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ELLOBIIDAE

VOL. 4, NO. 42

## THE GENERA *PEDIPES* AND *LAEMODONTA* IN THE WESTERN ATLANTIC

BY  
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In this study we have included the two species of *Pedipes* known from both coasts of the Americas, one in the Western Atlantic and one in the Eastern Pacific.<sup>1</sup>

Members of the genus *Pedipes*, similar to most other genera in the Ellobiidae, are subject to considerable variation. Much of this is brought about by the variation in their ecology, which unquestionably must play an important part in the general structural characters of their shells.

They usually occur near the upper tide level, generally in brackish water, in areas subject to marked changes, not only seasonally but even during a single day.

The two species are colonial, very similar to the condition prevailing among the marine species in the Truncatellidae. A colony becomes established, flourishes for a time, then may disappear when factors in the environment become impossible for its survival. They seem to prefer a hard substrate such as rocks or oyster shells, situations where there are crevices or other irregularities in which to crawl.

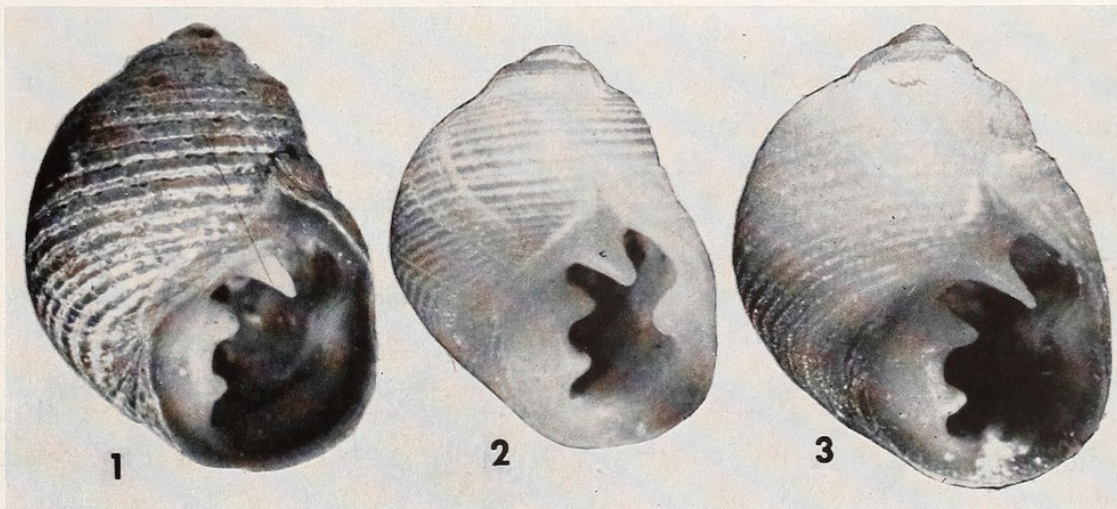


Plate 76. *Pedipes mirabilis* v. Mühlfeldt. Fig. 1. Cabo Rojo lighthouse, Puerto Rico (11.5x). Fig. 2. Lectotype of *Pedipes ovalis* C. B. Adams (= *mirabilis* v. Mühl.) MCZ, no. 177349. Fig. 3. Lectotype of *Pedipes globulosus* C. B. Adams (= *mirabilis* v. Mühl.), Jamaica (12.5x) MCZ, no. 177347.

<sup>1</sup> A second West Coast species "*Pedipes*" *unisulcata* Cooper from California, previously considered a *Pedipes*, is in the genus *Marinula* King and Broderip.



Férussac adopted the name from Adanson, the latter a pre-Linnean author who had given the name *Pedipes* to these little creatures because of a loping method of progression, an attempt to latinize the French word "pieten," a pedestrian.

Several synonyms are based upon young stages. The young, besides being much smaller, are structurally quite different from the adults. The shells are very thin, even translucent, and possess only the developing parietal plicae. In the adult stage, the shell is materially thicker, the parietal plicae much stronger, and in addition, a well developed palatal tooth is formed between the mid-region and the upper attachment of the outer lip. This variation was also indicated by Pfeiffer in using the names of *tridens* and *quadridens*, both synonyms of *P. mirabilis* v. Mühlfeldt.

Generally a colony consists of individuals of similar size; that is, all are the same age. This indicates a common origin, perhaps from a single individual or at least only a few individuals of the same age derived from a single source. This would naturally influence the describer who had such a series of specimens available for study. The assumption would be, owing to the uniformity of the individuals, that he was dealing with a "species" rather than a growth stage in the development of a species.

Variation is also exhibited in the size of the adult, with many examples in a single lot from one locality appearing to be fully adult and having all of the aperture dentition of other specimens two and three times their size. These mixed colonies may well represent two or more introductions from different populations. A new colony may become established by flotsam upon which egg masses or young from more than one population manage to arrive in one place.

Though the genus is world-wide in distribution in the tropics and south temperate zone, occurring on both sides of the Atlantic, the Eastern Pacific and the Indo-Pacific, species are few and colonies never abundant. Specimens may be abundant at any one place but to judge by the limited series we have had available, colonies are infrequently encountered. There is nothing in the literature, so far as we can trace, concerning their life history.

The family Ellobiidae is exceedingly complex, not only on a generic level but particularly in regard to the various species. These are to be found along the shores of most temperate and tropical seas. Generally the species are found in salt marsh and mangrove areas where brackish water conditions exist. A few occupy stations along open beaches in beach rubble or under stones and dead coral. The genus *Pythia* of the tropical portions of the Western Pacific is terrestrial, living in the woods and brush from the upper strand line and margins of mangrove swamps to many miles inland.

The genus *Carychium*, widespread in North America, Europe and Asia, is terrestrial. The various species are all small and are usually found under logs and stones in damp situations.

For a comprehensive report on the evolution and the morphology of several genera in the Ellobiidae, see J. E. Morton (1954). K. O. Meyer (1955) gives a very detailed report on *Ovatella myosotis* (Drap.).

The genus *Pedipes* is closely related to *Laemodonta* Philippi and *Marinula* King and Broderip.



The following will help in separating these complex genera.

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<b>Pedipes</b>	<b>Laemodonta</b>	<b>Marinula</b>
rounded-ovate	ovate-conic	ovate-oblong
sculptured	sculptured	smooth or faintly spirally lyrate
imperforate	usually umbilicate	imperforate
3 plicae on inner lip	3 plicae on inner lip	3 plicae on inner lip
1 tooth on outer lip	1 to 3 teeth on outer lip	outer lip without teeth

#### ACKNOWLEDGMENTS

I am greatly indebted to C. G. Aguayo, L. G. Hertlein, H. A. Rehder, D. and N. Schmidt and H. vander Schalie for the loan of material, and to Bengt Hubendick for the use of his manuscript notes which he had made on the genus *Pedipes*. My thanks are due to Dr. Champion and to Dr. Turner for reading the manuscript.

#### Genus *Pedipes* Férussac

*Pedipes* Férussac 1821, Tableaux Systématiques des Animaux Mollusques, Paris, p. 99 and 109 (p. 103 and 105 in the folio edition).

*Carassa* Gistel 1847 [1850] Handbuch der Naturgeschichte aller drei Reiche, Stuttgart, p. 555; Gistel 1848, Naturgeschichte Thierr., Stuttgart, p. 169. [This is only a substitute name for *Pedipes* Férussac.]

The shells are imperforate, small, seldom reaching 8 mm., rounded-ovate in outline and sculptured with incised spiral grooves. The whorls are few and the last one large. The aperture is constricted by the three plicae on the parietal wall or inner lip and the single, ridge-like tooth on the inner side of the palatal lip. Coloration ranges from yellowish brown to dark chocolate-brown. The foot is divided by a transverse groove. When the posterior portion is fixed the anterior part is extended forward and then the posterior part brought forward, thus allowing the animal to make short and rather rapid steps.

Type species, *Pedipes afra* Gmelin (= *P. pedipes* Bruguière), subsequent designation, Gray 1847.

#### *Pedipes mirabilis* Megerle von Mühlfeldt

Plate 76, figs. 1-3; Plate 77

*Turbo mirabilis* Megerle von Mühlfeldt 1816, Gesellschaft Naturforschender Freunde zu Berlin (Magazin) 8: 8, pl. 2, figs. 13a-b (locality unknown); non W. Wood 1828.

*Pedipes quadridens* Pfeiffer 1839, Archiv für Naturgeschichte 1: 357 (Cuba).

*Pedipes globulosus* C. B. Adams 1845, Proc. Boston Soc. Nat. Hist. 2: 12 (Jamaica).

*Pedipes ovalis* C. B. Adams 1849, Contributions to Conchology no. 3, p. 41 (Jamaica).

*Pedipes tridens* Pfeiffer 1854 [1855], Proc. Zool. Soc. London, p. 122 (Bermuda and Cárdenas, Cuba).

*Pedipes globulus* 'Petit' Pfeiffer 1856, Monographia Auriculaceorum Viventium 1: 71 (Insula Haiti).

*Pedipes naticoides* Stearns 1869 [1870], Proc. Boston Soc. Nat. Hist. 13: 108, text fig. (Rocky Point, Tampa Bay, Florida).

*Pedipes insularis* Haas 1950, Proc. Malac. Soc. London 28: 197, pl. 22, fig. 3 (Bermuda).

**Description.** Shell imperforate, small, variable in size, from 3 to 5 mm. (1/5 inch) in length, globose to globose-turbinate, usually sculptured and very solid in structure. Whorls 4 to 5 and strongly convex. Color light brown to a rather dark, reddish brown.



Spire extended moderately above the body whorl. Suture distinct. Aperture ovate to subovate with the outer edge thin but much thickened just within. Parietal area supporting three well developed plicae: two which are nearly uniform in size are built at right angles to and on the columella; the third and upper plica is much larger and built upon the body whorl. Outer lip supporting a ridge-like tooth which is directly opposite the central plica. This tooth extends backward a short distance within the aperture. Columella broad and straight. Sculpture consisting of numerous fine, incised, spiral grooves. Axial sculpture consisting of fine and irregular growth lines.

The radular teeth are extremely small and very numerous. The central tooth has a bifurcated base and a single denticle. The innumerable lateral teeth are straight-sided and have a simple denticle. The inner marginal teeth are about twice the width of the laterals and have four, long denticles, while the even broader outer marginals have six comb-like denticles. This radula is very close to those figured by Odhner (1925) for *Pedipes afra* Gmelin and *Plecotrema* [= *Laemodonta*] *clausa* Adams, and by Morton (1954) for *Marinula fiholi* Hutton. The illustration (Plate 77) was drawn at a magnification of 1290 $\times$ .

length	width	(all adults)
5.0 mm.	4.0 mm.	Barbados, Lesser Antilles
4.5	3.5	Matanzas, Cuba
4.5	4.0	Port Salut, Haiti

*Types.* The original types of this species may not be in existence. The lectotypes of *P. ovalis* C. B. Ad., no. 177349 and *P. globulosus* C. B. Ad., no. 177347, are in the Museum of Comparative Zoology. Both came from Jamaica. The holotype of *P. naticoides* Stearns from Rocky Point, Tampa Bay, Florida is in the United States National Museum, no. 37598. The holotype of *P. insularis* Haas is in the Chicago Natural History Museum, no. 30171.

Pfeiffer's collection was purchased by Dr. Henry Dohrn and later given to the Museum in Stettin, Germany.

*Remarks.* The many names in the synonymy of this species are due to the variation existing between its unit populations. These names were based upon different stages of growth, or perhaps slightly different genetic strains, particularly affecting size. This is easy to understand when comparisons are made between two or more populations. Each population can be remarkably uniform simply because the entire population may have had its origin from a single individual or a single clutch of eggs. Thus, comparisons are made between groups in different periods of growth and these differences are quite striking. The type of *Pedipes naticoides* Stearns is a small, immature specimen of *P. mirabilis* von Mühlfeldt.

*Range.* Florida and Texas, Bermuda and south to Estado de São Paulo, Brasil. This

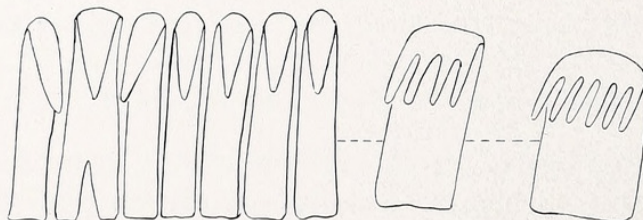


Plate 77. Radula of *Pedipes mirabilis* v. Mühlfeldt from a specimen from Cabo Rojo, Puerto Rico.



southernmost record is by Morretes (p. 122) and he listed it as *Pedipes afra* Gmelin (= *Pedipes pedipes* Bruguière). This is an Eastern Atlantic species and Morretes' record is very probably a misidentification for *Pedipes mirabilis* v. Mühlfeldt.

*Specimens examined.* FLORIDA: Lake Worth (J. S. Schwengel); Miami; Tavernier Key; Lower Matecumbe Key (all USNM); Plantation Key; Grassy Key; Crawl Key; Knights Key; Bahia Honda Key; Little Torch Key; Ramrod Key; Sugar Loaf Key (all D. & N. Schmidt); Boca Chica Key; Key West; Garden Key, Tortugas (all USNM); Tarpon Bay, Sanibel (MCZ); St. Petersburg (USNM; Edna Marcott). TEXAS: Port Aransas (Myra Taylor). BERMUDA: (MCZ; U of M; USNM). BAHAMA ISLANDS: Wilson City, Great Abaco (R. Robertson); Sand Bank, Crossing Bay and Sweetings Village, both Great Abaco (both MCZ); Mores Island (MCZ); Clifton Bluff, New Providence (MCZ); Mangrove Cay, Andros (USNM); Royal Island, Eleuthera (USNM); Governor's Harbour, Eleuthera (MCZ); Hog Cay, Exuma Island (R. Robertson); Cay Sal, Cay Sal Bank (USNM). CUBA: Vedado, Habana; Muelle de la Aduana, Matanzas; Cayo Francés, Caibarién; Chivera, Santiago (all Museo Poey); Penas Altas and Versalles, both Matanzas (both P. J. Bermudez). JAMAICA: Montego Bay; Jack's Bay and Robin's Bay; Kingston; Rio Cobre; Port Royal (all USNM). HISPANIOLA: Port Salut; Les Cayes; St. Louis; Aquin; Saltrou, all Haiti (all USNM); Cayo Chico, Santa Bárbara de Samaná (MCZ); Ciudad Santo Domingo (USNM), both Republica Dominicana. PUERTO RICO: Cabo Rojo and Humacao (both MCZ); Ensenada Honda, Culebra Island (USNM). VIRGIN ISLANDS: St. Thomas (USNM); Christiansted, St. Croix (G. Usticke); Guana Island, Tortola (M. Dewey). LESSER ANTILLES: St. Kitts; Barbados and Martinique (USNM); Guadeloupe (AMNH); Bequia Island, The Grenadines and Toco, Trinidad (both MCZ). COLOMBIA: Bahía de Savanilla (USNM).

### *Pedipes angulata* C. B. Adams

#### Plate 78

*Pedipes angulatus* C. B. Adams 1852, Ann. Lyceum of Nat. Hist. New York 5: 431 (Panama). Turner, R. D. 1956, Occ. Papers On Mollusks 2: 31, pl. 10, fig. 6. Lectotype MCZ, no. 177345.

*Pedipes lirata* Binney 1860, Proc. Acad. Nat. Sci. Philadelphia, p. 154 (Cabo San Lucas, Lower California, [Mexico]); Binney 1865, Smithsonian Miscellaneous Collections, no. 143, p. 20, text fig. 21.

*Description.* Shell imperforate, small, reaching 7.4 mm. (about  $\frac{1}{4}$  inch) in length, globose, sculptured and solid in structure. Whorls 5, strongly convex and shouldered. Color a uniform chestnut-brown. Spire extended a little above the body whorl. Suture distinct. Aperture ovate to subovate with the outer lip thin but much thickened below. Parietal area with 3 plicae, the lower two on the columella about equal in size, the upper one on the body whorl much larger. Outer lip with a single broad tooth below the shoulder. Columella broad and straight. Sculpture consists of numerous fine, incised spiral grooves. Axial sculpture of fine growth lines.

length	width	
6.5 mm.	5.0 mm.	Lectotype
7.4	5.1	Paratype

*Types.* The lectotype of *Pedipes angulata* is in the Museum of Comparative Zoology, no. 177345, from Panama (West Coast) probably from the vicinity of Panama City.



Additional paratypes from the same locality are in the Museum of Comparative Zoology, no. 177346. The holotype of *P. lirata* Binney is in the United States National Museum, no. 8567, from Cabo San Lucas, Baja California, Mexico.



Plate 78. *Pedipes angulata* C. B. Adams. Lectotype from Panama (West Coast) (14.1x). MCZ, no. 177345.

*Remarks.* *Pedipes angulata* C. B. Adams is close in its relationship to *P. mirabilis* von Mühlfeldt of the Western Atlantic. It differs by being larger, having a somewhat broader columella and in having the outer lip expanded or bell shaped. The sculpture appears to be the same in both species, as are the columellar and palatal teeth, but they are much larger in *P. angulata*. In addition, the whorls in *P. angulata* are slightly flattened.

*Pedipes lirata* Binney was based upon a single, slightly immature specimen.

*Range.* From southern California south to the Republic of Panama.

*Specimens examined.* MEXICO: Pichilique Bay; Santo Domingo; Magdalena Bay, all Baja California (all USNM). PANAMA: Taboga Island and Panama (both MCZ).

### Genus *Laemodonta* Philippi

*Laemodonta* Philippi 1846, Zeitschrift für Malakozoologie 3: 98.

*Plectotrema* H. and A. Adams 1853 [1854], Proc. Zool. Soc. London 21: 120.

*Laimodonta* 'Nuttall' H. and A. Adams 1855, Genera of Recent Mollusca 2: 246, non Bronn 1847.

*Laemadonta* 'Adams' Carpenter 1861, Ann. Rept. Regents Smithsonian Inst. for 1860, p. 228 [error for *Laimodonta* H. and A. Adams].

*Laimadonta* 'Adams' Pease 1868, American Jour. Conchology 4: 101 [error for *Laimodonta* H. and A. Adams].

*Plectotroma* 'Adams' Weyenbergh 1875, Period. Zool. Buenos Aires 2: 288 [error for *Plectotrema* H. and A. Adams].

*Enterodonta* Sykes 1894, Jour. of Malacology 3: 73, new name for *Laimodonta* H. and A. Adams 1855, non Bronn 1847.



Shells ranging in height from 3 mm. to 9 mm., rounded, ovate in shape and sculptured with fine to coarse, spiral threads. The various species are brownish to brownish yellow in color. There are three plicae on the inner lip and one to three teeth on the outer lip. All are imperforate other than *L. cubensis* Pfr.

Type species, *Laemodonta striata* 'Adams' Philippi, monotypic (= *L. octanfracta* Jonas). The following are the original references to these two names:

*Pedipes octanfracta* Jonas 1845, Zeitschrift für Malakozoologie 2: 169 (?Sandwich Islands [Hawaiian Islands]).

*Auricula striata* Philippi 1846, Zeitschrift für Malakozoologie 3: 98 (Sandwich Islands [Hawaiian Islands]), non *Auricula striata* v. Martens 1824, non Anton 1839.

Hubendick (1956, p. 111) has advocated the continued use of *Plectotrema* H. and A. Adams 1854, rather than *Laemodonta* Philippi 1846, but gives no reason for so doing. *Laemodonta* was introduced twelve years earlier with a monotypic type designation, leaving no question as to the status of *Laemodonta*. Errors in spelling of *Laemodonta* may have brought about some confusion but the original author should hardly be penalized for this trouble.

Haas (1950, p. 199) mentions that he was the first to note that *Laemodonta* possesses a "hirsute periostracum." Garrett (1872, p. 219) described a *Plectotrema hirsuta* [= *Laemodonta*] from the Fiji Islands which is "garnished with short, curved hairs." This character, of course, may not occur in the young stages of all species in this genus but it should be expected.

### Subgenus **Bullapex** Haas

*Bullapex* Haas 1950, Proc. Malacological Soc. London 28: 199.

This single species in the subgenus *Bullapex* differs from other species in *Laemodonta* by having a large, white and inflated apex which is produced at nearly a right angle to the long axis of the shell. It has, in addition, a very small umbilical opening.

Type species, *Laemodonta cubensis* Pfeiffer, original designation.

### **Laemodonta (Bullapex) cubensis Pfeiffer**

#### Plate 79

*Description.* Shell usually finely umbilicate, small, being about 3.3 mm. (about  $\frac{1}{8}$  inch) in length, ovate-conic, sculptured and rather thin in structure. Whorls 5 to 6 and flattened on the spire. Color a light straw-yellow, the apex being white. Apex enlarged and formed at nearly a right angle to the shell axis. Spire conic and moderately extended. Suture relatively indistinct owing to the spiral sculpture and the flattened whorls of the spire. Aperture auriculate with the outer lip simple and having two well developed teeth. Inner lip with three well developed teeth, two being on the parietal wall and one on the columella. Sculpture consisting of numerous fine, incised, spiral lines which are crossed by somewhat finer growth lines.

length	width				
2.5 mm.	1.6 mm.	Bahia	Honda	Key,	Florida
3.3	1.8	"	"	"	"



*Types.* The present location of the type of *Laemodonta cubensis* Pfeiffer is unknown. The Pfeiffer collection was purchased by H. Dohrn and later deposited in the museum in Stettin, Germany.

*Remarks.* This is the only species of *Laemodonta* to occur anywhere in the Atlantic and here it is limited to southern Florida, Bermuda, and the West Indies. The remaining species in this genus are all from the Indo-Pacific.



Plate 79. *Laemodonta cubensis* Pfeiffer. Bonefish Key, Lower Florida Keys (9.4x).

*Laemodonta cubensis* Pfr. probably has a wider distribution than is now known as its small size and type of habitat make it difficult to find.

This species is found along the upper strand line under broken coral, sea weed and other debris.

*Range.* South Florida Keys, Bermuda and the West Indies south to Barbados.

*Specimens examined.* FLORIDA: Key Largo (MCZ); Crawl Key; Bahia Honda Key; Little Torch Key; Ramrod Key (all D. and N. Schmidt); Bonefish Key (T. McGinty). BERMUDA: (MCZ). BAHAMA ISLANDS: Wilson City and south of Witch Point (both R. Robertson); Sand Bank, Crossing Bay; Mores Island (both MCZ), all Great Abaco; Hog Cay, Exuma Cays (R. Robertson). CUBA: Vedado, Habana (Museo Poey).

### *World Catalogue of the Genus Pedipes*

**adansonii** de Blainville, **Pedipes:** 1824, Dictionnaire des Sciences Naturelles **32:** 246 [refers to Adanson 1757, Histoire Naturelle du Sénégal, pl. 4, fig. 4]. Is *Pedipes pedipes* Bruguière.

**affinis** Férussac, **Pedipes:** 1821, Tableaux Systématiques des Animaux Mollusques. Paris, p. 109 (L'Ile de France [Mauritius]). Is a *Laemodonta*.

**afer** 'Gmelin' Pfeiffer, **Pedipes:** 1856, Monographia Auriculaceorum Viventium **1:** 68 (Gorée Id. [Dakar] Sénégal). Is *Pedipes pedipes* Bruguière.

**afra** Gmelin, **Helix:** 1791, Systema Naturae, 18 ed., **6:** 3561 (Sénégal). Is *Pedipes pedipes* Bruguière.

**angulatus** C. B. Adams, **Pedipes:** 1852, Ann. Lyceum of Nat. Hist. New York **5:** 431 (Panama [West Coast]). Lectotype MCZ, no. 177345.



**biangulatus** Jaeckel, **Pedipes**: 1927, Zoologischer Anzeiger **70**: 48, text figs. 1–2 (Santa Catalina [Island] California). Is *Marinula unisulcatus* Cooper.

**Carassa** Gistel: 1847 [1850], Handbuch der Naturgeschichte aller drei Reiche, Stuttgart, p. 555; Gistel 1848, Naturgeschichte des Thierreichs, Stuttgart, p. 169. [This is only a substitute name for *Pedipes* Férussac<sup>1</sup>.]

**coniformis** de Blainville, **Pedipes**: 1824, Dictionnaire des Sciences Naturelles **32**:246 [refers to Tableau Encyclopédique et Méthodique 1816, **3**: pl. 459, figs. 2a–b, which is a *Melampus*].

**crassidens** Bavay, **Pedipes**: 1920, Bull. Mus. Nat. D'Hist., Paris, **26**: 638, text. fig. (Tamara Island [Los Islands], French Guinea).

**deschampsii** Ancey, **Pedipes**: 1887, Bull. Soc. Malac. France **4**: 283 [not figured] (Aden).

**dohrni** d'Ailly, **Pedipes**: 1896, Bihang Svenska Vet. Ak. Handl. **22**: 118 [not figured] (Jonje, Cameroons).

**elongatus** Dall, **Pedipes**: 1885, Proc. United States Nat. Mus. **8**: no. 17, p. 279, pl. 18, fig. 4 (Marco, Florida). Is a *Marinula*.

**forestieri** Montrouzier, **Pedipes**: 1864, Jour. de Conchy. **12**: 41; 261, pl. 10, fig. 1 (Art Island, New Caledonia). Is a *Marinula*.

**globulosus** C. B. Adams, **Pedipes**: 1845, Proc. Boston Soc. Nat. Hist. **2**: 12 (Jamaica). Is *Pedipes mirabilis* v. Mühl. Lectotype MCZ, no. 177347.

**globulus** 'Férussac' H. and A. Adams, **Pedipes**: 1884 [1885], Proc. Zool. Soc. London, p. 36 [nomen nudum].

**globulus** 'Petit' Pfeiffer, **Pedipes**: 1856, Monographia Auriculaceorum Viventium **1**: 71 (Insula Haiti). Is *Pedipes mirabilis* v. Mühl.

**granum** Morelet, **Melampus**: 1872, Ann. Mus. Civico di Storia Nat. di Genova **3**: 205, pl. 9, fig. 14 (I'île Schech Said, Abyssinia [Sheik Said, Massaua, Eritrea]). Is a *Pedipes*.

**inaequalis** 'C. B. Adams' H. and A. Adams, **Pedipes**: 1853 [1854]. Proc. Zool. Soc. London, p. 122 [nomen nudum].<sup>2</sup>

**insularis** Haas, **Pedipes**: 1950, Proc. Malac. Soc. London **28**: 197, pl. 22, fig. 3 (Bermuda). Is *Pedipes mirabilis* v. Mühl. Holotype, Chicago Nat. Hist. Mus., no. 30171.

**jouani** Montrouzier, **Pedipes**: 1862, Jour. de Conchy. **10**: 244, pl. 9, fig. 11 (Baie Boisée, New Caledonia).

<sup>1</sup> I have not seen these two papers but through the kindness of Dr. Charles Wurtz I received typewritten copies of both paragraphs containing *Carassa*. The wording in both papers is the same.

<sup>2</sup> No such species was described by C. B. Adams. Apparently C. B. Adams exchanged material which had his manuscript names. Later he changed these names before publication or else discarded them entirely.



**leoniae** Ancey, **Pedipes**: 1887, Bull. Soc. Malac. France **4**: 286 [not figured] (Aden).

**lirata** Binney, **Pedipes**: 1860, Proc. Acad. Nat. Sci. Philadelphia, p. 154 [not figured] (Cabo San Lucas, Lower California); Binney 1865, Smithsonian Misc. Collections, no. 143, p. 20, text fig. 21. Is *Pedipes angulata* C. B. Adams.

**liratulus** Kobelt, **Pedipes**: 1901, Conchylien-Cabinet (2) **I**: pt. 16, p. 297, pl. 33, figs. 20–21 (Australia?). Probably is a *Marinula*.

**mirabilis** Megerle von Mühlfeldt, **Turbo**: 1816, Gesellschaft Naturforschender Freunde zu Berlin (Magazin) **8**: 8, pl. 2, figs. 13a–b (locality unknown).

**naticoides** Stearns, **Pedipes**: 1869 [1870], Proc. Boston Soc. Nat. Hist. **13**: 108, text fig. (Rocky Point, Tampa Bay, Florida). Is *Pedipes mirabilis* v. Mühl. Holotype USNM, no. 37598.

**occidentalis** 'Pfeiffer' Paetel, **Pedipes**: 1889, Catalog der Conchylien-Sammlung **2**: 381 [nomen nudum].

**octanfracta** Jonas, **Pedipes**: 1845, Zeitschrift für Malakozoologie **2**: 169 (Sandwich Islands? [Hawaiian Islands]). Is a *Laemodonta* according to Jickeli (1872, Nachrichtenblatt Malak. Gesell. **4**: 65).

**ovalis** C. B. Adams, **Pedipes**: 1849, Contributions to Conchology, no. 3, p. 41 (Jamaica). Lectotype, MCZ, no. 177349. Is *Pedipes mirabilis* v. Mühl.

**ovulus** Férussac, **Pedipes**: 1821, Tableaux Systématiques des Animaux Mollusques, Paris, p. 109 (locality unknown).

**Pedipes** Férussac: 1821, Tableaux Systématiques Animaux Mollusques, Paris, pp. 99 and 109 [103 and 105 in folio edition]. Type species, *Pedipes afra* Gmelin [= *Bulimus pedipes* Bruguière].

**pedipes** Bruguière, **Bulimus**: 1789, Encyclopédie Méthodique **1**: 340 (Gorée Island [Dakar], Sénégal).

**philippinica** v. Möllendorff, **Pedipes jouani**: 1893, Bericht der Senckenbergischen Natur. Gesell., p. 104 (Limansaua Id. [Limasaua Id., Leyte Id.] Philippines).

**quadridens** Pfeiffer, **Pedipes**: 1839, Archiv für Naturgeschichte **1**: 357 [not figured] (Cuba). Is *Pedipes mirabilis* v. Mühl. (Pfeiffer 1856, Mono. Auriculaceorum Viventium **1**: 70).

**sandwicensis** Pease, **Pedipes**: 1860, Proc. Zool. Soc. London, p. 146 (Sandwich Islands [Hawaiian Islands]). Holotype, MCZ, no. 74813.

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