***Ashmunella juarazensis* Pilsbry 1948**

*Ashmunella juarazensis* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:200–202; pl. 13, fig. 2 (shell), text-fig. 6C–D (genitalia).

Type Locality.—South side of the Rio Piedras Verdes 3.5 miles above Colonia Juaréz, Chihuahua, México; 5200 ft. alt. Holotype ANSP 166161.

Distribution.—CHIHUAHUA: known only from the immediate vicinity of the type locality.

***Ashmunella meridionalis* Pilsbry 1948**

*Ashmunella meridionalis* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:199–200; pl. 13, fig. 3 (shell), text figs. 6E–I (genitalia).

Type Locality.—“Barranca Colorado”, 21 miles south of

Miñeca, Chihuahua, México. Holotype ANSP 164084.

Distribution.—CHIHUAHUA: known only from the vicinity of the type locality.

***Ashmunella milesi* Reeder 1993**

*Ashmunella milesi* Reeder 1993; Veliger 36:69–71; figs. 1–4 (shell), 5 (genitalia).

Type Locality.—Northern Sonora, México, west of Cananea; south-facing talus slope along road to microwave tower, Sierra Mariquita, ca. 2000 m alt.; 31°2.0' N, 110°22.4' W. Holotype SBMNH 35609.

Distribution.—Known only from the type locality.

***Ashmunella montivaga* Pilsbry 1948**

*Ashmunella montivaga* Pilsbry 1948; Proc. Acad. Nat. Sci. Phila. 100:202–203; pl. 13, fig. 1 (shell), text-fig. 5A–B (genitalia).

Type Locality.—Sierra de La Breña, in a rock slide above the road from Colonia Juaréz and Pearson [Mata Ortiz] to Pacheco, Chihuahua, México; 700 ft. alt. Holotype: ANSP 166158.

Distribution.—Known only from the type locality

**Genus *Erectidens* Pilsbry 1953**

*Erectidens trichalis* Pilsbry 1953; Nautilus 67:47.- Bogan 1992; Malac. Rev. 25:131–133.

Type Species.—*Erectidens trichalis* Pilsbry 1953.

Distribution.—Known only from river drift along the Rio Maurisco, about 25 km south of Monterrey, Nuevo León, México.

Taxonomy.—A single species is recognized. It is known only from the holotype. Pilsbry (1953b:46) tentatively placed *Erectidens* in the Polygyridae. Other authors placed it in other families without the benefit of examining additional material (Bogan 1992:131).

***Erectidens trichalis* Pilsbry 1953**

*Erectidens trichalis* Pilsbry 1953; Nautilus 67:47; figs. 1–2 (shell).- Bogan 1992; Malac. Rev. 25:131–133; figs. 1a–1b (shell).

Type Locality.—Rio Maurisco near its junction with the Rio Carrizo to form the Rio Ramos; the Rio Maurisco is a short stream on the eastern slope of the Sierra Madre Oriental about 25 km south of Monterrey, Nuevo León, México. Holotype ANSP 164748.

Distribution.—Known only from the type locality.

**Genus *Giffordius* Pilsbry 1930**

*Giffordius* Pilsbry 1930; Nautilus 43:143.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:249.

Type Species.—*Giffordius pichoti* Pilsbry 1930.

Distribution.—Isla de Providencia, Colombia.

Taxonomy.—Two species are recognized.

***Giffordius pinchoti* Pilsbry 1930**

*Giffordius pinchoti* Pilsbry 1930; Nautilus 43:143.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:249–251; pl. 15, figs. 5–5c (shell); text-fig. 9 (anatomy).- Thompson 2008:822.



Type Locality.—Valley opening west, north of High Peak, Isla de Providencia. Holotype ANSP 150865.

Distribution.—Known only from Isla de Providencia.

### ***Giffordius corneliae* Pilsbry 1930**

*Giffordius corneliae* Pilsbry 1930; Nautilus 43:143.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:251–252; pl. 15, figs. 6–6a (shell).- Thompson 2008:822.

Type Locality.—Valley opening west, north of High Peak, Isla de Providencia. Holotype ANSP 150864.

Distribution.—Known only from Isla de Providencia.

### **Genus *Polygyra* Say 1818**

*Polygyra* Say 1818: Jour. Acad. Nat. Sci. Phila. 1:276.- W. G. Binney 1878:262.- Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:311.- Pilsbry 1940; Land Moll. N. Amer. 1:578–582.- Emberton 1995; Malacologia 37:89.

*Cyclodoma* Swainson 1840; Treatise on Malacology:193.

*Ulostoma* Albers 1856; Die Heliceen:95.

*Anchistoma* H. and A. Adams 1855; Genera of Recent Mollusca, 2:205. (Name amended to *Angistoma*; Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:311.)

Type Species.—*Polygyra: Helix septemvolva* Say 1818 (Hermannsen 1847:317). *Cyclodoma: Helix septemvolva* Say 1818 (Pilsbry 1930). *Ulostoma: Helix septemvolva* Say 1818 (Pilsbry 1930). *Anchistoma: Helix septemvolva* Say 1818 (Pilsbry 1930).

Distribution.—The southeastern United States south throughout most of México to Guatemala and Belize.

Taxonomy.—A recent analysis of the phylogeny of the Polygyridae recognized within the clade “Polygyri” seven subclades of unequal value (Emberton 1995). Each of these subclades was elevated to generic rank. Polygyri equals *Polygyra* plus *Praticolella* and *Giffordius*. The remaining five genera recognized by Emberton (1995) were treated in previous classifications as subgenera or sections within *Polygyra*. The phylogeny proposed by Emberton produced a new understanding of group relationships, but the proposed name changes result in taxonomic inflation without producing clear advantages over previous nomenclatorial systems. For purposes of this document *Giffordius*, *Praticolella*, and *Polygyra* are recognized as separate genera.

Six subgenera of *Polygyra* are recognized. Four occur in México. Two others, *Lobosculum*, and *Daedalochila* are extralimital.

### **Subgenus *Polygyra* Say 1818**

Distribution.—The Bahama Islands, Bermuda, Cuba, and the coastal zone of the southeastern United States south to Yucatán, México.

Taxonomy.—Four species are recognized. One occurs in México.

### ***Polygyra (Polygyra) cereolus cereolus* (Muhlfeld 1818)**

*Helix cereolus* Muhlfeld 1818; Gesellschaft naturforschender Freunde zu Berlin, Magazin, 8:11; pl. 2, figs. 18a–18b (shell).

*Polygyra cereolus cereolus* (Muhlfeld).- W. G. Binney 1878; Terr. Moll. N. Amer. 5:283; fig. 181.- Vanatta 1912; Nautilus 26:16–21, 31–34.- Pilsbry 1940; Land Moll. N. Amer. 1:582–586; fig. 379 (shell).- Thompson 2008:823.

*Helix cereolus* var. *laminifera* W. G. Binney 1858; Proc. Acad. Nat. Sci. Phila.:200 (*nomum nudum*).

*Helix carpenteriana* Bland 1860; Ann. Lyceum Nat. Hist. N. Y., 7:138.

*Polygyra cereolus carpenteriana* (Bland). Pilsbry 1894; Man. Conch. 9:73.- Bequaert & Clench 1933; Publ. Carnegie Inst. Wash., (431):531.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. 534:7, 8.- Rehder 1966; Proc. Biol. Soc. Wash. 79:289.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):17.

Type Localities.—*Helix cereolus*: restricted to Key West, Florida (Pilsbry 1940:584). *Helix carpenteriana*: Key Biscayne, Dade Co., Florida. Lectotype ANSP 10972 (Pilsbry 1940:586).

Distribution.—Florida and eastern México. QUINTANA ROO: Puerto Morelos; Isla Mujeres. YUCATÁN: 1.7 km SSE Puerto Telchac (UF 19190); Progreso; 5.3 km S Progreso (UF 19189). SAN LUÍS POTOSÍ: Laguna Media Luna, 10 km SSW of Rio Verde (UF 151961, UF 189664).

### **Subgenus *Acutidens* Pilsbry 1956**

*Acutidens* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:26.

Type Species.—*Helix (Polygyra) acute-dentata* W. G. Binney 1858.

Distribution.—Coastal regions of Sinaloa, México.

Taxonomy.—The subgenus contains a single species.

### ***Polygyra (Acutidens) acutedentata* (W. G. Binney 1858)**

*Helix (Polygyra) acute-dentata* W. G. Binney 1858; Proc. Acad. Nat. Sci. Phila. (for 1857), 9:183.

*Helix acutedentata* Binney. W. G. Binney 1869; Land and Fresh Water Shells of N. Amer., 1:103; fig. 179.

*Polygyra acutedentata* (Binney). Von Martens 1892; Biol. Cent. Amer.:172.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:26–27; pl. 2, figs. 6–6a (shell).

*Daedalochila acutidentata* (Binney). Emberton 1995; Malacologia 37:91.

*Helix (Polygyra) loisa* W. B. Binney 1858; Proc. Acad. Nat. Sci. Phila. (for 1857), 9:183.

*Helix acutedentata* var. *quinquedentata* Fischer & Crosse 1872; Miss. Sci. Mex. 1:289.

*Polygyra (Acutidens) acutedentata* (W. G. Binney). Thompson 2008:824.

*Helix acutedentata* var. *minor* Fischer & Crosse 1872; Miss. Sci. Mex. 1:289.

*Helix unguifera* Mousson 1883; Jour. de Conchyl. 31:216, pl. 9, fig.- Fischer & Crosse 1892; Miss. Sci. Mex. II:665; pl. 71; figs. 11–11b.- Martens 1892; Biol. Cent. Amer.:172, 627. (*A nomum nudum*).

Type Locality.—*Helix acuta-dentata*: Mazatlán, Sinaloa, México; holotype ANSP 33449. *Helix loisa*: Mazatlán, Sinaloa, México; holotype: ANSP 33450. *Helix acutedentata* var. *quinquedentata*: not given. *Helix acutedentata* var. *minor*: along streams at Mazatlán, Sinaloa, México.

Distribution.—SINALOA: known only from the vicinity

of the type locality; highway ca. 4 km N of Mazatlán; ca. 10 km N of Mazatlán.

### Subgenus *Linisia* Pilsbry 1930

*Linisia* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:315.- Pratt 1981; Unpubl. thesis:57.- Emberton 1995; Malacologia 37:90.  
*Erymodon* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:20.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611): 10–12.  
*Monophysis* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:25.  
*Solidens* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:27.

Type Species.—*Linisia*: *Helix* (*Polygyra*) *anilis* Gabb 1865. *Erymodon*: *Helix ventrosula* Pfeiffer 1845. *Monophysis*: *Helix* (*Polygyra*) *behri* Gabb 1865. *Solidens*: *Helix* (*Polygyra*) *anilis* Gabb 1865.

Distribution.—Texas, Oklahoma and Louisiana south throughout most of México to the Dept. Petén, Guatemala, and Belize.

Taxonomy.—Twenty-four species and five subspecies are recognized. All occur or are presumed to occur in México and adjacent Central America.

### *Polygyra* (*Linisia*) *albicostulata* Pilsbry 1896

*Polygyra albicostulata* Pilsbry 1896; Proc. Acad. Nat. Sci. Phila.:18–19; pl. 2, figs. 4–6 (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:25; pl. 2, fig 5 (shell).

*Linisia albicostulata* (Pilsbry). Emberton 1995; Malacologia 37:90.  
*Polygyra* (*Linisia*) *albicostulata* Pilsbry. Thompson 2008:826.

Type Locality.—“México”. Holotype presumed to be in the ANSP.

Distribution.—NAYARIT: Drift debris of the Rio Grande de Santiago at Yago.

### *Polygyra* (*Linisia*) *anilis* (Gabb 1865)

*Helix anilis* Gabb 1865; Amer. Jour. Conch. 1:209; pl. 19, figs. 1–4 (shell).- Fischer & Crosse 1872; Miss. Sci. Mex. 1:269.

*Polygyra analis* (Gabb). Tryon 1867; Amer. Jour. Conch. 3:158, 176; pl. 7, figs. 17–18 (shell).- Von Martens 1892; Biol. Cent. Amer. I:172.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:27; pl. 2, figs. 7–7a (shell).

*Linisia anilis* (Gabb). Emberton 1995; Malacologia 37:90.

*Helix solidens* Mabile 1895; Bull. Soc. Philomath. Paris, (8), 7:65.

*Polygyra* (*Linisia*) *anilis* (Gabb). Thompson 2008:826.

Type Localities.—*Helix anilis*: Near Guaymas, Sonora, México; lectotype: ANSP 33447a (H. B. Baker 1963:241). *Helix solidens*: south of the village of Guaymas, Sonora, México.

Distribution.—Coastal lowland of Sonora. SONORA: near Ortiz Station; Pitahaya; numerous places along highway from Cameja to Navojoa.

### *Polygyra* (*Linisia*) *ariadnae* (Pfeiffer 1848)

*Helix ariadnae* Pfeiffer 1848; Zeitschr. f. Malak., 120.- Pfeiffer, in Martini & Chemnitz, Syst. Conch. Cab., (2 ed.), *Helix*, 1:372; pl. 65, figs. 29–31 (shell).- Binney & Bland 1869; Land and freshwater shells N. A., 1:104; figs. 180 (shell).

*Helix* (*Polygyra*) *texasiana* Pfeiffer. Fischer & Crosse 1872; Miss. Sci. Mex. 1:287; pl. 12, figs. 8–8c.

*Polygyra ariadnae* (Pfeiffer). Binney 1869; Terr. Air-breath. Moll.

N. A., V:280; fig. 179.- Binney 1985; Man. Amer. Land Moll.:376; fig. 11 (shell).- Strebel 1880; Beitrag., IV:50; pl. 3, fig. 3 (shell).- Pilsbry 1928; Proc. Acad. Nat. Sci. Phila. 80:117.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:27–28.

*Daidalochela ariadnae* (Binney). Emberton 1995; Malacologia 37:91.

*Helix couchiana* Lea 1857; Proc. Acad. Nat. Sci. Phila. 9:102.- Lea 1857; Obs. Genus *Unio*, 11:139; pl. 24, fig. 112 (shell).

*Polygyra* (*Linisia*) *ariadnae* (Pfeiffer). Thompson 2008:826.

Type Localities.—*Helix ariadnae*: not given. *Helix couchiana*: “Texas”.

Distribution.—TAMAULIPAS: 1 mi. N of Jimenéz; Mesa de Solis, near La Lajilla, between Padilla and Jimenéz; km 155, 9 km SW of San Fernando; Matamoras (UF).

### *Polygyra* (*Linisia*) *aulacomphala* Pilsbry & Hinkley 1907

*Polygyra aulacomphala* Pilsbry & Hinkley 1907; Nautilus 21:38–39; pl. 5, fig. 12 (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:29.

*Linisia aulacomphala* (Pilsbry & Hinkley). Emberton 1995; Malacologia 37:90.

*Polygyra* (*Linisia*) *aulacomphala* Pilsbry & Hinkley. Thompson 2008:927.

Type Locality.—River drift of the Rio Panuco at Tampico, Tamaulipas, México. Holotype ANSP 96595.

Distribution.—TAMAULIPAS: known only from river drift shells from the type locality, and from river drift of the Rio Temesí, W of Maquiscatzín.

### *Polygyra* (*Linisia*) *behri* (Gabb 1865)

*Helix* (*Polygyra*) *behrii* Gabb 1865; Amer. Jour. Conch. 1:208; pl. 19, figs. 5–6 (shell).- Fischer & Crosse 1872; Miss. Sci. Mex. 1:276.

*Daedalichila behrii* (Gabb). Tryon 1867; Amer. Jour. Conch. 3:64, 80; pl. 5, figs. 40, 41, 43 (shell).

*Polygyra behri* (Gabb). Von Martens 1892; Biol. Cent. Amer.:171.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:26; pl. 2, fig. 8 (shell).

*Linisia behri* (Gabb). Emberton 1995; Malacologia 37:90.

*Polygyra* (*Linisia*) *behri* (Gabb). Thompson 2008:828.

Type Locality.—Near Guaymas, Sonora, México. Holotype ANSP 33448.

Distribution.—Coastal regions of northwestern México. SINALOA: Topolobampo; Rio Fuerte, San Blas. SONORA: Alamos; Jori; Pitahaya; northern foothills of Cerro Zaporxa, E of Cajeme; south from Cameje to Navojoa on the Rio Mayo.

### *Polygyra* (*Linisia*) *bicuris bicurris* (Pfeiffer 1857)

*Helix bicurris* Pfeiffer 1857; Proc. Zool. Soc. Lond. 25:109.- Pfeiffer 1859; Monogr. Helic. Viv., 4:315.

*Helix* (*Polygyra*) *bicurris* Pfeiffer. Fischer & Crosse 1872; Miss. Sci. Mex. 1:280; pl. 12, figs. 13–13c (shell).

*Polygyra bicurris* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:168, 627; pl. 7, figs. 8–8c (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:20–21; pl. 2, figs. 4–4c (shell).

*Linisia bicurris* (Pfeiffer). Emberton 1995; Malacologia 37:90.

*Polygyra* (*Linisia*) *bicurris bicurris* (Pfeiffer). Thompson 2008:828.

Type Locality.—“Mexico”.

Distribution.—DURANGO: Ventanas. NAYARIT: Islas

Mariás. SONORA: Arroyo San Rafael near San Bernardo; Arroyo Gochico ca. 7 km from San Bernard, 300 m alt. Fischer & Crosse (1872) recorded this species from Chiapas. Streams (1894:161) recorded it from Monterey, Nuevo León. Both records are unlikely.

***Polygyra (Linisia) bicurris insculpta* Pilsbry 1956**

*Polygyra bicurris insculpta* Pilsbry 1956, Proc. Acad. Nat. Sci. Phila. 108:21 (unfigured).

*Polygyra (Linisia) bicurris insculpta* Pilsbry. Thompson 2008:828.

Type Locality.—Hill in the coastal low land between Yago and the Rio Santiago, Nayarit, México; 500 ft. alt. Holotype ANSP 166441.

Distribution.—Known only from the type locality.

***Polygyra (Linisia) cantralli* Solem 1957**

*Polygyra cantralli* Solem 1957; Notulae Naturae (298):9–10; pl. 1, figs. 15–18 (shell).

*Linisia cantralli* (Solem). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) cantralli* Solem. Thompson 2008:829.

Type Locality.—Sierra Autlán, about 20 miles southeast of Autlán, Jalisco, México; 8200 ft. alt. Holotype UMMZ 185506.

Distribution.—Known only from the type locality.

***Polygyra (Linisia) euglypta* Pilsbry 1896**

*Polygyra euglypta* Pilsbry 1896; Proc. Acad. Nat. Sci. Phila. 48:18; pl. 2, figs. 7–9 (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:25.

*Linisia euglypta* (Pilsbry). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) euglypta* Pilsbry. Thompson 2008:829.

Type Locality.—“Sinaloa”. Lectotype: ANSP 33462 (H. B. Baker 1963:241).

Distribution.—SINALOA: hills around Pánuco, ca. 50 mi. from Mazatlán 1800 ft. alt. (Pilsbry 1956).

***Polygyra (Linisia) hertleini* Haas 1961**

*Polygyra hertleini* Haas 1961; Fieldiana, Zool., 44:21–21; fig. 12 (shell).

*Linisia hertleini* (Haas). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) hertleini* Haas. Thompson 2008:829.

Type Locality.—Tenecatita Bay, Jalisco, México. Holotype: FMNH 106703).

Distribution.—Known only from the type locality.

***Polygyra (Linisia) hindsi hindsi* (Pfeiffer 1845)**

*Helix hindsi* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:132.- Pfeiffer 1845, in Martini and Chemnitz, Syst. Conch. Cab., *Helix*, 1:373; pl. 65, figs. 5–6 (shell).- Reeve 1852; Conch. Icon., vii:92; pl. 70, fig. 712 (shell).

*Polygyra ventrosula* var. *hindsi* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:169–170.- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila.:192.

*Polygyra hindsi* (Pfeiffer). Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108; 23–24; pl. 2, figs. 3–3b (shell).- Solem 1957; Notulae Naturae (298):9.

*Linisia hindsi* (Pfeiffer). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) hindsi hindsi* (Pfeiffer). Thompson 2008:829.

Type Locality.—“Texas”. Restricted to Tepic, Nayarit, México (Pilsbry 1956).

Distribution.—JALISCO: Actopan; Chapala; Guadalajara. NAYARIT: banks of the Rio Tepic, ca. 5 km below Tepic; 20 mi. E of Yago. SINALOA: along Rio Fuerte, at San Blás.

***Polygyra (Linisia) hindsi guadalajarensis* Pilsbry 1910**

*Polygyra guadalajarensis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. (1909):541; text-figs. 2 (shell).

*Polygyra hindsi guadalajarensis* Pilsbry. Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:24.

*Polygyra (Linisia) hindsi guadalajarensis* Pilsbry. Thompson 2008:830.

Type Locality.—Guadalajara, Jalisco, México. Holotype: ANSP 99513.

Distribution.—Known only from the type locality.

***Polygyra (Linisia) hindsi heteroea* Pilsbry 1956**

*Polygyra hindsi heteroea* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:24; pl. 2, fig. 2 (shell).

*Polygyra (Linisia) hindsi heteroea* Pilsbry. Thompson 2008:830.

Type Locality.—Bank of the Laguna Santa Maria, Nayarit, México; at about 2600 ft. alt. Holotype: ANSP 166188.

Distribution.—Known only from the type locality.

***Polygyra (Linisia) implicata* (Von Martens 1865)**

*Helix implicata* “Beck” Von Martens 1865; Malak. Bl., 12:20.- Fischer & Crosse 1872; Miss. Sci. Mex. 1:283; pl. 12, figs. 12–12e (shell).

*Polygyra implicata* (Von Martens). Strebel 1880; Beitrag, 4:47–48; pl. 3, figs. 1–1h (shell).- Von Martens 1892; Biol. Cent. Amer.:164; pl. 7, figs. 5–5c (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:29; pl. 3, figs. 3–5a.

*Polygyra oppilata implicata* (Von Martens). Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. (1909):543–544.

*Millerelix ? implicata* (Von Martens). Emberton 1995; Malacologia 37:91.

*Polygyra (Linisia) implicata* (Von Martens). Thompson 2008:830.

Type Locality.—Rio Tecolota, near the shore, about 21° N Lat., Veracruz, México.

Distribution.—Eastern México from central Veracruz north to Tamaulipas. NUEVO LEÓN: 2.8 mi. N of Santiago. SAN LUÍS POTOSÍ: various places around Valles; Mecos; San Dieguito; Tamazunchale; Canoas; Ignacio Agua Buena. TAMAULIPAS: Tampico; drift of Rio Temesí W of Magiscatzin; 4 mi. S of Villagrán. VERACRUZ: Agua Caliente; Rancho Guerrero; Camino de Arroyo Hondo; Camino de Obispo; Misantla; Barranca de Mahuistlan between Jalapa and Mirador; San Juan Miahuatlan; Jalapa; Veracruz.

***Polygyra (Linisia) matermontana matermontana* Pilsbry 1896**

*Polygyra matermontana matermontana* Pilsbry 1896; Proc. Acad. Nat. Sci. Phila.:16–17; pl. 3, figs. 10–12 (shell).- Pilsbry & Clapp 1909; Nautilus 22:114.- Solem 1954; Nautilus 68:6.



*Linisia matermontana* (Pilsbry). Emberton 1995; *Malacologia* 37:90.

*Polygyra (Linisia) matermontana matermontana* Pilsbry. Thompson 2008:831.

Type Locality.—Sierra Madre, Colima, México. Holotype: ANSP 834a.

Distribution.—COLIMA: “Sierra Madre”. GUERRERO: Balsas, in limestone rocks 1000 ft. above the Rio Balsas; Taxco.

***Polygyra (Linisia) matermontana jaliscoensis* Pilsbry 1910**

*Polygyra matermontana jaliscoensis* Pilsbry 1910; *Proc. Acad. Nat. Sci. Phila.* (1909):541.- Pilsbry 1920; *Proc. Acad. Nat. Sci. Phila.* 72:192.

*Polygyra (Linisia) matermontana jaliscoensis* Pilsbry. Thompson 2008:831:

Type Locality.—Guadalajara, Jalisco, México. Holotype: ANSP 99512.

Distribution.—Known only from the type locality.

***Polygyra (Linisia) nelsoni* Dall 1897**

*Polygyra nelsoni* Dall 1897; *Nautilus* 11:74.- Solem 1957; *Notulae Naturae* (298):9; pl. 1, figs. 11–14 (shell).

*Polygyra nelsoni* var. *colisella* Dall 1897; *Nautilus* 11:74.

*Linisia nelsoni* (Dall). Emberton 1995; *Malacologia* 37:90.

*Polygyra (Linisia) nelsoni* Dall. Thompson 2008:832.

Type Localities.—*Polygyra nelsoni*: near San Sebastian [between Milpillas and San Sebastian], Jalisco, México; 3900 ft. alt.; holotype USNM 190921. *Polygyra nelsoni* var. *colisella*: not stated; syntypes USNM 190922.

Distribution.—JALISCO: La Laguna; vicinity of San Sabastian.

***Polygyra (Linisia) oppilata* (Morelet 1849)**

*Helix oppilata* Morelet 1849; *Test. Nov.*, I:8.- Fischer & Crosse 1872; *Miss. Sci. Mex.* I:285; pl. 12, fig. 11a-c (shell).

*Polygyra oppilata* (Morelet). Strebel 1880; *Beitrag*, IV:49.- Von Martens 1892; *Biol. Cent. Amer.*:164–165.- Pilsbry 1956; *Proc. Acad. Nat. Sci. Phila.* 108:28–29; pl. 3, figs. 2–2a (shell).

*Polygyra oppilata complicata* Pilsbry 1910; *Proc. Acad. Nat. Sci. Phila.* 61:543.

*Daedalocheila oppilata* (Morelet). Emberton 1995; *Malacologia* 37:91.

*Polygyra (Linisia) oppilata* (Morelet). Thompson 2008:832.

Type Localities.—*Helix oppilata*: Bequaert and Clench [1933:532] restricted to the type locality of Campeche [“*Littora Yucateana*”]; no Campeche record is otherwise reported. *Polygyra oppilata complicata*: south of Valles, San Luis Potosí; lectotype: ANSP 99003a (H. B. Baker 1963:241).

Distribution.—The species is known from northern Veracruz and adjacent regions of Tamaulipas and San Luis Potosí. SAN LUÍS POTOSÍ: mountains near Valles. TAMAULIPAS: foothills near Gonzalez; Tampico. VERACRUZ: Veracruz.

***Polygyra (Linisia) pergrandis* Solem 1959**

*Polygyra pergrandis* Solem 1959; *Occ. Pap. Mus. Zool. Univ. Mich.*

(611):10–12; pl. 1, figs. 1–3 (shell).

*Linisia pergrandis* (Solem). Emberton 1995; *Malacologia* 37:90.

*Polygyra (Linisia) pergrandis* Solem. Thompson 2008:833.

Type Locality.—Cerro de Barolosa, north of Coalcomán, Sierra de Coalcomán, Michoacán; 9000 ft. alt. Holotype: UMMZ 191180.

Distribution.—MICHOACÁN: known only from Cerro de Barolosa above 7500 ft. alt.

***Polygyra (Linisia) polita* Pilsbry & Hinkley 1907**

*Polygyra polita* Pilsbry & Hinkley 1907; *Nautilus* 21:38; pl. 5, figs. 11 (shell).- Pilsbry 1928; *Proc. Acad. Nat. Sci. Phila.* 80:117.- Pratt 1981; Unpubl. thesis:80–84.

*Polygyra scintilla* Pilsbry & Hubricht 1956; *Nautilus* 69:94–95; pl. 5, figs. 3–3a (shell).

*Linisia polita* (Pilsbry & Hinkley). Emberton 1995; *Malacologia* 37:90.

*Polygyra (Linisia) polita* Pilsbry & Hinkley. Thompson 2008:833.

Type Localities.—*Polygyra polita*: in river drift at Tampico, Tamaulipas, México; holotype: ANSP 96597. *Polygyra scintilla*: along a railroad 1.5 miles north of Raymondville, Willacy Co., Texas; holotype: ANSP 196560.

Distribution.—Extreme southern Texas and northeastern México. NUEVO LEÓN: river drift, Sabinas Hidalgo. TAMAULIPAS: loess 1.4 mi. S of Ciudad. Mier; drift, Rio San Fernando, San Fernando; 9 mi. SW of Santa Teresa; Mesa de Solís, near La Lajilla, between Padilla and Jimenéz.

***Polygyra (Linisia) ponsonbyi* Pilsbry 1896**

*Polygyra ponsonbyi* Pilsbry 1896; *Proc. Acad. Nat. Sci. Phila.*:17–18; pl. 2, figs. 1–3 (shell).- Pilsbry 1956; *Proc. Acad. Nat. Sci. Phila.* 108:22.

*Linisia ponsonbyi* (Pilsbry). Emberton 1995; *Malacologia* 37:90.

*Polygyra (Linisia) ponsonbyi* Pilsbry. Thompson 2008:833.

Type Locality.—“México”; holotype: ANSP 67808.

Distribution.—Unknown.

***Polygyra (Linisia) rhoadsi* Pilsbry 1899**

*Polygyra rhoadsi* Pilsbry 1899; *Proc. Acad. Nat. Sci. Phila.*:393–394.- Pilsbry 1903; *Proc. Acad. Nat. Sci. Phila.*:763; pl. 51, figs. 2–2b (shell).- Pilsbry 1956; *Proc. Acad. Nat. Sci. Phila.* 108:29–30; pl. 3, figs. 6–8 (shell).- Correa-Sandoval 1993; *Rev. Biol. Trop.* 41:685.

*Millerelix rhoadsi* (Pilsbry). Emberton 1995; *Malacologia* 37:91.

*Polygyra (Linisia) rhoadsi* Pilsbry. Thompson 2008:834.

Type Locality.—Topo Chico, near Monterey, Nuevo León, México. Holotype ANSP 77126a (H. B. Baker 1963:241).

Distribution.—NUEVO LEÓN: Topo Chico, near Monterrey; subfossil near an arroyo 4 mi. NW of Pesqueria Chica; 13 mi. W of Santa Catarina; Santiago.

***Polygyra (Linisia) richardsoni* Von Martens 1892**

*Polygyra richardsoni* Von Martens 1892; *Biol. Cent. Amer.*:168, 627; pl. 7, figs. 9–9c (shell).- Pilsbry 1956; *Proc. Acad. Nat. Sci. Phila.* 108:24–25.

*Polygyra richardsoni* var. *lingualis* Pilsbry 1899; *Nautilus* 12:144.

*Polygyra richardsoni* form *paucicostata* Dall 1926; *Proc. Calif.*

Acad. Sci. (4) 15:476; pl. 36, figs. 3–5.

*Linisia richardsoni* (Von Martens). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) richardsoni* Von Martens. Thompson 2008:834.

Type Localities.—*Polygyra richardsoni*: Mazatlán, Sinaloa, México. *Polygyra richardsoni* var. *lingualis*: Rosaria, near Mazatlán, Sinaloa, México; lectotype: ANSP 73999a (H. B. Baker 1963:241). *Polygyra richardsoni* form *paucicostata*: Islas Mariás, Nayarit, México; lectotype: CAS 2211 (H. B. Baker 1963:241).

Distribution.—COLIMA: Colima. NAYARIT: Islas Mariás. SINALOA: many localities in the vicinity of Mazatlán.

#### ***Polygyra (Linisia) suprazonata* Pilsbry 1899**

*Polygyra suprazonata* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila.:393–394.- Pilsbry 1903; Proc. Acad. Nat. Sci. Phila.:763; pl. 51; figs. 1–1b (shell).- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:22.- Solem 1959; Occ. Pap. Mus. Zool. Univ. Mich. (611):9–10.

*Linisia suprazonata* (Pilsbry). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) suprazonata* Pilsbry. Thompson 2008:835.

Type Locality.—Tzintzuntzán, Michoacán, México. Lectotype ANSP 77125 (H. B. Baker 1963:241).

Distribution.—MICHOCÁN: 1 mi. N of San Pedro Damian, Sierra de Coalcomán; 7–8.5 mi. N of Uruapán, 6800–7200 ft. alt.; 9.5 mi. N of Carapán, 6800 ft. alt.; Tzintzuntzán.

#### ***Polygyra (Linisia) tamaulipasensis* (Lea 1857)**

*Helix tamaulipasensis* Lea 1857; Proc. Acad. Nat. Sci. Phila. 9:102.- Lea 1864; Obs. Gen. *Unio*, 11:139–140; pl. 24, fig. 113 (shell).

*Polygyra texasiana tamaulipasensis* (Lea). Pilsbry & Hubricht; 1956; Nautilus 69:95–96.

*Polygyra tamaulipasensis* (Lea). Hubricht 1961; Nautilus 75:27–27.

*Linisia tamaulipasensis* (Lea). Emberton 1995; Malacologia 37:90.

*Polygyra (Linisia) texasiana texasiana* (Moricand). Thompson 2008:835.

Type Localities.—*Helix tamaulipasensis*: Tamaulipas, México; holotype USNM.

Distribution.—Central Texas south to northern México near the United States border.

#### ***Polygyra (Linisia) texasiana texasiana* (Moricand 1833)**

*Helix (Helicodonta) texasiana* Moricand 1833; Mem. Soc. Phys. et Hist. de Gèneve 6:538.

*Polygyra texasiana* (Moricand). Pilsbry 1940; Land Moll. N. Amer. I:617–619.- Pratt 1981; Unpubl. thesis:59–69; figs. 12–13 (shell).

*Linisia texasiana* (Moricand). Emberton 1995; Malacologia 37:90.

*Triodopsis tridonta* Beck 1837; Index Moll.:22 (new name for *texasiana* Moricand [Pilsbry 1940:617]).

*Polygyra texasiana tillandsiae* Cockerell 1917; Nautilus 21:36.

*Polygyra (Linisia) texasiana texasiana* (Moricand). Thompson 2008:835.

Type Localities.—*Helix texasiana*: Pilsbry (1940) restricted the type locality to Camaron Co., Texas. Pratt (1981) suggested that it should be San Antonio, Texas. Syntypes in

the Vienna Naturforschende Museum. *Polygyra texasiana tillandsiae*: San Benito, Cameron Co., Texas; holotype ANSP 116250.

Distribution.—Northern part of Tamaulipas, Nuevo León, and Coahuila north to southern Oklahoma and east to southwestern Missouri, western and southern Arkansas, and western Mississippi. It has been introduced elsewhere in the United States (Pratt 1981). COAHUILA: 9.5 km NE of Allende ((28°25.8' N, 100°47.2' W) (UF 244871). TAMAULIPAS: mesquite forest, 35 km NW Cruillas (24°57.8' N, 98°43.5' W) (UF 283582).

#### ***Polygyra (Linisia) texasiana texasensis* Pilsbry 1902**

*Polygyra texasensis* Pilsbry 1902; Nautilus 16:31.

*Polygyra texasiana texasensis* Pilsbry. Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:129; pl. 5, figs. 11–12.- Pilsbry 1940; Land Moll. N. Amer. I:619–620; figs. 394, g, h.

*Polygyra texasiana hyperolia* Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:128; pl. 5, figs. 13–15 (shell).

*Polygyra (Linisia) texasiana texasensis* Pilsbry. Thompson 2008:836.

Type Locality.—*Polygyra texasensis*: Texas, Mitchell Co., Colorado City; holotype ANSP 38258. *Polygyra texasiana hyperolia*: high mesa west of Devil's River, Texas; holotype ANSP 91363.

Distribution.—Southwestern Texas and immediately adjacent México. COAHUILA: bluff opposite Amistad Acres, Texas (29°29.5' N, 101°11.7' W) (UF 268410); 9.5 km NE of Allende (28°25.8' N, 100°47.2' W) (UF 244871).

#### ***Polygyra (Linisia) ventrosula* (Pfeiffer 1845)**

*Helix ventrosula* Pfeiffer 1845; Proc. Zool. Soc. Lond. 13:131.- Pfeiffer in Martini & Chemnitz; Conch. Cab., *Helix*, 1:373; pl. 65, figs. 5–6 (shell).

*Polygyra ventrosula* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:169; pl. 7, figs. 10–11 (shell).- Pilsbry 1920; Proc. Acad. Nat. Sci. Phila.:192.- Dall 1926; Proc. Calif. Acad. Sci. (4) 15:476.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:21–22; pl. 2, figs. 1–1b (shell).

*Linisia ventricosula* (Pfeiffer). Emberton 1995; Malacologia 37:90.

*Polygyra nayarita* Pilsbry & Cockerell 1925; Proc. Acad. Nat. Sci. Phila. 77:309; text-fig. 7 (shell).

*Polygyra (Linisia) ventrosula* (Pfeiffer). Thompson 2008:837.

Type Localities.—*Helix ventrosula*: “México”. Restricted to Tepic, Nayarit, México (Pilsbry 1956:22). *Polygyra nayarita*: Nayarit. Holotype ANSP 139841.

Distribution.—Known for certain only from western México in the States of Jalisco and Nayarit. JALISCO: Chapala. NAYARIT: Islas Mariás; Isla María Madre; banks of Rio Tepic 5 km below Tepic; Cerro San Juan ca. 3 km SSW of Tepic, 4500 ft. alt.; Yago, on the Rio Grande SE Santiago.

#### **Subgenus *Upsilodon* Pilsbry 1930**

*Upsilodon* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:315.- Pilsbry 1940; Land Moll. N. Amer. I:637–638.- Emberton 1995; Malacologia 37:91.

Type Species.—*Helix hippocrepeis* Pfeiffer 1848.

Distribution.—South-central Texas and northern Coahuila, México.

Taxonomy.—Six species are recognized. Five occur in México.

***Polygyra (Upsilodon) burlsoni* Metcalf & Riskind 1978**

*Polygyra burlsoni* Metcalf & Riskind 1978; Proc. Biol. Soc. Wash. 91:817–819; pl. 1, figs. F-G (shell); text-figs. 1 C, D (genitalia).  
*Daedalochila (Upsilodon) burlsoni* (Metcalf & Riskind). Emberton 1995; Malacologia 37:91.

*Polygyra (Upsilodon) burlsoni* Metcalf & Riskind. Thompson 2008:837.

Type Locality.—Cañon Bonito at extreme western end of Cañon Zorra, Serranias del Burro, Coahuila, México (29°01'20" N, 102°05'55" W), 1600 m alt. Holotype USNM 751886.

Distribution.—COAHUILA: known only from the immediate vicinity of the type locality.

***Polygyra (Upsilodon) dalli* Metcalf & Riskind 1978**

*Polygyra dalli* Metcalf & Riskind 1978; Proc. Biol. Soc. Wash. 91:815–817; pl. 1, figs. D, E (shell).

*Daedalochila (Upsilodon) dalli* (Metcalf & Riskind). Emberton 1995; Malacologia 37:91.

*Polygyra (Upsilodon) dalli* Metcalf & Riskind. Thompson 2008:838.

Type Locality.—Sierra de Guadalupe, Coahuila, México; 9500 ft. alt. Holotype USNM 758554.

Distribution.—Known only from the type locality.

***Polygyra (Upsilodon) idiogenes* Pilsbry 1956**

*Polygyra idiogenes* Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:30; pl. 3, figs. 1–1b (shell).

*Linisia indiogenes* (Pilsbry). Emberton 1995; Malacologia 37:90.

*Polygyra (Upsilodon) idiogenes* Pilsbry. Thompson 2008:838.

Type Locality.—San Lorenzo Canyon, southeast of Saltillo, Coahuila, México; 7200 ft. alt. Holotype ANSP 164589.

Distribution.—Known only from the type locality.

***Polygyra (Upsilodon) multiplicata* Metcalf & Riskind 1978**

*Polygyra multiplicata* Metcalf & Riskind 1978; Proc. Biol. Soc. Wash. 91:819–821; pl. 1, figs. A-C (shell); text figs. 1A-B (genitalia).

*Daedalochila (Upsilodon) multiplicata* (Metcalf & Riskind). Emberton 1995; Malacologia 37:91.

*Polygyra (Upsilodon) multiplicata* Metcalf & Riskind. Thompson 2008:238.

Type Locality.—Cañon Bonito at extreme western end of Cañon Zorra, Serranias del Burro, Coahuila, 1675 m alt. (29°01'20" N, 102°05'55" W). Holotype USNM 758818.

Distribution.—COAHUILA: known only from the immediate vicinity of the type locality.

***Polygyra (Upsilodon) sterni* Metcalf & Riskind 1978**

*Polygyra sterni* Metcalf & Riskind 1978; Proc. Biol. Soc. Wash. 91:821–823; pl. 1, figs. H-I (shell).

*Daedalochila (Upsilodon) sterni* (Metcalf & Riskind). Emberton

1995; Malacologia 37:91.

*Polygyra (Upsilodon) sterni* Metcalf & Riskind. Thompson 2008:839.

Type Locality.—Lower north slope of the extreme north end of the Sierra San Vicente, Mpio. Sacramento, immediately north of Fed. Hwy. 30, 2.5 km east of Boquillos, a village between Nadadores and Cuatro Ciénegas, Coahuila (27°00'00" N, 101°52'20" W); 750 m alt. Holotype USNM 758821.

Distribution.—Known only from the type locality.

***Polygyra* species of uncertain subgeneric status**

***Polygyra chiapensis* (Pfeiffer 1856)**

*Helix chiapensis* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:377.- Pfeiffer 1859; Mon. Helic. Viv., 4:315 (unfigured).

*Helix (Polygyra) chiapensis* (Pfeiffer).- Fischer & Crosse 1872: Miss. Sci. Mex. I:281.

*Polygyra chiapensis* (Pfeiffer).- Von Martens 1892; Biol. Cent. Amer.:165.- Thompson 2008:839.

Type Locality.—“Chiapas”.

Distribution.—Unknown.

***Polygyra couloni* (Shuttleworth 1852)**

*Helix couloni* Shuttleworth 1852; in Bern, Mittheil. (Diagn. 2, p. 17) 197.

*Polygyra couloni* (Shuttleworth). Strebel 1880; Beitrag, IV:46; pl. 3, fig. 4 (shell).- Von Martens 1892; Biol. Cent. Amer.:167–168, 627; pl. 7, figs. 6–6d (shell).- Neubert & Gosteli 2003; Contributions to Natural History, 1:19; pl. 22, fig. 3.- Thompson 2008:839.

*Linisia couloni* (Shuttleworth). Emberton 1995; Malacologia 37:90.

Type Locality.—Cordova, Veracruz, México. Syntype: Naturhistorisches Museum Bern 19045/1 h (Neubert & Gosteli 2003).

Distribution.—Trans-México south of the plateau. COLIMA: Colima. GUERRERO: Omilteme. JALISCO: Sayula. MORELOS: Cuernavaca. VERACRUZ: Córdoba; Jalapa; Maltrata; Orizaba.

***Polygyra dissecta* Von Martens 1892**

*Polygyra dissecta* Von Martens 1892; Biol. Cent. Amer.:167; pl. 7, figs. 7–7c.- Thompson 2008:840.

*Linisia dissecta* (Von Martens). Emberton 1995; Malacologia 37:90.

Type Locality.—Toluca, México.

Distribution.—Known only from the type locality.

***Polygyra dysoni* (Shuttleworth 1852)**

*Helix dorfeuilleana* Lea. Pfeiffer 1848; Mon. Helic. Viv., 1:410.- Pfeiffer in Martini and Chemnitz, Conch. Cab., *Helix*, 1:377; pl. 65, figs. 25–28 (shell).

*Helix dysoni* Shuttleworth 1852; in Bern, Mittheil. (Diagn. 2, p. 16) 196.

*Polygyra dysoni* (Shuttleworth). Von Martens 1892; Biol. Cent. Amer.:165.- Neubert & Gosteli 2003; Contributions to Natural History 1:22; pl. 22, fig. 7.- Thompson 2008:840.

*Linisia dysoni* (Shuttleworth). Emberton 1995; Malacologia 37:90.

Type Locality.—“Honduras”. Here restricted to Belize. Syntype: Naturhistorisches Museum Bern 15276/1 (Neubert



& Gosteli 2003).

Distribution.—Unknown.

***Polygyra plagioglossa* (Pfeiffer 1859)**

*Helix plagioglossa* Pfeiffer 1859; Proc. Zool. Soc. Lond. 27:26; pl. 43, fig. 3.

*Helix (Polygyra) plagioglossa* (Pfeiffer). Fischer & Crosse 1872; Miss. Sci. Mex. 1:270; pl. 12, figs. 9–9c (shell).

*Polygyra plagioglossa* (Pfeiffer). Strebel 1880; Beitrag, 4:45; pl. 15, fig. 12 (shell).—Von Martens 1892; Biol. Cent. Amer.:167.—Thompson 2008:841.

*Linisia plagioglossa* (Pfeiffer). Emberton 1995; Malacologia 37:90.  
Type Locality.—“Oaxaca”.

Distribution.—“Puebla” and “Oaxaca” (Von Martens 1892).

***Polygyra yucatanica* (Morelet 1849)**

*Helix yucatanica* Morelet 1849; Test. Noviss. 1:9.—Pfeiffer 1853; Mon. Helic. Viv., 3:263.—Folin 1865; Jour. de Conchyl. 13:68 (living animal, eggs).

*Helix (Polygyra) yucatanica* Morelet. Fischer & Crosse 1872; Miss. Sci. Mex. 1:277; pl. 12, figs. 14–14a.

*Polygyra yucatanica* (Morelet). Von Martens 1892; Biol. Cent. Amer.:166.—Bequaert & Clench 1933; Publ. Carnegie Inst. Wash., (431):531.—Goodrich & van der Schalie 1937; Misc. Publ. Mus. Zool. Univ. Mich. (34):27.—Rehder 1966; Proc. Biol. Soc. Wash. 79:280.—Thompson 1957; Nautilus 70:100.—Thompson 2008:841.

*Linisia yucatanica* (Morelet). Emberton 1995; Malacologia 37:90.

*Helix helictomphala* Pfeiffer 1856; Proc. Zool. Soc. Lond. 24:377.—Pfeiffer 1858; Mon. Helic. Viv., 4:314.

*Helix (Polygyra) helictomphala* Pfeiffer. Fischer & Crosse 1872; Miss. Sci. Mex. 1:272; pl. 12, figs. 10–10c (shell).

*Polygyra helicomphala* (Pfeiffer). Strebel 1880; Beitrag, 4:46; pl. 15, fig. 11.

*Polygyra yucatanica* var. *helictomphala* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:199.

Type Localities.—*Helix yucatanica*: “Yucatan”. Rehder (1966) incorrectly stated that Bequaert and Clench (1933) restricted the type locality to Isla de Carmen, Campeche, México. *Helix helictomphala*: Chiapas, México.

Distribution.—CAMPECHE: Isla de Carmen, at Laguna de Terminos. QUINTANA ROO: Icaiché. TABASCO: Villahermosa; 14 mi. N of Teapa. YUCATÁN: no specific locality recorded. BELIZE: Belize Dist.: Grace Bank (17°38' N, 88°24' W) (UF 135140); Rockville Quarry (17°24' N, 88°27' W) (UF 135017). Cayo Dist.: vicinity of San Ignacia (17°09' N, 89°04' W) (UF 135075). Orange Walk Dist.: Cedar Crossing on Rio Bravo (17°41' N, 88°02' W) (UF 135203). GUATEMALA, Dept. Petén: El Paso de Los Caballos; Laguna Perdido.

**Genus *Praticolella* Von Martens 1892**

*Praticola* Strebel 1880; Beitrag, IV:38. (Not *Praticola* Kaup 1837, Aves; not Swainson 1837, Aves; not Fatio 1867, Mammalia.)

*Praticolella* Von Martens 1892; Biol. Cent. Amer.:138.—Pilsbry 1895; Man. Conch. 9:67.—Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:318.—Pilsbry 1940; Land Moll. N. Amer. 1:688–689.—

Emberton 1995; Malacologia 37:90.

Type Species.—*Praticola ocampii* Strebel 1880 (= *Helix ampla* Pfeiffer 1866).

Distribution.—Southeastern United States and eastern México south to Nicaragua.

Taxonomy.—The genus contains four subgenera. Two occur in México and Central America.

**Subgenus *Praticolella* Von Martens 1892**

Distribution.—Texas and Arkansas south to Nicaragua.

Taxonomy.—Eight species are recognized. Six occur in México and Central America.

***Praticolella (Praticolella) ampla* (Pfeiffer 1866)**

*Helix ampla* Pfeiffer 1866; Malak. Blätt. 13:78.

*Helix (Patula) ampla* Pfeiffer. Fischer & Crosse 1880; Miss. Sci. Mex. 1:227.

*Praticola ocampii* Strebel 1880; Beitrag, IV:38; pl. 2, figs. 2, 5; pl. 10, figs. 1 (radula), 1a (jaw), 1a-f (anatomy).

*Helix (Praticolella) ampla* Pfeiffer. Von Martens 1892; Biol. Cent. Amer.:138.

*Praticolella ampla* (Pfeiffer). Pilsbry 1896; Nautilus 10:59.—Emberton 1995; Malacologia 37:90.—Thompson 2008:843.

Type Locality.—Mirador, Veracruz, México.

Distribution.—VERACRUZ: Almolonga; Jalapa; La Banderilla; Monte de Tataquicapá; Dos Arroyos; Consolapa, near Coatepec; San Antonia del Monte; Mirador; Misantla; Rancho de Guerrero, near Misantla (Von Martens 1892); San Rafael, Jicaltepec (Pilsbry 1896);

***Praticolella (Praticolella) berlandieriana* (Moricand 1833)**

*Helix berlandieriana* Moricand 1833; Mem. Soc. Physique et d'Hist. Nat. Genève, 6:537; pl. 1, fig. 1.—Pfeiffer 1853; Mon. Helic. Viv., 3:227.—Von Martens 1892; Biol. Cent. Amer.:140.

*Praticolella berlandieriana* (Moricand). Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:125; figs. 1–2.—Vanatta 1915; Proc. Acad. Nat. Sci. Phila. 67:194; fig. 1 (anatomy).—Pilsbry 1928; Proc. Acad. Nat. Sci. Phila. 80:117.—Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:318–319; pl. 27, figs. 03 (anatomy).—Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:30.—Correa-Sandoval 1993; Rev. Biol. Trop. 41:685.—Emberton 1995; Malacologia 37:90.—Correa-Sandoval 1997; Rev. Biol. Trop. 47:140.—Correa-Sandoval 2000; Acta Zool. Mex. (79):9.—Correa-Sandoval 2002; Acta Zool. Mex. (86):238.—Thompson 2008:843.

Type Locality.—“Texas”.

Distribution.—DURANGO: Ventanas. JALISCO: Sayula. NUEVO LEÓN: Monterrey; Pabllillo; Santa Barbara; Santiago; Topo Cicho; between Pabllillo valley and Santa Barbara canyon; Santiago; Iturbide (Pilsbry 1956). SAN LUÍS POTOSÍ: Cd. Valles. TAMAULIPAS: Cd. Victoria; Mesa de Solis, near La Lajilla, between Pabllillo and Jimenéz. Recorded from numerous localities in northern VERACRUZ, eastern San Luis Potosí, Nuevo León, and southern Tamaulipas (Correa-Sandoval 1998–2002).

***Praticolella (Praticolella) flavescens* (Pfeiffer 1848)**

*Helix flavescens* Pfeiffer 1848; Monogr. Helic. Viv., 1:337.

*Helix (Leptarionta) flavescens* Pfeiffer. Fischer & Crosse, Miss. Sci. Mex. 1:255;

*Helix (Arionta) flavescens* Pfeiffer. Von Martens 1892; Biol. Cent. Amer.:142–143; pl. 7, figs. 18–18c.

*Praticola flavescens* (Pfeiffer). Strebel 1880; Beitrag, IV:41; pl. 13, fig. 18.

*Praticolella flavescens* (Pfeiffer 1848). Emberton 1995; Malacologia 37:90.- Thompson 2008:844.

Type Locality.—Papantla, Veracruz, México.

Distribution.—Known only from the type locality.

#### ***Praticolella (Praticolella) griseola* (Pfeiffer 1841)**

*Helix griseola* Pfeiffer 1841; Symb. Hist. Hel., 1:40.

*Helix berlandieriana* var. *griseola* Pfeiffer. Von Martens 1892; Biol. Cent. Amer.:140; pl. 7, figs. 15–17.

*Praticolella griseola* (Pfeiffer). Pilsbry 1896:59.- Pilsbry 1940; Land Moll. N. Amer. I:690–692; figs. 425a-d.- Branson & McCoy 1965; Univ. Col. Stud. Biol., (13):1–16.- Neck 1977:1–4.- Emberton 1995; Malacologia 37:90.- Correa-Sandoval 1999; Acta Zool. Mex. (79):9.- Correa-Sandoval & Rodríguez 2002; Acta Zool. Mex. (86):238.- Pérez & Lopéz 2002:191–195.- Correa-Sandoval & Salizar 2005; Acta Zool. Mex. 21:61.- Thompson 2008:845.

Type Locality.—Vera Cruz, Veracruz, México.

Distribution.—Naturally occurring from Tamaulipas south to Nicaragua. Widely introduced into tropical areas elsewhere. Recorded from numerous localities in southern TAMAULIPAS and northern VERACRUZ (Correa-Sandoval 1999 2002). Other records follow. CAMPECHE: 8.1 mi. SW of Champotón; 17.2 mi. S Champotón; 5–11 mi. E of Campeche (Branson & McCoy 1965). SAN LUÍS POTOSÍ. Cd. Valles. VERACRUZ: Córdoba; Veracruz. GUATEMALA: Lago de Flores, Petén. NICARAGUA: Volcán de Masaya; Masapa, Boaco Dept. (Von Martens 1901); Grenada; San Ubaldo; numerous localities along the Pacific versant of Nicaragua (Péres & Lopéz 2002).

#### ***Praticolella (Praticolella) strebeliana* Pilsbry 1899**

*Praticolella strebeliana* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:394.- Pilsbry & Ferriss 1904; Proc. Acad. Nat. Sci. Phila. 55:762; pl. 51, figs. 6–6a (shell).- Emberton 1995; Malacologia 37:90.- Thompson 2008:845.

Type Locality.—Diente, near Monterey, Nuevo León; holotype: ANSP 77128a.

Distribution.—Known only from the type locality.

#### ***Praticolella (Praticolella) taeniata* Pilsbry 1940**

*Praticolella berlandieriana taeniata* Pilsbry 1940; Land Moll. N. Amer. I:696; figs. 427g, h.

*Praticolella taeniata* Pilsbry. Emberton 1995; Malacologia 37:90.- Thompson 2008:825.

Type Locality.—Brownsville, Texas.

Distribution.—Southeastern Texas; Tamaulipas, Nuevo León (no Mexican localities cited).

#### **Subgenus *Eduardus* Pilsbry 1930**

*Eduardus* Pilsbry 1930; Proc. Acad. Nat. Sci. Phila. 82:315.- Pilsbry 1936; Nautilus 21:140.- Emberton 1995; Malacologia 37:90.

Type Species.—*Polygyra martensiana* Pilsbry 1907.

Distribution.—Northeastern México.

Taxonomy.—The subgenus contains a single species.

#### ***Praticolella (Eduardus) martensiana* (Pilsbry 1907)**

*Polygyra (?) martensiana* Pilsbry 1907; Nautilus 21:26–27; pl. 9, figs. 1–3.

*Praticolella martensiana* (Pilsbry). Pilsbry 1936; Nautilus 49:140.- Pilsbry 1956; Proc. Acad. Nat. Sci. Phila. 108:30.- Emberton 1995; Malacologia 37:90.- Correa-Sandoval, García-Cubas & Reguero 1998; Acta Zool. Mex. (73):17.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.

*Praticolella (Eduardus) martensiana* (Pilsbry). Thompson 2008:846.

Type Locality.—Tampico, Tamaulipas, in river drift.

Lectotype ANSP 94798a (H. B. Baker 1963:241).

Distribution.—SAN LUIS POTOSÍ: Ignacio Agua Buena, near Tomasopo; Rio Gallinas, Ejid. Carpintero (21°55.2' N, 99°15.8' W); Las Cascadas, Tomasopo (21°56.1' N, 99°25.0' W); Canoas; El Abra; Cd. Valles; Poza Media Luna, Rio Verde (21°51.2' N, 100°03.8' W) (Correa-Sandoval 1999). TAMAULIPAS: Tampico. VERACRUZ: El Bajia, carretera Naranjos-Tuxpan; La Ordeña, Papantla (Correa-Sandoval 2000).

#### **Family THYSANOPHORIDAE Pilsbry 1926**

Distribution.—Middle America from Arizona and New Mexico south to Colombia and Venezuela; the Caribbean region; south Florida.

Taxonomy.—Five genera are recognized. Three genera are found in the study area. One genus, *McCleania* Bequaert & Clench 1939, is found on Hispaniola and Puerto Rico. Another genus, *Microphysala* Pilsbry 1926, is found in western North America.

#### **Genus *Itzamna* Pilsbry 1926**

*Itzamna* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:112–113.

Type Species.—*Helix sigmoides* Morelet 1851.

Distribution.—Guatemala.

Taxonomy.—*Itzamna* is tentatively placed in the Thysanophoridae. A single species is recognized.

#### ***Itzamna sigmoidius* (Morelet 1851)**

*Helix sigmoides* Morelet 1851; Test. Noviss. II:9.- Fischer & Crosse 1872:239–240, pl. 12, figs. 6–6d (shell).- Strebel & Pfeffer 1880:38.

*Helix vitrinoides* Tristram 1863; Proc. Zool. Soc. Lond. 31:411.

*Itzamna sigmoidius* (Morelet). Pilsbry 1926 Proc. Acad. Nat. Sci. Phila. 78:112–113.- Thompson 2008:847.

Type Locality.—“Vera Paz”, Guatemala.

Distribution.—Known only from the type locality.

#### **Genus *Microconus* Strebel & Pfeffer 1880**

*Microconus* Strebel & Pfeffer 1880:29.- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:236–238.- Thompson 1958; Nautilus 72:5–7.

Type Species.—*Helix wilhelmi* Pfeiffer 1866.

Distribution.—Panamá north to Puebla, México.

Taxonomy.—Two subgenera and four species are recognized.

#### Subgenus *Microconus* Strebel & Pfeffer 1880

Distribution.—Guatemala and southeastern México.

Taxonomy.—Two species are recognized.

#### *Microconus (Microconus) rufus* Thompson 1958

*Thysanophora conspercatella* (Morelet). Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):26.

*Microconus rufus* Thompson 1958; Nautilus 72:7–8; pl. 1, figs. A, B (shell).

*Microconus (Microconus) rufus* Thompson. Thompson 2008:847.

Type Locality.—A knoll along the Santa Ana Road, 2 km south of Puebla Nueva, Dept. Petén, Guatemala. Holotype UMMZ 64416.

Distribution.—GUATEMALA, Dept. Petén: various localities (Thompson 1958).

#### *Microconus (Microconus) wilhelmi* (Pfeiffer 1866)

*Helix wilhelmi* Pfeiffer 1866; Malak. Blätt. 13:79.

*Microconus wilhelmi* (Pfeiffer). Strebel & Pfeffer 1880:29–30; pl. 4, fig. 7.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:80–81; text-figs. 12B (shell).- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:236–238; pl. 18, fig. 31 (radula), fig. 32 (jaw), fig. 33 (pallial organs), figs. 34–40 (reproductive anatomy).

*Patula wilhelmi* (Pfeiffer). Von Martens 1892; Biol. Cent. Amer.:128.

Type Locality.—Mirador, Veracruz, México.

Distribution.—PUEBLA: near Necaxa (H. B. Baker 1927). VERACRUZ: Mirador.

#### Subgenus *Pulchriconus* Thompson 1958

*Pulchriconus* Thompson 1958; Nautilus 72:9.

Type Species.—*Microconus (Pulchriconus) pilsbryi* Thompson 1958.

Distribution.—Nicaragua, Panamá.

Taxonomy.—Two species are recognized.

#### *Microconus (Pulchriconus) pilsbryi* Thompson 1958

*Microconus pilsbryi* Thompson 1958; Nautilus 72:8–9; pl. 1, figs. C, D (shell); pl. 2, fig. A (pallial organs), fig. B (Radula), figs. C, D (reproductive anatomy).

*Microconus (Pulchriconus) pilsbryi* Thompson. Thompson 2008:248.

Type Locality.—4.5 km south of Matagalpa, Dept. Matagalpa, Nicaragua. Holotype UMMZ 193100.

Distribution.—Known only from the type locality.

#### *Microconus (Pulchriconus) termitarum* Pilsbry 1926

*Microconus termitarum* Pilsbry 1926, Proc. Acad. Nat. Sci. Phila. 78:80–81; text-figs. 12A (shell).- Thompson 1958; Nautilus 72:9–10.

*Microconus (Pulchriconus) termitarum* Pilsbry. Thompson 2008:849.

Type Locality.—Isla Barro Colorado, Canal Zone, Panamá. Holotype ANSP 140824.

Distribution.—Known only from the type locality.

#### Genus *Thysanophora* Strebel & Pfeffer 1880

*Thysanophora* Strebel & Pfeffer 1880:30.- Tryon 1887, Man. Conch. 3:16.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:113.- H. B. Baker 1927, Proc. Acad. Nat. Sci. Phila. 79:240.- Pilsbry 1940, Land Moll. N. Amer. 1:984–986.

Type Species.—*Helix impura* Pfeiffer 1866. Type by subsequent designation; Tryon 1887.

Distribution.—Continental North America from Arizona south to Venezuela. One species occurs in Cuba.

Taxonomy.—Four subgenera are recognized. All occur in the study area. Twenty-one species are found in the study area.

#### Subgenus *Thysanophora* Strebel & Pfeffer 1880

Distribution.—Western North America south to Colombia and Venezuela; Cuba.

Taxonomy.—Ten species are recognized in the study area. As a taxonomic convenience various problematic small species of land snails with a simple aperture have been placed in *Thysanophora*. The genus as now constituted includes several such species.

#### *Thysanophora (Thysanophora) amita* Pilsbry 1926

*Thysanophora amita* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:78; figs. 9–10 (shell).

*Thysanophora (Thysanophora) amita* Pilsbry. Thompson 2008:849.

Type Locality.—Juan Minas, Canal Zone, Panamá. Holotype ANSP 45259.

Distribution.—PANAMÁ: Juan Minas; Mount Hope (Pilsbry 1930).

#### *Thysanophora (Thysanophora) balboa* Pilsbry 1926

*Thysanophora balboa* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:78–79; text-figs. 11 (shell).

*Thysanophora (Thysanophora) balboa* Pilsbry. Thompson 2008:850.

Type Locality.—Las Cascades, Canal Zone, Panamá. Holotype ANSP 101339a (H. B. Baker 1963:240).

Distribution.—PANAMÁ, Canal Zone: Juan Mina. Las Santos Prov.: Tonosí (Pilsbry 1926); Ruins of Old Panamá City (Pilsbry 1930).

#### *Thysanophora (Thysanophora) canalis canalis* Pilsbry 1910

*Thysanophora canalis* Pilsbry 1910; Proc. Acad. Nat. Sci. Phila. 62:507; text-fig. 3.- H. B. Baker 1926b; Occ. Pap. Mus. Zool. Univ. Mich. (167):13.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:70.

*Thysanophora (Thysanophora) canalis canalis* Pilsbry. Thompson 2008:850.

Type Locality.—Las Cascades, Canal Zone, Panamá. Holotype ANSP 101329.

Distribution.—PANAMÁ: known only from the type locality. VENEZUELA (H. B. Baker 1926).

#### *Thysanophora (Thysanophora) canalis cariacensis* Pilsbry 1926

*Thysanophora canalis cariacensis* Pilsbry 1926; Proc. Acad. Nat.



Sci. Phila. 78:79.

*Thysanophora (Thysanophora) canalis cariacensis* Pilsbry.  
Thompson 2008:850.

Type Locality.—Cariaco, Venezuela. Holotype ANSP 28263a (H. B. Baker 1963:240).

Distribution.—Known only from the type locality.

***Thysanophora (Thysanophora) clarionensis* Dall, 1926**

*Thysanophora clarionensis* Dall 1926; Proc. Calif. Acad. Sci. (4) 15:477–478; pl. 36, figs. 1–2.

*Thysanophora (Thysanophora) clarionensis* Dall. Thompson 2008:851.

Type Locality.—Sulphur Bay, Isla Clarión, Nayarit, México. Holotype CAS 2197.

Distribution.—NAYARIT: known only from Isla Clarión.

***Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet 1851)**

*Helix conspurcatella* Morelet 1851; Test. Noviss. II:7.- Fischer & Crosse 1872:232–233 (description, but not figures).

*Patula conspurcatella* (Morelet). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:314.

*Thysanophora conspurcatella conspurcatella* (Morelet). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:77, 120–121; text-fig. 8 A (shell).- Goodrich & van der Schalie 1937; Misc. Pub. Mus. Zool. Univ. Mich. (34):26.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):5.- Thompson 1967, Nautilus 70:254.

*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet). Thompson 2008:851.

Type Locality.—Merida, Yucatán

Distribution.—CAMPECHE: 7.1 mi. SW of Campeche; 5.1 mi. NNW of Dzibalchén; 19.3 mi. S of Silcitic (Thompson 1967). TABASCO: San Juan Bautista (Pilsbry 1900). TAMAULIPAS: El Ambra (Hinkley 1907). YUCATÁN: Merida; Tekantu (Pilsbry 1891); in the region of Chichen Itza (Harry 1950); 0.8 mi. NE of Becanchén; 10 mi. NE of Becanchén (Thompson 1967). VERACRUZ: Veracruz (Pilsbry 1891); Antigua (Pilsbry 1903). GUATEMALA: figures of specimens from Tenosique and Flores in Fischer and Crosse (1872) were attributed to another taxon by Pilsbry (1926). Goodrich and van der Schalie (1937) gave no additional information on this question.

***Thysanophora (Thysanophora) conspurcatella puella* Pilsbry 1926**

*Thysanophora conspurcatella puella* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:77–78; text-figs. 8 B (shell).

*Thysanophora (Thysanophora) conspurcatella puella* Pilsbry. Thompson 2008:852.

Type Locality.—Isla Taboga, Panamá. Holotype ANSP 28260a (H. B. Baker 1963:240).

Distribution.—PANAMÁ: Panamá (Pilsbry 1926).

***Thysanophora (Thysanophora) costaricensis* Rehder 1942**

*Thysanophora costaricensis* Rehder 1942:352; figs. 1–2 (shell).- Pérez & Lopéz 2001; Malac. Rev. 33/34:95.- Pérez & Lopéz 2003:200.

*Thysanophora (Thysanophora) costaricensis* Rehder. Thompson 2008:852.

Type Locality.—La Caja, near San José, Prov. San José, Costa Rica; 1000 m alt. Holotype USNM 536009.

Distribution.—COSTA RICA, Prov. San José: San José (Rehder 1942). NICARAGUA: Dept. Jinotega; Dept. Matagalpa (Pérez & Lopéz 2001, 2003).

***Thysanophora (Thysanophora) incrustata* (Poey 1854)**

*Helix saxicola* Gould 1851, Terr. Moll., 2:174; pl. 29a, fig. 4 (not *Helix saxicola* Pfeiffer 1840).

*Helix incrustata* Poey 1854, Mem. Hist. Nat. Cuba, 1:208; pl. 12, figs. 11–16.

*Thysanophora incrustata* (Poey). Pilsbry 1940; Land Moll. N. Amer. 1:987–988; figs. 547 b (shell).

*Thysanophora (Thysanophora) incrustata* (Poey). Thompson 2008:852.

Type Locality.—Puentes Grandes, Cuba.

Distribution.—Early records from Texas have not been confirmed. The species is included in this report because it may be found in northeastern México.

***Thysanophora (Thysanophora) jaliscoensis* Pilsbry 1926**

*Thysanophora jaliscoensis* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:124–125; text-figs. 30 (shell).

*Thysanophora (Thysanophora) jaliscoensis* Pilsbry. Thompson 2008:852.

Type Locality.—Guadalajara, Jalisco, México. Holotype ANSP 44927.

Distribution.—Known only from the type locality.

***Thysanophora (Thysanophora) materna* Dall 1926**

*Thysanophora materna* Dall 1926; Proc. Calif. Acad. Sci., ser. 4 15:477; pl. 35, figs. 16, 17.

*Thysanophora (Thysanophora) materna* Dall. Thompson 2008:853.

Type Locality.—Isla María Madre, Islas Marías, Nayarit, México. Holotype CAS 2196.

Distribution.—Known only from the type locality.

***Thysanophora (Thysanophora) proxima* Pilsbry 1899**

*Thysanophora proxima* Pilsbry 1899; Proc. Acad. Nat. Sci. Phila. 51:394–395 (not figured).

*Thysanophora (Thysanophora) proxima* Pilsbry. Thompson 2008:853.

Type Locality.—Uruapan, Michoacán, México. Lectotype ANSP 77117a (H. B. Baker 1963:240).

Distribution.—MICHOCÁN: Huingo; Morelia; Patzcuaro (Pilsbry 1899).

**Subgenus *Lyroconus* H. B. Baker 1927**

*Lyroconus* H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:235.- Pilsbry 1940, Land Moll. N. Amer. 1:988.

Type Species.—*Helix plagiopycha* Shuttleworth 1854.

Distribution.—Northern South America, Central America and México; the West Indies; and the southeastern United States.

Taxonomy.—Four species are recognized.

***Thysanophora (Lyroconus) caecoides* (Tate 1870)**

*Helix caecoides* Tate 1870:153.

*Helix guatemalensis* Crosse & Fischer 1872; Jour. de Conchy. 20:222.- Fischer & Crosse 1873; Jour. de Conchyl. 21:274; pl. 9, fig. 3 (shell).- Fischer & Crosse 1900:664; pl. 71, figs. 9–9a (shell).

*Acanthinula granum* Strebel 1880; Beitrag. Mex. Land- und Süßw.-Conch. IV:31; pl. 4, fig. 13 (shell).

*Thysanophora caecoides* (Tate). Pilsbry 1920; Nautilus 33:95–96; text-fig. 4 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:70–71.- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:241; pl. 19, fig. 43 (reproductive anatomy).- Richards 1937; Proc. Amer. Philos. Soc. 77:252.- Richards 1939; Proc. Amer. Philos. Soc. 81:33.- Harry 1950; Occ. Pap. Mus. Zool. Univ. Mich. (524):8.- Thompson 1967; Bull. Fla. St. Mus. 11:254.- Pérez & Lopéz 2003:196–198.

*Thysanophora (Lyroconus) caecoides* (Tate). Thompson 2008:853.

Type Localities.—*Helix caecoides*: Chontales forest, Nicaragua Lectotype ANSP 12159 (H. B. Baker 1963:240). *Helix guatemalensis*: Guatemala. *Acanthinula granum*: Plantage Mirador, Veracruz, México.

Distribution.—PANAMÁ: Cd. Panamá; Bocas del Toro (Pilsbry 1926); Old Panamá City (Pilsbry 1930). NICARAGUA: Isla del Maíz, near Quin Bluff (Richards 1939); numerous localities along the Pacific slope (Pérez & Lopéz 2003). HONDURAS: Isla de Roatán (Ancy 1880). GUATEMALA: Quirigua; Tikal (Basch 1959). CAMPECHE: 8.1 mi. SW of Champoton (Thompson 1967). QUINTANA ROO: San Miguel, Isla Cozumel (Richards 1937); 4.0 mi. E of Zpujil, Campeche; 7.1 mi. NNE of Xiatil (Thompson 1967). VERACRUZ: Córdoba (H. B. Baker 1927). YUCATÁN: region of Chichen Itza (Harry 1950); Progreso; 1.0 mi. S of Puerto Telchac (Thompson 1967).

***Thysanophora (Lyroconus) fuscula* (C. B. Adams 1849)**

*Helix fuscula* C. B. Adams 1849:35.

*Thysanophora fuscula* (Adams). Pilsbry 1920; Nautilus 33:94; text-fig. 1 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:115.- Bequaert 1957:219.

*Thysanophora fischeri* Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:49; text-figs. 6 (shell).

*Thysanophora (Lyroconus) fuscula* (C. B. Adams). Thompson 2008:854.

Type Localities.—*Helix fuscula*: Jamaica. Lectotype MCZ. *Thysanophora fischeri*: Cd. Victoria, Tamaulipas, México.

Distribution.—JAMAICA. CHIAPAS: Laguna Ocotal, 950 m alt.; Monte Libano, 600 m alt. (Bequaert 1957). TAMAULIPAS: Tampico; Cd. Victoria (Pilsbry 1920).

***Thysanophora (Lyroconus) plagiopycha* (Shuttleworth 1854)**

*Helix plagiopycha* Shuttleworth 1854; Mitt. Naturf. Ges. Bern:37.

*Thysanophora plagiopycha* (Shuttleworth). Pilsbry 1920; Nautilus 33:94–95; text-figs. 2 (shell).- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:240–241; pl. 19, figs. 45. (reproductive anatomy), fig. 46 (pallial organs).- Pilsbry 1940; Land Moll. N. Amer. 1:989; figs. 576 (shell).- Neubert & Gosteli 2003; Contr. Nat. Hist. 1:44; pl. 20, fig. 4.

*Thysanophora (Lyroconus) plagiopycha* (Shuttleworth). Thompson 2008:855.

Type Locality.—Puerto Rico, Humacoa. Syntype: Naturhistorisches Museum Bern 18878/1 (Neubert & Gosteli 2003).

Distribution.—Trinidad to Colombia, north through Central America, México, and the southeastern United States; West Indies in general.

***Thysanophora (Lyroconus) rhoadsi* Pilsbry 1919**

*Thysanophora rhoadsi* Pilsbry 1919; Proc. Acad. Nat. Sci. Phila. 71:217; text-fig. 6.

*Thysanophora (Lyroconus) rhoadsi* Pilsbry. Thompson 2008:855.

Type Locality.—Gualan, Guatemala. Holotype ANSP 114826.

Distribution.—Known only from the type locality.

**Subgenus *Miroconus* H. B. Baker 1927**

*Miroconus* H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:235.

Type Species.—*Thysanophora paleosa* Strebel & Pfeffer 1880.

Distribution.—Eastern México.

Taxonomy.—A single species is recognized.

***Thysanophora (Miroconus) paleosa* Strebel & Pfeffer 1880**

*Thysanophora paleosa* Strebel & Pfeffer 1880:30–31; pl. 4, fig. 3 (shell).- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:115.- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:238–240; pl. 19, figs. 47, 49 (reproductive anatomy), fig. 48 (jaw), fig. 50 (pallial organs).

*Thysanophora (Miroconus) paleosa* Strebel & Pfeffer. Thompson 2008:856.

Type Locality.—Forests of Pacho, Veracruz, México.

Distribution.—PUEBLA: Necaxa (H. B. Baker 1927). VERACRUZ: Pacho.

**Subgenus *Setidiscus* H. B. Baker 1927**

*Setidiscus* H. B. Baker; Proc. Acad. Nat. Sci. Phila. 79 1927:236.

Type Species.—*Helix horni* Gabb 1866.

Distribution.—Central México south to Colombia and coastal Venezuela.

Taxonomy.—Six species and one subspecies are recognized.

***Thysanophora (Setidiscus) crinita crinita* (Fulton 1917)**

*Trichodiscina crinita* Fulton 1917; Proc. Malac. Soc. London 12:240–241; text-figs. (shell).

*Thysanophora crinita* (Fulton). Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:124.- Pérez & Lopéz 2003:200–203; pl. 14.

*Thysanophora (Setidiscus) crinita crinita* (Fulton). Thompson 2008:856.

Type Locality.—Cartago, Colombia.

Distribution.—COLOMBIA: known only from the type locality. NICARAGUA: Abundantly distributed along the Pacific slope (Pérez & Lopéz 2003).

***Thysanophora (Setidiscus) heilprini* Pilsbry 1926**

*Thysanophora heilprini* Pilsbry 1926; Proc. Acad. Nat. Sci. Phila.

78:123–124; text-figs. 38 (shell).

*Thysanophora (Setidiscus) heilprini* Pilsbry. Thompson 2008:856.

Type Locality.—On the Hill of Calvary, Yauatepec, Morelos. Holotype ANSP 61558.

Distribution.—Known only from the type locality.

***Thysanophora (Setidiscus) horni* (Gabb 1866)**

*Helix horni* Gabb 1866, Amer. Jour. Conch. 2:330; pl. 21, fig. 5.

*Patula horni* (Gabb). Binney 1878:167, fig. 78.

*Thysanophora horni* (Gabb). Pilsbry 1898; Nautilus 11:105.- Pilsbry 1900; Nautilus 13:98.- Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:703.- Pilsbry & Ferriss 1906; Proc. Acad. Nat. Sci. Phila. 58:126.- Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:115.- Dall 1896; Proc. U. S. Nat. Mus. 19:336.- Hinkley 1907; Nautilus 21:172.- Hanna 1923; Proc. Calif. Acad. Sci. (4) 12:505.- Pilsbry 1940, Land Moll. N. Amer. 1:986–987; figs. 574 A (shell).- Bequaert & Miller 1973:135–137.- Smith, Miller, Christensen & Roth 1990; Proc. Calif. Acad. Sci. 47:130–131.- Correa-Sandoval 2000; Acta Zool. Mex. (79):9.- Correa-Sandoval 2003; Rev. Biol. Trop. 51:514.

*Thysanophora (Setidiscus) horni* (Gabb). Thompson 2008:857.

*Thysanophora ingersolli meridionalis* Pilsbry & Ferriss 1910; Proc. Acad. Nat. Sci. Phila. 62:116; figs. 24d-f (Bequaert & Miller 1973).

Type Localities.—*Helix horni*: Old Fort Grant, at junction of Aravaipa and San Pedro Rivers, Pinal County, Arizona; holotype ANSP 10945. *Thysanophora ingersolli meridionalis*: Chiricahua Mountains at Long Park, Arizona; holotype ANSP 97306.

Distribution.—Texas, New Mexico and Arizona south to the Mexican states of Tamaulipas, Nuevo León, San Luis Potosí, Jalisco, Chihuahua, Sonora and Sinaloa (Pilsbry 1940). ). VERACRUZ: road Tuxpan-Poza Rica, km 234 (1 km east) (20°49'11" N, 97°30'00" W)(Correa-Sandoval 2000). Baja California Sur (Smith et al. 1990). NICARAGUA, Depts. Grenada, Managua, Masaya, and Rio San Juan (Pérez & López 2001).

Remarks.—Records from Nicaragua seem unlikely.

***Thysanophora (Setidiscus) impura* (Pfeiffer 1866)**

*Helix impura* Pfeiffer 1866; Malak. Blätt. 13:79.

*Thysanophora impura* (Pfeiffer). Strebel & Pfeiffer 1880:30; pl. 4, fig. 2 (shell).

*Patula impura* (Pfeiffer). Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:314.

*Thysanophora impura* (Pfeiffer). Pilsbry 1904; Proc. Acad. Nat. Sci. Phila. 55:763.- Pilsbry 1926; Proc. Acad. Nat. Sci. Phila. 78:121–122; text-figs. 36 (shell).- H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:240.- Bequaert & Clench 1933; Pub. Carnegie Inst. Wash. (431):530.- Bequaert 1957:218.

*Thysanophora (Setidiscus) impura* (Pfeiffer). Thompson 2008:857.

Type Locality.—Mirador, Veracruz, México.

Distribution.—CHIAPAS: Ocosingo, 950 m alt. (Bequaert 1957). YUCATÁN: Tekantu; Tunkas; Merida (Pilsbry 1926); Chichen Itza (Bequaert & Clench 1933). VERACRUZ: Mirador; Veracruz, México; Antigua; Pacho (Pilsbry 1926). Records from Yauatepec, Morelos refer to *Thysanophora heilprini* (Pilsbry 1891; 1926).

***Thysanophora (Setidiscus) intonsa* (Pilsbry 1891)**

*Patula intonsa* Pilsbry 1891; Proc. Acad. Nat. Sci. Phila. 43:314–315; pl. 15, figs. 1–3 (shell).- Pilsbry, 1926; Proc. Acad. Nat. Sci. Phila. 78:115.- Thompson 2008:858.

Type Locality.—Orizaba, Veracruz, México. Holotype ANSP 61986.

Distribution.—Known only from the type locality.

***Thysanophora (Setidiscus) minuta* H. B. Baker 1927**

*Thysanophora minuta* H. B. Baker 1927; Proc. Acad. Nat. Sci. Phila. 79:238; pl. 19, fig. 44 (male reproductive system) (shell not figured).- Thompson 2008:858.

Type Locality.—Necaxa, Puebla, México. Holotype in the UMMZ.

Distribution.—Known only from the type locality.

**BIBLIOGRAPHY OF THE LAND AND FRESHWATER SNAILS OF MÉXICO AND CENTRAL AMERICA**

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Herman Strebel. 1873. Beitrag zur Kenntniss der Fauna mexikanischer Land- und Süßwasser-Conchylien. Theil I:1–69. 1875, Theil II:1–58. 1878, Theil III:1–53. 1880, Theil IV:1–122. 1882, Theil V:1–144.

P. Fischer & H. Crosse 1870–1878. Mission Scientifique au Mexique et dans L’Amerique Centrale. Études sur les mollusques terrestres et fluviatiles du Mexique et du Guatemala; Part I:1–702. 1880–1902. Part II:1–731.

Eduard von Martens 1890–1902. Biologia Centrali-Americana. Mollusca. 1–706.

Von Martens (1890–1902) gave complete references and citations for all taxa then known from México and Central America. Therefore many 19<sup>th</sup> Century citations are omitted from this bibliography as redundant. J. Díaz de León (1912) compiled a list of mollusks recorded from México at that time. This bibliography includes citations of some works dealing with geographic regions other than the study area. They are included if they contain information relevant to the México-Central America fauna.

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APPENDIX. Faunal lists of land and freshwater gastropods from Central American countries and Mexican states

CENTRAL AMERICAN COUNTRIES

**BELIZE** 39 species and subspecies

*Helicina (Oxyrhombus) bocourti* Crosse & Fischer, 1869  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Pomacea belizensis* (Crosse & Fischer, 1888)  
*Pomacea flagellata livescens* (Reeve, 1856)  
*Tomocyclus fistularis* Thompson, 1963  
*Neocyclotus dysoni cookei* (Bartsch & Morrison, 1942)  
*Chondropoma (Chondropomium) gruneri* (Pfeiffer, 1846)  
*Chondropoma (Chondropomium) kuesteri* (Pfeiffer, 1851)  
*Chondropoma (Chondropomium) rubicundum* (Morelet, 1849)  
*Choanopoma (Choanopomops) largillierti* (Pfeiffer, 1846)  
*Choanopoma (Choanopomops) radiosum* (Morelet, 1849)  
*Choanopoma (Choanopomops) rigidulum* (Morelet, 1851)  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Drepanotrema (Drepanotrema) lucidum* (Pfeiffer, 1839)  
*Biomphalaria albicans* (Pfeiffer, 1848)  
*Biomphalaria belizensis* (Crosse & Fischer, 1878)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Planorbella (Pierosoma) trivolvis* (Say, 1817)  
*Mexinauta princeps* (Phillipi, 1846)  
*Orthalicus princeps crossei* Von Martens, 1893  
*Orthalicus princeps deceptor* (Pilsbry, 1899)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Mesembrinus) hondurasanus* (Pfeiffer, 1846)  
*Coelocentrum (Coelocentrum) fistulare* (Morelet, 1849)  
*Brachypodella subtilis subtilis* (Morelet, 1849)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Leptinaria lamellata lamellata* (Potiez & Michaud, 1838)  
*Subulina octona* (Bruguière, 1789)  
*Streptostyla (Streptostyla) thomsoni* Ancey, 1888  
*Streptostyla (Streptostyla) dysoni* (Pfeiffer, 1846)  
*Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet, 1851)  
*Hyalosagda (Aeretrochus) turbonella* (Morelet, 1851)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Polygyra yucatanica* (Morelet, 1849)

**COSTA RICA** 182 species and subspecies

*Helicina (Succincta) flavida flavida* Menke, 1828  
*Helicina (Gemma) beatrix beatrix* Angas, 1879  
*Helicina (Gemma) beatrix confusa* (Wagner, 1908)  
*Helicina (Gemma) beatrix riopejensis* Richling, 2004  
*Helicina (Gemma) chiquitica* (Richling, 2001)  
*Helicina (Gemma) escondida* Richling, 2004  
*Helicina (Gemma) gemma* Preston, 1903  
*Helicina (Gemma) monteverdensis* Richling, 2004  
*Helicina (Gemma) talamancensis* (Richling, 2001)  
*Helicina (Tristramia) ehandiensis* Richling, 2004  
*Helicina (Tristramia) funcki* Pfeiffer, 1849  
*Helicina (Tristramia) pitulensis* Wagner, 1910  
*Helicina (Tristramia) punctisulcata cuericensis* Richling, 2004  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Alcacia (Microalcacia) boeckeleri* (Richling, 2001)  
*Alcacia (Microalcacia) hojarasca* (Richling, 2001)  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Marisa rotula* (Mousson, 1869)  
*Pomacea conoidea* (Von Martens, 1899)  
*Pomacea costaricana* (Von Martens, 1899)  
*Pomacea dacostae* (Sowerby, 1909)  
*Pomacea flagellata flagellata* (Say, 1827)  
*Neocyclotus bisinuatus* (Von Martens, 1864)  
*Neocyclotus capsceilius* Thompson, 1969  
*Neocyclotus dysoni nicaraguensis* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni valerioi* (Bartsch & Morrison, 1942)  
*Incidostoma carmioli* (Bartsch & Morrison, 1942)  
*Incidostoma costaricense* (Von Martens, 1876)

*Incidostoma exiguum* (Bartsch & Morrison, 1942)  
*Incidostoma impressum* (Thompson, 1969)  
*Incidostoma irregulare* (Pfeiffer, 1855)  
*Incidostoma pittieri* (Von Martens, 1900)  
*Dicrista cooperi* (Tryon, 1863)  
*Barbacyclus boucardi* (Angas, 1878)  
*Barbacyclus princeps* (Pilsbry, 1935)  
*Barbacyclus underwoodi* (Da Costa, 1900)  
*Aylacostoma maculatum* (Lea, 1832)  
*Aroapyrgus costaricensis* (Mörch, 1860)  
*Aroapyrgus subangulatus* (Von Martens, 1899)  
*Aroapyrgus tryoni* (Pilsbry, 1904)  
*Cochliopa perforata* Thompson & Hershler, 1991  
*Cochliopina tryoniana* (Pilsbry, 1890)  
*Littoridina microcona* Thompson & Hershler, 1991  
*Subcochliopa trochulus* (Von Martens, 1899)  
*Zetekina melanioides* (Von Martens, 1899)  
*Zetekina tenuis* (Von Martens, 1899)  
*Rachipteron philopelum* Thompson, 1964  
*Hebetancylus excentricus* (Morelet, 1851)  
*Uncancylus ameliae* Pilsbry, 1920  
*Uncancylus calverti* Pilsbry, 1920  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Drepanotrema (Fossulorbis) depressissimum* (Moricand, 1839)  
*Drepanotrema (Fossulorbis) surinamense* (Clessin, 1884)  
*Biomphalaria albicans* (Pfeiffer, 1848)  
*Biomphalaria hondurasensis* (Clessin, 1878)  
*Biomphalaria petenensis* (Morelet, 1851)  
*Biomphalaria straminea* (Dunker, 1848)  
*Biomphalaria subprona* (Von Martens, 1899)  
*Planorbella (Pierosoma) foveale foveale* (Menke, 1830)  
*Planorbella (Pierosoma) costaricense* (Preston, 1907)  
*Planorbella (Pierosoma) trivolvis* (Say, 1817)  
*Planorbella (Pierosoma) wyldi* (Tristram, 1861)  
*Planorbella (Seminolina) duryi* (Wetherby, 1879)  
*Mexinauta aurantia* (Carpenter, 1857)  
*Mayabina pliculosa* (Von Martens, 1898)  
*Mayabina sanctijohannis* Taylor, 2003  
*Mayabina tempisquensis* Taylor, 2003  
*Tropinauta sinusdulcensis* Taylor, 2003  
*Chiapaphysa pacifica* Taylor, 2003  
*Carychium costaricensis* Von Martens, 1898  
*Diplosolenodes occidentalis* (Guilding, 1825)  
*Diplosolenodes olivacea* (Stearns, 1871)  
*Sarasinula dubia* (Semper, 1885)  
*Sarasinula plebeia* (Fischer, 1868)  
*Succinea (Succinea) costaricensis* Von Martens, 1898  
*Succinea (Succinea) globispira* Von Martens, 1898  
*Succinea (Succinea) guatemalensis* Morelet, 1849  
*Nesopupa (Cocopupa) cocosensis* (Dall, 1900)  
*Gastrocopta (Geminidens) geminidens* (Pilsbry, 1917)  
*Gastrocopta (Immersidens) gularis* Thompson & López, 1996  
*Orthalicus ferussaci ferussaci* Von Martens, 1863  
*Orthalicus ferussaci tricinctus* Von Martens, 1893  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus corneus corneus* (Sowerby, 1833)  
*Drymaeus (Drymaeus) josephus josephus* (Angas, 1878)  
*Drymaeus josephus concolor* (Von Martens, 1893)  
*Drymaeus (Drymaeus) josephus maculosus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) megastomus* Parodiz, 1962  
*Drymaeus (Drymaeus) zhorquinensis* (Angas, 1879)  
*Drymaeus (Mesembrinus) lineolatus* (Conrad, 1855)  
*Drymaeus (Mesembrinus) recluzianus martensianus* Pilsbry, 1899  
*Drymaeus (Mesembrinus) attenuatus attenuatus* (Pfeiffer, 1851)  
*Drymaeus (Mesembrinus) attenuatus pittieri* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) attenuatus varicosus* (Pfeiffer, 1851)  
*Drymaeus (Mesembrinus) costaricensis* (Pfeiffer, 1862)  
*Drymaeus (Mesembrinus) pluvialis* (Pfeiffer, 1862)  
*Drymaeus (Mesembrinus) irazuensis* (Angas, 1878)



- Drymaeus (Mesembrinus) tripictus tripictus* (Albers, 1857)  
*Drymaeus (Mesembrinus) tripictus hoffmanni* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) gabbi* (Angas, 1879)  
*Drymaeus (Mesembrinus) semimaculatus* Pilsbry, 1898  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) discrepans* (Sowerby, 1833)  
*Drymaeus (Mesembrinus) inusitatus* (Fulton, 1900)  
*Drymaeus (Mesembrinus) semipellucidus* (Tristram, 1861)  
*Drymaeus (Mesembrinus) translucens alternans* (Beck, 1837)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Beckianum beckianum gabbianum* (Angas, 1879)  
*Beckianum sinistrum* (Von Martens, 1898)  
*Lamellaxis pittieri pittieri* (Von Martens, 1898)  
*Lamellaxis pittieri obliquatus* (Von Martens, 1898)  
*Lamellaxis crenulatus* (Von Martens, 1898)  
*Lamellaxis costaricanus* (Von Martens, 1898)  
*Lamellaxis ambiguus* (Von Martens, 1898)  
*Leptopeas bocourtianum pittieri* (Von Martens, 1898)  
*Leptopeas guatemalense guatemalense* (Strebel, 1882)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Leptinaria ambigua* Von Martens, 1898  
*Leptinaria convoluta* Von Martens, 1898  
*Leptinaria solida* Von Martens, 1898  
*Ochrodermella cumingiana* (Pfeiffer, 1849)  
*Ochrodermella martensi* (Dall, 1900)  
*Ochrodermella pittieri* (Von Martens, 1898)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Euglandina) gigantea* Pilsbry, 1926  
*Euglandina (Singleya) anomala anomala* (Angas, 1879)  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Guillarmodia (Proameria) mitriformis* (Angas, 1879)  
*Pittieria (Pittieria) bicolor* (Von Martens, 1901)  
*Pittieria (Pittieria) pittieri* (Von Martens, 1901)  
*Pittieria (Laeviglandina) aurantiaca* (Angas, 1879)  
*Pittieria (Laeviglandina) broctontomlini* (Pilsbry, 1926)  
*Pittieria (Laeviglandina) underwoodi* (Fulton, 1897)  
*Streptostyla (Streptostyla) gabbi* Pilsbry, 1907  
*Streptostyla (Streptostyla) costaricensis* Da Costa, 1904  
*Streptostyla (Streptostyla) turgidula turgidula* (Pfeiffer, 1856)  
*Streptostyla (Streptostyla) viridula* Angas, 1879  
*Streptostyla (Streptostyla) valerioi* Rehder, 1942  
*Streptostyla (Streptostyla) ventricosula* (Morelet, 1849)  
*Streptostyla (Chersomitra) lurida* (Shuttleworth, 1852)  
*Rectaxis canalizonalis* (Pilsbry, 1930)  
*Rectaxis paulisculpta* (Rehder, 1942)  
*Rectaxis pittieri* (Von Martens, 1898)  
*Volutaxis (Volutaxis) eburneus* Thompson, 2010  
*Volutaxis (Volutaxis) scalella* (Von Martens, 1898)  
*Streptostele (Tomostele) musaecola* (Morelet, 1860)  
*Drepanostomella stollii* (Von Martens, 1892)  
*Occultator olssoni* Pilsbry, 1926  
*Systrophia (Systrophiella) costaricana* Rehder, 1942  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Ragiodiscus (Radiodiscus) millicostatus costaricanus* Pilsbry, 1926  
*Rotadiscus pilsbryi* Rehder, 1942  
*Habroconus (Habroconus) championi* (Von Martens, 1892)  
*Habroconus (Habroconus) costaricanus costaricanus* (Pilsbry, 1920)  
*Habroconus (Habroconus) costaricanus elatior* (Pilsbry, 1920)  
*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Habroconus (Cocoslens) pallidus* H. B. Baker, 1941  
*Habroconus (Pseudoguppya) calverti* (Pilsbry, 1920)  
*Habroconus (Pseudoguppya) pittieri* (Von Martens, 1892)  
*Guppya biolleyi* Von Martens, 1892  
*Guppya gundlachi orosciana* Von Martens, 1892  
*Guppya micans* (Angas, 1879)  
*Ovachlamys fulgens* (Gude, 1900)  
*Velifera gabbi* W. G. Binney, 1879  
*Zonitoides (Zonitella) hoffmanni* (Von Martens, 1892)  
*Zonitoides (Zonitella) multivolvis* Pilsbry, 1926  
*Mesomphix (Zonyalina) modestus* (Von Martens, 1892)  
*Deroceras costaricensis* (Cockerell, 1890)  
*Deroceras laeve* (Müller, 1774)  
*Pallifera costaricensis costaricensis* (Mörch, 1858)  
*Labyrinthus quadridentatus quadridentatus* (Broderip, 1832)  
*Labrinthus quadridentatus biollii* Solem, 1966  
*Labyrinthus triplicatus* (Von Martens, 1868)  
*Labyrinthus otis orthorhinus* (Pilsbry, 1910)  
*Psadara tiloriensis* (Angas, 1879)  
*Leptarionta adela* (Angas, 1878)  
*Leptarionta costaricensis* (Roth, 1856)  
*Trichodiscina suturalis pressula* (Morelet, 1851)  
*Cryptostracon corcovadensis* Cuezco, 1997  
*Cryptostracon gabbi* Binney, 1879  
*Thysanophora (Thysanophora) costaricensis* Rehder, 1942
- EL SALVADOR** 20 species and subspecies
- Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Neocyclotus dysoni aureus* (Bartsch & Morrison, 1942)  
*Amphicyclotus parvus* Thompson, 1963  
*Pachychilus (Pachychilus) chrysalis nympha* Von Martens, 1899  
*Pachychilus (Glyptomelania) largillierti largillierti* (Philippi, 1843)  
*Pyrgophorus hydrobioides* (Ancey, 1888)  
*Biomphalaria helophila* (Orbigny, 1835)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria subprona* (Von Martens, 1899)  
*Planorbella (Pierosoma) wyldi* (Tristram, 1861)  
*Haitia lacustris* (Clessin, 1886)  
*Diplosolenodes occidentalis* (Guilding, 1825)  
*Sarasinula dubia* (Semper, 1885)  
*Sarasinula plebeia* (Fischer, 1868)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus princeps trifractus* (Pilsbry, 1899)  
*Drymaeus (Mesembrinus) discrepans* (Sowerby, 1833)  
*Eucalodium (Oligostylus) australis* Thompson, 1963  
*Streptostyla (Streptostyla) propinqua* Thompson, 1963  
*Lysinoe starretti* Thompson, 1963
- GUATEMALA** 292 species and subspecies
- Helicina (Oxyrhombus) amoena* Pfeiffer, 1849  
*Helicina (Oxyrhombus) ghiesbreghtii* Pfeiffer, 1856  
*Helicina (Oxyrhombus) ptychophora* Sykes, 1902  
*Helicina (Succincta) flavida flavida* Menke, 1828  
*Helicina (Succincta) flavida incommoda* Wagner, 1905  
*Helicina (Succincta) oweniana oweniana* Pfeiffer, 1849  
*Helicina (Succincta) oweniana anozona* Von Martens, 1875  
*Helicina (Gemma) fragilis fragilis* Morelet, 1851  
*Helicina (Tristramia) punctisulcata zunilensis* Wagner, 1910  
*Helicina (Tristramia) rostrata rostrata* Morelet, 1849  
*Helicina (Tristramia) senachuensis* Wagner, 1905  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Helicina (Tristramia) trossula* Morelet, 1849  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Schasicheila (Necaxia) minuscula* (Pfeiffer, 1859)  
*Schasicheila (Schasicheila) hinkleyi* Pilsbry, 1919  
*Schasicheila (Schasicheila) pannucea* (Morelet, 1849)  
*Schasicheila (Schasicheila) walkeri* Hinkley, 1920  
*Pyrgodomus microdinus microdinus* (Morelet, 1851)  
*Pomacea flagellata flagellata* (Say, 1827)  
*Pomacea flagellata guatemalensis* (Von Martens, 1899)  
*Pomacea flagellata livescens* (Reeve, 1856)  
*Pomacea lattarei chamana* (Hinkley, 1920)  
*Tomocyclus gealei* Crosse & Fischer, 1872  
*Tomocyclus fistularis* Thompson, 1963  
*Tomocyclus guatemalensis* (Pfeiffer, 1851)  
*Tomocyclus simulacrum* (Morelet, 1849)  
*Neocyclotus bisinuatus* (Von Martens, 1864)  
*Neocyclotus dysoni aureus* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni cookei* (Bartsch & Morrison, 1942)

- Neocyclotus dysoni hinkleyi* (Bartsch & Morrison, 1942)  
*Amphicyclotus ponderosus* (Pfeiffer, 1851)  
*Amphicyclotus texturatus texturatus* (Sowerby, 1850)  
*Adelopoma stollii* (Von Martens, 1890)  
*Pachychilus (Pachychilus) corvinus corvinus* (Morelet, 1849)  
*Pachychilus (Pachychilus) corvinus indifferens* Crosse & Fischer, 1891  
*Pachychilus (Pachychilus) explicatus* Fischer & Crosse, 1892  
*Pachychilus (Pachychilus) hinkleyi* (Marshall, 1921)  
*Pachychilus (Pachychilus) indiorum* (Morelet, 1849)  
*Pachychilus (Pachychilus) oerstedii planensis* (Lea, 1858)  
*Pachychilus (Pachychilus) potsianus* Hinkley, 1920  
*Pachychilus (Pachychilus) schumoi* Pilsbry, 1931  
*Pachychilus (Glyptomelania) glaphyrus glaphyrus* (Morelet, 1849)  
*Pachychilus (Glyptomelania) glaphyrus glaphyroides* Fischer & Crosse, 1892.  
*Pachychilus (Glyptomelania) glaphyrus immanis* (Morelet, 1851)  
*Pachychilus (Glyptomelania) glaphyrus polygonotus* (Lea, 1850)  
*Pachychilus (Glyptomelania) glaphyrus pyramidalis* (Morelet, 1851)  
*Pachychilus (Glyptomelania) glaphyrus scamnatus* Fischer & Crosse, 1892  
*Pachychilus (Glyptomelania) glaphyrus opilaris* (Morelet, 1851)  
*Pachychilus (Glyptomelania) lacustris lacustris* (Morelet, 1849)  
*Pachychilus (Glyptomelania) lacustris amphibolus* Fischer & Crosse, 1892  
*Pachychilus (Glyptomelania) largillierti largillierti* (Philippi, 1843)  
*Pachychilus (Glyptomelania) largillierti stollii* Von Martens, 1899  
*Pachychilus (Glyptomelania) obeliscus pyrgiscus* Fischer & Crosse, 1892  
*Pachychilus (Oxymelania) graphium* (Morelet, 1849)  
*Pachychilus (Potamanax) passionensis* Pilsbry, 1956  
*Pachychilus (Potamanax) sargi* (Crosse & Fischer, 1875)  
*Aylacostoma rubiginosum* (Morelet, 1849)  
*Chondropoma (Chondropomium) rubicundum* (Morelet, 1849)  
*Choanopoma (Choanopomops) gaigei* Bequaert & Clench, 1931  
*Choanopoma (Choanopomops) osberti* (Tristram, 1861)  
*Choanopoma (Choanopomops) radiosum* (Morelet, 1849)  
*Choanopoma (Choanopomops) rigidulum* (Morelet, 1851)  
*Aroapyrgus cisterninus* (Walker, 1919)  
*Aroapyrgus clenchi* (Goodrich & Van der Schalie, 1937)  
*Ammicola conchensis* Walker, 1919  
*Aroapyrgus guatemalensis* (Fischer & Crosse, 1891)  
*Aroapyrgus hinkleyi* (Walker, 1919)  
*Aroapyrgus panzosensis* (Walker, 1919)  
*Aroapyrgus passionensis* (Goodrich & Van der Schalie, 1937)  
*Aroapyrgus petenensis* (Morelet, 1851)  
*Aroapyrgus stollii* (Von Martens, 1901)  
*Cochliopina dulcensis* (Marshall, 1920)  
*Cochliopina francesae* (Goodrich & Van der Schalie, 1937)  
*Cochliopina fratercula* Morrison, 1946  
*Cochliopina guatemalensis* (Morelet, 1851)  
*Cochliopina hinkleyi* (Pilsbry, 1920)  
*Cochliopina infundibulum* (Von Martens, 1899)  
*Cochliopina izabal* (Pilsbry, 1920)  
*Pyrgophorus vulcani* (Von Martens, 1901)  
*Tryonia exiguus* (Morelet, 1851)  
*Fossaria (Bakerlymnaea) cubensis* (Pfeiffer, 1839)  
*Gundlachia hinkleyi* Walker, 1917  
*Hebetancylus excentricus* (Morelet, 1851)  
*Laevapex aguadae* (Goodrich & Van der Schalie, 1937)  
*Antillorbis aeruginosus* (Morelet, 1851)  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Drepanotrema (Drepanotrema) lucidum* (Pfeiffer, 1839)  
*Drepanotrema (Fossulorbis) cultratum cultratum* (Orbigny, 1841)  
*Drepanotrema (Fossulorbis) cultratum duenasianum* (Tristram, 1861)  
*Biomphalaria belizensis* (Crosse & Fischer, 1878)  
*Biomphalaria helophila* (Orbigny, 1835)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Biomphalaria petenensis* (Morelet, 1851)  
*Biomphalaria subprona* (Von Martens, 1899)  
*Planorbella (Pierosoma) caloderma* (Pilsbry, 1923)  
*Planorbella (Pierosoma) foveale foveale* (Menke, 1830)  
*Planorbella (Pierosoma) foveale guatemalense* (Clessin, 1889)  
*Planorbella (Pierosoma) trivolvis* (Say, 1817)  
*Planorbella (Pierosoma) wyldi* (Tristram, 1861)  
*Mexinauta gracilentus* (Fischer & Crosse, 1886)  
*Mexinauta impluviatus* (Morelet, 1849)  
*Mexinauta princeps* (Philippi, 1846)  
*Mayabina tapanensis* (Crosse & Fischer, 1882)  
*Haitia moreleti* Taylor, 2003  
*Carychium costaricensis* Von Martens, 1898  
*Carychium mexicanum* Pilsbry, 1891  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Succinea (Succinea) carmenensis* Fischer & Crosse, 1878  
*Succinea (Succinea) guatemalensis* Morelet, 1849  
*Succinea (Succinea) hortulana* Morelet, 1851  
*Strobilops (Strobilops) salvini* (Tristram, 1863)  
*Strobilops (Strobilops) strebeli guatemalensis* Hinkley, 1920  
*Bothriopupa breviconus* Pilsbry, 1917  
*Bothriopupa leucodon* (Morelet, 1851)  
*Pupisoma (Ptychopatala) mediamericanum* Pilsbry, 1920  
*Pupisoma (Ptychopatala) minus* Pilsbry, 1920  
*Sterkia (Metasterkia) eyresii eyresii* (Drouet, 1859)  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Immersidens) prototypus* (Pilsbry, 1899)  
*Orthalicus ferussaci ferussaci* Von Martens, 1863  
*Orthalicus livens* Shuttleworth 1856  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus princeps deceptor* (Pilsbry, 1899)  
*Orthalicus princeps fischeri* Von Martens, 1893  
*Orthalicus selectus* (Strebel, 1909)  
*Bulimulus corneus corneus* (Sowerby, 1833)  
*Bulimulus dysoni* (Pfeiffer, 1846)  
*Bulimulus inermis var. major* Von Martens, 1897  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Drymaeus) castus castus* (Pfeiffer, 1846)  
*Drymaeus (Drymaeus) castus xantholeucus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) castus porrectus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) lattarei lattarei* (Pfeiffer, 1846)  
*Drymaeus (Drymaeus) lattarei hiabundus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) lilacinus lilacinus* (Reeve, 1949)  
*Drymaeus (Drymaeus) lilacinus crosssei* (Von Martens, 1893)  
*Drymaeus (Drymaeus) lilacinus ictericus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) lilacinus undulosus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) lilacinus unicolor* (Von Martens, 1893).  
*Drymaeus (Mesembrinus) ghiesbreghtii interstitialis* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) ghiesbreghtii stollii* (Von Martens, 1887)  
*Drymaeus (Mesembrinus) jonasi* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) lirinus* (Morelet, 1851)  
*Drymaeus (Mesembrinus) sargi sargi* (Crosse & Fischer, 1875)  
*Drymaeus (Mesembrinus) sargi motaguae* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) championi* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) semimaculatus* Pilsbry, 1898  
*Drymaeus moricandi hyalinoalbidus* (Fischer & Crosse, 1875)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) discrepans* (Sowerby, 1833)  
*Drymaeus (Mesembrinus) shattucki* Bequaert & Clench, 1931  
*Drymaeus (Mesembrinus) tropicalis* (Morelet, 1849)  
*Drymaeus (Mesembrinus) translucens alternans* (Beck, 1837)  
*Drymaeus (Mesembrinus) translucens juquilensis* (Von Martens, 1893)  
*Simpulopsis simula* (Morelet, 1851)  
*Eucalodium (Eucalodium) decollatum guatemalensis* Bartsch, 1906  
*Eucalodium (Eucalodium) mexicanum major* Fischer & Crosse, 1873  
*Eucalodium (Oligostylus) walpoleanum* Crosse & Fischer, 1872  
*Coelocentrum (Coelocentrum) anomalum* Strebel, 1880  
*Coelocentrum (Coelocentrum) championi* Von Martens, 1897  
*Coelocentrum (Coelocentrum) clathratum* Von Martens, 1897  
*Coelocentrum (Coelocentrum) dispar* Pilsbry, 1902  
*Coelocentrum (Coelocentrum) fistulare* (Morelet, 1849)  
*Coelocentrum (Coelocentrum) gigas* Von Martens, 1897  
*Coelocentrum (Coelocentrum) pittieri pittieri* Bartsch, 1906  
*Coelocentrum (Coelocentrum) pittieri guatemalensis* Bartsch, 1906

- Epirobia polygyrella* (Von Martens, 1863)  
*Brachypodella morini morini* (Morelet, 1849)  
*Brachypodella morini salpinx* (Tristram, 1861)  
*Brachypodella morini sargi* (Von Martens, 1897)  
*Brachypodella speluncae* (Morelet, 1852)  
*Brachypodella subtilis subtilis* (Morelet, 1849)  
*Brachypodella subtilis pulchella* (Von Martens, 1886)  
*Ceciloides (Karolus) consobrinus primus* (De Folin, 1870)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Lamellaxis martensi martensi* (Pfeiffer, 1856)  
*Lamellaxis filicostatus* Strebel, 1882  
*Leptopeas bocourtianum bocourtianum* (Crosse & Fischer, 1869)  
*Leptopeas gladiolus* (Crosse & Fischer, 1877)  
*Leptopeas guatemalense guatemalense* (Strebel, 1882)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Leptinaria elisae* Tristram, 1863  
*Leptinaria emmelinae* Tristram, 1861  
*Leptinaria stollii* Von Martens, 1898  
*Leptinaria livingstonensis* Hinkley, 1920  
*Opeas pumilum* (Pfeiffer, 1840)  
*Subulina octona* (Bruguière, 1789)  
*Rumina decollata* (Linnaeus, 1758)  
*Euglandina (Euglandina) binneyana* (Pfeiffer, 1845)  
*Euglandina (Euglandina) pan* Thompson, 1987  
*Euglandina (Euglandina) piticola* (Fischer & Crosse, 1870)  
*Euglandina (Euglandina) titan* Thompson, 1987  
*Euglandina (Singleya) carminensis* (Morelet, 1849)  
*Euglandina (Singleya) decussata* (Deshayes, 1840)  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Varicoglandina monilifera monilifera* (Pfeiffer, 1845)  
*Varicoglandina monilifera rubella* (Morelet, 1849)  
*Varicoglandina rubiginosa* (Thompson, 1995)  
*Varicoturris huehuetenangoensis* (Thompson, 1995)  
*Myxastyla hyalina* Thompson, 1995  
*Myxastyla pycnota* Thompson, 1995  
*Salasiella (Salasiella) guatemalensis* Pilsbry, 1920  
*Salasiella (Perpusilla) modesta* (Pfeiffer, 1862)  
*Streptostyla (Streptostyla) cylindracea* (Pfeiffer, 1846)  
*Streptostyla (Streptostyla) lattarei lattarei* (Pfeiffer, 1845)  
*Streptostyla (Streptostyla) labida* (Morelet, 1851)  
*Streptostyla (Streptostyla) turgidula guatemalensis* Fischer & Crosse, 1870  
*Streptostyla (Streptostyla) binneyana* Crosse & Fischer 1869  
*Streptostyla (Streptostyla) crassa* Strebel, 1877  
*Streptostyla (Streptostyla) delibuta* (Morelet, 1851)  
*Streptostyla (Streptostyla) meridana meridana* (Morelet, 1849)  
*Streptostyla (Streptostyla) meridana cobanensis* (Tristram, 1861)  
*Streptostyla (Streptostyla) sololensis* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) sargi sargi* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) sargi pallidior* Crosse & Fischer, 1876  
*Streptostyla (Chersomitra) lurida* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) mitraeformis* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) nigricans* (Pfeiffer, 1845)  
*Streptostyla (Peteniella) ligulata* (Morelet, 1849)  
*Mayaxis cylindrella* (Morelet, 1851)  
*Mayaxis fortis* (Von Martens, 1898)  
*Mayaxis lirifera* (Morelet, 1851)  
*Mayaxis martensiana* (Pilsbry, 1920)  
*Mayaxis mitescens* (Von Martens, 1898)  
*Mayaxis stollii* (Von Martens, 1898)  
*Pseudosubulina martensiana* Pilsbry, 1920  
*Pseudosubulina salvini* Von Martens, 1898  
*Pseudosubulina sargi* Crosse & Fischer, 1877  
*Pseudosubulina splendens* Thompson, 1959  
*Rectaxis alvaradoi* (Goodrich & Van der Schalie, 1937)  
*Rectaxis fumibus* (Goodrich & Van der Schalie, 1937)  
*Volutaxis (Volutaxis) livingstonensis* (Pilsbry, 1920)  
*Volutaxis (Volutaxis) longior* (Pilsbry, 1920)  
*Volutaxis (Volutaxis) scalariopsis* (Morelet, 1851)  
*Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet, 1851)  
*Volutaxis (Volutaxis) sulciferus cobanensis* (Fischer & Crosse, 1877)  
*Drepanostomella stollii* (Von Martens, 1892)  
*Miradiscops maya* (Pilsbry, 1920)  
*Miradiscops puncticipitis* (Pilsbry, 1926)  
*Punctum (Toltecia) burringtoni* Pilsbry, 1930  
*Punctum (Toltecia) textilis* (Pilsbry, 1920)  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Rotadiscus hermanni hermanni* (Pfeiffer, 1866)  
*"Punctum" baschi* Thompson, 1962  
*Hyalosagda (Aerotrochus) turbonella* (Morelet, 1851)  
*Xenodiscula taintori* Goodrich & Van der Schalie, 1937  
*Habroconus (Habroconus) championi* (Von Martens, 1892)  
*Habroconus (Habroconus) elegans* Strebel, 1880  
*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Guppya biolleyi* Von Martens, 1892  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Guppya gundlachi orosciana* Von Martens, 1892  
*Zonitoides (Zonitella) arboreus* (Say, 1816)  
*Zonitoides (Zonitella) glomerulus* (Von Martens, 1892)  
*Zonitoides (Zonitella) nitidopsis* (Morelet, 1851)  
*Zonitoides (Zonitella) tehuantepecensis* (Crosse & Fischer, 1870)  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Mesomphix (Omphalina) martensianus* (Pilsbry, 1903)  
*Mesomphix (Omphalina) pittieri* (Bartsch, 1909)  
*Mesomphix (moreletia) euryomphala* (Pfeiffer, 1845)  
*Patulopsis (Omphalinella) veracruzensis jalapensis* (Strebel, 1880)  
*Deroceras cobanensis* (Crosse & Fischer, 1872)  
*Deroceras laeve* (Müller, 1774)  
*Leptarionta trigonostoma trigonostoma* (Pfeiffer, 1844)  
*Leptarionta trigonostoma elevatoconica* (Fischer & Crosse, 1872)  
*Leptarionta trigonostoma intermedia* (Fischer & Crosse, 1872)  
*Leptarionta trigonostoma salleana* (Pfeiffer, 1849)  
*Leptinaria trigonostoma stolliana* (Von Martens, 1892)  
*Lysinoe eximia eximia* (Pfeiffer, 1844)  
*Lysinoe eximia stollii* (Von Martens, 1892)  
*Lysinoe ghiesbreghtii ghiesbreghtii* (Nyst, 1841)  
*Lysinoe ghiesbreghtii fulvostraminea* (Von Martens, 1892)  
*Lysinoe ghiesbreghtii rufozonata* (Von Martens, 1892)  
*Lysinoe ghiesbreghtii subaurantia* (Von Martens, 1892)  
*Miraverellia sargi* (Crosse & Fischer, 1872)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Trichodiscina hinkleyi* Pilsbry, 1919  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Trichodiscina suturalis pressula* (Morelet, 1851)  
*Polygyra yucatanica* (Morelet, 1849)  
*Praticolella (Praticolella) griseola* (Pfeiffer, 1841)  
*Itzamna signoidius* (Morelet, 1851)  
*Microconus (Microconus) rufus* Thompson, 1958  
*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet, 1851)  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)  
*Thysanophora (Lyroconus) rhoadsi* Pilsbry, 1919
- HONDURAS** 63 species and subspecies
- Helicina (Oxyrhombus) bocourti* Crosse & Fischer, 1869  
*Helicina (Oxyrhombus) sanguinea* Pfeiffer, 1849  
*Helicina (Succincta) flavida flavida* Menke, 1828  
*Helicina (Gemma) diaphana* Pfeiffer, 1852  
*Helicina (Tristemia) hondurana* Richards, 1938  
*Helicina (Tristramia) rostrata denticulata* Pfeiffer, 1855  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Lucidella (Poenia) midyetti* Richards, 1938  
*Lucidella (Poenia) pilsbryi pilsbryi* Clapp, 1914  
*Lucidella (Poenia) pilsbryi indecora* Pilsbry, 1930  
*Pyrgodomus fischeri* Pilsbry, 1930  
*Pyrgodomus simpsoni* (Ancey, 1886)  
*Pomacea flagellata dysoni* (Hanley, 1854)



- Neocyclotus dysoni dysoni* (Pfeiffer, 1851)  
*Neocyclotus dysoni dyeri* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni ruatanensis* (Bartsch & Morrison, 1942)  
*Amphicyclotus texturatus goldfussi* (Boettger, 1892)  
*Pachychilus (Pachychilus) oerstedii oerstedii* (Mörch, 1860)  
*Pachychilus (Pachychilus) oerstedii planensis* (Lea, 1858)  
*Pachychilus (Glyptomelania) obeliscus obeliscus* (Reeve, 1861)  
*Chondropoma (Chondropomium) rubicundum* (Morelet, 1849)  
*Choanopoma (Choanopomops) andrewsae* (Ancey, 1886)  
*Mesobia pristina* Thompson & Hershler, 1991  
*Gundlachia hjalmarsoni* Pfeiffer, 1858  
*Biomphalaria hondurasensis* (Clesson, 1878)  
*Belocaulus angustipes* (Heynemann, 1885)  
*Diplosolenodes occidentalis* (Guilding, 1825)  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasinula dubia* (Semper, 1885)  
*Sarasinula plebeia* (Fischer, 1868)  
*Veronicella sloanei* (Cuvier, 1816)  
*Orthalicus macluriae* Von Martens, 1893  
*Bulimulus dysoni* (Pfeiffer, 1846)  
*Bulimulus sarcodes* (Pfeiffer, 1846)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Mesembrinus) hondurasanus* (Pfeiffer, 1846)  
*Simpulopsis simula* (Morelet, 1851)  
*Brachypodella bourguignatiana* (Ancey, 1886)  
*Microceramus concisus arctispirus* (Ancey, 1886)  
*Allopeas gracilis* (Hutton, 1934)  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Lamellaxis mexicanus utilis* (Pilsbry, 1907)  
*Lamellaxis filicostatus* Strebel, 1882  
*Lamellaxis simpsoni* (Ancey, 1886)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Singleya) carminensis* (Morelet, 1849)  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Myxastyla coxeni* (Richards, 1938)  
*Streptostyla (Streptostyla) obesa* Von Martens, 1891  
*Streptostyla (Streptostyla) thomsoni* Ancey, 1888  
*Streptostyla (Streptostyla) dysoni* (Pfeiffer, 1846)  
*Mayaxis leei* Thompson, 1995  
*Habroconus (Pseudoguppya) utilensis* (Ancey, 1886)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Leptarionta altispira* (Von Martens, 1892)  
*Leptarionta trigonostoma trigonostoma* (Pfeiffer, 1844)  
*Leptarionta trigonostoma freytagiana* (Von Martens, 1892)  
*Lysinoe giesbreghtii strubelli* (Von Martens, 1892)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)
- NICARAGUA** 113 species and subspecies  
*Helicina (Oxyrhombus) amoena* Pfeiffer, 1849  
*Helicina (Gemma) beatrice nicaraguae* (Wagner 1908)  
*Helicina (Gemma) gemma* Preston, 1903  
*Helicina (Tristramia) funcki* Pfeiffer, 1849  
*Helicina (Tristramia) rostrata rostrata* Morelet, 1849  
*Helicina (Tristramia) rostrata denticulata* Pfeiffer, 1855  
*Helicina (Tristramia) rostrata matagalpensis* Wagner, 1910  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Pomacea costaricana* (Von Martens, 1899)  
*Neocyclotus chrysacme* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni nicaraguensis* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni sumichrasti* (Bartsch & Morrison, 1942)  
*Adelopoma stollii* (Von Martens, 1890)  
*Pachychilus (Pachychilus) chrysalis chrysalis* (Brot, 1872)  
*Pachychilus (Pachychilus) corvinus corvinus* (Morelet, 1849)  
*Pachychilus (Pachychilus) oerstedii oerstedii* (Mörch, 1860)  
*Pachychilus (Glyptomelania) largillierti largillierti* (Philippi, 1843)  
*Pachychilus (Glyptomelania) subnodosus* (Philippi, 1847)  
*Chondropoma (Chondropomium) callipeplum* Solem, 1961  
*Aroapyrgus tryoni* (Pilsbry, 1904)  
*Cochliopina minor* (Pilsbry, 1920)  
*Cochliopina tryoniana* (Pilsbry, 1890)  
*Pyrgophorus conoideus* (Ancey, 1888)  
*Pseudosuccinea columella championi* (Von Martens, 1899)  
*Hebetancylus excentricus* (Morelet, 1851)  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Drepanotrema (Drepanotrema) lucidum* (Pfeiffer, 1839)  
*Drepanotrema (Fossulorbis) cultratum cultratum* (Orbigny, 1841)  
*Drepanotrema (Fossulorbis) depressissimum* (Moricand, 1839)  
*Biomphalaria fieldi* (Tryon, 1863)  
*Biomphalaria helophila* (Orbigny, 1835)  
*Biomphalaria nicaraguana* (Morelet, 1851)  
*Planorbella (Pierosoma) foviale guatemalense* (Clessin, 1889)  
*Planorbella (Pierosoma) trivolvis* (Say, 1817)  
*Planorbella (Pierosoma) wyldi* (Tristram, 1861)  
*Diplosolenodes occidentalis* (Guilding, 1825)  
*Diplosolenodes olivacea* (Stearns, 1871)  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasinula plebeia* (Fischer, 1868)  
*Veronicella sloanei* (Cuvier, 1816)  
*Succinea (Succinea) guatemalensis* Morelet, 1849  
*Columella polvonense* (Pilsbry, 1894)  
*Bothriopupa conoidea* (Pfeiffer, 1853)  
*Bothriopupa tenuidens* (C. B. Adams, 1841)  
*Pupisoma (Ptychopatula) minus* Pilsbry, 1920  
*Sterkia (Metasterkia) antillensis* Pilsbry, 1920  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Geminidens) geminidens* (Pilsbry, 1917)  
*Gastrocopta (Immersidens) gularis* Thompson & López, 1996  
*Vertigo (Angustula) milium* (A. A. Gould, 1840)  
*Orthalicus ferussaci ferussaci* Von Martens, 1863  
*Orthalicus ferussaci tricinatus* Von Martens, 1893  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus princeps deceptor* (Pilsbry, 1899)  
*Bulimulus corneus corneus* (Sowerby, 1833)  
*Bulimulus dysoni* (Pfeiffer, 1846)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Drymaeus) lilacinus ictericus* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) costaricensis* (Pfeiffer, 1862)  
*Drymaeus (Mesembrinus) dominicus* (Reeve, 1850)  
*Drymaeus (Mesembrinus) semimaculatus* Pilsbry, 1898  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) discrepans* (Sowerby, 1833)  
*Drymaeus (Mesembrinus) multilineatus* (Say, 1825)  
*Drymaeus (Mesembrinus) semipellucidus* (Tristram, 1861)  
*Drymaeus (Mesembrinus) translucens translucens* (Broderip, 1832)  
*Drymaeus (Mesembrinus) translucens alternans* (Beck, 1837)  
*Drymaeus (Mesembrinus) translucens subfloccosus* Pilsbry, 1899  
*Cecilioides (Karolus) consobrinus primus* (De Folin, 1870)  
*Cecilioides (Geostilba) aperta* (Swainson, 1840)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Beckianum sinistrum* (Von Martens, 1898)  
*Lamellaxis tamaulipensis* (Pilsbry, 1903)  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Lamellaxis hyalinus* (Tate, 1870)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Leptinaria lamellata lamellata* (Potiez & Michaud, 1838)  
*Opeas pumilum* (Pfeiffer, 1840)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Singleya) wani* (Jacobson, 1968)  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Pittieria (Laeviglandina) obtusa* (Pfeiffer, 1844)  
*Salasiella (Salasiella) corni* Richards, 1939  
*Salasiella (Salasiella) pulchella* (Pfeiffer, 1856)  
*Streptostyla (Streptostyla) vancegreenei* Jacobson, 1966  
*Streptostyla (Streptostyla) dysoni* (Pfeiffer, 1846)  
*Streptostyle (Tomostele) musaecola* (Morelet, 1860)

- Miradiscops opal* (Pilsbry, 1920)  
*Miradiscops panamensis* Pilsbry, 1930  
*Punctum (Toltecia) burringtoni* Pilsbry, 1930  
*Punctum (Toltecia) coloba* (Pilsbry, 1894)  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Chanomphalus tatei* Pilsbry, 1903  
*Radiodiscus (Radiodiscus) millicostatus millicostatus* Pilsbry & Ferriss, 1906  
*Xenodiscula taimori* Goodrich & Van der Schalie, 1937  
*Habroconus (Habroconus) championi* (Von Martens, 1892)  
*Habroconus (Habroconus) selenkai* (Pfeiffer, 1866)  
*Habroconus (Pseudoguppya) pittieri* (Von Martens, 1892)  
*Guppya biolleyi* Von Martens, 1892  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss, 1906)  
*Glyphyalina indentata indentata* (Say, 1822)  
*Hawaitia minuscula minuscula* (Binney, 1840)  
*Deroceras laeve* (Müller, 1774)  
*Pallifera auratus* (Tate, 1870)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Praticolella (Praticolella) griseola* (Pfeiffer, 1841)  
*Microconus (Pulchriconus) pilsbryi* Thompson, 1958  
*Thysanophora (Thysanophora) costaricensis* Rehder, 1942  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)  
*Thysanophora (Setidiscus) crinita crinita* (Fulton, 1917)  
*Thysanophora (Setidiscus) horni* (Gabb, 1866)
- PANAMÁ** 135 species and subspecies
- Helicina (Oxyrhombus) amoena* Pfeiffer, 1849  
*Helicina (Oxyrhombus) heighwayana* Dall, 1909  
*Helicina (Oxyrhombus) isthmica* Pilsbry, 1926  
*Helicina (Oxyrhombus) oxyrhyncha* Crosse & Debeaux, 1863  
*Helicina (Gemma) beatrix nicaraguae* (Wagner 1908)  
*Helicina (Gemma) terryae* Rehder, 1940  
*Helicina (Tristramia) funcki* Pfeiffer, 1849  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Pomacea costaricana* (Von Martens, 1899)  
*Pomacea cumingi cumingi* (King & Broderip, 1831)  
*Pomacea cumingi sanjoseensis* Morrison, 1946  
*Pomacea pealiana* (Lea, 1834)  
*Pomacea zeteki* Morrison, 1946  
*Neocyclotus dysoni affinis* (Von Martens, 1890)  
*Neocyclotus panamensis* Da Costa, 1904  
*Incidostoma brujense* (Bartsch & Morrison, 1942)  
*Incidostoma gigantea* (Reeve, 1842)  
*Incidostoma portobellense* (Bartsch & Morrison, 1942)  
*Calacyclotus atratensis* Bartsch & Morrison, 1942  
*Tudora (Tudorata) thomasi* Solem, 1961  
*Aroapyrgus alleei* Morrison, 1946  
*Aroapyrgus chagresensis* Morrison, 1946.  
*Aroapyrgus joseana* Morrison, 1946.  
*Aroapyrgus panamensis* (Tryon, 1863)  
*Cochliopa diazensis* Morrison, 1946  
*Cochliopa joseana* Morrison, 1946.  
*Cochliopa rowelli* (Tryon, 1863)  
*Cochliopina australis* Morrison, 1946  
*Cochliopina extremis* Morrison, 1946  
*Cochliopina juradoi* Morrison, 1946  
*Cochliopina navalis* Morrison, 1946  
*Cochliopina wetmorei* Morrison, 1946  
*Cochliopina zeteki* Morrison, 1946  
*Pyrgophorus chagresensis* (Morrison, 1946)  
*Pyrgophorus zeteki* (Morrison, 1946)  
*Subcochliopa colabrensis* Morrison, 1946  
*Subcochliopa trochus* Morrison, 1946  
*Zetekina frenata* (Pilsbry, 1935)  
*Zetekina kompi* (Morrison, 1946)  
*Zetekina panamensis* (Bartsch, 1920)  
*Zetekina veraguasensis* (Morrison, 1946)  
*Pseudosuccinea columella championi* (Von Martens, 1899)
- Laevapex joseana* (Morrison, 1946)  
*Gyraulus "percarinatus" Paraense*, 2000  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Drepanotrema (Fossulorbis) sumichrasti* (Crosse & Fischer, 1879)  
*Drepanotrema (Fossulorbis) surinamense* (Clessin, 1884)  
*Biomphalaria fieldi* (Tryon, 1863)  
*Biomphalaria kuhniiana* (Clessin, 1885)  
*Biomphalaria panamensis* Dunker, 1848  
*Micromenetus dilatatus avus* (Pilsbry, 1905)  
*Diplosolenodes occidentalis* (Guilding, 1825)  
*Succinea (Succinea) lutosa* Pilsbry, 1926  
*Succinea (Succinea) panamensis* Pilsbry, 1920  
*Gastrocopta (Geminidens) geminidens* (Pilsbry, 1917)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus princeps deceptor* (Pilsbry, 1899)  
*Orthalicus princeps perlongus* (Pilsbry, 1899)  
*Plekocheilus (Eudolichotis) distorta panamensis* (Pilsbry, 1910)  
*Drymaeus (Drymaeus) expansus balboa* Pilsbry, 1926  
*Drymaeus (Drymaeus) josephus errans* Pilsbry, 1926  
*Drymaeus (Drymaeus) megastomus* Parodiz, 1962  
*Drymaeus (Mesembrinus) bugabensis* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) chiriquiensis* Da Costa, 1901  
*Drymaeus (Mesembrinus) tripictus hoffmanni* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) pilsbryi* Zetek, 1933  
*Drymaeus (Mesembrinus) intrapictus* Pilsbry, 1930  
*Drymaeus (Mesembrinus) semimaculatus* Pilsbry, 1898  
*Drymaeus (Mesembrinus) inusitatus* (Fulton, 1900)  
*Drymaeus (Mesembrinus) translucens translucens* (Broderip, 1832)  
*Drymaeus (Mesembrinus) translucens alternans* (Beck, 1837)  
*Drymaeus (Mesembrinus) translucens misellus* Pilsbry, 1926  
*Drymaeus (Mesembrinus) translucens pachecensis* Pilsbry, 1930  
*Drymaeus (Mesembrinus) translucens panamensis* (Broderip, 1833)  
*Drymaeus (Mesembrinus) translucens sororcula* Pilsbry, 1926  
*Drymaeus (Mesembrinus) translucens tonosiesis* Pilsbry, 1930  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Lamellaxis filicostatus* Strebel, 1882  
*Lamellaxis costaricanus* (Von Martens, 1898)  
*Lamellaxis panamensis panamensis* (Pilsbry, 1910)  
*Lamellaxis panamensis tabogensis* (Pilsbry, 1930)  
*Leptopeas colimense* (Crosse & Fischer, 1869)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Leptinaria lamellata concentrica* (Reeve, 1849)  
*Opeas adamsi* Pilsbry, 1906  
*Opeas pumilum* (Pfeiffer, 1840)  
*Subulina octona* (Bruguière, 1789)  
*Obeliscus (Ischnocion) triptyx* (Pilsbry, 1908)  
*Euglandina (Euglandina) dactylus* (Broderip, 1832)  
*Euglandina (Euglandina) gigantea* Pilsbry, 1926  
*Euglandina (Euglandina) striata* (Müller, 1774)  
*Euglandina (Singleya) anomala barrocoloradensis* Pilsbry, 1930  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Pittieria (Laeviglandina) aurantiaca* (Angas, 1879)  
*Pittieria (Laeviglandina) broctontomlini* (Pilsbry, 1926)  
*Pittieria (Laeviglandina) chiriquiensis* (Da Costa, 1900)  
*Salasiella (Salasiella) browni* Pilsbry, 1910  
*Streptostyla (Streptostyla) chiriquiana* Von Martens, 1901  
*Streptostyla (Streptostyla) viridula* Angas, 1879  
*Rectaxis canalizonalis* (Pilsbry, 1930)  
*Sinoennea (Indoennea) bicolor* (Hutton, 1834)  
*Streptostele (Tomostele) musaecola* (Morelet, 1860)  
*Drepanostomella pinchoti* Pilsbry, 1930  
*Guestieria isthmica* Pilsbry, 1930  
*Miradiscops balboa* Pilsbry, 1930  
*Miradiscops haplocochlion* Thompson, 1967  
*Miradiscops panamensis* Pilsbry, 1930  
*Systrophia (Systarophiella) zeteki* (Pilsbry, 1920)  
*Systrophia (?) antoni* (Pfeiffer, 1842)  
*Habroconus (Ernstia) zeteki* Pilsbry, 1930

*Habroconus (Pseudoguppya) browni* (Pilsbry, 1910)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Zonitoides (Zonitella) hoffmanni* (Von Martens, 1892)  
*Zonitoides (Zonitella) ostauri* Pilsbry, 1926  
*Pallifera costaricensis costaricensis* (Mörch, 1858)  
*Labyrinthus quadridentatus quadridentatus* (Broderip, 1832)  
*Labyrinthus triplicatus* (Von Martens, 1868)  
*Labyrinthus subplanatus sipunculatus* (Forbes, 1850)  
*Labyrinthus otis orthorhinus* (Pilsbry, 1910)  
*Labyrinths uncigera uncigera* (Petit, 1838)  
*Labyrinths uncigera chiriquiensis* (Pilsbry, 1910)  
*Labyrinthus uncigera tau* (Pilsbry, 1926)  
*Zachrysia auricoma auricoma* (Férussac, 1821)  
*Zachrysia auricoma havanensis* (Pilsbry, 1894)  
*Leptarionta venusta venusta* Gude, 1903  
*Leptarionta venusta albata* Rehder, 1942  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Microconus (Pulchriconus) termitarum* Pilsbry, 1926  
*Thysanophora (Thysanophora) amita* Pilsbry, 1926  
*Thysanophora (Thysanophora) balboa* Pilsbry, 1926  
*Thysanophora (Thysanophora) canalis canalis* Pilsbry, 1910  
*Thysanophora (Thysanophora) conspurcatella puella* Pilsbry, 1926  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)

#### MÉXICAN STATES

##### AGUAESCALIENTE

no species recored from this state

##### BAJA CALIFORNIA NORTE 62 species and subspecies

*Pyrgulopsis cedrosensis* (Pilsbry, 1927)  
*Fossaria (Fossaria) obrussa modicella* (Say, 1825)  
*Fossaria (Bakerlymnaea) bulimoides techella* (Haldeman, 1867)  
*Fossaria (Bakerlymnaea) cubensis* (Pfeiffer, 1839)  
*Planorbella (Pierosoma) tenue pertenua* (F. C. Baker, 1940)  
*Catinella (Mediappendix) rehderi* Pilsbry, 1948  
*Succinea (Succinea) californica* Crosse & Fischer, 1990  
*Succinea (Succinea) guadelupensis* Dall, 1900  
*Succinea (Succinea) rusticana* Gould, 1846  
*Pupilla (Pupilla) hebes* (Ancey, 1881)  
*Pupilla (Stiopupilla) goniodon* Pilsbry, 1927  
*Pupilla (Stiopupilla) sterkiana* (Pilsbry, 1890)  
*Sterkia (Sterkia) calamitosa calamitosa* (Pilsbry, 1889)  
*Sterkia (Sterkia) calamitosa martiniana* Pilsbry, 1927  
*Sterkia (Sterkia) hemphilli* (Sterki, 1890)  
*Sterkia (Metasterkia) clementina* (Sterki, 1890)  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Vertigo (Vertigo) berryi* Pilsbry, 1919  
*Vertigo (Vertigo) ovata* Say, 1822  
*Nearctula rowelli diegoensis* (Sterki, 1890)  
*Nearctula rowelli catalinaria* (Sterki, 1890)  
*Nearctula rowelli guadalupensis* (Pilsbry, 1927)  
*Nearctula degeneris* (Pilsbry, 1927)  
*Pseudosubulina ruthae* Pilsbry, 1954  
*Glyptostoma newberryanum depressum* Bryant, 1902  
*Euconulus fulvus* (Müller, 1774)  
*Striatura (Striatura) pugetensis* (Dall, 1895)  
*Hawaii minuscula minuscula* (Binney, 1840)  
*Binney (Alluthya) guadalupensis* Pilsbry, 1927  
*Eremarionta indioensis* (Yates, 1890)  
*Helminthoglypta (Helminthoglypta) tudiculata* (Binney, 1843)  
*Helminthoglypta (Charodotes) coelata* (Bartsch, 1916)  
*Helminthoglypta (Charodotes) hannai hannai* Pilsbry, 1927  
*Helminthoglypta (Charodotes) hannai diodon* Pilsbry, 1927  
*Helminthoglypta (Charodotes) misiona* Chase, 1937  
*Helminthoglypta (Charodotes) reederi* Miller, 1981  
*Helminthoglypta (Charodotes) iraski coronadoensis* (Bartsch, 1916)  
*Herpeteros chacei* (Willett, 1940)  
*Herpeteros evermanni* (Pilsbry, 1927)

*Herpeteros inglesiana* (Berry, 1928)  
*Herpeteros merrilli* (Bartsch, 1904)  
*Herpeteros peninsularis* (Pilsbry, 1916)  
*Martirelix babrakzai* (Miller, 1982)  
*Martirelix huertai* (Miller & Roth, 1990)  
*Micrarionta guadalupiana* (Dall, 1898)  
*Xerarionta (Xerarionta) levis levis* (Pfeiffer, 1845)  
*Xerarionta (Xerarionta) levis canescens* (Adams & Reeve, 1848)  
*Xerarionta (Xerarionta) pandorae* (Forbes, 1850)  
*Xerarionta (Plesarionta) orcutti* (Dall, 1900)  
*Xerarionta (Plesarionta) stearnsiana* (Gabb, 1868)  
*Xerarionta (Plesarionta) orcutti* (Dall, 1900)

##### BAJA CALIFORNIA SUR 53 species and subspecies

*Ferrissia bayacalifornica* Walker, 1924  
*Drepanotrema (Fossulorbis) cultratum anitense* (Cooper, 1893)  
*Biomphalaria gracilentia* (Gould, 1855)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Catinella (Mediappendix) rehderi* Pilsbry, 1948  
*Oxyloma (Neoxyloma) nuttalliana* Lea, 1841  
*Succinea (Succinea) rusticana* Gould, 1846  
*Strobilops (Strobilops) californica* Miller & Christensen, 1980  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Pupoides (Pupoides) catalinensis* Hanna, 1923  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Gastrocopta) riograndensis* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Immersidens) allyni* Roth & Christensen, 1984  
*Gastrocopta (Immersidens) rixfordi* Hanna, 1923  
*Berendtia taylori* (Pfeiffer, 1861)  
*Naesiotus altus* (Dall, 1893)  
*Naesiotus beldingi* (Cooper, 1892)  
*Naesiotus cosmicus* (Mabille, 1895)  
*Naesiotus dentifer dentifer* (Mabille, 1895)  
*Naesiotus dentifer johnstoni* (Hanna, 1923)  
*Naesiotus dentifer lamellifer* (Pilsbry, 1897)  
*Naesiotus dentifer santacruzensis* (Hanna, 1923)  
*Naesiotus excelsus* (Gould, 1853)  
*Naesiotus gabbi* (Crosse & Fischer, 1872)  
*Naesiotus gigantensis* (Christensen & Miller, 1977)  
*Naesiotus hannai* (Pilsbry, 1927)  
*Naesiotus harribaueri* (Jacobson, 1958)  
*Naesiotus laevapex* (Christensen & Miller, 1977)  
*Naesiotus montezuma* (Dall, 1893)  
*Naesiotus pallidior* (Sowerby, 1833)  
*Naesiotus rimatus* (Pfeiffer, 1846)  
*Naesiotus spirifer* (Gabb, 1868)  
*Naesiotus veseyanus* (Dall, 1893)  
*Naesiotus xantusi* (Binney, 1861)  
*Rabdotus (Rabdotus) ceralboensis* (Hanna, 1923)  
*Rabdotus (Rabdotus) chamberlini* (Hanna, 1923)  
*Rabdotus (Rabdotus) levis* (Dall, 1893)  
*Rabdotus (Rabdotus) pilula* (Binney, 1861)  
*Rabdotus (Rabdotus) sufflatus* (Gould, 1859)  
*Rabdotus (Plicolumna) abbreviatus* (Cooper, 1892)  
*Rabdotus (Plicolumna) artemisia* (Binney, 1861)  
*Rabdotus (Plicolumna) inscendens* (Binney, 1861)  
*Rabdotus (Plicolumna) perhirsutus* Miller, Christensen & Roth, 1990  
*Rabdotus (Plicolumna) ramentosus* (Cooper, 1991)  
*Spartocentrum digueti* (Mabille, 1895)  
*Spartocentrum eisenianum* (Pilsbry, 1900)  
*Spartocentrum insulare* (Hanna, 1923)  
*Spartocentrum irregularis* (Gabb, 1868)  
*Spartocentrum vanduzeei* (Hanna, 1923)  
*Pseudosubulina eiseniana* (Cooper, 1893)  
*Pseudosubulina tastensis* (Cooper, 1894)  
*Paralaoma servilis* (Shuttleworth, 1852)  
*Helicodiscus (Lucilla) singleyanus* (Pilsbry, 1889)  
*Radiocentrum discus* Christensen & Miller, 1976  
*Radiocentrum exorbitans* (Miller, 1973)  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)



- Greggelix indigena* (Mabille, 1895)  
*Greggelix loehrii* (Gabb, 1867)  
*Greggelix punctata* Miller, 1981  
*Herpeteros peninsularis* (Pilsbry, 1916)  
*Xerarionta* (*Xerarionta*) *areolata* (Pfeiffer, 1845)  
*Xerarionta* (*Xerarionta*) *levis canescens* (Adams & Reeve, 1848)  
*Xerarionta* (*Xerarionta*) *levis crassula* (Dall, 1900)
- CAMPECHE** 53 species and subspecies
- Helicina* (*Oxyrhombus*) *amoena* Pfeiffer, 1849  
*Helicina* (*Succincta*) *arenicola arenicola* Morelet, 1849  
*Helicina* (*Succincta*) *flavida flavida* Menke, 1828  
*Helicina* (*Tristramia*) *tenuis* Pfeiffer, 1849.  
*Lucidella* (*Poenia*) *lirata* (Pfeiffer, 1847)  
*Pomacea flagellata flagellata* (Say, 1827)  
*Neocyclotus dysoni aureus* (Bartsch & Morrison, 1942)  
*Neocyclotus dysoni berendti* (Pfeiffer, 1861)  
*Neocyclotus dysoni cookei* (Bartsch & Morrison, 1942)  
*Choanopoma* (*Choanopomops*) *andrewsae* (Ancey, 1886)  
*Choanopoma* (*Choanopomops*) *gaigei* Bequaert & Clench, 1931  
*Choanopoma* (*Choanopomops*) *largillierti* (Pfeiffer, 1846)  
*Texadina sphinctostoma* (Abbott & Ladd, 1951)  
*Fossaria* (*Bakerlymnaea*) *viator* (Orbigny, 1835)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Biomphalaria retusus* (Morelet, 1849)  
*Planorbella* (*Pierosoma*) *foveale foveale* (Menke, 1830)  
*Mexinauta nitens* (Philippi, 1841)  
*Mayabina spiculata* (Morelet, 1849)  
*Leidyula moreleti* (Fischer, 1871)  
*Catinella* (*Mediappendix*) *avara* (Say, 1824)  
*Succinea* (*Succinea*) *carmenensis* Fischer & Crosse, 1878  
*Gastrocopta* (*Gastrocopta*) *cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta* (*Gastrocopta*) *riograndensis* (Pilsbry & Vanatta, 1900)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus inermis inermis* (Morelet, 1851)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus* (*Drymaeus*) *serperastrum* (Say, 1829)  
*Drymaeus* (*Mesembrinus*) *dominicus* (Reeve, 1850)  
*Drymaeus* (*Mesembrinus*) *sulfureus* (Pfeiffer, 1856)  
*Drymaeus* (*Mesembrinus*) *multilineatus* (Say, 1825)  
*Drymaeus* (*Mesembrinus*) *tropicalis* (Morelet, 1849)  
*Brachypodella dubia* (Pilsbry, 1891)  
*Cecilioides* (*Karolus*) *consobrinus primus* (De Folin, 1870)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina* (*Singleya*) *carminensis* (Morelet, 1849)  
*Euglandina* (*Cosmomenus*) *cylindracea* (Phillips, 1846)  
*Streptostyla* (*Streptostyla*) *ventricosula* (Morelet, 1849)  
*Streptostyla* (*Streptostyla*) *meridana meridana* (Morelet, 1849)  
*Habroconus* (*Pseudoguppya*) *pittieri* (Von Martens, 1892)  
*Guppya fulvoidea* (Morelet, 1851)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Hawaiia minuscula permodesta* (Strebel, 1880)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Polygyra yucateana* (Morelet, 1849)  
*Praticolella* (*Praticolella*) *griseola* (Pfeiffer, 1841)  
*Thysanophora* (*Thysanophora*) *conspurcatella conspurcatella* (Morelet, 1851)  
*Thysanophora* (*Lyroconus*) *caecoides* (Tate, 1870)
- CHIAPAS** 87 species and subspecies
- Linidiella sulfureous* Thompson, 1967  
*Helicina* (*Oxyrhombus*) *amoena* Pfeiffer, 1849  
*Helicina* (*Oxyrhombus*) *ghiesbreghtii* Pfeiffer, 1856  
*Helicina* (*Succincta*) *flavida flavida* Menke, 1828  
*Helicina* (*Succincta*) *flavida brevilabris* Pfeiffer, 1857  
*Helicina* (*Succincta*) *oweniana oweniana* Pfeiffer, 1849  
*Helicina* (*Succincta*) *oweniana anozona* Von Martens, 1875  
*Helicina* (*Tristramia*) *tenuis* Pfeiffer, 1849.  
*Lucidella* (*Poenia*) *lirata* (Pfeiffer, 1847)  
*Schasicheila* (*Atoyac*) *alata* (Pfeiffer, 1849)  
*Schasicheila* (*Schasicheila*) *pannucea* (Morelet, 1849)  
*Neocyclotus dysoni ambiguus* (Von Martens, 1890)  
*Neocyclotus simplicostus* Thompson, 1969  
*Amphicyclotus megaplanus* Morrison, 1955  
*Amphicyclotus palenquensis* (Pilsbry, 1935)  
*Amphicyclotus paulsonorum* Thompson, 1969  
*Amphicyclotus texturatus texturatus* (Sowerby, 1850)  
*Amphicyclotus texturatus spiralis* Thompson, 1969  
*Pachychilus* (*Pachychilus*) *chrysalis chrysalis* (Brot, 1872)  
*Pachychilus* (*Pachychilus*) *indiorum* (Morelet, 1849)  
*Chondropoma* (*Chondropomium*) *rubicundum* (Morelet, 1849)  
*Choanopoma* (*Choanopomops*) *chiapasense* Crosse & Fischer, 1877  
*Choanopoma* (*Choanopomops*) *terecostatum* Thompson, 1966  
*Cochliopina infundibulum* (Von Martens, 1899)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria subprona* (Von Martens, 1899)  
*Planorbella* (*Pierosoma*) *foveale foveale* (Menke, 1830)  
*Mexinauta impluviatus* (Morelet, 1849)  
*Mayabina tapanensis* (Crosse & Fischer, 1882)  
*Chiapaphysa grijalvae* Taylor, 2003  
*Leidyula floridana* Leidy, 1851  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasinula dubia* (Semper, 1885)  
*Succinea* (*Succinea*) *brevis* Dunker, 1850  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus* (*Mesembrinus*) *recluzianus recluzianus* (Pfeiffer, 1847)  
*Drymaeus moricandi hyalinoalbidus* (Fischer & Crosse, 1875)  
*Simulopsis simula* (Morelet, 1851)  
*Eucalodium* (*Eucalodium*) *otoides* Thompson, 1968  
*Eucalodium* (*Oligostylus*) *sumichrasti* Crosse & Fischer, 1878  
*Eucalodium* (*Oligostylus*) *walpoleanum* Crosse & Fischer, 1872  
*Eucalodium* (*Pryhocentrum*) *marianum* (Bartsch, 1943)  
*Coelocentrum* (*Coelocentrum*) *anconai* Bartsch, 1948  
*Coelocentrum* (*Coelocentrum*) *cataclines* Thompson, 1968  
*Coelocentrum* (*Coelocentrum*) *nelsoni* Dall, 1896  
*Coelocentrum* (*Coelocentrum*) *pfefferi* Dall, 1896  
*Coelocentrum* (*Coelocentrum*) *tomacella tomacella* (Morelet, 1849)  
*Coelocentrum* (*Coelocentrum*) *tomacella adelphion* Thompson, 1968  
*Coelocentrum* (*Coelocentrum*) *tomacella attenuatum* (Pfeiffer, 1856)  
*Coelocentrum* (*Coelocentrum*) *turris* (Pfeiffer, 1856)  
*Coelocentrum* (*Coelocentrum*) *tyla* Thompson, 1968  
*Epirobia berendti albida* (Fischer & Crosse, 1873)  
*Epirobia gassiesi* (Pfeiffer, 1867)  
*Epirobia lurida* Thompson, 1976  
*Epirobia swiftiana alternans* Thompson, 1976  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina* (*Singleya*) *ghiesbreghtii* (Pfeiffer, 1856)  
*Varicoglandina monilifera monilifera* (Pfeiffer, 1845)  
*Varicoturris dubia* (Pfeiffer, 1856)  
*Salasiella* (*Salasiella*) *pulchella* (Pfeiffer, 1856)  
*Streptostyla* (*Streptostyla*) *nebulosa* Dall, 1896  
*Streptostyla* (*Streptostyla*) *biconica* Pfeiffer, 1856  
*Streptostyla* (*Streptostyla*) *oblonga* (Pfeiffer, 1856)  
*Streptostyla* (*Chersomitra*) *chiapensis* Pilsbry, 1909  
*Streptostyla* (*Chersomitra*) *nigricans* (Pfeiffer, 1845)  
*Streptostyla* (*Peteniella*) *catenata* (Pfeiffer, 1856)  
*Streptostyla* (*Peteniella*) *ligulata* (Morelet, 1849)  
*Mayaxis chiapensis* (Pfeiffer, 1856)  
*Miraradula similaris* (Strebel, 1882)  
*Volutaxis* (*Volutaxis*) *scalariopsis* (Morelet, 1851)  
*Volutaxis* (*Volutaxis*) *sulciferus sulciferus* (Morelet, 1851)  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Chanomphalus cidarisca* (Von Martens, 1892)

*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Mesomphix (Omphalina) zonites* (Pfeiffer, 1845)  
*Mesomphix (Zonyalina) bilineatus* (Pfeiffer, 1845)  
*Leptarionta trigonostoma trigonostoma* (Pfeiffer, 1844)  
*Lysinoe ghiesbreghti ghiesbreghti* (Nyst, 1841)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Xanthonyx chiapensis* (Pfeiffer, 1856)  
*Semiconchula breedlovei* Naranjo-Garcia, 2003  
*Semiconchula custepecana* Naranjo-Garcia, Polaco & Pearce, 2000  
*Thysanophora (Lyroconus) fuscula* (C. B. Adams, 1849)  
*Thysanophora (Setidiscus) impura* (Pfeiffer, 1866)

#### CHIHUAHUA 61 species and subspecies

*Eremopyrgus elegans* Hershler, Liu & Lande, 2002  
*Minkleyella balnearis* Hershler, Liu & Lande, 2011  
*Pseudotryonia mica* Hershler, Liu & Lande, 2011  
*Pyrgophorus spinosus* (Call & Pilsbry, 1886)  
*Pyrgulopsis brandi* (Drake, 1953)  
*Pyrgulopsis chihuahua* (Pilsbry, 1928)  
*Pyrgulopsis palomasensis* (Pilsbry, 1895)  
*Fossaria (Fossaria) obrussa modicella* (Say, 1825)  
*Planorbella (Pierosoma) tenue pertenua* (F. C. Baker, 1940)  
*Succinea (Calcsuccinea) luteola luteola* Gould, 1848  
*Cochlicopa lubrica* (Müller, 1774)  
*Vallonia perspectiva* Sterki, 1892  
*Pupilla (Pupilla) hebes* (Ancey, 1881)  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Vertigo (Vertigo) gouldi arizonensis* Pilsbry & Vanatta, 1900  
*Vertigo (Vertigo) gouldi inserta* Pilsbry, 1919  
*Vertigo (Alloptyx) hinkleyi* Pilsbry, 1921  
*Drymaeus (Drymaeus) dunkeri forreri* (Mousson, 1883)  
*Rabdotus (Rabdotus) pilsbryi* (Ferriss, 1925)  
*Rabdotus (Rabdotus) schiedeanus schiedeanus* (Pfeiffer, 1841)  
*Haplocion greggi* (Drake, 1951)  
*Haplocion hamiltoni* (Dall, 1897)  
*Haplocion pasonis* (Dall, 1896)  
*Haplocion semisculpta* (Stearns, 1890)  
*Haplocion wilmoti* Bartsch, 1947  
*Coelostemma (Goniapex) attenuapex* Thompson, 1988  
*Coelostemma (Goniapex) bryantwalkerii* (Pilsbry, 1917)  
*Coelostemma (Goniapex) freytagi* Bartsch, 1950  
*Coelostemma (Goniapex) reiteri* Drake, 1951  
*Coelostemma (Goniapex) townsendi* (Bartsch, 1906)  
*Metastoma roemeri* (Pfeiffer, 1848)  
*Radiodiscus (Radiodiscus) millicostatus millicostatus* Pilsbry & Ferriss, 1906  
*Discus (Discus) whitneyi* (Newcomb, 1864)  
*Helicodiscus (Helicodiscus) eiganmanni* Pilsbry, 1900  
*Radiocentrum caenosa* (Pilsbry, 1953)  
*Radiocentrum labrenana* (Pilsbry, 1948)  
*Euconulus fulvus* (Müller, 1774)  
*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss, 1906)  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Humboldtiana (Aglotrochus) tanymastix* Thompson, 2006  
*Humboldtiana (Clydonacme) hogeana* (Von Martens, 1892)  
*Humboldtiana (Clydonacme) oberon* Thompson, 2006  
*Humboldtiana (Clydonacme) princeps* Thompson, 2006  
*Humboldtiana (Clydonacme) regula* Thompson, 2006  
*Humboldtiana (Clydonacme) spectabile* Thompson, 2006  
*Humboldtiana (Clydonacme) titania* Thompson, 2006  
*Humboldtiana (Gymnopallax) cicatricosa* Thompson, 2006  
*Humboldtiana (Gymnopallax) sylvania* Thompson & Mejia, 2006  
*Humboldtiana (Humboldtiana) balanites* Thompson, 2006  
*Humboldtiana (Humboldtiana) corruga* Thompson & Mejia, 2006  
*Humboldtiana (Humboldtiana) eulaliae* Metcalf, 1983  
*Humboldtiana (Humboldtiana) torrei* Pilsbry, 1935  
*Sonorella (Sonorella) goldmani* Bartsch, 1904  
*Sonorella (Sonorella) nelsoni* Bartsch, 1904  
*Sonorella (Sonorella) pennelli* Pilsbry, 1948  
*Tryonigens remondi* (Tryon, 1863)

*Ashmunella intricata* Pilsbry, 1948  
*Ashmunella juarazensis* Pilsbry, 1948  
*Ashmunella meridionalis* Pilsbry, 1948  
*Ashmunella milesi* Reeder, 1993  
*Ashmunella montivaga* Pilsbry, 1948

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*Helicina (Oligyra) orbiculata tropica* Pfeiffer, 1852  
*Corrobium crassilabrum* Hershler, Liu & Lande, 2011  
*Coahuilix landyei* Hershler, 1985  
*Cochliopina milleri* Taylor, 1966  
*Cochliopina riograndensis* (Pilsbry & Ferriss, 1906)  
*Juturnia coahuilae* (Taylor, 1966)  
*Mexipyrgus carranzae* Taylor, 1966  
*Mexithauma quadripaludium* Taylor, 1966  
*Paludiscala caramba* Taylor, 1966  
*Phreatoceras taylori* (Hershler & Longley, 1986)  
*Pyrgophorus spinosus* (Call & Pilsbry, 1886)  
*Pyrgulopsis acarinatus* (Hershler, 1985)  
*Pyrgulopsis manantiali* (Hershler, 1985)  
*Pyrgulopsis minkleyi* (Taylor, 1966)  
*Assimineia cienegensis* Hershler, Liu & Lange, 2007  
*Fossaria obrussa obrussa* (Say, 1825)  
*Stagnicola elodes* (Say, 1821)  
*Hebetancylus excentricus* (Morelet, 1851)  
*Rabdotus (Rabdotus) pilsbryi* (Ferriss, 1925)  
*Rabdotus (Rabdotus) schiedeanus schiedeanus* (Pfeiffer, 1841)  
*Propilsbrya nelsoni* (Bartsch, 1906)  
*Haplocion coahuilensis* (W. G. Binney, 1865)  
*Haplocion yucatanensis* (Bartsch, 1906)  
*Coelostemma (Coelostemma) dalli* (Pilsbry, 1902)  
*Coelostemma (Coelostemma) saltillensis* Pilsbry, 1953  
*Coelostemma (Apertaxis) coahuilensis* (Bartsch, 1906)  
*Holospira (Holospira) aguerreverei* Hanna & Hertlein, 1929  
*Holospira (Holospira) fergusonii* Gilbertson & Naranjo-Garcia, 2010  
*Holospira (Holospira) infanta* Bartsch, 1906  
*Holospira (Holospira) monclovana* Bartsch, 1925  
*Holospira (Holospira) nelsoni* Pilsbry, 1902  
*Holospira (Holospira) orcutti* Bartsch, 1925  
*Holospira (Holospira) picta* Bartsch, 1925  
*Metastoma roemeri* (Pfeiffer, 1848)  
*Radiocentrum orientalis* Metcalf, 1980  
*Humboldtiana (Humboldtiana) edesma* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) malenae* Metcalf, 1983  
*Humboldtiana (Humboldtiana) nueveleonis* Pilsbry, 1927  
*Humboldtiana (Humboldtiana) riskindi* Fullington & Zimmerman, 1977  
*Humboldtiana (Humboldtiana) taylori* Drake, 1951  
*Humboldtiana (Polyomphala) oreina* Thompson & Brewer, 2000  
*Humboldtiana (Polyomphala) plana* Metcalf & Riskind, 1976  
*Polygyra (Linista) texasiana texasiana* (Moricand, 1833)  
*Polygyra (Linista) texasiana texasensis* Pilsbry, 1902  
*Polygyra (Upsilondon) burlsoni* Metcalf & Riskind, 1978  
*Polygyra (Upsilondon) dalli* Metcalf & Riskind, 1978  
*Polygyra (Upsilondon) idiogenes* Pilsbry, 1956  
*Polygyra (Upsilondon) multiplicata* Metcalf & Riskind, 1978  
*Polygyra (Upsilondon) sterni* Metcalf & Riskind, 1978

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*Ceochasma phrixina* Thompson, 1968  
*Dicrista cooperi* (Tryon, 1863)  
*Dicrista rugosa* Thompson, 1969  
*Xenocyclus patulus* Thompson, 1969  
*Tryonia pilsbryi* (Morrison, 1945)  
*Sarasinula dubia* (Semper, 1885)  
*Orthalicus elegans* Rolle, 1895  
*Orthalicus maclurrae* Von Martens, 1893  
*Orthalicus melanocheilus melanocheilus* (Valenciennes, 1833)  
*Orthalicus nobilis* Rolle, 1895  
*Orthalicus pallidus* (Strebel, 1909)  
*Orthalicus princeps princeps* (Broderip, 1833)

*Orthalicus quagus* (Strebel, 1909)  
*Orthalicus tepicensis rollei* (Strebel, 1909)  
*Orthalicus zoniferus* Strebel, 1882  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Drymaeus) colimensis* (Rolle, 1895)  
*Drymaeus (Drymaeus) fenestratus* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) ghiesbreghtii iodostylus* (Pfeiffer, 1861)  
*Anisospira (Trachycion) recticosta townsendi* Pilsbry & Cockerell, 1903  
*Dissotropis amplaxis* Thompson, 1968  
*Coelostemma (Coelostemma) anaclasta* Thompson, 1971  
*Leptopeas colimense* (Crosse & Fischer, 1869)  
*Euglandina (Euglandina) daudebarti dardebarti* (Deshayes, 1850)  
*Euglandina (Euglandina) liebmanni* (Pfeiffer)  
*Guillarmodia (Guillarmodia) elegans* (Von Martens, 1895)  
*Guillarmodia (Proameria) albersi albersi* (Pfeiffer, 1854)  
*Tryonigens remondi* (Tryon, 1863)  
*Polygyra (Linisia) bicurris bicurris* (Pfeiffer, 1857)  
*Polygyra (Linisia) matermontana matermontana* Pilsbry, 1896  
*Polygyra (Linisia) richardsoni* Von Martens, 1892

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*Tryonia mariae* (Morrison, 1945)  
*Valvata humeralis humeralis* Say, 1829  
*Biomphalaria orbicula* (Morelet, 1849)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Planorbella (Pierosoma) tenue boucardi* (Fischer & Crosse, 1880)  
*Punctum (Toltecia) conspectum jaliscoensis* (Pilsbry, 1926)  
*Humboldtiana (Humboldtiana) buffoniana* (Pfeiffer, 1845)

**DURANGO** 21 species and subspecies

*Helicina (Oligyra) borealis* Von Martens, 1890  
*Helicina (Tristramia) durangoana durangoana* Mousson, 1883  
*Tryonia pasajae* Hershler, Liu & Lande, 2011  
*Tryonia seemani* (Frauenfeld, 1863)  
*Hebetancylus excentricus* (Morelet, 1851)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Drymaeus (Drymaeus) dunkeri forreri* (Mousson, 1883)  
*Drymaeus (Mesembrinus) uhdeanus borealis* (Von Martens, 1893)  
*Naesiotus durangoanus* (Von Martens, 1893)  
*Rabdotus (Rabdotus) schiedeamus schiedeamus* (Pfeiffer, 1841)  
*Haplocion durangoensis* Bartsch, 1906  
*Coelostemma (Crycoryne) astraxis* Thompson, 1971  
*Coelostemma (Styloptyx) fornax fornax* Thompson, 1971  
*Coelostemma (Styloptyx) fornax ix* Thompson, 1971  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)  
*Bunnya naranjoae* Miller, 1987  
*Humboldtiana (Humboldtiana) gradyi* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) latizona* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) pergranulosa* Solem, 1955  
*Tryonigens remondi* (Tryon, 1863)  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)

**GUANAJUATO** 3 species and subspecies

*Tryonia dugesiana* (Morrison, 1945)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Succinea (Succinea) undulate undulata* Say, 1829

**GUERRERO** 62 species and subspecies

*Volutaxis (Volutaxis) cacahuamilpensis* (Herrera, 1891)  
*Helicina (Gemma) fragilis fragilis* Morelet, 1851  
*Helicina (Tristramia) punctisulcata punctisulcata* Von Martens, 1890  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Pomacea picta* (Reeve, 1856)  
*Dicrista cooperi* (Tryon, 1863)  
*Dicrista flavescens* Thompson, 1969  
*Littoridina orcutti* (Pilsbry, 1928)  
*Mexinauta aurantia* (Carpenter, 1857)  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Orthalicus melanocheilus melanocheilus* (Valenciennes, 1833)  
*Orthalicus melanocheilus mariae* (McGinty, 1939)  
*Orthalicus muelleri* (Strebel, 1909)

*Orthalicus ponderosus albatu*s (McGinty, 1939)  
*Orthalicus ponderosus balesi* (McGinty, 1939)  
*Orthalicus torrei* (McGinty, 1939)  
*Orthalicus uhdeanus* Von Martens, 1893  
*Orthalicus zoniferus* Strebel, 1882  
*Drymaeus (Drymaeus) dombeyanus* (Ferussac, 1842)  
*Drymaeus (Mesembrinus) sulcosus* (Pfeiffer, 1841)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) perductorum* Rehder, 1943  
*Drymaeus (Mesembrinus) tryoni pochutlensis* (Crosse & Fischer, 1875)  
*Drymaeus (Mesembrinus) livescens* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) moritinctus* (Von Martens, 1893)  
*Eucalodium (Oligostylus) mariae* (Bartsch, 1947)  
*Coelocentrum (Coelocentrum) huertai* Bartsch, 1947  
*Coelocentrum (Coelocentrum) stenocion* Thompson  
*Coelocentrum (Coelocentrum) tanydeira* Thompson, 1968  
*Dissotropis blandi* (Bartsch, 1906)  
*Haplocion campoi* Bartsch, 1943  
*Coelostemma (Coelostemma) anconai* Bartsch, 1951  
*Coelostemma (Coelostemma) balesi* Pilsbry 1954  
*Coelostemma (Coelostemma) balsasensis* (Bartsch, 1926)  
*Coelostemma (Coelostemma) bartschi* Pilsbry & Clapp, 1909  
*Coelostemma (Coelostemma) bembix* Thompson, 1971  
*Coelostemma (Coelostemma) bourgeoisana antricola* Bartsch, 1943  
*Coelostemma (Coelostemma) chilpancingoensis* Pilsbry, 1953  
*Coelostemma (Coelostemma) eclipses* Thompson, 1971  
*Coelostemma (Coelostemma) elizabethae* (Pilsbry, 1898)  
*Coelostemma (Coelostemma) fusca* (Von Martens, 1897)  
*Coelostemma (Coelostemma) hazelae* Pilsbry, 1953  
*Coelostemma (Coelostemma) igualaensis* (Bartsch, 1926)  
*Coelostemma (Coelostemma) scaphopleuron* Thompson, 1988  
*Euglandina (Euglandina) bailyi* M. Smith, 1950  
*Euglandina (Euglandina) cuneus* (Von Martens, 1891)  
*Euglandina (Euglandina) daudebarti dardebarti* (Deshayes, 1850)  
*Euglandina (Euglandina) liebmanni* (Pfeiffer)  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Euglandina (Singleya) pseudoturrus* (Strebel, 1875)  
*Guillarmodia (Guillarmodia) arthritica* (Thompson, 1995)  
*Guillarmodia (Guillarmodia) brachystyla* (Thompson, 1995)  
*Guillarmodia (Guillarmodia) comma* (Thompson, 1995)  
*Guillarmodia (Guillarmodia) gracilior* (Thompson, 1995)  
*Guillarmodia (Guillarmodia) stenotrema* (Thompson, 1995)  
*Varioglandina monilifera monilifera* (Pfeiffer, 1845)  
*Pittieria (Laeviglandina) lanceolata* (Von Martens, 1891)  
*Pseudosubulina robusta* Von Martens, 1898  
*Patulopsis (Omphalinella) sculptus* (Von Martens, 1892)  
*Tryonigens remondi* (Tryon, 1863)  
*Polygyra (Linisia) matermontana matermontana* Pilsbry, 1896  
*Polygyra couloni* (Shuttleworth, 1852)

**HIDALGO** 13 species and subspecies

*Aperostoma palmeri* (Bartsch & Morrison, 1942)  
*Pachychilus (Oxymelania) saussurei* (Brot, 1874)  
*Stagnicola elodes* (Say, 1821)  
*Succinea (Succinea) brevis* Dunker, 1850  
*Succinea (Succinea) undulata morchi* Dunker, 1889  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Mesembrinus) uhdeanus uhdeanus* (Von Martens, 1893)  
*Coelocentrum (Ptychodonta) astrophorea* Dall, 1897  
*Coelocentrum (Ptychodonta) endolphus* Pilsbry, 1953  
*Coelostemma (Coelostemma) lichenophora* (Bartsch, 1906)  
*Holospira (Bostrichocentrum) hidalgoensis* Bartsch, 1906  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Humboldtiana (Humboldtiana) fasciata* Burch & Thompson, 1957

**JALISCO** 50 species and subspecies

*Proserpinella edentula* Naranjo-Garcia, 1994  
*Helicina (Oxyrhombus) cinctella cinctella* Shuttleworth, 1852  
*Helicina (Tristramia) durangoana sagulensis* Wagner, 1910  
*Dicrista cooperi* (Tryon, 1863)



- Dicrista liobasis* Thompson, 1969  
*Fossaria (Bakerlymnaea) viator* (Orbigny, 1835)  
*Laevapex papillaris* (Von Martens, 1899)  
*Planorbella contrerasi* (Pilsbry, 1920)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Planorbella (Pierosoma) tenue chapalensis* (Pilsbry, 1920)  
*Ameanauta jaliscoensis* Taylor, 2003  
*Mexinauta aurantia* (Carpenter, 1857)  
*Haitia solidissima* (Pilsbry, 1920)  
*Sarasinula dubia* (Semper, 1885)  
*Succinea (Succinea) undulate undulata* Say, 1829  
*Gastrocopta (Immersidens) prototypus* (Pilsbry, 1899)  
*Orthalicus zoniferus* Strebel, 1882  
*Drymaeus (Drymaeus) dombeyanus* (Ferussac, 1842)  
*Drymaeus (Drymaeus) fenestratus* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) uhdeanus uhdeanus* (Von Martens, 1893)  
*Rabdotus (Rabdotus) schiedeanus schiedeanus* (Pfeiffer, 1841)  
*Dissotropis castaneum* Thompson, 1968  
*Microceramus mexicanus* (Von Martens, 1897)  
*Euglandina (Euglandina) livida* Dall, 1908  
*Euglandina (Euglandina) pilsbryi* Bartsch, 1909  
*Euglandina (Singleya) hererra* (Contreras, 1923)  
*Euglandina (Singleya) turris longurio* Pilsbry & Cockerell, 1926  
*Guillarmodia (Proameria) sayula* (Von Martens, 1891)  
*Guillarmodia (Proameria) sulcifera* (Von Martens, 1891)  
*Salasiella (Salasiella) guadalajarensis* Pilsbry & Cockerell, 1926  
*Streptostyla (Streptostyla) conulus* Von Martens, 1891  
*Paralaoma servilis* (Shuttleworth, 1852)  
*Punctum (Toltecia) conspectum jaliscoensis* (Pilsbry, 1926)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Guppya jalisco* Pilsbry, 1919  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)  
*Bunnya bernadinae* H. B. Baker, 1942  
*Bunnya naranjoae* Miller, 1987  
*Tryonigens remondi* (Tryon, 1863)  
*Lysinoe sebastiana* (Dall, 1897)  
*Polygyra (Linsia) hertleini* Haas, 1961  
*Polygyra (Linsia) hindi hindi* (Pfeiffer, 1845)  
*Polygyra (Linsia) hindi guadalajarensis* Pilsbry, 1910  
*Polygyra (Linsia) matermontana jaliscoensis* Pilsbry, 1910  
*Polygyra (Linsia) nelsoni* Dall, 1897  
*Polygyra (Linsia) ventrosula* (Pfeiffer, 1845)  
*Polygyra couloni* (Shuttleworth, 1852)  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)  
*Thysanophora (Thysanophora) jaliscoensis* Pilsbry, 1926
- MÉXICO 33 species and subspecies**
- Tryonia mariae* (Morrison, 1945)  
*Valvata humeralis humeralis* Say, 1829  
*Pseudosuccinea columella championi* (Von Martens, 1899)  
*Stagnicola elodes* (Say, 1821)  
*Laevapex papillaris* (Von Martens, 1899)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasinula plebeia* (Fischer, 1868)  
*Catinella (Mediappendix) avara* (Say, 1824)  
*Succinea (Calcisuccinea) campestris* Say, 1817  
*Succinea (Succinea) undulate undulata* Say, 1829  
*Drymaeus (Drymaeus) chiapensis chiapensis* (Pfeiffer, 1866)  
*Drymaeus (Drymaeus) chiapensis nebulosus* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) sulcosus* (Pfeiffer, 1841)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) rudis* (Anton, 1839)  
*Drymaeus (Mesembrinus) rudis* (Anton, 1839)  
*Simpulopsis cumingi* Pfeiffer, 1861  
*Guillarmodia (Proameria) fischeri* (Von Martens, 1891)  
*Rotadiscus hermanni nivatus* H. B. Baker, 1930  
*Milax gagatus* (Draparnaud, 1801)  
*Pallifera costaricensis alticola* H. B. Baker, 1930
- Xanthyx sumichrasti* (Brot, 1867)  
*Haplocion mariae* Bartsch, 1942  
*Haplocion mathewsoni* Bartsch, 1942  
*Haplocion yucatanensis* (Bartsch, 1906).  
*Coelostemma (Coelostemma) bourgeoisana bourgeoisana* Bartsch, 1943  
*Coelostemma (Coelostemma) bourgeoisana antricola* Bartsch, 1943  
*Coelostemma (Coelostemma) scaphopleuron* Thompson, 1988  
*Microceramus mexicanus* (Von Martens, 1897)  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Humboldtiana (Humboldtiana) buffoniana* (Pfeiffer, 1845)  
*Humboldtiana (Humboldtiana) striata* Burch & Thompson, 1957
- MICHOACÁN 49 species and subspecies**
- Haitia patzcuarensis* (Pilsbry, 1891)  
*Oxyloma (Neoxyloma) tlalpamensis cuitseana* Pilsbry, 1899  
*Gastrocopta (Immersidens) prototypus* (Pilsbry, 1899)  
*Radiodiscus (Radiodiscus) millicostatus millicostatus* Pilsbry & Ferriss, 1906  
*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Guppya micra* Pilsbry, 1904  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)  
*Dicrista damianensis* (Solem, 1956)  
*Dicrista indentata* Thompson, 1969  
*Dicrista petersi* (Solem, 1956)  
*Tepalcatia tela* Thompson & Hershler, 2002  
*Pyrgulopsis patzcuarensis* Pilsbry, 1891  
*Valvata humeralis pilsbryi* Von Martens, 1899  
*Pseudosuccinea columella championi* (Von Martens, 1899)  
*Hebetancylus excentricus* (Morelet, 1851)  
*Laevapex papillaris* (Von Martens, 1899)  
*Planorbella (Pierosoma) tenue exaggeratum* (Von Martens, 1899)  
*Pupisoma (Ptychopatala) michoacanensis* Pilsbry, 1920  
*Orthalicus boucardi* Pfeiffer, 1860  
*Orthalicus ferussaci ferussaci* Von Martens, 1863  
*Orthalicus lividus* Von Martens, 1863  
*Orthalicus quagus* (Strebel, 1909)  
*Orthalicus uhdeanus* Von Martens, 1893  
*Orthalicus zoniferus* Strebel, 1882  
*Drymaeus (Drymaeus) dombeyanus* (Ferussac, 1842)  
*Drymaeus (Drymaeus) dunkeri dunkeri* (Pfeiffer, 1846)  
*Drymaeus (Drymaeus) fenestratus* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) rudis* (Anton, 1839)  
*Drymaeus (Mesembrinus) fenestrellus* (Von Martens, 1863)  
*Eucalodium (Oligostylus) hegewischi* (Bartsch, 1947)  
*Eucalodium (Oligostylus) hippocastaneum* Dall, 1897  
*Anisospira (Trachycion) hadromylla* Thompson, 1968  
*Dissotropis henryi* (Solem, 1957)  
*Euglandina (Euglandina) indusiata* (Pfeiffer, 1860)  
*Euglandina (Euglandina) michoacanensis* (Pilsbry, 1899)  
*Guillarmodia (Guillarmodia) dorsalis* (Thompson, 1963)  
*Pseudosubulina berendti occidentalis* Pilsbry, 1899  
*Volutaxis (Volutaxis) delicatus* (Pilsbry, 1907)  
*Volutaxis (Volutaxis) uruapamensis* (Pilsbry, 1899)  
*Volutaxis (Versutaxis) odiosus* (Pilsbry, 1899)  
*Volutaxis (Versutaxis) patzcuarensis* (Pilsbry, 1899)  
*Rotadiscus hermanni hermanni* (Pfeiffer, 1866)  
*Glyphyalinia indentata indentata* (Say, 1822)  
*Tryonigens remondi* (Tryon, 1863)  
*Metastracon mimia* Pilsbry, 1900  
*Polygyra (Linsia) pergrandis* Solem, 1959  
*Polygyra (Linsia) suprazonata* Pilsbry, 1899  
*Thysanophora (Thysanophora) proxima* Pilsbry, 1899
- MORELOS 16 species and subspecies**
- Tepalcatia bakeri* (Pilsbry, 1891)  
*Stagnicola elodes* (Say, 1821)  
*Gyraulus (Torquis) parvus* (Say, 1817)  
*Sarasinula dubia* (Semper, 1885)  
*Pupisoma (Ptychopatala) bailyi* Pilsbry, 1934  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)

*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) uhdeanus cuernovacensis* (Crosse & Fischer, 1874)  
*Coelostemma (Coelostemma) leucostoma* Thompson, 1971  
*Holospira (Holospira) rehderi* Bartsch, 1947  
*Microceramus mexicanus* (Von Martens, 1897)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Glyphyalina indentata indentata* (Say, 1822)  
*Glyphyalina indentata paucilirata* (Morelet, 1849)  
*Polygyra couloni* (Shuttleworth, 1852)  
*Thysanophora (Setidiscus) heilprini* Pilsbry, 1926

**NAYARIT** 61 species and subspecies

*Proserpinella hanna* Dall, 1926  
*Littoridina orcutti* (Pilsbry, 1928)  
*Pseudosuccinea columella championi* (Von Martens, 1899)  
*Biomphalaria boucardianus* (Preston, 1907)  
*Biomphalaria tepicensis* (Von Martens, 1899)  
*Austrinauta elatus* (Gould, 1853)  
*Ultraphysella sinaloae* Taylor, 2003  
*Leidyula moreletii* (Fischer, 1871)  
*Succinea (Succinea) clarionensis* Dall, 1926  
*Succinea (Succinea) mcgregori* Pilsbry, 1898  
*Succinea (Succinea) socorroensis* Dall, 1926  
*Tornatellides mexicana* Dall, 1926  
*Tornatellides clarionensis* Dall, 1926  
*Strobilops (Strobilops) hannai* Pilsbry, 1931  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Orthalicus delphinus* (Strebel, 1909)  
*Orthalicus hackeri* (Strebel, 1909)  
*Orthalicus melanocheilus melanocheilus* (Valenciennes, 1833)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus richardsoni* (Strebel, 1909)  
*Orthalicus sphinx sphinx* (Strebel, 1909)  
*Orthalicus sphinx turrata* (Strebel, 1909)  
*Orthalicus tepicensis tepicensis* (Strebel, 1909)  
*Drymaeus (Drymaeus) dunkeri dunkeri* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) trimarianus* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) heterogeneus* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) uhdeanus tepicensis* (Von Martens, 1893)  
*Cecilioides (Karolus) consobrinus primus* (De Folin, 1870)  
*Lamellaxis martensi martensi* (Pfeiffer, 1856)  
*Opeas rarum* Miller, 1879  
*Euglandina (Singleya) insignis* (Pfeiffer, 1855)  
*Euglandina (Singleya) lowei* Pilsbry, 1931  
*Euglandina (Singleya) mazatlanica mazatlanica* (Von Martens, 1891)  
*Euglandina (Singleya) mazatlanica abbreviata* (Von Martens, 1891)  
*Euglandina (Singleya) turris longurio* Pilsbry & Cockerell, 1926  
*Guillarmodia (Guillarmodia) mariana* (Dall, 1926)  
*Guillarmodia (Guillarmodia) nelsoni* (Bartsch, 1909)  
*Guillarmodia (Proameria) albersi albersi* (Pfeiffer, 1854)  
*Guillarmodia (Proameria) albersi infanta* (Von Martens, 1891)  
*Guillarmodia (Proameria) tepicensis* Pilsbry & Cockerell, 1926  
*Pseudosubulina evermanni* Dall, 1926  
*Punctum (Punctum) minutissimum minutissimum* (Lea, 1841)  
*Punctum (Punctum) minutissimum rotundum* Dall, 1926  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Guppya capsula* Dall, 1926  
*Guppya montanica* Dall, 1926  
*Guppya perforata* Dall, 1926  
*Guppya socorroana* Dall, 1926  
*Glyphyalina indentata indentata* (Say, 1822)  
*Nesovitrea subhyalina socorroensis* (Dall, 1926)  
*Hawaiiia minuscula neomexicana* (Cockerell & Pilsbry, 1900)  
*Bunnya naranjoae* Miller, 1987  
*Tryonigens remondi* (Tryon, 1863)  
*Polygyra (Linisia) bicurvis insculpta* Pilsbry, 1956  
*Polygyra (Linisia) albicostulata* Pilsbry, 1896  
*Polygyra (Linisia) hindsi hindsi* (Pfeiffer, 1845)  
*Polygyra (Linisia) hindsi heteroea* Pilsbry, 1956  
*Polygyra (Linisia) richardsoni* Von Martens, 1892

*Polygyra (Linisia) ventrosula* (Pfeiffer, 1845)  
*Thysanophora (Thysanophora) clarionensis* Dall, 1926  
*Thysanophora (Thysanophora) materna* Dall, 1926

**NUEVO LEON** 71 species and subspecies

*Helicina (Oligyra) orbiculata tropica* Pfeiffer, 1852  
*Helicina (Oxyrhombus) sowerbyana* Pfeiffer, 1849  
*Helicina (Tristramia) chrysocheila chrysocheila* Binney, 1851  
*Schasicheila (Atoyac) fragilis* Pilsbry, 1899  
*Carychium mexicanum* Pilsbry, 1891  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Cochlicopa lubrica* (Müller, 1774)  
*Strobilops (Strobilops) aenea mexicana* Pilsbry, 1927  
*Vallonia gracilicostata* Reinhardt, 1883  
*Pupisoma (Ptychopatula) minus* Pilsbry, 1920  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Drymaeus (Mesembrinus) emeus* (Say, 1829)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Cecilioides (Karolus) consobrinus primus* (De Folin, 1870)  
*Guillarmodia (Proameria) potosiana tamaulipensis* (Pilsbry, 1908)  
*Salasiella (Perpusilla) minima* Pilsbry, 1907  
*Punctum (Toltecia) vitreum* H. B. Baker, 1930  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss, 1906)  
*Glyphyalina indentata indentata* (Say, 1822)  
*Hawaiiia minuscula minuscula* (Binney, 1840)  
*Patulopsis (Omphalinella) montereyensis montereyensis* (Pilsbry, 1899)  
*Patulopsis (Omphalinella) montereyensis victorianus* (Pilsbry, 1903)  
*Xanthonyx potosiana* Dall, 1905  
*Helicina (Tristramia) zephyrina dientensis* Pilsbry, 1903  
*Schasicheila (Schasicheila) hidalgoana* Dall, 1897  
*Schazicheila (Schasicheila) vanattai vanattai* Pilsbry, 1899  
*Viviparus inornatus* (Binney, 1865)  
*Valvata beltrami* Contreras-Arquie, 1993  
*Leidyula floridana* Leidy, 1851  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Rabdotus (Rabdotus) alternatus alternatus* (Say, 1830)  
*Rabdotus (Rabdotus) dealbatus dealbatus* (Say, 1821)  
*Rabdotus (Rabdotus) pilsbryi* (Ferriss, 1925)  
*Epirobia (Gyrocion) mirabilis* Pilsbry, 1902  
*Propilsbrya potosiana* (Pilsbry, 1953)  
*Pectinistemma infernilla* Pilsbry, 1953  
*Pectinistemma koestneri* Rehder, 1940  
*Hendersoniella christmani* Thompson & Correa-Sandoval, 1994  
*Holospira (Holospira) amalthea* Bartsch, 1926  
*Holospira (Holospira) mitraensis* Bartsch, 1926  
*Holospira (Holospira) topochoana* Bartsch, 1926  
*Hiolospira (Holospira) wilmoti* Bartsch, 1951  
*Microceramus mexicanus* (Von Martens, 1897)  
*Euglandina (Euglandina) immemorata* Pilsbry, 1907  
*Euglandina (Euglandina) texasiana texasiana* (Pfeiffer, 1856)  
*Guillarmodia (Proameria) alticola* (Pilsbry, 1903)  
*Guillarmodia (Proameria) dalli* (Pilsbry, 1899)  
*Guillarmodia (Proameria) rhoadsi* (Pilsbry, 1899)  
*Salasiella (Salasiella) hinkleyi* Pilsbry, 1920  
*Salasiella (Salasiella) joaquinae* Strebel, 1877  
*Salasiella (Salasiella) subcylindrica* Pilsbry, 1903  
*Salasiella (Perpusilla) perpusilla* (Pfeiffer, 1866)  
*Streptostyla (Streptostyla) novoleonis* Pilsbry, 1899  
*Pseudosubulina borealis* (Pilsbry, 1903)  
*Volutaxis (Volutaxis) rhoadsae* (Pilsbry, 1899)  
*Humboldtiana (Humboldtiana) edesma* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) fortis* Pilsbry, 1940  
*Humboldtiana (Humboldtiana) inferior* Pilsbry, 1948  
*Humboldtiana (Humboldtiana) iversoni* Thompson, 2006  
*Humboldtiana (Humboldtiana) montezuma* Pilsbry, 1940  
*Humboldtiana (Humboldtiana) nuevoleonis* Pilsbry, 1927  
*Humboldtiana (Oreades) porterae* Thompson & Brewer, 2000

- Erectidens trichalis* Pilsbry, 1953  
*Polygyra (Linisia) implicata* (Von Martens, 1865)  
*Polygyra (Linisia) polita* Pilsbry & Hinkley, 1907  
*Polygyra (Linisia) rhoadsi* Pilsbry, 1899  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)  
*Praticolella (Praticolella) strebeliana* Pilsbry, 1899
- OAXACA** 89 species and subspecies  
*Helicina (Succincta) oaxacana* Pilsbry, 1920  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849  
*Helicina (Tristramia) zephyrina zephyrina* Duclos, 1833  
*Helicina (Tristramia) zephyrina depeana* Von Martens, 1863  
*Aperostoma mexicanum mexicanum* (Menke, 1830)  
*Neocyclotus dysoni ambiguus* (Von Martens, 1890)  
*Neocyclotus dysoni aureus* (Bartsch & Morrison, 1942)  
*Dicrista cooperi* (Tryon, 1863)  
*Amphicyclotus maleri* Crosse & Fischer, 1883  
*Pachychilus (Pachychilus) indiorum* (Morelet, 1849)  
*Pachychilus (Pachychilus) liebmanni gracilior* Von Martens, 1899  
*Pachychilus (Pilsbrychilus) dalli* Pilsbry, 1896  
*Annularia sumichrasti* Crosse & Fischer, 1874  
*Tepalcattia polia* (Thompson & Hershler, 1991)  
*Drepanotrema (Fossulorbis) sumichrasti* (Crosse & Fischer, 1879)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Biomphalaria petenensis* (Morelet, 1851)  
*Biomphalaria tepicensis* (Von Martens, 1899)  
*Mayabina tapanensis* (Crosse & Fischer, 1882)  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasimula dubia* (Semper, 1885)  
*Succinea (Succinea) virgata virgata* Von Martens, 1865  
*Succinea (Succinea) virgata hogeana* Von Martens, 1898  
*Orthalicus boucardi* Pfeiffer, 1860  
*Orthalicus ferussaci ferussaci* Von Martens, 1863  
*Orthalicus macluræ* Von Martens, 1893  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Orthalicus zoniferus* Strebel, 1882  
*Bulimulus coriaceus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) aurifluus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) ghiesbreghtii ghiesbreghtii* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) ghiesbreghtii iodostylus* (Pfeiffer, 1861)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) rudis* (Anton, 1839)  
*Drymaeus (Mesembrinus) hepatostomus* (Pfeiffer, 1861)  
*Drymaeus (Mesembrinus) inglorius inglorius* (Reeve, 1848)  
*Drymaeus (Mesembrinus) inglorius heyneimanni* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) albostriatum* (Strebel, 1882)  
*Drymaeus (Mesembrinus) multilineatus* (Say, 1825)  
*Drymaeus (Mesembrinus) translucens juquilensis* (Von Martens, 1893)  
*Simpulopsis aenea* Pfeiffer, 1861  
*Eucalodium (Eucalodium) mexicanum mexicanum* (Pfeiffer, 1860)  
*Eucalodium (Eucalodium) mexicanum minor* (Pfeiffer, 1860)  
*Eucalodium (Oligostylus) decurtatum* (H. Adams, 1872)  
*Eucalodium (Oligostylus) grande* (Pfeiffer, 1860)  
*Eucalodium (Oligostylus) neglectum* Crosse & Fischer, 1872  
*Eucalodium (Oligostylus) splendidum* (Pfeiffer, 1860)  
*Anisospira (Anisospira) dalli dalli* (Von Martens, 1901)  
*Anisospira (Anisospira) dalli stringens* Thompson, 1968  
*Anisospira (Anisospira) liebmanni* (Pfeiffer, 1846)  
*Anisospira (Trachycion) strebeli* Pfeiffer, 1887  
*Anisospira (Trachycion) velascorum* Breure, 1977  
*Coelocentrum (Coelocentrum) arctispira arctispira* (Pfeiffer, 1860)  
*Coelostemma (Coelostemma) notogastor* Thompson, 1971  
*Coelostemma (Coelostemma) richardi* Thompson, 1971  
*Holospira (Holospira) ocana* Bartsch, 1906  
*Holospira (Holospira) rehderi* Bartsch, 1947  
*Holospira (Bostrichocentrum) goldmani* Bartsch, 1906  
*Holospira (Bostrichocentrum) perplexa* Thompson, 1964  
*Holospira (Stalactella) chazumbae* Thompson & Mihalcik, 2005  
*Euglandina (Euglandina) cognata* (Strebel, 1875)  
*Euglandina (Euglandina) daudebarti dardebarti* (Deshayes, 1850)  
*Euglandina (Euglandina) indusiata* (Pfeiffer)  
*Euglandina (Euglandina) radula* (Strebel, 1875)  
*Euglandina (Euglandina) sowerbyana sowerbyana* (Pfeiffer, 1846)  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Euglandina (Singleya) candida candida* (Shuttleworth, 1852)  
*Euglandina (Singleya) pseudoturrus* (Strebel, 1875)  
*Guillarmodia (Guillarmodia) kingi* (Thompson, 1995)  
*Guillarmodia (Guillarmodia) multispira* (Pfeiffer, 1861)  
*Guillarmodia (Guillarmodia) pupa* (H. B. Baker, 1941)  
*Guillarmodia (Proameria) conferta conferta* (Pfeiffer, 1861)  
*Guillarmodia (Proameria) turgida* (Pfeiffer, 1861)  
*Varicoglandina constricta* (Thompson, 1995)  
*Varicoturrus elegans* Thompson, 2009  
*Pittieria (Laeviglandina) decidua* (Pfeiffer, 1861)  
*Streptostyla (Streptostyla) irrigua similis* Strebel, 1877  
*Streptostyla (Streptostyla) sumichrasti* Ancey, 1903  
*Streptostyla (Streptostyla) flavescens boucardi* (Pfeiffer, 1861)  
*Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet, 1851)  
*Zonitoides (Zonitella) tehuantepecensis* (Crosse & Fischer, 1870)  
*Mesomphix (Omphalina) lucubratus lucubratus* (Say, 1829)  
*Mesomphix (Omphalina) lucubratus olivarius* (Fischer & Crosse, 1872)  
*Mesomphix (Omphalina) paradensis* (Pfeiffer, 1860)  
*Leptarionta bicincta* (Pfeiffer, 1841)  
*Miraverellia sumichrasti* (Crosse & Fischer, 1872)  
*Trichodiscina oajacensis* (Kock, 1842)  
*Xanthyx salleanus* (Pfeiffer, 1856)
- PUEBLA** 113 species and subspecies  
*Helicina (Succincta) flavida flavida* Menke, 1828  
*Helicina (Succincta) succincta* Von Martens, 1890  
*Aperostoma mexicanum mexicanum* (Menke, 1830)  
*Aperostoma walkeri* H. B. Baker, 1928  
*Carychium mexicanum* Pilsbry, 1891  
*Succinea (Calcisuccinea) luteola rudiusscula* Von Martens, 1898  
*Succinea (Succinea) pueblensis* Fischer & Crosse, 1878  
*Succinea (Succinea) virgata virgata* Von Martens, 1865  
*Succinea (Succinea) virgata microspira* Von Martens, 1898  
*Strobilops (Strobilops) aenea mexicana* Pilsbry, 1927  
*Pupisoma (Ptychopatula) comicolense* H. B. Baker, 1927  
*Pupisoma (Ptychopatula) mediamericanum* Pilsbry, 1920  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) fenestrellus* (Von Martens, 1863)  
*Drymaeus (Mesembrinus) inglorius heyneimanni* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) necaxanus* Solem, 1955  
*Drymaeus (Mesembrinus) emeus* (Say, 1829)  
*Drymaeus (Mesembrinus) livescens* (Pfeiffer, 1842)  
*Rabdodus (Rabdodus) schiedeanus schiedeanus* (Pfeiffer, 1841)  
*Holospira (Holospira) albertoi* Bartsch, 1947  
*Holospira (Holospira) colymis* Thompson & Mihalcik, 2005  
*Holospira (Holospira) denserpens* Thompson & Mihalcik, 2005  
*Holospira (Holospira) eburnea* Thompson & Mihalcik, 2005  
*Holospira (Holospira) haploplax* Thompson & Mihalcik, 2005  
*Holospira (Holospira) hogeana* Von Martens, 1897  
*Holospira (Holospira) hyperia* Bartsch, 1926  
*Holospira (Holospira) melea* Bartsch, 1926  
*Holospira (Holospira) painteri* Bartsch, 1906  
*Holospira (Holospira) pfeifferi* (Menke, 1847)  
*Holospira (Holospira) rehderi* Bartsch, 1947  
*Holospira (Holospira) rhinion* Thompson & Mihalcik, 2005  
*Holospira (Holospira) zygoptyx* Thompson & Mihalcik, 2005  
*Holospira (Allocoryphe) minima* Von Martens, 1897  
*Holospira (Bostrichocentrum) centicostata* Thompson, 1964  
*Holospira (Bostrichocentrum) goldmani* Bartsch, 1906  
*Holospira (Bostrichocentrum) pilsbryi* Dall, 1895  
*Holospira (Bostrichocentrum) pupa* Thompson, 1964  
*Holospira (Bostrichocentrum) ronconi* Bartsch, 1943  
*Holospira (Bostrichocentrum) tryoni* (Pfeiffer, 1867)  
*Holospira (Stalactella) cremnobates* Thompson & Mihalcik, 2005  
*Holospira (Stalactella) marmorata* Thompson & Mihalcik, 2005



- Holospira (Stalactella) psectra* Thompson & Mihalcik, 2005  
*Holospira (Stalactella) rosei* Bartsch, 1906  
*Ceciloides (Karolus) consobrinus primus* (De Folin, 1870)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Lamellaxis mexicanus abbreviatus* (Von Martens, 1898)  
*Leptopeas argutus* (Pilsbry, 1906)  
*Euglandina (Euglandina) daudebarti dardebarti* (Deshayes, 1850)  
*Euglandina (Euglandina) sowerbyana sowerbyana* (Pfeiffer, 1846)  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Guillarmodia (Proameria) delicatula montivaga* H. B. Baker, 1941  
*Guillarmodia (Proameria) oblonga* (Pfeiffer, 1866)  
*Guillarmodia (Proameria) saxitilis saxitilis* H. B. Baker, 1941  
*Guillarmodia (Proameria) saxitilis convallis* H. B. Baker, 1941  
*Guillarmodia (Proameria) saxitilis montivaga* H. B. Baker, 1941  
*Pittierria (Shuttleworthia) arborea* H. B. Baker, 1941  
*Salasiella (?) camerata* H. B. Baker, 1941  
*Salasiella (Perpusilla) minima* Pilsbry, 1907  
*Salasiella (Perpusilla) modesta* (Pfeiffer, 1862)  
*Salasiella (Perpusilla) perpusilla* (Pfeiffer, 1866)  
*Streptostyla (Streptostyla) irrigua irrigua* (Shuttleworth, 1852)  
*Streptostyla (Streptostyla) irrigua quirozi* Strebel, 1877  
*Streptostyla (Eustreptostyla) nicoleti atypica* H. B. Baker, 1941  
*Streptostyla (Eustreptostyla) toyuca* Dall, 1908  
*Miraradula similis* (Strebel, 1882)  
*Pseudosubulina berendti berendti* (Pfeiffer, 1862)  
*Pseudosubulina borealis* (Pilsbry, 1903)  
*Pseudosubulina (Pseudosubulina) irregularis negligens* (H. B. Baker, 1939)  
*Pseudosubulina ventrosa* (H. B. Baker, 1939)  
*Micromena minuscula* (H. B. Baker, 1940)  
*Micromena minuta* (H. B. Baker, 1939)  
*Rectaxis granum* (H. B. Baker, 1939)  
*Rectaxis subnitidus* (H. B. Baker, 1939)  
*Rectaxis subtilis vitreus* (H. B. Baker, 1939)  
*Volutaxis (Volutaxis) fallax* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) nitidus persulcatus* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) subulinus* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) tenuecostatus tenuecostatus* Strebel, 1882  
*Volutaxis (Volutaxis) tenuecostatus obesus* (H. B. Baker, 1940)  
*Volutaxis (Versutaxis) arctatus* (H. B. Baker, 1940)  
*Volutaxis (Versutaxis) futilis* (H. B. Baker, 1939)  
*Volutaxis (Versutaxis) opeas* (H. B. Baker, 1939)  
*Volutaxis (Versutaxis) subopeas* (H. B. Baker, 1939)  
*Miradiscops opal* (Pilsbry, 1920)  
*Miradiscops puncticipitis* (Pilsbry, 1926)  
*Punctum (Punctum) minutissimum minutissimum* (Lea, 1841)  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Radiodiscus (Radiodiscus) millicostatus costaricanus* Pilsbry, 1926  
*Radiodiscus (Radiodiscus) proameri* H. B. Baker, 1930  
*Rotadiscus hermanni hermanni* (Pfeiffer, 1866)  
*Discus (Gontiodiscus) victorianus* (Pilsbry, 1904)  
*Helicodiscus (Helicodiscus) eiganmanni* Pilsbry, 1900  
*Helicodiscus (Lucilla) singleyanus* (Pilsbry, 1889)  
*Habroconus (Habroconus) selenkai* (Pfeiffer, 1866)  
*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Guppya biolleyi* Von Martens, 1892  
*Guppya gundlachi orosciana* Von Martens, 1892  
*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss, 1906)  
*Zonitoides (Zonitella) arboreus* (Say, 1816)  
*Glyphyalinia indentata paucilirata* (Morelet, 1849)  
*Nesovitreia subhyalina subhyalina* (Pfeiffer, 1867)  
*Hawaiiia minuscula neomexicana* (Cockerell & Pilsbry, 1900)  
*Mesomphix (Omphalina) lucubratus strebelianus* (Von Martens, 1892)  
*Patulopsis (Patulopsis) carinatus* Strebel, 1880  
*Pycnogyra berendti* (Pfeiffer, 1861)  
*Limax flavus* Linnaeus, 1758  
*Pallfera costaricensis crosseana* (Strebel, 1880)  
*Microconus (Microconus) wilhelmi* (Pfeiffer, 1866)
- Thysanophora (Miroconus) paleosa* Strebel & Pfeiffer, 1880  
*Thysanophora (Setidiscus) minuta* H. B. Baker, 1927  
*Holospira (Holospira) acanthidia* Thompson & Mihalcik, 2005
- QUERÉTARO** 9 species and subspecies  
*Sarasinula dubia* (Semper, 1885)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Coelocentrum (Ptychodonta) brachyacron* Thompson & Correa-Sandoval, 1994  
*Coelocentrum (Ptychodonta) telescopium* Thompson & Correa-Sandoval, 1994  
*Holospira (Holospira) arellanoi* (Bartsch, 1945)  
*Holospira (Holospira) politecnica* (Bartsch, 1945)  
*Holospira (Holospira) queretaroensis* (Bartsch, 1945)  
*Humboldtiana (Humboldtiana) pinicola* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) queretaroana* (Dall, 1897)
- QUINTANA ROO** 39 species and subspecies  
*Helicina (Oxyrhombus) bocourti* Crosse & Fischer, 1869  
*Helicina (Succincta) arenicola arenicola* Morelet, 1849  
*Helicina (Succincta) flavida flavida* Menke, 1828  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Neocyclotus dysoni berendti* (Pfeiffer, 1861)  
*Neocyclotus dysoni cookei* (Bartsch & Morrison, 1942)  
*Choanopoma (Choanopomops) andrewsae* (Ancey, 1886)  
*Choanopoma (Choanopomops) gaigei* Bequaert & Clench, 1931  
*Choanopoma (Choanopomops) largillierti* (Pfeiffer, 1846)  
*Antillorbis aeruginosus* (Morelet, 1851)  
*Drepanotrema (Fossulorbis) cultratum cultratum* (Orbigny, 1841)  
*Drepanotrema (Fossulorbis) kermatoides* (Orbigny, 1835)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Mexinauta princeps* (Phillipi, 1846)  
*Mayabina spiculata* (Morelet, 1849)  
*Succinea (Succinea) carmenensis* Fischer & Crosse, 1878  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Mesembrinus) dominicus* (Reeve, 1850)  
*Drymaeus (Mesembrinus) shattucki* Bequaert & Clench, 1931  
*Drymaeus (Mesembrinus) tropicalis* (Morelet, 1849)  
*Drymaeus (Mesembrinus) cozumelensis* Richards, 1937  
*Drymaeus (Mesembrinus) mayaorum* Rehder, 1966  
*Brachypodella dubia* (Pilsbry, 1891)  
*Lamellaxis martensi martensi* (Pfeiffer, 1856)  
*Euglandina (Cosmomenus) cylindracea* (Phillips, 1846)  
*Streptostyla (Streptostyla) ventricosula* (Morelet, 1849)  
*Streptostyla (Streptostyla) meridana meridana* (Morelet, 1849)  
*Streptostyla (Streptostyla) mohriana* (Pfeiffer, 1862)  
*Habroconus (Pseudoguppya) pittieri* (Von Martens, 1892)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Polygyra (Polygyra) cereolus cereolus* (Muhlfeld, 1818)  
*Polygyra yucatanea* (Morelet, 1849)  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)
- SAN LUÍS POTOSÍ** 118 species and subspecies  
*Valvata humeralis humeralis* Say, 1829  
*Fossaria (Bakerlymnaea) cubensis* (Pfeiffer, 1839)  
*Drepanotrema (Fossulorbis) cultratum panuco* Pilsbry, 1934  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Planorbella (Pierosoma) tenue strebelianum* (Fischer & Crosse, 1880)  
*Succinea (Calcisuccinea) luteola subtilis* Von Martens, 1898  
*Succinea (Succinea) panucoensis* Pilsbry, 1910  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Gastrocopta) riograndensis* (Pilsbry & Vanatta, 1900)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Rabdatus (Rabdatus) alternatus alternatus* (Say, 1830)

- Lamellaxis tamaulipensis* (Pilsbry, 1903)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Patulopsis (Omphalinella) montereyensis victorianus* (Pilsbry, 1903)  
*Praticolella (Eduardus) martensiana* (Pilsbry, 1907)  
*Helicina (Tristramia) elatior* Von Martens, 1890  
*Leidyula moreleti* (Fischer, 1871)  
*Drymaeus (Mesembrinus) emeus* (Say, 1829)  
*Drymaeus (Mesembrinus) multilineatus* (Say, 1825)  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Euglandina (Euglandina) lamyi* (Fischer & Chatelet, 1903)  
*Euglandina (Singleya) corneola* (W. G. Binney, 1857)  
*Guillarmodia (Proameria) potosiana potosiana* Pilsbry, 1908  
*Salasiella (Salasiella) hinkleyi* Pilsbry, 1920  
*Streptostyla (Streptostyla) palmeri* Dall, 1905  
*Streptostyla (Streptostyla) potosiana* Dall, 1905  
*Streptostyla (Streptostyla) gracilis* Pilsbry, 1907  
*Streptostyla (Eustreptostyla) supracostata* Pilsbry, 1910  
*Ceres nelsoni* Dall, 1898  
*Helicina (Oligyra) orbiculata orbiculata* (Say, 1818)  
*Helicina (Oxyrhombus) sowerbyana* Pfeiffer, 1849  
*Helicina (Tristramia) chrysocheila chrysocheila* Binney, 1851  
*Helicina (Tristramia) vanatae* Pilsbry, 1910  
*Helicina (Tristramia) zephyrina zephyrina* Duclos, 1833  
*Schasicheila (Atoyac) xanthia* Pilsbry, 1909  
*Schasicheila (Necaxia) minuscula* (Pfeiffer, 1859)  
*Schasicheila (Schasicheila) hidalgona* Dall, 1897  
*Schasicheila (Schasicheila) palmeri* Dall, 1905  
*Aperostoma palmeri* (Bartsch & Morrison, 1942)  
*Adelopoma stollii* (Von Martens, 1890)  
*Lithasiopsis hinkleyi* Pilsbry, 1910  
*Lithasiopsis mexicanus* Pilsbry, 1910  
*Pachychilus (Oxymelania) apheles* Thompson, 1967  
*Pachychilus (Oxymelania) atratus* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) humerosus* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) moctezumensis* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) monachus* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) pleurostriatus pleurostriatus* (Say, 1831)  
*Pachychilus (Oxymelania) pleurostriatus longus* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) pleurostriatus tamasopensis* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) pleurotoma* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) suturalis* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) tristis* Pilsbry & Hinkley, 1910  
*Pachychilus (Oxymelania) vallesensis vallesensis* Hinkley, 1907  
*Pachychilus (Oxymelania) vallesensis attenuatus* Pilsbry & Hinkley, 1910  
*Aroapyrgus mexicanus* (Pilsbry, 1910)  
*Cochliopina compacta* (Pilsbry, 1910)  
*Cochliopina picta* (Pilsbry, 1910)  
*Cochliopina riograndensis* (Pilsbry & Ferriss, 1906)  
*Emmerciella longa* (Pilsbry, 1909)  
*Emmerciella novimundi* (Pilsbry, 1909)  
*Pterides bisinulabris* Pilsbry, 1909  
*Pterides pterostoma* Pilsbry, 1909  
*Pterides rhabdus* Pilsbry, 1909  
*Carychium mexicanum* Pilsbry, 1891  
*Coelostele tampicoensis* (Pilsbry, 1907)  
*Sarasinula dubia* (Semper, 1885)  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Strobilops (Strobilops) aenea mexicana* Pilsbry, 1927  
*Strobilops (Discostrobilops) hubbardi* (A. D. Brown, 1861)  
*Pupisoma (Ptychopatulula) minus* Pilsbry, 1920  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Gastrocopta (Privatula) corticaria* (Say, 1816)  
*Vertigo (Vertigo) ovata* Say, 1822  
*Rabdotus (Rabdotus) dealbatus dealbatus* (Say, 1821)  
*Eucalodium (Resupinata) ischnostele* (Pilsbry, 1909)  
*Coelocentrum (Crossostephanus) hinkleyi* Pilsbry, 1909  
*Coelocentrum (Crossostephanus) priosculpta* Thompson & Correa-Sandoval, 1994  
*Coelostemma (Coelostemma) lissocentrum* Pilsbry, 1953  
*Hendersoniella lux lux* Thompson & Correa-Sandoval, 1994  
*Hendersoniella lux chonomphix* Thompson & Correa-Sandoval, 1994  
*Hendersoniella palmeri* (Dall, 1905)  
*Holospira (Holospira) catorceana* Pilsbry, 1953  
*Holospira (Holospira) hinkleyi* Pilsbry, 1907  
*Holosira (Holospira) palmeri* Bartsch, 1906  
*Holospira (Holospira) pedroana pedroana* Bartsch, 1926  
*Holospira (Holospira) pedroana laevissima* Pilsbry, 1953  
*Holospira (Holospira) stenopylis* Pilsbry, 1953  
*Microceramus mexicanus* (Von Martens, 1897)  
*Cecilioides (Karolus) consobrinus primus* (De Folin, 1870)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Leptoebas micra micra* (Orbigny, 1835)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Euglandina) texasiana texasiana* (Pfeiffer, 1856)  
*Euglandina (Euglandina) texasiana angustior* Pilsbry & Vanatta, 1936  
*Guillarmodia (Guillarmodia) cymatophora* (Pilsbry, 1910)  
*Guillarmodia (Guillarmodia) minuta* (Pilsbry, 1910)  
*Streptostyla (Eustreptostyla) bartschi* Dall, 1908  
*Streptostyla (Eustreptostyla) jililtana* Dall, 1908  
*Miradiscops opal* (Pilsbry, 1920)  
*Miradiscops puncticipitis* (Pilsbry, 1926)  
*Punctum (Punctum) minutissimum minutissimum* (Lea, 1841)  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Discus (Goniodiscus) victorianus* (Pilsbry, 1904)  
*Zonitoides (Zonitella) arboreus* (Say, 1816)  
*Glyphyalina indentata indentata* (Say, 1822)  
*Hawaiiia minuscula minuscula* (Binney, 1840)  
*Humboldtiana (Humboldtiana) nuevoleonis* Pilsbry, 1927  
*Humboldtiana (Humboldtiana) potosiana* Pilsbry, 1927  
*Xanthonyx potosiana* Dall, 1905  
*Polygyra (Polygyra) cereolus cereolus* (Muhlfeld, 1818)  
*Polygyra (Linisia) implicata* (Von Martens, 1865)  
*Polygyra (Linisia) oppilata* (Morelet, 1849)  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)  
*Praticolella (Praticolella) griseola* (Pfeiffer, 1841)  
**SINALOA** 31 species and subspecies  
*Dicrista cooperi* (Tryon, 1863)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Ultraphysella sinaloae* Taylor, 2003  
*Phyllocaulis gayi* (Fischer, 1871)  
*Sarasinula dubia* (Semper, 1885)  
*Strobilops (Discostrobilops) sinaloa* Morrison, 1953  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Orthalicus delphinus* (Strebel, 1909)  
*Orthalicus lividus* Von Martens, 1863  
*Orthalicus melanocheilus melanocheilus* (Valenciennes, 1833)  
*Orthalicus muelleri* (Strebel, 1909)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Drymaeus) zieglerei* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) tryoni tryoni* (Fischer & Crosse, 1875)  
*Leptoebas micra mazatlanica* Pilsbry, 1931  
*Euglandina (Singleya) balesi* Pilsbry, 1938  
*Euglandina (Singleya) excavata* (Von Martens, 1891)  
*Euglandina (Singleya) mazatlanica mazatlanica* (Von Martens, 1891)  
*Euglandina (Singleya) turris turris* (Pfeiffer, 1846)  
*Euglandina (Singleya) turris longurio* Pilsbry & Cockerell, 1926  
*Guillarmodia (Proameria) albersi albersi* (Pfeiffer, 1854)  
*Punctum (Toltecia) mazatlanica* (Pfeiffer, 1856)  
*Eremarionta ultima* (Pilsbry, 1916)  
*Tryonigens remondi* (Tryon, 1863)  
*Trichodiscina sinaloa* Pilsbry, 1954  
*Polygyra (Acutidens) acutedentata* (W. G. Binney, 1858)  
*Polygyra (Linisia) behri* (Gabb, 1865)  
*Polygyra (Linisia) euglypta* Pilsbry, 1896  
*Polygyra (Linisia) hindsi hindsi* (Pfeiffer, 1845)  
*Polygyra (Linisia) richardsoni* Von Martens, 1892

**SONORA** 65 species and subspecies

*Fossaria (Fossarria) obrussa modicella* (Say, 1825)  
*Fossarria (Bakerlymnaea) bulimoides techella* (Haldeman, 1867)  
*Gyraulus (Torquis) parvus* (Say, 1817)  
*Antillorbis aeruginosus* (Morelet, 1851)  
*Helisoma anceps anceps* (Menke, 1830)  
*Planorbella (Pierosoma) foveale foveale* (Menke, 1830)  
*Planorbella (Pierosoma) tenue pertenuis* (F. C. Baker, 1940)  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Succinea (Calcisuccinea) luteola sonorensis* Fischer & Crosse, 1878  
*Chaenaxis tuba* (Pilsbry & Ferriss, 1906)  
*Pupisoma (Ptychopatulula) minus* Pilsbry, 1920  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Gastrocopta (Immersidens) dalliana bilamellata* (Sterki & Clapp, 1909)  
*Vertigo (Vertigo) ovata* Say, 1822  
*Naesiotus milleri* (Hoffman, 1987)  
*Naesiotus nigromontanus* (Dall, 1897)  
*Rabdotus (Rabdotus) baileyi* (Dall, 1893)  
*Holospira (Holospira) cyclostoma* Pilsbry, 1953  
*Holospira (Allocoryphe) guaymasensis* (Bartsch, 1943)  
*Holospira (Allocoryphe) minima* Von Martens, 1897  
*Holospira (Millerspira) milleri* Gilbertson, 1989  
*Holospira (Millerspira) hoffmani* Gilbertson & Naranjo-Garcia, 1998  
*Holospira (Sonoraloa) dentaxis dentaxis* Pilsbry, 1953  
*Holospira (Sonoraloa) dentaxis alamellata* Gilbertson, 1993  
*Holospira (Sonoraloa) dentaxis lamellata* Pilsbry, 1953  
*Holospira (Sonoraloa) dentaxis latior* Pilsbry, 1953  
*Holospira (Sonoraloa) dentaxis striatella* Pilsbry, 1953  
*Holospira (Sonoraloa) kinonis* J. Baily & R. Baily, 1940  
*Holospira (Sonoraloa) remondi remondi* (Gabb, 1865)  
*Holospira (Sonoraloa) remondi forticostata* Pilsbry, 1953  
*Holospira (Sonoraloa) remondi laevior* Pilsbry, 1953  
*Holospira (Sonoraloa) remondi yaquensis* Pilsbry, 1953  
*Helicodiscus (Helicodiscus) eiganmanni* Pilsbry, 1900  
*Oreohelix concentrata concentrata* (Dall, 1895)  
*Euconulus fulvus* (Müller, 1774)  
*Glyphyalina indentata indentata* (Say, 1822)  
*Hawaiiia minuscula minuscula* (Binney, 1840)  
*Hawaiiia minuscula minuscula* (Binney, 1840)  
*Humboldtiana (Gymnopallax) ootamorum* Mejía et al., 2009  
*Cahuillus greggi* (Miller, 1967)  
*Cahuillus mexicanus* (Pilsbry & Lowe, 1934)  
*Eremarionta rowelli rowelli* (Newcomb, 1865)  
*Eremarionta rowelli bechteli* (Emerson & Jacobson, 1964)  
*Sonorella (Sonorella) burgessi* Naranjo-Garcia, 1988  
*Sonorella (Sonorella) cananea* Naranjo-Garcia, 1988  
*Sonorella (Sonorella) madreana* Naranjo-Garcia, 1989  
*Sonorella (Sonorella) magdalenensis* (Stearns, 1890)  
*Sonorella (Sonorella) mearnsi* Bartsch, 1904  
*Sonorella (Sonorella) mormonorum huasabensis* Miller, 1967  
*Sonorella (Sonorella) nixonii* Miller, 1967  
*Sonorella (Sonorella) perhirsuta* Miller, 1967  
*Sonorella (Sonorella) pratti* Naranjo-Garcia, 1988  
*Sonorella (Sonorella) rothi* Naranjo-Garcia, 1988  
*Sonorella (Sonorella) sasabe* Naranjo-Garcia, 1989  
*Sonorella (Sonorella) seri* Naranjo-Garcia, 1988  
*Sonorella (Sonorella) sitiens montezuma* Pilsbry & Ferriss, 1919  
*Sonorella (Sonorella) torreonica* Naranjo-Garcia, 1989  
*Sonorella (Sonorella) walkeri walkeri* Pilsbry & Ferriss, 1915  
*Sonorella (Sonorella) walteri* Naranjo-Garcia, 1989  
*Tryonigens remondi* (Tryon, 1863)  
*Polygyra (Linsia) anilis* (Gabb, 1865)  
*Polygyra (Linsia) behri* (Gabb, 1865)

**TABASCO** 63 species and subspecies

*Helicina (Oxyrhombus) cinctella bautistae* Wagner, 1910  
*Helicina (Oxyrhombus) ghiesbreghtii* Pfeiffer, 1856  
*Helicina (Succincta) flavida brevilabris* Pfeiffer, 1857

*Helicina (Succincta) oweniana oweniana* Pfeiffer, 1849  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Pomacea cerasum* (Hanley, 1854)  
*Pomacea flagellata flagellata* (Say, 1827)  
*Pomacea flagellata livescens* (Reeve, 1856)  
*Neocyclotus dysoni ambiguus* (Von Martens, 1890)  
*Amphicyclotus maleri* Crosse & Fischer, 1883  
*Pachychilus (Pachychilus) chrysalis chrysalis* (Brot, 1872)  
*Pachychilus (Pachychilus) corvinus corvinus* (Morelet, 1849)  
*Pachychilus (Glyptomelania) glaphyrus bicarinatus* Von Martens, 1901  
*Pachychilus (Glyptomelania) glaphyrus polygonotus* (Lea, 1850)  
*Pachychilus (Glyptomelania) potomarchus* Pilsbry, 1892  
*Pachychilus (Potamanax) pilsbryi* Von Martens, 1899.  
*Chondropoma (Chondropomium) rubicundum* (Morelet, 1849)  
*Choanopoma (Choanopomops) martensianum* (Pilsbry, 1900)  
*Aroapyrgus clenchi* (Goodrich & Van der Schalie, 1937)  
*Aroapyrgus pasionensis* (Goodrich & Van der Schalie, 1937)  
*Cochliopina francesae* (Goodrich & Van der Schalie, 1937)  
*Cochliopina infundibulum* (Von Martens, 1899)  
*Littoridina crosseana* (Pilsbry, 1910)  
*Fossaria (Bakerlymnaea) viator* (Orbigny, 1835)  
*Drepanotrema (Drepanotrema) anatinum* (Orbigny, 1835)  
*Biomphalaria belizensis* (Crosse & Fischer, 1878)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Mexinauta nitens* (Philippi, 1841)  
*Leidyula moreleti* (Fischer, 1871)  
*Succinea (Succinea) colorata* Fischer & Crosse, 1878  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Bulimulus coriaceus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) dominicus* (Reeve, 1850)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Eucalodium (Eucalodium) compactum* Pilsbry, 1893  
*Eucalodium (Eucalodium) decollatum decollatum* (Nyst, 1841)  
*Coelocentrum (Coelocentrum) arctispira arctispira* (Pfeiffer, 1860)  
*Coelocentrum (Coelocentrum) tomacella tomacella* (Morelet, 1849)  
*Coelocentrum (Coelocentrum) tomacella clava* (Pfeiffer, 1865)  
*Coelocentrum (Coelocentrum) turris* (Pfeiffer, 1856)  
*Brachypodella morini morini* (Morelet, 1849)  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Opeas pumilum* (Pfeiffer, 1840)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Singleya) ghiesbreghtii* (Pfeiffer, 1856)  
*Euglandina (Cosmomenus) cumingi* (Beck, 1837)  
*Varicoturris dubia* (Pfeiffer, 1856)  
*Salasiella (Salasiella) subcylindrica* Pilsbry, 1903  
*Streptostyla (Streptostyla) meridana cobanensis* (Tristram, 1861)  
*Streptostyla (Chersomitra) lurida* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) mitraeformis* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) nigricans* (Pfeiffer, 1845)  
*Mayaxis porrecta* (Von Martens, 1898)  
*Pseudosubulina sargi* Crosse & Fischer, 1877  
*Volutaxis (Volutaxis) scalariopsis* (Morelet, 1851)  
*Leptarionta trigonostoma trigonostoma* (Pfeiffer, 1844)  
*Leptarionta trigonostoma salleana* (Pfeiffer, 1849)  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Polygyra yucatanica* (Morelet, 1849)  
*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet, 1851)

**TAMAULIPAS** 102 species and subspecies

*Ceres nelsoni* Dall, 1898  
*Helicina (Oligyra) orbiculata orbiculata* (Say, 1818)  
*Helicina (Oligyra) orbiculata tropica* Pfeiffer, 1852  
*Helicina (Oxyrhombus) sowerbyana* Pfeiffer, 1849  
*Helicina (Tristramia) chrysocheila chrysocheila* Binney, 1851  
*Helicina (Tristramia) vanatta* Pilsbry, 1910  
*Helicina (Tristramia) zephyrina zephyrina* Duclos, 1833  
*Schasicheila (Atoyac) fragilis* Pilsbry, 1899



- Schasicheila (Schasicheila) hidalgoana* Dall, 1897  
*Schasicheila (Schasicheila) nicoleti* Shuttleworth, 1852  
*Schasicheila (Schasicheila) vannattai tricostata* Pilsbry, 1903  
*Aperostoma palmeri* (Bartsch & Morrison, 1942)  
*Adelopoma stollii* (Von Martens, 1890)  
*Lithasiopsis crassus* Thompson, 1959  
*Pachychilus (Oxymelania) corpulentus* Thompson, 1967  
*Pachychilus (Oxymelania) vallesensis vallesensis* Hinkley, 1907  
*Cochliopina riograndensis* (Pilsbry & Ferriss, 1906)  
*Littoridina crosseana* (Pilsbry, 1910)  
*Littoridinops tampicoensis* (Pilsbry & Hinkley, 1907)  
*Fossarria (Bakerlymnaea) bulimoides techella* (Haldeman, 1867)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Drepanotrema (Fossulorbis) cultratum panuco* Pilsbry, 1934  
*Mexinauta nitens* (Philippi, 1841)  
*Carychium mexicanum* Pilsbry, 1891  
*Coelostele tampicoensis* (Pilsbry, 1907)  
*Leidyula moreleti* (Fischer, 1871)  
*Succinea (Calcsuccinea) luteola luteola* Gould, 1848  
*Succinea (Succinea) panucoensis* Pilsbry, 1910  
*Strobilops (Discostrobilops) hubbardi* (A. D. Brown, 1861)  
*Pupoides (Pupoides) albilabris* (C. B. Adams, 1841)  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Gastrocopta) riograndensis* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Vertigo (Angustula) milium* (A. A. Gould, 1840)  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Mesembrinus) emeus* (Say, 1829)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) multilineatus* (Say, 1825)  
*Rabdotus (Rabdotus) alternatus alternatus* (Say, 1830)  
*Rabdotus (Rabdotus) dealbatus dealbatus* (Say, 1821)  
*Rabdotus (Rabdotus) schiedeanus schiedeanus* (Pfeiffer, 1841)  
*Coelocentrum (Coelocentrum) penion* Thompson & Correa-Sandoval, 1994  
*Coelocentrum (Crossostephanus) affinis* Thompson & Correa-Sandoval, 1994  
*Coelocentrum (Crossostephanus) palmeri* Dall & Bartsch, 1908  
*Coelocentrum (Crossostephanus) paucinoda* Thompson & Correa-Sandoval, 1994  
*Coelocentrum (Crossostephanus) priosculpta* Thompson & Correa-Sandoval, 1994  
*Coelocentrum (Crossostephanus) torosum* Thompson & Correa-Sandoval, 1994  
*Holospira (Holospira) kriegeri* Drake, 1950  
*Holospira (Bostrichocentrum) tamaulipensis* Bartsch, 1906  
*Cecilioides (Karolus) consobrinus primus* (De Folin, 1870)  
*Cecilioides (Caecilianopsis) jod* Pilsbry, 1907  
*Allopeas gracilis* (Hutton, 1934)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Lamellaxis tamaulipensis* (Pilsbry, 1903)  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Euglandina) lamyi* (Fischer & Chatelet, 1903)  
*Euglandina (Euglandina) texasiana texasiana* (Pfeiffer, 1856)  
*Euglandina (Euglandina) texasiana angustior* Pilsbry & Vanatta, 1936  
*Euglandina (Singleya) jacksoni* Pilsbry & Vanatta, 1936  
*Euglandina (Singleya) singleyana* (W. G. Binney, 1878)  
*Guillarmodia (Guillarmodia) pygmaea* (Pilsbry & Vanatta, 1936)  
*Guillarmodia (Proameria) dalli* (Pilsbry, 1899)  
*Guillarmodia (Proameria) delicata* Pilsbry, 1903  
*Guillarmodia (Proameria) potosiana tamaulipensis* (Pilsbry, 1908)  
*Guillarmodia (Proameria) victoriana* (Pilsbry, 1903)  
*Salasiella (Salasiella) hinkleyi* Pilsbry, 1920  
*Streptostyla (Streptostyla) palmeri* Dall, 1905  
*Streptostyla (Streptostyla) potosiana* Dall, 1905  
*Streptostyla (Streptostyla) gracilis* Pilsbry, 1907  
*Streptostyla (Streptostyla) jacobsoni* Pilsbry, 1951  
*Streptostyla (Eustreptostyla) bartschi* Dall, 1908  
*Punctum (Toltecia) vitreum* H. B. Baker, 1930  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Discus (Goniodiscus) victorianus* (Pilsbry, 1904)  
*Helicodiscus (Lucilla) singleyanus* (Pilsbry, 1889)  
*Radiocentrum victoriana* (Pilsbry, 1904)  
*Habrocomus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Guppya micra* Pilsbry, 1904  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Hawaiia pentagyra* (Pilsbry, 1907)  
*Patulopsis (Omphalinella) montereyensis montereyensis* (Pilsbry, 1899)  
*Patulopsis (Omphalinella) montereyensis victorianus* (Pilsbry, 1903)  
*Humboldtiana (Humboldtiana) pilsbryi* Solem, 1954  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Xanthonyx potosiana* Dall, 1905  
*Polygyra (Linisia) ariadnae* (Pfeiffer, 1848)  
*Polygyra (Linisia) aulacomphala* Pilsbry & Hinkley, 1907  
*Polygyra (Linisia) implicata* (Von Martens, 1865)  
*Polygyra (Linisia) oppilata* (Morelet, 1849)  
*Polygyra (Linisia) polita* Pilsbry & Hinkley, 1907  
*Polygyra (Linisia) texasiana texasiana* (Moricand, 1833)  
*Praticolella (Praticolella) griseola* (Pfeiffer, 1841)  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)  
*Praticolella (Eduardus) martensiana* (Pilsbry, 1907)  
*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet, 1851)  
*Thysanophora (Lyroconus) fuscata* (C. B. Adams, 1849)  
*Microceramus mexicanus* (Von Martens, 1897)
- VERACRUZ** 293 species and subspecies
- Ceres eolina* Duclou, 1834  
*Ceres salleana* Gray, 1856  
*Linidiella citrina* Thompson, 1987  
*Proserpinella berendii* (Bland, 1865)  
*Helicina (Oligyra) cordillerae* Pfeiffer, 1857  
*Helicina (Oxyrhombus) amoena* Pfeiffer, 1849  
*Helicina (Oxyrhombus) cinctella cinctella* Shuttleworth, 1852  
*Helicina (Succincta) arenicola reresulcata* Pfeiffer, 1861  
*Helicina (Succincta) flavida brevilabris* Pfeiffer, 1857  
*Helicina (Succincta) succincta* Von Martens, 1890  
*Helicina (Gemma) fragilis fragilis* Morelet, 1851  
*Helicina (Gemma) fragilis elata* Shuttleworth, 1852  
*Helicina (Gemma) merdigera* Pfeiffer, 1855.  
*Helicina (Gemma) mohriana* Pfeiffer, 1861.  
*Helicina (Tristramia) chrysocheila chrysocheila* Binney, 1851  
*Helicina (Tristramia) chrysocheila shuttleworthi* Von Martens, 1890  
*Helicina (Tristramia) delicatula* Shuttleworth, 1852  
*Helicina (Tristramia) elatior* Von Martens, 1890  
*Helicina (Tristramia) notata* Pfeiffer, 1856  
*Helicina (Tristramia) tenuis* Pfeiffer, 1849.  
*Helicina (Tristramia) turbinata* Pfeiffer, 1848  
*Helicina (Tristramia) vanatae* Pilsbry, 1910  
*Helicina (Tristramia) zephyrina zephyrina* Duclou, 1833  
*Helicina (Tristramia) zephyrina deppeana* Von Martens, 1863  
*Schasicheila (Atoyac) alata* (Pfeiffer, 1849)  
*Schasicheila (Necaxia) minuscula* (Pfeiffer, 1859)  
*Schasicheila (Schasicheila) hidalgoana* Dall, 1897  
*Schasicheila (Schasicheila) misantlensis* Fischer & Crosse, 1893  
*Schasicheila (Schasicheila) nicoleti* Shuttleworth, 1852  
*Pyrgodomus microdinus abditus* H. B. Baker, 1928  
*Pomacea catamacensis* (H. B. Baker, 1922)  
*Pomacea flagellata flagellata* (Say, 1827)  
*Pomacea miltocheila* (Reeve, 1856)  
*Aperostoma mexicanum mexicanum* (Menke, 1830)  
*Aperostoma mexicanum salleanum* (Von Martens, 1865)  
*Aperostoma walkeri* H. B. Baker, 1928  
*Tomocylus lunai* Bartsch, 1945  
*Neocyclotus dysoni ambiguus* (Von Martens, 1890)  
*Amphicyclotus boucardi* (Pfeiffer, 1856)  
*Amphicyclotus palenquensis* (Pilsbry, 1935)  
*Pachychilus (Pachychilus) apis* (Lea, 1850)  
*Pachychilus (Pachychilus) indiorum* (Morelet, 1849)  
*Pachychilus (Pachychilus) liebmanni liebmanni* (Philippi, 1848)

- Pachychilus (Pachychilus) turati* (Villa, 1854)  
*Pachychilus (Oxymelania) schiedeanus schiedeanus* (Philippi, 1843)  
*Pachychilus (Oxymelania) schiedeanus strebelianus* Fischer & Crosse, 1892  
*Chondropoma (Chondropomium) cordovanum* Pfeiffer, 1856.  
*Aroapyrgus guatemalensis* (Fischer & Crosse, 1891)  
*Aroapyrgus orizabensis* (Crosse & Fischer, 1891)  
*Littoridinops tampicoensis* (Pilsbry & Hinkley, 1907)  
*Fossaria (Bakerlymmaea) virgata* (Pfeiffer, 1839)  
*Fossaria (Bakerlymmaea) viator* (Orbigny, 1835)  
*Laevapex sallei* (Bourguignat, 1857)  
*Biomphalaria helophila* (Orbigny, 1835)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Planorbella (Pierosoma) foveale foveale* (Menke, 1830)  
*Planorbella (Pierosoma) tenue* (Dunker, 1850)  
*Planorbella (Pierosoma) tenue pertenua* (F. C. Baker, 1940)  
*Planorbella (Pierosoma) tenue strebelianum* (Fischer & Crosse, 1880)  
*Mexinauta nitens* (Philippi, 1841)  
*Mayabina bullula* (Crosse & Fischer, 1882)  
*Carychium mexicanum* Pilsbry, 1891  
*Leidyula floridana* Leidy, 1851  
*Leidyula moreleti* (Fischer, 1871)  
*Sarasinula dubia* (Semper, 1885)  
*Sarasinula plebeia* (Fischer, 1868)  
*Succinea (Calcisuccinea) luteola luteola* Gould, 1848  
*Succinea (Calcisuccinea) luteola subtilis* Von Martens, 1898  
*Succinea (Succinea) cordovana* Fischer & Crosse, 1878  
*Succinea (Succinea) virgata virgata* Von Martens, 1865  
*Strobilops (Strobilops) strebeli strebeli* (Pfeiffer, 1862)  
*Strobilops (Strobilops) veracruzensis veracruzensis* Pilsbry, 1927  
*Strobilops (Strobilops) veracruzensis crossei* Pilsbry, 1927  
*Pupisoma (Ptychopatulula) mediamericanum* Pilsbry, 1920  
*Sterkia (Metasterkia) bakeri* Pilsbry, 1921  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Albinula) contracta contracta* (Say, 1822)  
*Vertigo (Vertigo) ovata* Say, 1822  
*Orthalicus leucocheilus* Crosse & Fischer, 1869  
*Orthalicus livens* Shuttleworth 1856  
*Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus coriaceus* (Pfeiffer, 1856)  
*Bulimulus corneus minor* (Von Martens, 1893)  
*Drymaeus (Drymaeus) chiapensis chiapensis* (Pfeiffer, 1866)  
*Drymaeus (Drymaeus) chiapensis quadrifasciatus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) chiapensis nebulosus* (Von Martens, 1893)  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Mesembrinus) sulcosus* (Pfeiffer, 1841)  
*Drymaeus (Mesembrinus) aurifluus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) boterrii* (Crosse & Fischer, 1875)  
*Drymaeus (Mesembrinus) hegewischi* (Pfeiffer, 1842)  
*Drymaeus (Mesembrinus) attenuatus attenuatus* (Pfeiffer, 1851)  
*Drymaeus (Mesembrinus) attenuatus varicosus* (Pfeiffer, 1851)  
*Drymaeus (Mesembrinus) droueti droueti* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) droueti deletus* Solem, 1955  
*Drymaeus (Mesembrinus) droueti soleleri* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) inglorius heynemanni* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) dominicus* (Reeve, 1850)  
*Drymaeus (Mesembrinus) emeus* (Say, 1829)  
*Drymaeus (Mesembrinus) totonacus* (Strebel, 1882)  
*Drymaeus (Mesembrinus) moricandi moricandi* (Pfeiffer, 1846)  
*Drymaeus (Mesembrinus) sulfureus* (Pfeiffer, 1856)  
*Drymaeus (Mesembrinus) heterogeneus* (Pfeiffer, 1866)  
*Drymaeus (Mesembrinus) uhdeanus uhdeanus* (Von Martens, 1893)  
*Drymaeus (Mesembrinus) uhdeanus cuernovacensis* (Crosse & Fischer, 1874)  
*Rabdotus (Rabdotus) alternatus alternatus* (Say, 1830)  
*Eucalodium (Oligostylus) blandianum* Crosse & Fischer, 1868  
*Eucalodium (Resupinata) cereum* Strebel, 1880  
*Eucalodium (Resupinata) denscostatum* Strebel, 1880  
*Eucalodium (Resupinata) edwardsianum* Crosse & Fischer, 1872  
*Eucalodium (Resupinata) speciosum speciosum* (Dunker, 1844)  
*Eucalodium (Resupinata) speciosum boucardi* (Pfeiffer, 1856)  
*Eucalodium (Resupinata) speciosum fischeri* Von Martens, 1897  
*Eucalodium (Resupinata) speciosum minimum* Von Martens, 1897  
*Eucalodium (Resupinata) speciosum strebeli* Von Martens, 1897  
*Coelocentrum (Coelocentrum) arctispira estefaniae* Pilsbry, 1902  
*Coelocentrum (Gymnocentrum) crosseanum* (Pfeiffer, 1867)  
*Coelocentrum (Gymnocentrum) filicosta* (Shuttleworth, 1852)  
*Epirobia apiostoma* (Pfeiffer, 1856)  
*Epirobia berendti berendti* (Pfeiffer, 1866)  
*Epirobia polygyra* (Pfeiffer, 1856)  
*Coelostemma (Coelostemma) presidioensis* Bartsch, 1943  
*Holospira (Holospira) hogeana* Von Martens, 1897  
*Holospira (Holospira) maxwelli* Pilsbry, 1953  
*Holospira (Bostrichocentrum) veracruziana* Dall, 1895  
*Holospira (Bostrichocentrum) veracruzicola* (Bartsch, 1943)  
*Ceciliooides (Karolus) consobrinus primus* (De Folin, 1870)  
*Beckianum beckianum beckianum* (Pfeiffer, 1846)  
*Lamellaxis martensi martensi* (Pfeiffer, 1856)  
*Lamellaxis martensi modestus* Strebel, 1882  
*Lamellaxis mexicanus mexicanus* (Pfeiffer, 1866)  
*Lamellaxis mexicanus abbreviatus* (Von Martens, 1898)  
*Leptopeas argutus* (Pilsbry, 1906)  
*Leptopeas colimense* (Crosse & Fischer, 1869)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Euglandina) daudebarti dardebarti* (Deshayes, 1850)  
*Euglandina (Euglandina) daudebarti amoena* (Von Martens, 1865)  
*Euglandina (Euglandina) daudebarti jalapana* (Von Martens, 1891)  
*Euglandina (Euglandina) daudebarti miradorensis* (Strebel, 1878)  
*Euglandina (Euglandina) sowerbyana sowerbyana* (Pfeiffer, 1846)  
*Euglandina (Euglandina) sowerbyana estephaniae* (Strebel, 1875)  
*Euglandina (Euglandina) texasiana texasiana* (Pfeiffer, 1856)  
*Euglandina (Euglandina) vanuxemensis* (Lea, 1834)  
*Euglandina (Singleya) candida candida* (Shuttleworth, 1852)  
*Euglandina (Singleya) candida conularis* (Pfeiffer, 1855)  
*Euglandina (Singleya) corneola* (W. G. Binney, 1857)  
*Euglandina (Singleya) decussata* (Deshayes, 1840)  
*Euglandina (Singleya) tenella* (Strebel, 1875)  
*Guillarmodia (Guillarmodia) pupa* (H. B. Baker, 1941)  
*Guillarmodia (Proameria) conferta conferta* (Pfeiffer, 1861)  
*Guillarmodia (Proameria) cordovana* (Pfeiffer, 1856)  
*Guillarmodia (Proameria) delicatula delicatula* (Shuttleworth, 1852)  
*Guillarmodia (Proameria) delicatula major* (Von Martens, 1891)  
*Guillarmodia (Proameria) filosa* (Pfeiffer, 1855)  
*Guillarmodia (Proameria) oblonga* (Pfeiffer, 1866)  
*Guillarmodia (Proameria) orizabae* (Pfeiffer, 1856)  
*Guillarmodia (Proameria) polita* (Strebel, 1875)  
*Guillarmodia (Proameria) pulcherrima* (Strebel, 1883)  
*Guillarmodia (Proameria) speciosa* (Pfeiffer, 1856)  
*Varicoglandina nana* (Shuttleworth, 1852)  
*Varicoglandina stigmatica* (Shuttleworth, 1852)  
*Streptostylella botteriana* (Crosse & Fischer, 1869)  
*Varicoturris flammulata* (H. B. Baker, 1941)  
*Varicoturris pycnoptyx* (Thompson, 1995)  
*Pittieria (Laeviglandina) underwoodi* (Fulton, 1897)  
*Pittieria (Shuttleworthia) difficilis* (Crosse & Fischer, 1869)  
*Salasiella (Salasiella) joaquinae* Strebel, 1877  
*Salasiella (Salasiella) margaritacea* (Pfeiffer, 1857)  
*Salasiella (Perpusilla) minima* Pilsbry, 1907  
*Salasiella (Perpusilla) modesta* (Pfeiffer, 1862)  
*Salasiella (Perpusilla) perpusilla* (Pfeiffer, 1866)  
*Strebelia berendti* (Pfeiffer, 1861)  
*Streptostyla (Streptostyla) cylindracea* (Pfeiffer, 1846)  
*Streptostyla (Streptostyla) irrigua irrigua* (Shuttleworth, 1852)  
*Streptostyla (Streptostyla) irrigua cingulata* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) irrigua quirozi* Strebel, 1877  
*Streptostyla (Streptostyla) irrigua similis* Strebel, 1877  
*Streptostyla (Streptostyla) irrigua ventricosa* Von Martens, 1891  
*Streptostyla (Streptostyla) latrei edwardsiana* Crosse & Fischer, 1869

- Streptostyla (Streptostyla) latrei sallei* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) gracilis* Pilsbry, 1907  
*Streptostyla (Streptostyla) streptostyla streptostyla* (Pfeiffer, 1846)  
*Streptostyla (Streptostyla) streptostyla coniformis* (Shuttleworth, 1852)  
*Streptostyla (Streptostyla) turgidula turgidula* (Pfeiffer, 1856)  
*Streptostyla (Streptostyla) flavescens flavescens* (Shuttleworth, 1852)  
*Streptostyla (Streptostyla) fulvida* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) glandiformis* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) plicatula* Strebel, 1977  
*Streptostyla (Streptostyla) boyeriana* Crosse & Fischer, 1869  
*Streptostyla (Streptostyla) vexans* Strebel, 1877  
*Streptostyla (Streptostyla) mohriana* (Pfeiffer, 1862)  
*Streptostyla (Chersomitra) limneiformis* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) lurida* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) mitraeformis* (Shuttleworth, 1852)  
*Streptostyla (Chersomitra) physodes* (Shuttleworth, 1852)  
*Streptostyla (Eustreptostyla) nicoleti atypica* H. B. Baker, 1941  
*Streptostyla (Eustreptostyla) bartschi* Dall, 1908  
*Streptostyla (Eustreptostyla) rupecula* Thompson, 2009  
*Streptostyla (Peteniella) ligulata* (Morelet, 1849)  
*Mirradula miradorsis* (Strebel, 1882)  
*Mirradula similis* (Strebel, 1882)  
*Pseudosubulina arcuata* (H. B. Baker, 1939)  
*Pseudosubulina berendti berendti* (Pfeiffer, 1862)  
*Pseudosubulina berendti gracilior* Von Martens, 1898  
*Pseudosubulina caduca* (H. B. Baker, 1939)  
*Pseudosubulina costata* (H. B. Baker, 1939)  
*Pseudosubulina irregularis irregularis* Pilsbry, 1907  
*Pseudosubulina orizabensis* Pilsbry, 1907  
*Pseudosubulina parva* (H. B. Baker, 1939)  
*Pseudosubulina texoloensis* Pilsbry, 1899  
*Micromena minuscula* (H. B. Baker, 1940)  
*Rectaxis confertestriatus* (Strebel, 1882)  
*Rectaxis granum* (H. B. Baker, 1939)  
*Rectaxis intermedius* (Strebel, 1882)  
*Rectaxis rhabdus* (Pilsbry, 1907)  
*Rectaxis subtilis subtilis* (H. B. Baker, 1939)  
*Volutaxis (Volutaxis) blandiana* (Pilsbry, 1909)  
*Volutaxis (Volutaxis) confertecostatus* Strebel, 1882  
*Volutaxis (Volutaxis) delicatus* (Pilsbry, 1907)  
*Volutaxis (Volutaxis) fallax* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) linearis* (Pfeiffer, 1866)  
*Volutaxis (Volutaxis) nitidus nitidus* Strebel, 1882  
*Volutaxis (Volutaxis) nitidus persulcatus* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) strebeli* (Pilsbry, 1907)  
*Volutaxis (Volutaxis) sulciferus sulciferus* (Morelet, 1851)  
*Volutaxis (Volutaxis) sulciferus atoyacensis* (H. B. Baker, 1940)  
*Volutaxis (Volutaxis) tenuicostatus tenuicostatus* Strebel, 1882  
*Volutaxis (Volutaxis) tenuis* (Pfeiffer, 1868)  
*Volutaxis (Mirapex) enigmaticus* (H. B. Baker, 1939)  
*Volutaxis (Versutaxis) subgranum* (H. B. Baker, 1939)  
*Volutaxis (Mirapex ?) acus* (Shuttleworth, 1852)  
*Volutaxis (Volutaxis ?) costatostriatus* (Pfeiffer, 1856)  
*Sinoennea (Indoennea) bicolor* (Hutton, 1834)  
*Punctum (Toltecia) vitreum* H. B. Baker, 1930  
*Chanomphalus pilsbryi* (H. B. Baker, 1927)  
*Radiodiscus (Radiodiscus) proameri* H. B. Baker, 1930  
*Rotadiscus hermanni hermanni* (Pfeiffer, 1866)  
*Discus (Goniodiscus) victorians* (Pilsbry, 1904)  
*Habroconus (Habroconus) elegans* Strebel, 1880  
*Habroconus (Habroconus) selenkai* (Pfeiffer, 1866)  
*Habroconus (Habroconus) trochulinus* (Morelet, 1851)  
*Habroconus (Ernstia) elegantulus* (Pilsbry, 1919)  
*Habroconus (Pseudoguppya) pittieri* (Von Martens, 1892)  
*Guppya gundlachi gundlachi* (Pfeiffer, 1840)  
*Guppya gundlachi orosciana* Von Martens, 1892  
*Guppya micra* Pilsbry, 1904  
*Striatura (Striatura) meridionalis* (Pilsbry & Ferriss, 1906)  
*Zonitoides (Zonitella) arboreus* (Say, 1816)  
*Nesovitrea subhyalina subhyalina* (Pfeiffer, 1867)  
*Hawaiiia minuscula minuscula* (Binney, 1840)  
*Hawaiiia minuscula permodesta* (Strebel, 1880)  
*Mesomphix (Omphalina) lucubratus lucubratus* (Say, 1829)  
*Mesomphix (Omphalina) lucubratus caducus* (Pfeiffer, 1846)  
*Mesomphix (Omphalina) lucubratus depbianus* (Von Martens, 1892)  
*Mesomphix (Omphalina) lucubratus fasciatus* (Fischer & Crosse, 1872)  
*Mesomphix (Omphalina) lucubratus strebelianus* (Von Martens, 1892)  
*Mesomphix (Omphalina) paradensis* (Pfeiffer, 1860)  
*Mesomphix (Zonyalina) bilineatus* (Pfeiffer, 1845)  
*Mesomphix (Zonyalina) modestus* (Von Martens, 1892)  
*Mesomphix (Zonyalina) tuxtensis* (Crosse & Fischer)  
*Patulopsis (Patulopsis) carinatus* Strebel, 1880  
*Patulopsis (Omphalinella) salleana* (Von Martens, 1892)  
*Patulopsis (Omphalinella) veracruzensis veracruzensis* (Pfeiffer, 1856)  
*Patulopsis (Omphalinella) veracruzensis jalapensis* (Strebel, 1880)  
*Pycnogyra berendti* (Pfeiffer, 1861)  
*Deroceras laeve* (Müller, 1774)  
*Pallifera costaricensis crosseana* (Strebel, 1880)  
*Pallifera sallei* (Crosse & Fischer, 1869)  
*Humboldtiana (Humboldtiana) globosa* Burch & Thompson, 1957  
*Leptarionta bicincta* (Pfeiffer, 1841)  
*Leptarionta guillarmodi* (Shuttleworth, 1852)  
*Miraverellia inflata* (Thompson, 1859)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Trichodiscina suturalis suturalis* (Pfeiffer, 1846)  
*Xanthonyx cordovanus* (Pfeiffer, 1856)  
*Xanthonyx salleanus* (Pfeiffer, 1856)  
*Polygyra (Linisia) implicata* (Von Martens, 1865)  
*Polygyra (Linisia) oppilata* (Morelet, 1849)  
*Polygyra couloni* (Shuttleworth, 1852)  
*Praticolella (Praticolella) ampla* (Pfeiffer, 1866)  
*Praticolella (Praticolella) berlandieriana* (Moricand, 1833)  
*Praticolella (Praticolella) flavescens* (Pfeiffer, 1848)  
*Praticolella (Praticolella) griseola* (Pfeiffer, 1841)  
*Praticolella (Eduardus) martensiana* (Pilsbry, 1907)  
*Microconus (Microconus) wilhelmi* (Pfeiffer, 1866)  
*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet, 1851)  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)  
*Thysanophora (Miroconus) paleosa* Strebel & Pfeiffer, 1880  
*Thysanophora (Setidiscus) horni* (Gabb, 1866)  
*Thysanophora (Setidiscus) impura* (Pfeiffer, 1866)  
*Thysanophora (Setidiscus) intonsa* (Pilsbry, 1891)
- YUCATÁN** 57 species and subspecies
- Helicina (Succincta) arenicola arenicola* Morelet, 1849  
*Lucidella (Poenia) lirata* (Pfeiffer, 1847)  
*Neocyclotus dysoni berendti* (Pfeiffer, 1861)  
*Neocyclotus dysoni sallei* (Bartsch & Morrison, 1942)  
*Pachychilus (Oxymelania) graphium* (Morelet, 1849)  
*Choanopoma (Choanopomops) andrewsae* (Ancey, 1886)  
*Choanopoma (Choanopomops) gaigei* Bequaert & Clench, 1931  
*Choanopoma (Choanopomops) largillierti* (Pfeiffer, 1846)  
*Hebetancylus excentricus* (Morelet, 1851)  
*Drepanotrema (Drepanotrema) lucidum* (Pfeiffer, 1839)  
*Drepanotrema (Fossulorbis) cultratum cultratum* (Orbigny, 1841)  
*Biomphalaria obstructa* (Morelet, 1849)  
*Biomphalaria orbicula* (Morelet, 1849)  
*Biomphalaria retusus* (Morelet, 1849)  
*Planorbella (Pierosoma) foveale foveale* (Menke, 1830)  
*Mayabina spiculata* (Morelet, 1849)  
*Mexinauta princeps* (Phillipi, 1846)  
*Sarasinula plebeia* (Fischer, 1868)  
*Catinella (Mediappendix) avara* (Say, 1824)  
*Succinea (Calcsuccinea) luteola luteola* Gould, 1848  
*Succinea (Succinea) carmenensis* Fischer & Crosse, 1878  
*Bothriopupa variolosa* (Gould, 1848)  
*Gastrocopta (Gastrocopta) cristata* (Pilsbry & Vanatta, 1900)  
*Gastrocopta (Gastrocopta) riograndensis* (Pilsbry & Vanatta, 1900)  
*Orthalicus ferussaci ferussaci* Von Martens, 1863



- Orthalicus princeps princeps* (Broderip, 1833)  
*Bulimulus dysoni* (Pfeiffer, 1846)  
*Bulimulus unicolor* (Sowerby, 1833)  
*Drymaeus (Drymaeus) serperastrum* (Say, 1829)  
*Drymaeus (Mesembrinus) cucullus* (Morelet, 1851)  
*Drymaeus (Mesembrinus) dominicus* (Reeve, 1850)  
*Drymaeus (Mesembrinus) multilineatus* (Say, 1825)  
*Drymaeus (Mesembrinus) shattucki* Bequaert & Clench, 1931  
*Drymaeus (Mesembrinus) tropicalis* (Morelet, 1849)  
*Brachypodella dubia* (Pilsbry, 1891)  
*Allopeas gracilis* (Hutton, 1934)  
*Lamellaxis martensi martensi* (Pfeiffer, 1856)  
*Lamellaxis yucatanensis* (Pilsbry, 1907)  
*Leptopeas gladiolus* (Crosse & Fischer, 1877)  
*Leptopeas micra micra* (Orbigny, 1835)  
*Leptopeas yucatanense* (Pilsbry, 1906)  
*Subulina octona* (Bruguière, 1789)  
*Euglandina (Singleya) carminensis* (Morelet, 1849)  
*Euglandina (Cosmomenus) cylindracea* (Phillips, 1846)
- Oryzosoma tabiensis* (Pilsbry, 1891)  
*Streptostyla (Streptostyla) ventricosula* (Morelet, 1849)  
*Streptostyla (Streptostyla) meridana meridana* (Morelet, 1849)  
*Volutaxis (Volutaxis) maya* (Bequaert & Clench, 1931)  
*Habroconus (Pseudoguppya) pittieri* (Von Martens, 1892)  
*Hawaiia minuscula minuscula* (Binney, 1840)  
*Zachrysia auricoma havanensis* (Pilsbry, 1894)  
*Trichodiscina coactiliata* (Férussac, 1838)  
*Polygyra (Polygyra) cereolus cereolus* (Muhlfeld, 1818)  
*Polygyra yucatanica* (Morelet, 1849)  
*Thysanophora (Thysanophora) conspurcatella conspurcatella* (Morelet, 1851)  
*Thysanophora (Lyroconus) caecoides* (Tate, 1870)  
*Thysanophora (Setidiscus) impura* (Pfeiffer, 1866)
- ZACATECAS** 4 species and subspecies  
*Holospira (Holospira) temeroso* Pilsbry, 1953  
*Humboldtiana (Humboldtiana) bicincta* Thompson & Brewer, 2000  
*Humboldtiana (Humboldtiana) chrysogona* Pilsbry, 1948  
*Humboldtiana (Humboldtiana) tescola* Thompson, 1967

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