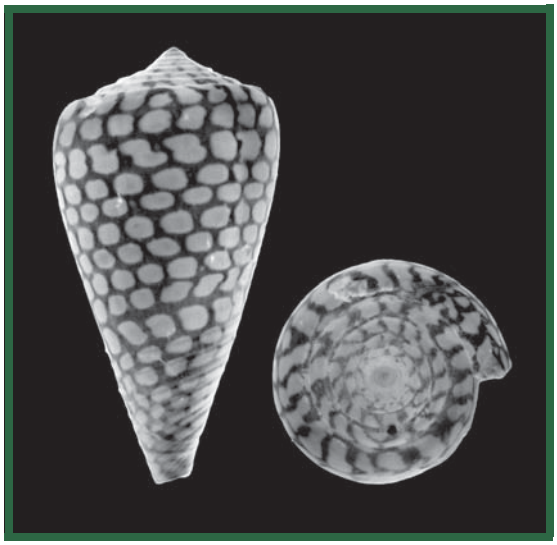

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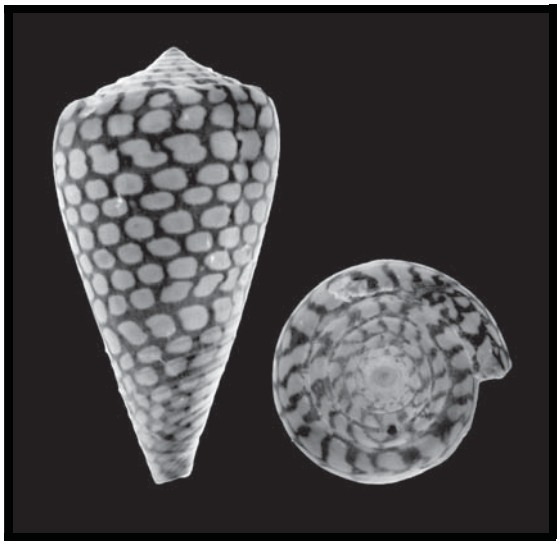

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THE GENUS *CONUS* (MOLLUSCA: NEOGASTROPODA) IN THE PLIO-PLEISTOCENE OF THE SOUTHEASTERN UNITED STATES

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ABSTRACT

Conus (or cone) shells are common in many Pliocene and Pleistocene fossil deposits from the Coastal Plain of the southeastern United States, but have never been the subjects of a comprehensive taxonomic review or revision. In total, 84 names (including those of some Recent species and fossil taxa from other strata or areas) have been applied to Plio-Pleistocene cone shells from this region, and since Green described *Conus marylandicus* in 1830, an additional 59 species have been described from these strata. Forty of these taxa were described in the last 17 years and were published outside of the peer-reviewed literature, making their status as distinct species suspect, particularly because most are poorly illustrated, perfunctorily described, and based on few specimens. This makes them nearly impossible to evaluate without direct inspection of type material and/or access to large suites of specimens. Evaluating whether these suspect taxon names represent distinctive morphospecies is critical to attaining an understanding of the evolutionary history and diversity of Neogene and Recent *Conus* in the western Atlantic.

The present work provides a systematic treatment of 82 of the 84 names that have been applied to *Conus* shells from the Plio-Pleistocene fossil records of Virginia, North Carolina, South Carolina, and Florida. Here, through application of a conservative morphological species concept (one that accepts large amounts of intraspecific morphological variation), 19 of these nominal taxa are accepted as representing distinctive species of Plio-Pleistocene *Conus* from this study area. In addition, this investigation also resulted in the discovery of one new fossil morphospecies, described here as *Conus burnetti* n. sp. An identification key to these 20 species is provided. The status of three additional, previously described species (known only by their type specimens) remains less certain. Two names that are likely familiar to collectors of Plio-Pleistocene *Conus* from the United States Coastal Plain, *C. floridanus* Gabb, 1869, and *C. druidi* Olsson, 1967, are synonymized, respectively, with *C.* cf. *largillierti* Kiener, 1845, and *C. haytensis* G. B. Sowerby II, 1850. All previously described species of sinistral *Conus* are considered to belong to one highly morphologically variable species, *C. adversarius* Conrad, 1840.

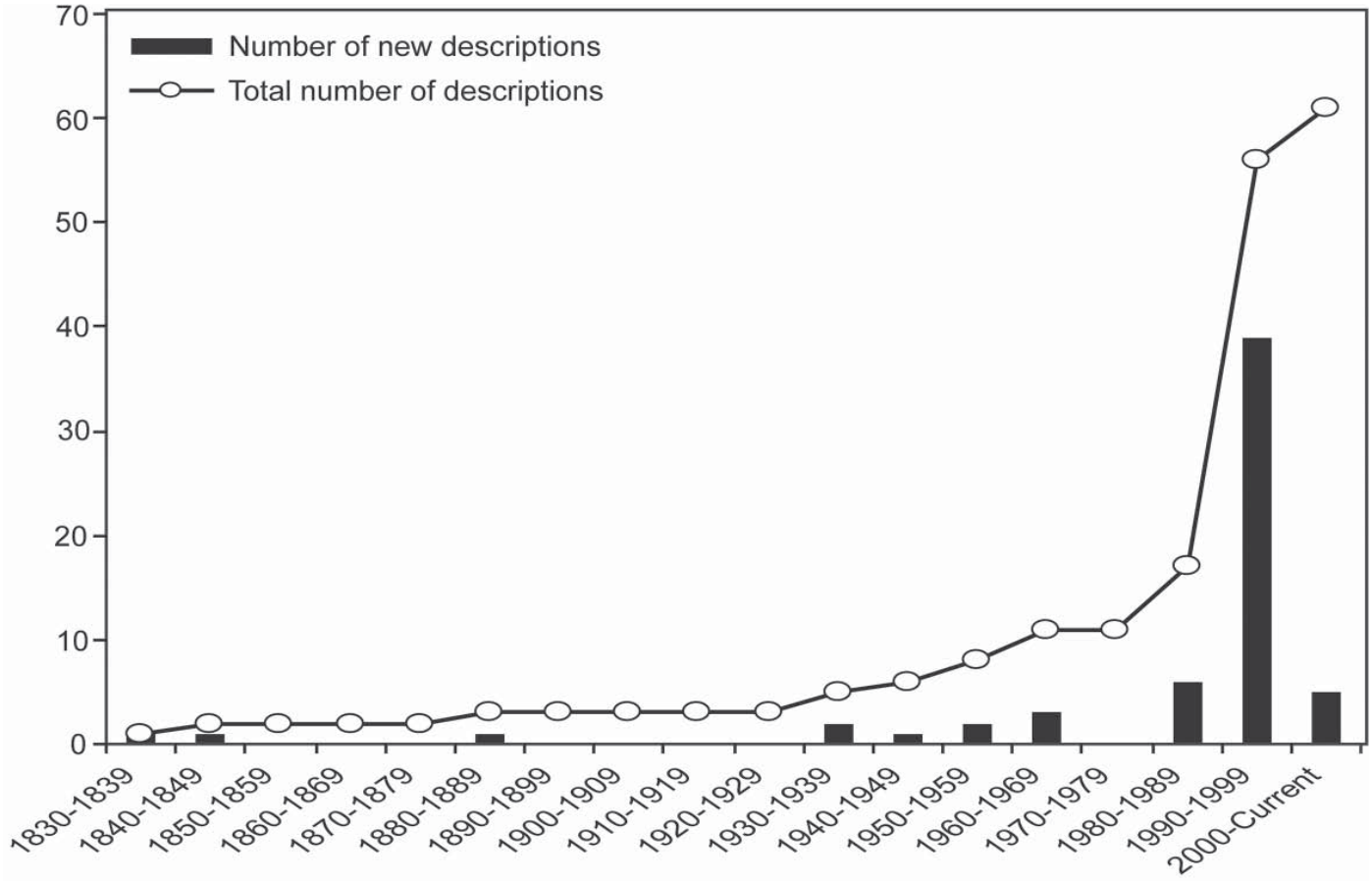
INTRODUCTION

"*It is with decided reluctance that I have taken up the enumeration and separation of the [fossil] Cones of Santo Domingo. I am safe in asserting that I have never undertaken a more difficult task, and while I have almost suffered under an embarrassment of riches in the great numbers of specimens I have had to study, that same profusion is rather the source of the difficulty than a means of relief. With a few shells, a fictitious division can easily be made; but in series of hundreds, nay thousands, where opportunity exists for the study of all the varieties, this labor is not so easy.*"

- W. M. Gabb, 1873

As Gabb (1873) discovered in the Neogene strata of the Dominican Republic, *Conus* (or cone) shells are often common and diverse constituents of many Pliocene and Pleistocene marine fossil deposits from the Coastal Plain of the southeastern United States. Despite over 175 years of collection and description, however, fossil cone shells from the U. S. Coastal Plain have never been subjected to a comprehensive taxonomic review or revision and are currently in taxonomic disarray. Since Green (1830) described the first species of Plio-Pleistocene *Conus* (*C. marylandicus*) from the southeastern U. S., 59 additional species have been described. Only 11 of these species were described during the period 1830-1979; the remaining 48 were described during the subsequent 25 years. This recent dramatic rise in the rate of publication of new fossil *Conus* species descriptions is illustrated in Text-fig. 1. None of the 40 species named since 1990 were described in peer-reviewed publications (Petuch 1991, 1994, 2004), and most are poorly illustrated, inadequately described, and insufficiently compared with otherwise similar taxa, making them nearly impossible to evaluate without access to type specimens and/or large suites of comparative shell material (see also Allmon, 2005). Of these 40 species, 31 are only represented by their holotype specimens; an additional four species are described as having paratype representatives, but these specimens are not housed in museum collections.

In total, 84 known species names have been applied to fossil *Conus* shells from the Plio-Pleistocene of Virginia, North Carolina, South Carolina, and Florida (Table 1); similarly-aged *Conus* shells are not yet known from Georgia. Besides the 60 species described from the Plio-Pleistocene of the southeastern U. S., an additional 24 species names, belonging to either extant *Conus* (16 names) or fossil species (8 names) from older strata and/or other regions, have also been applied



Text-fig. 1. Actual and cumulative number of fossil *Conus* species described from Plio-Pleistocene strata from the Coastal Plain of the southeastern United States between 1830 and present (n = 61; count includes the new species described here). The pace of publication increased significantly in the 1990s.

to Plio-Pleistocene cone shells from the U. S. Atlantic Coastal Plain.

The present work provides a systematic treatment of 82 of the 84 names that have been applied to Plio-Pleistocene *Conus* fossils from the southeastern U. S. The first exception is Heilprin's (1886: 83) report of *Conus catenatus* G. B. Sowerby II, 1850, a fossil species from the Dominican Republic, in the Pliocene of Florida. Heilprin (1886) did not figure *C. catenatus* and his description is uninformative; I did not observe specimens resembling the figures of *C. catenatus* provided by Pilsbry (1922: pl. 22, figs 3-4) and Woodring (1928: pl. 11, figs 4-5) during the course of this study. The second exception is Petuch's (1994: 226, pl. 92, fig. e) report of a fossil specimen of the extant species *C. amphiurgus* Dall, 1889, from the Bermont Formation of Florida; this single specimen is not in a museum collection and thus could not be verified. Following examination of more than 20,000 specimens (more than 2,400 museum lots), including study of nearly all (exceptions noted below) available type fossil material, I conclude here that 19 of these 82 names represent valid *Conus* fossil morphospecies and that three additional forms appear distinctive, but are only known by their type specimen(s). This study resulted in the discovery of one additional new fossil species, which is described here as *C. burnetti*.

RECOGNITION AND CIRCUMSCRIPTION OF *CONUS* TAXA

Treatment of Higher Taxa Within the Conidae

The neogastropod family Conidae Fleming, 1822, includes three genera (Kohn, 1990; Röckel *et al.*, 1995): *Conus* Linnaeus, 1758, *Conorbis* Swainson, 1840, and *Hemiconus* Cossman, 1889. Whereas *Conorbis* is represented by a single extant species and *Hemiconus* is extinct (Kohn, 1990; Röckel *et al.*, 1995), *Conus* might be the most diverse of marine metazoan genera, containing more than 500 extant and 1,000 fossil species (Röckel *et al.*, 1995). Recent phylogenetic analyses of molecular sequence datasets (*e. g.*, Duda & Palumbi, 1999; Duda *et al.*, 2001; Espiritu *et al.*, 2001; Duda & Kohn, 2005;

Table 1. *Conus* species names (n = 84) applied to Plio-Pleistocene fossils from the southeastern United States; list also include the new species, *C. burnetti*. Species names in **bold** were originally applied to fossil material (n = 60) from the study area; other names were originally applied to either extant species (n = 16) or to fossil taxa from other regions or older strata (n = 8; these are marked with an "*"). The species author and date of publication, first known and subsequent important literature citations to the species in the Plio-Pleistocene fossil record of the southeastern United States, and the taxonomic treatment followed here are also presented.

***Conus* Species-Group Name**	**Authority**	**First Application**	**Subsequent Citations**	**Taxonomic Treatment Followed Here**
adversarius	Conrad, 1840	Conrad (1840)	Conrad (1841), Tuomey & Holmes (1857), Emmons (1858), Dall (1890), LaVille (1921), Mansfield (1930), Smith (1929, 1945), Olsson & Harbison (1953), DuBar (1958), Olsson & Petit (1964), Kamp (1967), Petuch (1988), Kohn (1992), Petuch (1991, 1994, 2004), Campbell (1993)	*C. adversarius* Conrad, 1840
amphiurgus	Dall, 1889	Petuch (1994)	n/a	Not treated here
anabathrum	Crosse, 1865	Petuch (2004)	n/a	*C.* cf. *largillierti* Kiener, 1845
*apium**	Woodring, 1928	Olsson (1967)	n/a	*C. patricius* Hinds, 1843
bassi	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. bassi* Petuch, 1991
berryi	Petuch, 1994	Petuch (1994)	n/a	*C. adversarius* Conrad, 1840
***burnetti* n. sp.**	Present work	Present work	n/a	*C. **burnetti*** n. sp.
calusa	Abbott, 1988b	Abbott (1988b)	Petuch (1994)	*C. oniscus* Woodring, 1928
capelettii	Petuch, 1990	Petuch (1990)	Petuch (1994, 2004)	*C.* cf. *largillierti* Kiener, 1845
*catenatus**	Sowerby II, 1850	Heilprin (1886)	Kamp (1967)	Not treated here
cherokus	Olsson & Petit, 1964	Olsson & Petit (1964)	Petuch (1994, 2004)	*C. spurius* Gmelin, 1791
*consobrinus**	Sowerby II, 1850	Kamp (1967)	n/a	*C. violetae* Petuch, 1988
daucus	Hwass in Bruguière, 1792	Dall (1890)	Olsson & Harbison (1953)	*C. daucus* Hwass in Bruguière, 1792
delessertii	Récluz, 1843	Petuch (1988)	Petuch (1994)	*C. delessertii* Récluz, 1843
deluvianus / *diluvianus* [sic]*	Green, 1830	Tuomey & Holmes (1857)	Emmons (1858)	*C. oniscus* Woodring, 1928
diegelae	Petuch, 1994	Petuch (1994)	n/a	*C.* cf. *largillierti* Kiener, 1845
druidi	Olsson, 1967	Olsson (1967)	Petuch (1994, 2004)	*C. haytensis* Sowerby II, 1850
duerri	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. delessertii* Récluz, 1843
evergladesensis	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. evergladesensis* Petuch, 1991

eversoni	Petuch, 1987	Petuch (1988)	n/a	? *C. daucus* Hwass in Bruguière, 1792
floridanus	Gabb, 1868	Dall (1890)	Mansfield (1930), Smith (1930, 1945), Olsson & Harbison (1953), DuBar (1958), Kamp (1967), Petuch (1994)	*C.* cf. *largillierti* Kiener, 1845
gravesae	Petuch, 1994	Petuch (1994)	Petuch (2004)	? *C. daucus* Hwass in Bruguière, 1792
griffini	Petuch, 1990	Petuch (1990)	Petuch (1994, 2004)	? *C. daucus* Hwass in Bruguière, 1792
harbisonae	Petuch, 1994	Petuch (1994)	n/a	? *C. daucus* Hwass in Bruguière, 1792
harveyensis	Mansfield, 1930	Mansfield (1930)	Petuch (1994)	*C. harveyensis* Mansfield, 1930
heilprini	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. adversarius* Conrad, 1840
hertwecki	Petuch, 1988	Petuch (1988)	Petuch (1994)	*C. hertwecki* Petuch, 1988
hyshugari	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
irisae	Petuch, 2004	Petuch (2004)	n/a	*C. paranobilis* Petuch, 1991
jaclynae	Petuch, 1994	Petuch (2004)	n/a	*C. jaspideus* Gmelin, 1791
jaroldi	Abbott, 1988a	Abbott (1988a)	n/a	*C. oniscus* Woodring, 1928
jaspideus	Gmelin, 1791	Kamp (1967)	Petuch (1988, 1994)	*C. jaspideus* Gmelin, 1791
jeremyi	Petuch, 1994	Petuch (1994)	n/a	*C. spurius* Gmelin, 1791
joelshugari	Petuch, 1994	Petuch (1994)	n/a	*C.* cf. *largillierti* Kiener, 1845
jonesorum	Petuch, 1994	Petuch (1994)	n/a	*C. yaquensis* Gabb, 1873
largillierti	Kiener, 1845	Dietl & Hendricks (2006)	n/a	*C.* cf. *largillierti* Kiener, 1845
laurenae	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
lemoni	Petuch, 1990	Petuch (1990)	Petuch (1994, 2004)	*C. spurius* Gmelin, 1791
lindajoyceae	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. adversarius* Conrad, 1840
loxahatcheensis	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C.* cf. *largillierti* Kiener, 1845
martinshugari	Petuch, 1994	Petuch (1994)	n/a	*C. spurius* Gmelin, 1791
marylandicus	Green, 1830	Green (1830)	Martin (1904), Olsson & Harbison (1953), Olsson (1967), Kohn (1992), Campbell (1993), Petuch (1994, 2004)	*C. marylandicus* Green, 1830
marymansfieldae	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
maureenae	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791

*mercati**	Brocchi, 1814	Heilprin (1886)	n/a	Not treated here
miamiensis	Petuch, 1986	Petuch (1986)	Petuch (1988, 1994, 2004)	*C. miamiensis* Petuch, 1986
micanopy	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. spurius* Gmelin, 1791
miccosukee	Abbott, 1988b	Abbott (1988b)	Petuch (1994)	*C. oniscus* Woodring, 1928
mitchellorum	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. adversarius* Conrad, 1840
*oniscus**	Woodring, 1928	Kamp (1967)	Petuch (1994)	*C. oniscus* Woodring, 1928
osceolai	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. adversarius* Conrad, 1840
palmbeachensis	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
paranobilis	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. paranobilis* Petuch, 1991
parkeri	Richards & Harbison, 1947	Richards & Harbison (1947)	Petuch (1994)	*C. parkeri* Richards & Harbison, 1947
patstreamae	Petuch, 1994	Petuch (1994)	n/a	*C. delessertii* Récluz, 1843
pealii	Green, 1830	Dall (1890)	n/a	*C. jaspideus* Gmelin, 1791
petiti	Petuch, 2004	Petuch (2004)	n/a	*C. adversarius* Conrad, 1840
pfluegeri	Petuch, 2004	Petuch (2004)	n/a	*C. jaspideus* Gmelin, 1791
presozoni	Olsson & Petit, 1964	Olsson & Petit (1964)	Kamp (1967), Petuch (1994)	*C. delessertii* Récluz, 1843
proteus	Hwass in Bruguière, 1792	Dall (1890)	n/a	*C. spurius* Gmelin, 1791
protocardinalis	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. protocardinalis* Petuch, 1991
pygmaeus	Reeve, 1844	Dall (1890)	n/a	? *C. jaspideus* Gmelin, 1791
robertsi	Olsson & Harbison, 1953	Olsson & Harbison (1953)	Abbott (1988a), Petuch (1994)	*C. oniscus* Woodring, 1928
ronaldsmithi	Petuch, 1994	Petuch (1994)	n/a	*C.* cf. *largillierti* Kiener, 1845
sarasotaensis	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
schmidti	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. adversarius* Conrad, 1840
scotti	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. adversarius* Conrad, 1840
sennottorum	Rehder & Abbott, 1951	Petuch (1988)	Petuch (1994)	*C. sennottorum* Rehder & Abbott, 1951
spengleri	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C. spurius* Gmelin, 1791
spurius	Gmelin, 1791	Kamp (1967)	Petuch (1988, 1994)	*C. spurius* Gmelin, 1791
spuroides	Olsson & Harbison, 1953	Olsson & Harbison (1953)	Kamp (1967), Petuch (1991, 1994, 2004)	*C. spuroides* Olsson & Harbison, 1953
stearnsii	Conrad, 1869	Smith (1930)	Smith (1945), Olsson & Harbison (1953), DuBar (1958)	*C. jaspideus* Gmelin, 1791
streami	Petuch, 1994	Petuch (1994)	Petuch (2004)	*C. spurius* Gmelin, 1791

susanae	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
susankhanae	Petuch, 1994	Petuch (1994)	n/a	*C. delessertii* Récluz, 1843
testudinarius	Hwass in Bruguière, 1792	Mansfield (1930)	n/a	? *C. patricius* Hinds, 1843
tomeui	Petuch, 2004	Petuch (2004)	n/a	*C. evergladesensis* Petuch, 1991
trippae	Petuch, 1991	Petuch (1991)	Petuch (1994, 2004)	*C.* cf. *largillierti* Kiener, 1845
tryoni	Heilprin, 1886	Heilprin (1886)	Petuch (1988, 1991, 1994, 2004)	*C. adversarius* Conrad, 1840
*vaughanensis**	Mansfield, 1935	Petuch (1994)	n/a	? *C. largillierti* Kiener, 1845
verrucosus	Hwass in Bruguière, 1792	Smith (1936)	n/a	*C. jaspideus* Gmelin, 1791
violetae	Petuch, 1988	Petuch (1988)	Petuch (1994, 2004)	*C. violetae* Petuch, 1988
waccamawensis	Smith, 1930	Smith (1930)	Smith (1945), Olsson & Harbison (1953), Petuch (1994, 2004)	*C. oniscus* Woodring, 1928
wilsoni	Petuch, 1994	Petuch (1994)	n/a	*C. jaspideus* Gmelin, 1791
*yaquensis**	Gabb, 1873	Kamp (1967)	Petuch (1988, 1994, 2004)	*C. yaquensis* Gabb, 1873

Duda & Rolán, 2005; see also Kohn, 2002) have tested and, thus far, substantiated the monophyly of *Conus* as a distinct evolutionary lineage and have also begun to shed light on the species membership of some subclades within the genus.

Since Linnaeus (1758) named *Conus*, numerous attempts (beginning with Linnaeus himself; Röckel *et al.*, 1995) have been made to subdivide the genus (at the generic and subgeneric levels), although none of the resultant classification schemes have gained long-term traction among naturalists. As noted by Röckel *et al.* (1995: 16), "[m]ore than 90 genus-group names have now been proposed in the family Conidae" and "[t]he classifications employing different subsets of these vary widely. Schemes based on shell shape and sculpture, shell colour pattern, and radular tooth characters are inconsistent and incongruent." For the same reason, I follow Röckel *et al.* (1995) in rejecting most previously named higher taxa within the Conidae (the single exception here is the subgenus *Contraconus*, for reasons described on p. 27), all of which, to date, have been based on morphological characters, and particularly shell characteristics, which are few and frequently intraspecifically variable in *Conus* species (see below). I expect that meaningful progress in the subdivision of *Conus* will be made, however, as additional molecular sequence data are collected from extant species and analyzed using cladistic methodologies. Until such work is completed, I consider the use of subgeneric classifications of *Conus* both premature and unsubstantiated in almost all cases.

Characteristics Used by Previous Workers to Discriminate *Conus* Species

Like most gastropods, species of *Conus* have long been described and differentiated almost entirely on the basis of shell characteristics. The shells of *Conus* species are renowned for their intraspecific variability in shape, sculpture, and color patterns, particularly across wide geographic expanses (*e. g.*, Röckel *et al.*, 1995). This variation is rarely summarized adequately in original *Conus* species descriptions, and discussions of key shell characters separating otherwise similar species are usually insufficient (Kohn, 1980a; Filmer, 2001). As a consequence, *Conus* has long been a genus plagued by synonymous names, though several recent efforts (Kohn, 1992,; Röckel *et al.*, 1995; Filmer, 2001; Kohn & Anderson, 2008) have made great strides in clarifying the taxonomy of extant and some fossil species. Yet, new *Conus* species (extant and fossil) continue to be described at a feverish pace; by the mid-1990s, an average of 23 species were being described per year, mostly outside of peer-review (Röckel *et al.*, 1995).

Problems associated with the taxonomy of extant *Conus* species are magnified when considering fossil representatives. Reasons for this include the incomplete nature of fossils (*i.*

e., no anatomical characters), lack of direct evidence of their ecologies, inability to study biological populations, the lack of spatial continuity of the strata in which they are found, and geological mixing of non-contemporaneous faunas (*i. e.*, time averaging). Nevertheless, because most extant *Conus* species are described on the basis of shell characters alone, fossil species are similarly recognizable and comparable.

For extant *Conus*, Walls (1979: 30-31) noted that color patterns and the "structure of the early whorls" are the most useful character types for the identification of species when only shells are available. Walls described other attributes, such as last whorl sculpture, shape, and spire height, as being of less use for identifications due to their high degree of variation within species, which he noted as possibly being a consequence of ecology.

Röckel *et al.*'s (1995) treatment of the extant Indo-Pacific Conidae prominently illustrated, described, and quantified variation in shell form in *Conus* species that were recognized by both shell and soft-part characters, including ecological observations as well. This work provides a useful benchmark for demonstrating the amount and kinds of variation in shell morphology that one might expect when considering fossil *Conus* taxa. Röckel *et al.* (1995) used shell shape and color, periostracum characters, colors of soft-parts, radular teeth characters, ecological observations, and geographic range to characterize the species of *Conus* that they recognized in their monograph of extant Indo-Pacific species. They did not explicitly define one set of characters as being more useful than another for identifying species. For reasons of practicality, Röckel *et al.* (1995: 17) adopted a morphological species concept and stressed discontinuities in morphological characters as being critical for the circumscription of species, stating that "if two distinct forms occur sympatrically without intergrades, we conclude that they are different species. In cases of uncertainty, we have decided to unify rather than separate such taxa."

There is no consensus view on what characters are the most useful for identifying fossil *Conus* species when only shell material is available for study. In part, this is because preservational quality is often inconsistent among fossil localities. Few authors have presented discussions of the shell characters that they consider useful for recognizing fossil *Conus* species. Smith (1930) argued that attributes of the shell apex and subsutural flexure (sometimes referred to as the "anal notch") used in combination can provide diagnostic information useful for identifying fossil *Conus* species from the Neogene of the southeastern U. S. He specifically discussed the presence or absence of tubercles (or nodes) on the earliest postnuclear whorls and the shape and depth of the subsutural flexure as being important characters.

In their key to the Pliocene cones of southern Florida, Olsson & Harbison (1953: 170) used shell-coiling direction, shape of the sutural ramp, depth of the subsutural flexure, and last whorl ornamentation features to segregate species. Wolfson (1962) separated two extant *Conus* species with similar shell color patterns using several simple shell measurements and a discriminant function analysis. Wolfson then noted that besides overall shell shape, the depth and shape of the subsutural flexure is also useful for differentiating the two species. Kamp (1967) placed special emphasis on using color patterns, revealed using ultraviolet light (see description of process below), to identify and circumscribe fossil *Conus* species. Hoerle (1976) also emphasized the use of color patterns for making identifications of fossil *Conus* species and referenced the utility of the apex characters described by Smith (1930) [she cited Smith (1929), apparently in error]. Hoerle specifically stated (1976: 2) that misleading "factors in species identification are: the angle and height of the spire; the angle of the shoulder; the basal sculpture; and pustules on final whorl."

Kohn (1980b) provided the most thorough description of a fossil *Conus* species (*C. kahiko* Kohn, 1980, from the Pleistocene of Oahu, Hawaii). He quantified almost all shell characters, including color patterns, shell size, shell shape, and sculptural features and provided summary statistics for these data. Kohn (1980b: 537) differentiated *C. kahiko* from similar fossil and Recent Hawaiian species using these same characters, and stated that "*Conus kahiko* differs most strikingly from the most similar Hawaiian species with respect to color pattern and sculpture of the last whorl."

Muñiz Solís (1999) listed the characters that he used to identify *Conus* shells from the Pliocene of Spain. He placed special emphasis on using the shapes of growth lines around the subsutural flexure and shoulder, as well as protoconch characters, to discriminate species.

To date, Petuch has described 130 species of fossil and Recent cone shells and has introduced six (five by Petuch, 2004) genus-level names within Conidae (Kohn & Anderson, 2008). It is unclear what shell characters Petuch considers to be of greatest value for circumscribing and distinguishing cone species. In the discussion portions of his sinistral *Conus* species descriptions, Petuch (1991, 1994, 2004) used mostly shell size and shape characters (*e. g.*, relative last whorl width or height, spire height) to discriminate co-occurring species, but often also made mention of differences in sculptural characters (such as presence or absence of tubercles on spire, or prominence of spiral threads on the last whorl).

In general, it appears that Petuch believed that fossil species tend to be restricted to single temporal intervals in narrowly defined geographical regions: "Paleospecies, by definition, demarcate blocks of time, from their first appearance in the fossil record to their last appearance and extinction. As

is usually seen in regional fossil records, paleospecies are most often endemic (biogeographically confined) to the depositional boundaries of their respective oceans and, when viewed in light of their evolution and extinction, tightly define the paleosea as a discrete entity moving through both time and space" (Petuch, 1997: iv). As an apparent consequence of this philosophy, Petuch usually placed special emphasis on temporal rather than morphological separations between otherwise similar species, which he frequently described (without the support of methods such as cladistic analysis) as ancestors or descendants of one another. For example, in his remarks on *Contraconus mitchellorum*, Petuch (1994: 360-361) stated that this species "is most similar to, and is the direct descendant of, the older, stratigraphically-lower *C. tryoni*" Heilprin, 1886 (he then listed some morphological differences between these taxa).

Taxonomic Approach Used Here for Recognizing *Conus* Species

Many Plio-Pleistocene *Conus* shells from the southeastern U. S. are exceptionally well preserved, particularly those from southern Florida. Protoconchs, early postnuclear shell characters, and color patterns are frequently available (along with most other shell characters) for study. These character groups are given special weight and emphasis in this revision because they tend not to be as highly variable as others (*e. g.*, shape parameters) within extant *Conus* species. Secondarily important characters for species circumscription and identification include the shape and depth of the subsutural flexure and major sculptural features of the spire and last whorl. Spire height and overall last whorl shape are considered here to be less reliable taxonomic characters for identifying or differentiating fossil *Conus* species. These shape characters could be due to ecological effects, or might be the consequence of ontogenetic disturbance(s) (*e. g.*, shell breakage).

Röckel *et al.*'s (1995) assertion that similar *Conus* forms should be lumped into single species when uncertainty exists is similarly adopted here. Two particular problems associated with the fossils revised here add high levels of uncertainty not generally associated with extant populations, further justifying this conservative approach. First, some dense fossil assemblages from the southeastern U. S., and southern Florida in particular (*e. g.*, the Pinecrest Beds of the Tamiami Formation), have probably experienced extensive sediment winnowing, physical reworking, and hence time averaging (*e. g.*, see Allmon, 1993). Consequently, it is unlikely that two *Conus* shells found next to one another, in place, were associated with one another in life. This results in collections containing mixed populations of individuals that experienced potentially variable ecological conditions during their lifetimes, making ecophenotypic and genetic effects difficult to discriminate in shell material. When a narrow species concept (one that accepts little morphological variation) is employed under these conditions, excessive taxonomic splitting is probable.

A second matter further justifies the use of a conservative species concept, although it is a specimen collection problem, rather than a geological one. Specimens of many of the species revised here were collected from spoil piles excavated by shell aggregate mining companies. Mining activity sometimes crosses stratigraphic boundaries, particularly in southern Florida. Resulting spoil piles can therefore contain *Conus* shells from different, though stratigraphically adjacent, formations. As a result, it is not always possible to discern whether two distinctive forms existed within the same stratigraphic unit, or were ecological morphs separated by a major stratigraphic boundary.

It is conceivable (and perhaps even probable) that an analysis of fossil *Conus* shell form using advanced morphometric techniques could discriminate morphological subgroupings not recognized here (which might or might not be comparable to biological species). However, given (1) the uncertainty resulting from stratigraphic sampling problems in the study area (due to time averaging and spoil pile collections; see above), (2) the fact that a majority of fossil shells available for study are in some way damaged, (3) that indeterminate shell growth in *Conus* prevents identification of more than a few justifiable landmark points, and (4) that many extant species are known to be highly variable in shell shape but less variable in other aspects of morphology and ecology (*e. g.*, see Röckel *et al.*, 1995), I believe that application of such morphometric techniques would greatly overestimate fossil species diversity in the study area (*i. e.*, show significantly greater diversity than observed in the most diverse extant *Conus* faunas). I have employed simple ratio metrics (described below) to describe overall shell form for species recognized (for the most part) on the basis of discrete shell characters. It is possible that this study has underestimated *Conus* species diversity during the Plio-Pleistocene in the southeastern U. S., but it seems highly unlikely that diversity has been overestimated. Thus, I consider the results of the taxonomic revision presented here to be a conservative estimate of *Conus* species diversity during the Plio-Pleistocene in the southeastern U. S. Finally, I remind the reader that the *Conus* taxa that I accept here as species are hypotheses based upon the criteria outlined above and the material that I examined during the course of this study. I have provided a listing (Appendix) of all fossil specimens observed during this study so that future workers might test the boundaries of my species circumscriptions, if so desired.

MATERIALS AND METHODS

Material Examined

This revision is based upon direct observation of more than 2,400 *Conus* specimen lots (more than 20,000 specimens) from eight institutions (all specimen lots observed are presented in the Appendix); privately held collections were not considered in this study. The *Conus* collections that I made as part of my dissertation work are reposited at the PRI, where they have been integrated into the "taxonomic" collections. Most specimens observed were originally collected from one of 13 different Plio-Pleistocene stratigraphic units from Virginia, North and South Carolina, and Florida. These strata and their general relationships to one another, along with citations to relevant literature sources, are presented in Table 2, which was modified from fig. 10.2 by Allmon *et al.* (1996). Controversy remains over the absolute ages of these strata and how they should be correlated across the Atlantic Coastal Plain; readers are referred to discussions by DuBar (1974), Lyons (1991), Ward *et al.* (1991), Ward (1992), Campbell (1993), Allmon (1993), Campbell & Campbell (1995), and Allmon *et al.* (1996). A significant majority of the specimens observed for this study are from Florida. For a recent overview of the Neogene geology of Florida, see Scott (1997).

Digital Photography and Image Processing

With the exception of scanning electron photomicrographs, all photographic images presented here were captured using several different digital cameras (all with resolutions of 5.0 megapixels or higher). All photographic images were processed and plates were constructed using Adobe® Photoshop® (versions 5.5 and CS2). This software program was often used to improve the quality of images through adjustments of the levels, contrast, and brightness settings.

Some specimens of Plio-Pleistocene *Conus* have retained pigmented elements that fluoresce under ultraviolet light, permitting original color patterns to be observed. (For a recent and much needed account of these polyene pigments in *Conus* and other mollusks, see Hedegaard *et al.*, 2006). The process of inducing and photographing fluorescence in Neogene fossil shells has been described by Kamp (1967), Olsson (1967),

Table 2. Stratigraphic context of Plio-Pleistocene *Conus* fossils considered in this study. Stratigraphic spatiotemporal units lacking time-equivalent strata or *Conus* fossils are marked as "-". Broad correlations of units are based on Allmon *et al.* (1996) and the lithostratigraphic correlation chart for the southeastern U.S. presented by Randazzo & Jones (1997). Absolute ages for most formations and/or their boundaries are controversial.

Age	Southern Florida	Northern Florida	South Carolina	North Carolina	Virginia
Late Pleistocene	Anastasia Fm. (*e.g.*, Scott, 1997; Portell *et al.*, 2003)	-	-	-	-
Late Pleistocene	Fort Thompson Fm. (*e.g.*, Lyons, 1991)	-	-	-	-
Early Pleistocene	Bermont Fm. (*e.g.*, Lyons, 1991)	-	-	-	-
Plio-Pleistocene	Caloosahatchee Fm. (*e.g.*, Lyons, 1991)	Nashua Fm. (*e.g.*, Scott, 1997)	Waccamaw Fm. (*e.g.*, Akers, 1972)	Waccamaw Fm. / James City Fm. (*e.g.*, Ward & Gilinsky, 1993)	-
Late Pliocene	Upper Pinecrest Beds of the Tamiami Fm. (*e.g.*, Petuch, 1982; Allmon, 1993)	-	-	Chowan River Fm. (*e.g.*, Ward & Gilinsky, 1993)	Chowan River Fm. (*e.g.*, Ward & Gilinsky, 1993; Campbell, 1993)
Late Pliocene	Lower Pinecrest Beds of the Tamiami Fm. (*e.g.*, Petuch, 1982; Allmon, 1993)	Jackson Bluff Fm. (*e.g.*, Jones, 1997)	Raysor Marl / Duplin Marl (*e.g.*, Campbell *et al.*, 1975)	Duplin Marl (*e.g.*, Campbell *et al.*, 1975)	Yorktown Fm. (Moore House, Rushmere, & Morgarts Beach Members) (*e.g.*, Campbell, 1993)

Vokes & Vokes (1968), Krueger (1974), Hoerle (1976), and Pitt & Pitt (1993). To capture these patterns, fluorescence was induced using two Raytech Versalume PP-FLS longwave/shortwave ultraviolet lamps set on either side of the shell, with all other light sources extinguished. Digital photographs were typically taken at F-value settings of 7.1-8.0 and shutter speed settings of 5-30 sec. Because when "color patterns fluoresce under ultraviolet light, they appear to the human eye as photographic negatives of the color pattern on a modern shell" (Krueger, 1974: 46), Photoshop® was used to create negatives of the ultraviolet images, permitting observation of shell color patterns as they would have appeared in life (dark pigments on a light background).

All of the holotypes and lectotypes that were observed were photographed and their images are presented here, along with those of some paratype specimens; additional images of type specimens reposited by Edward Petuch at the Florida Museum of Natural History can also be viewed at the website http://www.flmnh.ufl.edu/databases/ivp. Most other specimens presented on plates were selected to document the full range of observed intraspecific morphological variation (*e. g.*, in shell shape, ornamentation, or color pattern).

Taxonomic Descriptions and Terminology

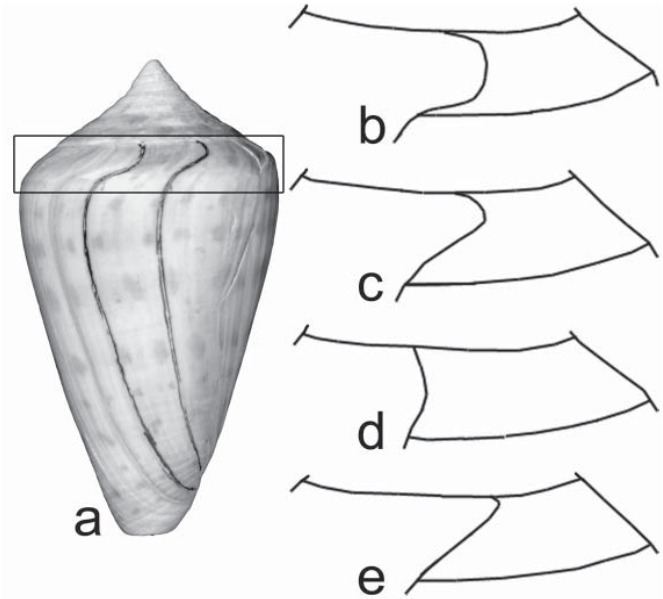
Taxa are treated in order of their date of original description (1791-2004); a taxonomic key (p. 13) was developed to aid in the identification of species. Description format and terminology of shell characters and color patterns generally follow Röckel *et al.* (1995). Morphological references made to the "base" of a shell pertain to the anterior end of the shell. "Unornamented sutural ramps" are those that lack raised spiral threads, incised spiral grooves, or prominent radial growth lines. New terminology was developed to describe the overall shape of the subsutural flexure (see Smith, 1930; this character is sometimes referred to as the "anal notch"), which can be observed in most well-preserved fossil and modern cone shells by following the shape of the growth lines across the sutural ramp of the teleoconch whorls (see Text-fig. 2a; also see Muñiz Solís, 1999). These terms include:

(1) Symmetrically curved (Text-fig. 2b): apex of curve near center of sutural ramp; depth can be moderate (depth approximately the same as width across the sutural ramp) or deep (depth greater than width across the sutural ramp).

(2) Asymmetrically curved (Text-fig. 2c): apex of curve on adaxial half of sutural ramp; depth usually moderate.

(3) Shallow (Text-fig. 2d): depth less than width across sutural ramp; outline can be flat, gently curved, or V-shaped.

(4) Diagonal (Text-fig. 2e): forms a nearly straight line that is oriented abaxioventrally across the sutural ramp and shows little to no bowing; degree of curvature near the suture is less than in the asymmetrically curved condition; depth usually moderate.

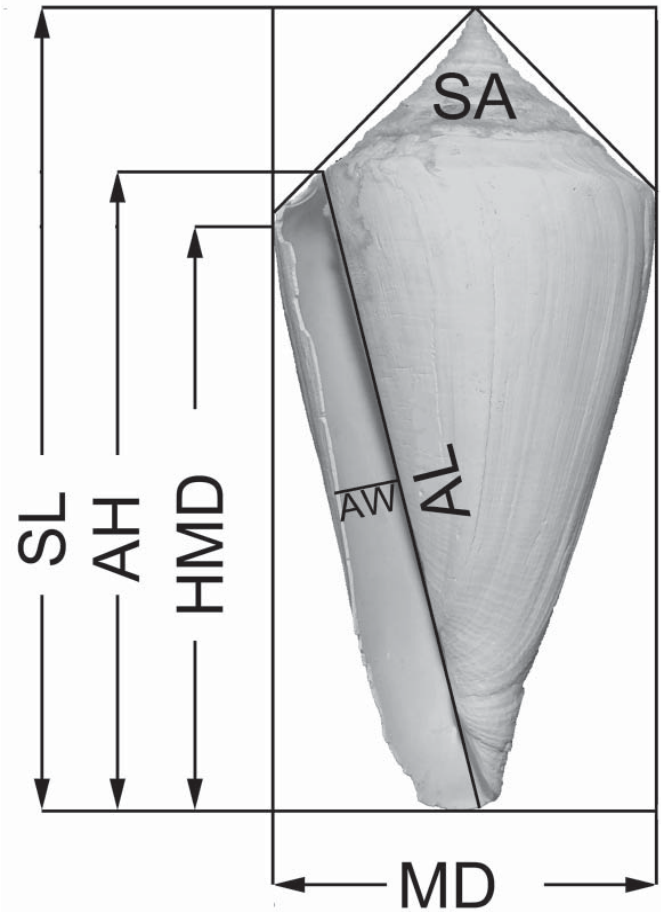


Text-fig. 2. *Conus* subsutural flexure morphologies; see text and Smith (1930) for further explanations. (a) Specimen of *Conus spuroides* Olsson & Harbison, 1953, showing traces of growth lines (dark lines) across the body whorl and sutural ramp region, outlining the shape of the subsutural flexure (region in box) for reference to illustrations in b-e; (b) symmetrically curved subsutural flexure; (c) asymmetrically curved subsutural flexure; (d) shallow subsutural flexure; (e) diagonal subsutural flexure.

Species descriptions of taxa that have Recent in addition to fossil records circumscribe the variation observed in fossil material from the Plio-Pleistocene of the southeastern U. S. and should not be considered full accountings of the total variation that might be observed in modern forms. Furthermore, the total variation presented here for some of these taxa can exceed that which might be observed in only modern members of such species if the fossil material includes extinct phenotypes (due to ecological or evolutionary change).

Measurements

Five simple measurements (Text-fig. 3) were directly captured and recorded from a total of nearly 1,900 fossil specimens to quantify variation within (and to a lesser extent between) morphospecies; these measurements were also captured from a smaller number of modern *Conus* shells for comparative purposes. Specimens were selected for measurement only if all five measurements could be collected. Most measured medium- and large-sized specimens lack preservation of the protoconch and the first several early postnuclear whorls are often also lost or heavily eroded. Shell length (SL) and maximum diameter (MD) were measured parallel to and



Text-fig. 3. Measurements collected from *Conus* shells (example is a specimen of *Conus adversarius* Conrad, 1840). AH, apertural height; HMD, height of maximum diameter; MD, maximum diameter; SA, spire angle; SL, shell length. Apertural length (AL) and width (AW) can also be measured from *Conus* shells, although these were not extensively collected in this study.

perpendicular to the coiling axis, respectively, using standard digital calipers. Following Röckel *et al.* (1995), qualitative statements of SL represent the following ranges: very small (< 15 mm), small (15-25 mm), moderately small (25-35 mm), medium-sized (35-55 mm), moderately large (55-80 mm), and large (> 80 mm). Apertural height (AH) and height of maximum diameter (HMD) were measured perpendicular to the axis of coiling using a calipers modified by rhinoplasty (see Kohn & Riggs, 1975: fig. 4).

From these measurements (SL, MD, AH, and HMD), four ratios were computed to characterize shell shape: length-width ratio (LW = SL/MD), relative diameter (RD = MD/AH), position of maximum diameter (PMD = HMD/AH), and relative height of spire (RSH = [SL-AH]/SL). The last three ratios (RD, PMD, and RSH) were developed and utilized by Röckel *et al.* (1995) to describe *Conus* shell form. A fifth measurement, spire angle (SA), was collected using a General brand square head protractor (no. 17); this metric is equivalent to angle b of Kohn & Riggs (1975). SA and RSH are different measures of spire height; RSH is equivalent (in a practical sense) to SA only when RD (a measure of last-whorl shape) is held constant.

Two additional formulas are presented to further characterize and quantify shell shape as a function of shell size. The regressions $MD = b_1(SL) + a_1$ and $MD = b_2(AH) + a_2$ each demonstrate the relationship between the dependent variable maximum diameter (MD) and the independent variables shell length (SL) and aperture height (AH), respectively. The reader should note that SL and AH are not independent of one another, because AH constitutes a major component of SL.

In some cases, the relationship between the number of rows of pigmented elements (NRPE) along the length of the last whorl of the shell and shell size are characterized by the regression equation $NRPE = b_1(SL) + a_1$.

Protoconchs and the first several early postnuclear whorls were removed (using either a jeweler's saw or a powered Dremel saw) from the apices of some well-preserved fossil and modern *Conus* shells for study; some very small specimens were left intact. These were mounted on stubs observed and imaged using one of several scanning electron microscopes (SEMs) at the Cornell Center for Materials Research and the Cornell Integrated Microscopy Center. The diameters (in mm) and number of whorls of individual protoconchs were calculated from these images following the methodology of Jablonski & Lutz (1980: fig. 4; see Shuto, 1974, and Kohn & Perron, 1994). The boundary between the protoconch and the earliest postnuclear whorl was typically identified by a significant change in sculpturing, such as the onset of tuberculate early postnuclear whorls.

The specimens measured for this study portray the overall morphospace (as defined by the measurements collected and ratios calculated) occupied by each morphospecies as recognized largely using other criteria (*e. g.*, discrete shell characters). Most measured specimens are the best-preserved shells present in museum collections. As a result, sampling biases are likely present, resulting from both my choice of specimens for measurement and original collection biases (see below). Therefore, it is possible that some morphological forms could have been originally oversampled relative to others and thus, the measurement data presented here should not be assumed to represent random samples. Nevertheless, I made every effort to collect measurements from specimens representing both extreme and typical morphologies. Tables summarizing measurements from observed type specimens and summary statistics for all specimens measured are provided for most species. Many non-type specimens with

extreme morphologies are figured.

METHODOLOGY FOR SYNONYMIES

Synonymy lists are restricted to nominal taxa (both species names and first usages of genus-group names) that have been previously published as occurring in Plio-Pleistocene strata from the southeastern U. S., and in several cases the Dominican Republic or Jamaica. Nominal extant taxa that have not been reported in the literature as occurring in the study area as fossils are excluded from the synonymy lists presented here. Thus, the synonymy lists presented below – and particularly in the cases of extant taxa that possess Plio-Pleistocene fossil records – might lack many nominal taxon names that have been applied exclusively to extant *Conus* and have been recognized by other workers as synonymous. Such names have been excluded from the synonymy lists presented here because they are considered beyond the scope of this study, which focuses extensively on fossil material but little on Recent specimens. As an example of this methodology for synonymies, the fossil species *Conus presozoni* Olson & Petit, 1964, is considered here a junior synonym of the extant taxon *C. delessertii* Récluz, 1843. Most workers (*e. g.*, Walls, 1979) also recognize *C. sozoni* Bartsch, 1939, as a junior synonym of *C. delessertii*. The name *C. sozoni* is not known to have been applied in the literature to Plio-Pleistocene shell material from the southeastern U. S., however, and so is not presented here in the synonymy list for *C. delessertii*. The reader is referred to the extensive literature on modern *Conus* taxa for more complete synonymy lists for the extant taxa recognized here.

TREATMENT OF STRATIGRAPHIC UNCERTAINTY

Very few of the specimens examined for this study were originally collected *in situ* or as stratigraphically-located bulk samples; most were collected from spoil piles by many different collectors over the course of approximately the last 90 years. Assignment of age is problematic for specimens collected as spoil from localities bearing multiple strata, including formations. One example of such a locality was the former APAC quarry (also known as the Newburn, Warren Brothers, and Macasphalt pit; see Geary & Allmon, 1990, and Allmon, 1993) near Sarasota, Florida, where many specimens considered in this study were collected. Although the principal shell material exposed and mined at the APAC quarry was from the Pinecrest Beds of the Tamiami Formation, a small amount of the overlying Caloosahatchee Formation (Petuch's 1982 "Unit 1") was also exposed there (Allmon, 1993; see also discussion by Lyons, 1991). All measured *Conus* specimens from this locality are assumed to be from the Pinecrest Beds (unless otherwise noted), although I acknowledge that it is possible that a small number of *Conus* specimens from the overlying Caloosahatchee Formation are present in the Sarasota-area study samples.

An additional example is the "Star Ranch Pit" locality (UF locality PB014; Palm Beach County, Florida). All specimens studied from this locality come from spoil piles containing mixed material from two strata, the Caloosahatchee and overlying Bermont formations; no *in situ* exposures are present. Absolute determination of which specimens came from which formation, therefore, is not possible. Through biostratigraphic cross-referencing, however, it is sometimes possible to make reasonable assumptions regarding the stratigraphic assignments of taxa from localities containing mixed strata, such as is the case at the Star Ranch Pit. For instance, because sinistral *Conus* specimens (*C. adversarius* Conrad, 1840) are not known from localities preserving only material from the Bermont Formation, an assumption is made that sinistral cones from the Star Ranch Pit are from the Caloosahatchee Formation, which contains large numbers of sinistral cone shells at other localities.

ABBREVIATIONS OF REPOSITORY INSTITUTIONS

AMNH, Division of Paleontology, American Museum of Natural History, New York, New York, U. S. A.; ANSP, Academy of Natural Sciences, Philadelphia, Pennsylvania, U. S. A.; BMNH, The Natural History Museum, London, England [formerly the British Museum (Natural History)]; CM, Section of Invertebrate Paleontology, Carnegie Museum of Natural History, Pittsburg, Pennsylvania, U. S. A.; FGS, Florida Geological Survey, Tallahassee, Florida, U. S. A.; FLMNH, Florida Museum of Natural History, University of Florida, Gainesville, U. S. A.; MCZ, Department of Invertebrate Paleontology, Museum of Comparative Zoology, Cambridge, Massachusetts, U. S. A.; PRI, Paleontological Research Institution, Ithaca, New York, U. S. A.; TU, Tulane University, New Orleans, Louisiana, U. S. A.; UF, Division of Invertebrate Paleontology, Florida Museum of Natural History, Gainesville, Florida, U. S. A.; UF(MAL), Division of Malacology and Invertebrate Zoology, Florida Museum of Natural History, Gainesville, Florida, U. S. A.; USGS, United States Geological Survey, Washington, DC, U. S. A.; USNM, Department of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, DC, U. S. A.; VMNH, Virginia Museum of Natural History, Martinsville, Virginia, U. S. A.

RESULTS

From an original pool of 84 available nominal taxa, I accept 19 here as representing morphospecies (hereafter referred to as species) occurring in the Plio-Pleistocene of the southeastern U. S. These 19 taxa belong to previously described modern (n = 7) or fossil (n = 12) *Conus*; one new species was discovered during this study and is described below as *C. burnetti*. An

identification key to these 20 species is provided immediately below. Three additional and previously described fossil taxa of less certain status (*C. parkeri* Richards & Harbison, 1947, *C. hertwecki* Petuch, 1988, and *C. protocardinalis* Petuch, 1991) are based only on their type specimens; they are described, discussed, and figured below, but are not diagnosed or included in the key. To aid in identification, I show representative specimens of all 23 species in Text-fig. 4. Further, I present the apparent stratigraphic ranges of these species in Table 3.

IDENTIFICATION KEY

This identification key treats all taxa described herein, with the exceptions of *Conus parkeri* Richards & Harbison, 1947, *C. hertwecki* Petuch, 1988, and *C. protocardinalis* Petuch, 1991, which are based only upon their type specimens. This key should be used in conjunction with Text-fig. 4 to identify species. Morphological terminology generally follows that used by Röckel *et al.* (1995). See Text-fig. 2 for illustration of the new terminology used to describe subsutural flexure character states. Maximum shell length (SL) values correspond to fossil shells, not modern specimens. Color patterns are only included as characters in this key when they are commonly preserved and visible in normal light (as opposed to under ultraviolet light).

Taxon occurrence records in Plio-Pleistocene deposits from the southeastern U. S. are summarized as follows (also see Tables 2 and 3). Pliocene deposits: CR, Chowan River Formation; D, Duplin Formation; JB, Jackson Bluff Formation; P, Pinecrest Beds of the Tamiami Formation; RM, Raysor Marl; Y, Yorktown Formation. Plio-Pleistocene deposits: C, Caloosahatchee Formation; JC, James City Formation; N, Nashua Formation; W, Waccamaw Formation. Pleistocene deposits: A, Anastasia Formation; B, Bermont Formation; FT, Fort Thompson Formation. Modern occurrence: R, Recent.

"Frequency observed" provides a qualitative assessment of how rare or common a particular species is among the 20,000+ museum specimens observed (see Appendix): very rare, 1-10 specimens observed; rare, 11-100 specimens observed; uncommon, 101-500 specimens observed; common, 500-1,000 specimens observed; very common, more than 1,000 specimens observed. These values are not meant to be read as measures of biological abundance, but rather are meant to provide caution for the reader during the process of species identification. Further, the reader should be aware that intraspecific abundance values can vary considerably across space and across stratigraphic boundaries.

1–Shell sinistral:
- ***Conus adversarius*** Conrad, 1840 (p. 24, Pl. 7, Figs 1-18; Pl. 8, Figs 1-8; Pl. 9, Figs 1-17; Pl. 10, Figs 1-11; Pl. 11, Figs 1-4).
- Maximum SL = 189 mm.
- Occurrence: Y, D, RM, CR, JB, P, JC, W, N, and C.
- Frequency observed: Very common.

1'–Shell dextral:
- **Go to 2**.

2–Incised spiral grooves extending from base of shell (anterior end) to at least half-way up last whorl:
- **Go to 3**.

2'–Incised spiral grooves either absent or restricted to the anterior end of the last whorl:
- **Go to 6.**

3–Subsutural flexure shallow:
- **Go to 4**.

3'–Subsutural flexure symmetrically curved:
- **Go to 5**.

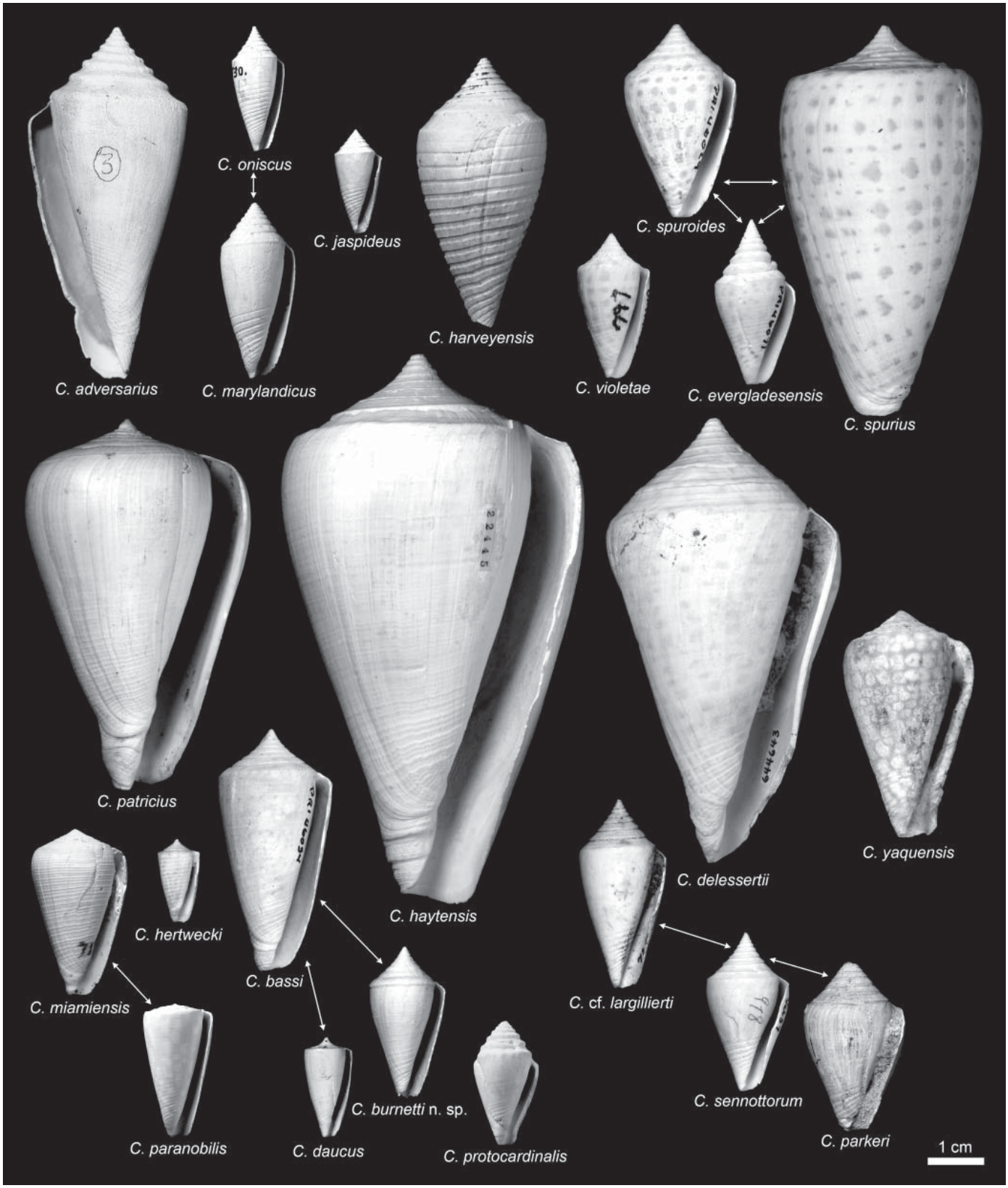
4–Subsutural flexure shallow and flat or gently curved; shoulder of early postnuclear whorls angulate:
- ***Conus marylandicus*** Green, 1830 (p. 23, Pl. 6, Figs 1-18).
- Maximum SL = 39 mm.
- Occurrence: Y, D, JB, P, and questionably in N and C.
- Frequency observed: Uncommon.

4'–Subsutural flexure shallow and V-shaped, shoulder of early postnuclear whorls carinate:
- ***Conus oniscus*** Woodring, 1928 (p. 34, Pl. 16, Figs 1-21).
- Maximum SL = 42 mm.
- Occurrence: RM, JB, P, JC, W, C, and questionably in N and B.
- Frequency observed: Very common.

5–Sutural ramp unornamented, early postnuclear whorls smooth, shell small:
- ***Conus jaspideus*** Gmelin, 1791 (p. 17, Pl. 1, Figs 1-22; Pl. 2, Figs 1-12).
- Maximum SL = 31 mm.
- Occurrence: P, W, C, B, FT, A, and R.
- Frequency observed: Very common.

5'–Sutural ramp with several raised spiral threads, early postnuclear whorl tuberculate, shell medium-sized:
- ***Conus harveyensis*** Mansfield, 1930 (p. 35, Pl. 15, Figs 17-19).
- Maximum SL = 52 mm.
- Occurrence: JB.
- Frequency observed: Very rare.

6–Sutural ramp ornamented with raised spiral threads or incised spiral grooves on at least some whorls:



Text-fig. 4. Identification guide to the 23 *Conus* species recognized here as occurring in Plio-Pleistocene deposits from the southeastern USA. All specimens figured here are also figured in plates; see corresponding figure captions for specimen details. Arrows connect similar taxa that can be mistaken for one another.

Table 3. Species occurrences within individual stratigraphic units belonging to "time-slices" (*sensu* Allmon *et al.*, 1996) utilized here. Strata within the YDJP slice include (north to south) the Yorktown (Y), Duplin (D), Jackson Bluff (JB), and Tamiami (P, for Pinecrest Beds of that formation) formations. Strata within the JWC slice include (north to south) the James City (JC), Waccamaw (W), and Caloosahatchee (C) formations. Time-equivalent strata within the YDJP and JWC slices are arranged from left to right in the order that they outcrop in a north-to-south trajectory across the study area. Two additional time slices are represented by individual formations in Florida; these are the Bermont Formation (B) and the Fort Thompson Formation (FT). The fossil species that persist to the Recent (R) are given in the final column; an estimated 21 species of *Conus* occur off of the coast of Florida today (Camp *et al.*, 1998), but 14 of these do not have Plio-Pleistocene fossil records. Not all fossil *Conus*-bearing strata considered in this table are included in this chart (*e.g.*, compare Table 2). Definite occurrences are marked by an "x"; ambiguous or questionable occurrence records (with the exceptions of *Conus hertwecki* Petuch, 1988, and *C. protocardinalis* Petuch, 1991) are marked by a "?" and are not included in diversity counts (see text for discussions of questionable occurrence records for individual species). The taxon *C. parkeri* Richards & Harbison, 1947, reportedly from the Caloosahatchee Formation (Richards & Harbison, 1947), is included in the table, but is likely equivalent to *C. sennottorum* Rehder & Abbot, 1951, so is not included in the diversity count.

Time Slice	**YDJP**				**JWC**			**Bermont (FL)**	**Ft. Thompson (FL)**	**Recent**
***Conus* Taxon**	**Y**	**D**	**JB**	**P**	**JC**	**W**	**C**	**B**	**FT**	**R**
spurius Gmelin, 1791	-	-	-	x	-	-	x	x	x	x
jaspideus Gmelin, 1791	-	-	-	x	-	x	x	x	x	x
daucus Hwass in Bruguière, 1792	-	-	-	?	-	-	x	?	-	x
marylandicus Green, 1830	x	x	x	x	-	-	?	-	-	-
adversarius Conrad, 1840	x	x	x	x	x	x	x	-	-	-
patricius Hinds, 1843	-	-	-	x	-	-	?	-	-	x
delessertii Récluz, 1843	-	x	-	x	-	x	?	x	-	x
largillierti (cf.) Kiener, 1845	-	x	x	x	x	x	x	x	x	x
haytensis Sowerby II, 1850	-	-	-	x	-	-	?	-	-	-
yaquensis Gabb, 1873	-	-	-	x	-	-	-	-	-	-
oniscus Woodring, 1928	-	-	x	x	x	x	x	?	-	-
harveyensis Mansfield, 1930	-	-	x	-	-	-	-	-	-	-
parkeri Richards & Harbison, 1947	-	-	-	-	-	-	x	-	-	-
sennottorum Rehder & Abbott, 1951	-	-	-	x	-	-	?	x	-	x
spuroides Olsson & Harbison, 1953	-	-	-	?	-	-	x	?	-	-
miamiensis Petuch, 1986	-	-	-	x	-	-	?	-	-	-
hertwecki Petuch, 1988	-	-	-	x	-	-	-	-	-	-
violetae Petuch, 1988	-	-	-	x	-	-	-	-	-	-
bassi Petuch, 1991	-	-	?	x	-	-	?	?	-	-
evergladesensis Petuch, 1991	-	-	-	-	-	-	-	x	-	-
paranobilis Petuch, 1991	-	-	-	x	-	-	-	-	-	-
protocardinalis Petuch, 1991	-	-	-	-	-	-	x	-	-	-
burnetti n. sp.	-	-	-	x	-	-	-	-	-	-
Total Taxa	2	4	5	17	3	5	8	6	3	7

- **Go to 7**.

6'–Sutural ramp lacking spiral ornamentation:

- **Go to 14**.

7–Subsutural flexure symmetrically curved:

- **Go to 8**.

7'–Subsutural flexure asymmetrically curved or diagonal:

- **Go to 10**.

8–Incised spiral grooves at base (anterior end) of shell; spire height moderate to high:

- ***Conus delessertii*** Récluz, 1843 (p. 28, Pl. 12, Figs

1-13).
- Maximum SL = 105 mm.
- Occurrence: D, P, W, B, R, and questionably in C.
- Frequency observed: Uncommon.

8'–Raised spiral threads at base (anterior end) of shell; spire height low to moderate:
- **Go to 9**.

9–Last whorl outline slightly sigmoidal; maximum shell length very large:
- ***Conus haytensis*** G. B. Sowerby II, 1850 (p. 32, Pl. 14, Figs 1-7).
- Maximum SL = 179 mm.
- Occurrence: P and questionably in C.
- Frequency observed: Rare.

9'–Last whorl outline straight to slightly convex; maximum shell length medium:
- ***Conus paranobilis*** Petuch, 1991 (p. 43, Pl. 20, Figs 10-22).
- Maximum SL = 52 mm.
- Occurrence: P.
- Frequency observed: Rare.

10–Subsutural flexure asymmetrically curved:
- **Go to 11**.

10'–Subsutural flexure diagonal:
- **Go to 13**.

11–Most teleoconch whorls tuberculate; last whorl with one or two rows of fine spiral beads below shoulder:
- ***Conus violetae*** Petuch, 1988 (p. 40, Pl. 18, Figs 11-19).
- Maximum SL = 36 mm.
- Occurrence: P.
- Frequency observed: Rare.

11'–Most teleoconch whorls smooth (earliest postnuclear whorls can be weakly tuberculate):
- **Go to 12**.

12–Shoulder with a ridge-forming carina:
- ***Conus burnetti*** n. sp. (p. 45, Pl. 19, Figs 13-24).
- Maximum SL = 34 mm.
- Occurrence: P.
- Frequency observed: Rare.

12'–Shoulder lacking a ridge-forming carina; early postnuclear whorls weakly tuberculate:
- ***Conus bassi*** Petuch, 1991 (p. 41, Pl. 19, Figs 1-12).
- Maximum SL = 43 mm.
- Occurrence: P and questionably in JB, C, and B.
- Frequency observed: Uncommon.

13–Teleoconch sutural ramps concave; raised spiral threads on last whorl usually restricted to base (anterior end) of shell:
- ***Conus daucus*** Hwass, in Bruguière, 1792 (p. 21, Pl. 5, Figs 1-23).
- Maximum SL = 29 mm.
- Occurrence: C, R, and questionably in P and B.
- Frequency observed: Uncommon.

13'–Teleoconch sutural ramps sigmoidal; raised spiral threads on last whorl usually extending from base (anterior end) of shell to shoulder:
- ***Conus miamiensis*** Petuch, 1986 (p. 39, Pl. 18, Figs 1-8).
- Maximum SL = 36 mm.
- Occurrence: P and questionably in C.
- Frequency observed: Uncommon.

14–Base (anterior end) of shell with incised spiral grooves:
- **Go to 15**.

14'–Raised spiral threads at base (anterior end) of shell, sometimes extending to shoulder:
- **Go to 16**.

15–Subsutural flexure symmetrically curved; outline of last whorl flat to slightly convex in profile:
- ***Conus* cf. *largillierti*** Kiener, 1845 (p. 30, Pl. 13, Figs 1-28).
- Maximum SL = 66 mm.
- Occurrence: D, CR, JB, P, JC, W, N, C, B, FT, A, and R.
- Frequency observed: Very common.

15'–Subsutural flexure asymmetrically curved; outline of last whorl usually sigmoidal:
- ***Conus sennottorum*** Rehder & Abbott, 1951 (p. 36, Pl. 17, Figs 1-8).
- Maximum SL = 37 mm.
- Occurrence: P, B, R, and questionably in C.
- Frequency observed: Rare.

16–Last whorl with a reticulate (net-like) color pattern that can usually be observed in normal light (color of pigment typically preserved as blue or orange); subsutural flexure diagonal:
- ***Conus yaquensis*** Gabb, 1873 (p. 33, Pl. 15, Figs 1-16).
- Maximum SL = 63 mm.
- Occurrence: P.
- Frequency observed: Common.

16'–Last whorl lacking reticulate color pattern; subsutural flexure symmetrically or asymmetrically curved:
- **Go to 17**.

17–Shoulder round with a carina at its junction with the sutural ramp:
- ***Conus patricius*** Hinds, 1843 (p. 27, Pl. 11, Figs 5-14).
- Maximum SL = 66 mm.
- Occurrence: P and questionably in C.
- Frequency observed: Very rare.

17'–Shoulder angulate or subangulate and lacking a carina:
- **Go to 18**.

18–Last whorl with color pattern typically visible in normal light and consisting of 13 or fewer rows of spiral blotches or dots:
- ***Conus spuroides*** Olsson & Harbison, 1953 (p. 37, Pl. 17, Figs 11-22).
- Maximum SL = 61 mm.
- Occurrence: C and questionably P and B.
- Frequency observed: Uncommon.

18'–Last whorl with color pattern typically visible in normal light and consisting of *ca.* 20 or more rows of spiral blotches or dots:
- **Go to 19**.

19–Spire height typically high; outline of last whorl often sigmoidal; shell moderately small to medium-sized:
- ***Conus evergladesensis*** Petuch, 1991 (p. 42, Pl. 20, Figs 1-9).
- Maximum SL = 44 mm.
- Occurrence: B.
- Frequency observed: Uncommon.

19'–Spire height low to high; outline of last whorl convex; shell often large:
- ***Conus spurius*** Gmelin, 1791 (p. 19, Pl. 3, Figs 1-14; Pl. 4, Figs 1-14).
- Maximum SL = 100 mm.
- Occurrence: P, C, B, FT, and R.
- Frequency observed: Very common.

SYSTEMATIC PALEONTOLOGY

Order **NEOGASTROPODA** Wenz, 1938
Family **CONIDAE** Fleming, 1822
Genus ***CONUS*** Linnaeus, 1758

Type species.–*Conus marmoreus* Linnaeus, 1758: 712 (by subsequent designation; Children, 1823)

Conus jaspideus Gmelin, 1791
Pl. 1, Figs 1-22; Pl. 2, Figs 1-13; Table 4

Conus jaspideus Gmelin, 1791: 3387, no. 28; Kamp, 1967: 30-35, pl. 4, figs 6-15.
Conus (*Conasprella*) *jaspideus* (Gmelin, 1791). Petuch, 1988: pl. 24, fig. 13; 1994: pl. 94, fig. n.
Jaspidiconus jaspideus (Gmelin, 1791). Petuch, 2004: 292-293.
?*Conus* (*Conasprella*) *harveyensis* (Mansfield, 1930). Petuch, 1994: pl. 94, fig. m (non Mansfield, 1930).
Conus (*Conasprella*) *hyshugari* Petuch, 1994: 356-357, pl. 94, fig. i.
Conus (*Conasprella*) *jaclynae* Petuch, 1994: 357, pl. 94, fig. h.
Conus (*Conasprella*) *laurenae* Petuch, 1994: 357, pl. 94, fig. o.
Conus (*Conasprella*) *marymansfieldae* Petuch, 1994: 357-358, pl. 94, fig. e.
Conus (*Conasprella*) *maureenae* Petuch, 1994: 358, pl. 94, fig. g.
Conus (*Conasprella*) *palmbeachensis* Petuch, 1994: 358, pl. 94, fig. l.
Conus pealii Green, 1830: 123, pl. 3, fig. 3; Dall, 1890: 27.
Jaspidiconus pfluegeri Petuch, 2004: 293, pl. 97, figs f, i.
?*Conus pygmaeus* Reeve, 1844. Dall, 1890: 27 (non Reeve, 1844).
Conus (*Conasprella*) *sarasotaensis* Petuch, 1994: 358-359, pl. 91, fig. l.
Conus stearnsii Conrad, 1869: 104-105, pl. 10, figs 1, 1a; Smith, 1930: 281-282, figs 3-4; Olsson & Harbison, 1953: 174-175, pl. 26, figs 5, 5a; DuBar, 1958: 185.
Conus (*Conasprella*) *susanae* Petuch, 1994: 359, pl. 94, fig. j.
Conus verrucosus Hwass in Bruguière, 1792: 708; Smith, 1936: 136, pl. 9, fig. 11.
Conus (*Conasprella*) *wilsoni* Petuch, 1994: 359, pl. 94, fig. k.

Diagnosis.–Shell small; protoconch paucispiral; early postnuclear whorls lacking tubercles; teleoconch sutural ramps unornamented; subsutural flexure symmetrically curved; incised spiral grooves extending from base of shell to at least halfway up last whorl.

Description.–Shell dextral, small. Last whorl conical to broadly and/or ventricosely conical; outline straight to convex. Shoulder carinate in early whorls, carinate to angulate in later whorls, sometimes undulate (especially in specimens with granules on the last whorl). Spire height moderate to high; outline flat to concave. Larval shell of *ca.* 1.9 whorls, maximum diameter *ca.* 0.6 mm. Teleoconch sutural ramps concave. Subsutural flexure symmetrically curved; depth *ca.* 1.5 times width. Last whorl with incised spiral grooves extending from anterior end of shell to at least halfway up last whorl, sometimes reaching shoulder. In some specimens, intervening ribs are granulose, with larger granules forming toward the shoulder. Color pattern on last whorl often consisting of *ca.* 20 rows of spiral dots and/or dashes, which sometimes merge to form axial streaks; teleoconch whorls with radial blotches.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 94 fossil and 30 modern specimens of *Conus jaspideus*, including type specimens listed below, are summarized in Table 4. In the fossil shells, MD = 0.50(SL) – 0.23 (R^2 = 0.89) and MD = 0.65(AH) + 0.49 (R^2 = 0.82). In the modern shells, MD = 0.56(SL) – 1.14 (R^2 = 0.93) and MD = 0.74(AH) – 0.52 (R^2 = 0.93).

Types observed.–Clench (1942) designated Martini's (1773) poor figure (reproduced by Kohn, 1992: fig. 87) as

Table 4. Statistical summary of morphometric data collected from type and other specimens of fossil and modern *Conus jaspideus* Gmelin, 1791. H, holotype; L, lectotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
Type Specimens								
UF 66425 (H, *C. sarasotaensis* Petuch, 1994)	24.7	13.6	19.0	17.2	90	0.72	0.91	0.23
UF 66435 (H, *C. marymansfieldae* Petuch, 1994)	23.7	11.1	16.4	14.7	63	0.68	0.90	0.31
UF 66436 (H, *C. maureenae* Petuch, 1994)	28.5	11.9	19.2	17.8	59	0.62	0.93	0.33
UF 66437 (H, *C. jaclynae* Petuch, 1994)	30.7	13.8	21.9	20.2	67	0.63	0.92	0.29
UF 66438 (H, *C. hyshugari* Petuch, 1994)	28.2	14.2	19.1	17.5	69	0.74	0.92	0.32
UF 66439 (H, *C. susanae* Petuch, 1994)	21.0	11.5	16.2	14.7	84	0.71	0.91	0.23
UF 66440 (H, *C. palmbeachensis* Petuch, 1994)	25.6	13.4	18.6	15.9	77	0.72	0.85	0.27
UF 66441 (H, *C. laurenae* Petuch, 1994)	25.2	13.4	20.1	17.7	96	0.67	0.88	0.20
UF 66442 (H, *C. wilsoni* Petuch, 1994)	19.8	9.7	14.2	12.9	74	0.68	0.91	0.28
All Specimens (n = 94)								
Mean	20.3	9.9	14.5	13.3	72.7	0.68	0.92	0.28
Median	20.0	9.7	14.4	13.2	72.0	0.67	0.92	0.29
Minimum	9.9	4.4	6.5	6.0	54	0.57	0.85	0.20
Maximum	31.1	14.8	23.4	20.3	96	0.84	0.95	0.35
MODERN SPECIMENS								
Type Specimens								
AMNH 308069 (H, *Jaspidiconus pfluegeri* Petuch, 2004)	24.4	12.4	17.5	14.2	76	0.71	0.81	0.28
AMNH 308070 (P, *Jaspidiconus pfluegeri* Petuch, 2004)	23.0	12.4	17.1	15.1	86	0.72	0.88	0.26
ANSP 34158 (L, *C. stearnsii* Conrad, 1869)	17.6	7.9	13.0	11.8	70	0.61	0.91	0.26
All Specimens (n = 30)								
Mean	18.1	9.0	12.9	11.6	72.2	0.70	0.90	0.29
Median	18.0	8.9	12.6	11.4	71.0	0.70	0.90	0.29
Minimum	12.5	5.6	8.7	7.8	60	0.61	0.81	0.21
Maximum	24.4	12.9	17.6	16.2	87	0.78	0.93	0.34

the holotype for the species. Observed type specimens and associated morphometric data are listed in Table 4 and include the holotypes of *Conus jaclynae* Petuch, 1994 (UF 66437; Pl. 1, Figs 1-2), *C. hyshugari* Petuch, 1994 (UF 66438; Pl. 1, Figs 3-4), *C. maureenae* Petuch, 1994 (UF 66436; Pl. 1, Figs 5-6), *C. laurenae* Petuch, 1994 (UF 66441; Pl. 1, Figs 7-8), *C. palmbeachensis* Petuch, 1994 (UF 66440; Pl. 1, Figs 9-10), *C. sarasotaensis* Petuch, 1994 (UF 66425; Pl. 1, Figs 11-12), *C. susanae* Petuch, 1994 (UF 66439; Pl. 1, Figs 13-14), *C. marymansfieldae* Petuch, 1994 (UF 66435; Pl. 1, Figs 15-16), *C. wilsoni* Petuch, 1994 (UF 66442; Pl. 1, Figs 17-18), *C. stearnsii* Conrad, 1869 (ANSP 34158; Pl. 1, Figs 19-20), and *Jaspidiconus pfluegeri* Petuch, 2004 (AMNH 308069; Pl. 1, Figs 21-22); a paratype of *J. pfluegeri* (AMNH 308070) was also observed, although is not figured here.

Other material examined.–More than 260 lots (more than 2,500 specimens) of fossil and 11 lots of modern (80 specimens) *Conus jaspideus*. Fossil lots examined are listed in the Appendix. Pl. 2 demonstrates the morphological characters of fossil (Figs 1-8, 11-13) and modern (Figs 9-10) specimens of *C. jaspideus*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Plio-Pleistocene specimens of *Conus jaspideus* are common in Florida, but are nearly absent to the north; only one lot (two specimens) of *C. jaspideus* (UF 112491) was observed from the Waccamaw Formation of North Carolina. In Florida, *C. jaspideus* is known from the Tamiami (Pinecrest Beds), Caloosahatchee, Bermont, Fort Thompson, and Anastasia formations. Today, *C. jaspideus* is present in Florida, the Gulf of Mexico, the Caribbean, and south to Brazil at depths of 0.0-51.0 m (Costa, 1994).

Remarks.–I accept Costa's (1994) treatment of extant

members of the *Conus jaspideus* complex, which recognized only three distinct species, *C. jaspideus*, *C. mindanus* Hwass in Bruguière, 1792, and *C. pusio* Hwass in Bruguière, 1792. For the first time, Costa analyzed soft-part anatomy (including penis morphology and body coloration) in conjunction with shell characters when circumscribing these species, which have very similar shells. Costa considered *C. verrucosus* Hwass in Bruguière, 1792, *C. pealii* Green, 1830, and *C. stearnsii* to be junior synonyms of *C. jaspideus*; all four of these morphologies are present in the Plio-Pleistocene fossil record of Florida.

Costa (1994) stated that the presence of a carinated shoulder on early postnuclear whorls can be used to distinguish *Conus jaspideus* from *C. mindanus* and *C. pusio* (where it is angular or rounded, respectively). This feature was observed in several juvenile fossil specimens of *C. jaspideus* that had protoconchs preserved. Because the earliest postnuclear whorls of many fossil specimens tend to be highly eroded, however, it is possible that specimens more closely matching *C. mindanus* and/or *C. pusio* were observed during the course of this study, but were not correctly recognized. Costa further stated that it is not known whether *C. mindanus* or *C. pusio* have fossil records, but did recognize *C. jaspideus* as occurring in Plio-Pleistocene strata.

I consider ten of Petuch's taxa to be synonyms of *Conus jaspideus*. Petuch (1994, 2004) himself noted the similarities between *C. palmbeachensis*, *C. wilsoni*, *Jaspidiconus pfluegeri*, and *C. jaspideus*. Some members of the group *C. sarasotaensis*, *C. marymansfieldae*, and *C. susanae* were compared by Petuch (1994) to one another, as were some members of the group *C. hyshugari*, *C. maureenae*, *C. jaclynae*, and *C. laurenae*, but no members of either of these two groups were compared by Petuch with *C. jaspideus*, despite their strong similarities to the latter taxon as circumscribed above. Petuch's figured (1994: pl. 94, fig. m) specimen of *C. harveyensis* Mansfield, 1930, is poor, but appears to share more similarities with *C. jaspideus* than with *C. harveyensis* as circumscribed here (see p. 35). Finally, Dall (1890) did not provide a figure for any of the fossils he considered to belong to *C. pygmaeus* Reeve, 1843, but his description and comparison to *C. pealii* are suggestive of *C. jaspideus*, prompting its recognition here as a possible synonym of the latter species.

Conus spurius Gmelin, 1791
Pl. 3, Figs 1-14; Pl. 4, Figs 1-14; Table 5

Conus spurius Gmelin, 1791: 3396, no. 67; Kamp, 1967: 35, pl. 5, figs 1-4.
Conus (*Lithoconus*) *spurius* (Gmelin, 1791). Petuch, 1994: pl. 93, fig. f.
Conus (*Lithoconus*) *spurius* (Gmelin, 1791) subspecies. Petuch, 1988: pl. 23, fig. 1.
Conus cherokus Olsson & Petit, 1964: 538-539, pl. 79, figs 3, 3a, 3b.
Conus (*Lithoconus*) *cherokus* (Olsson & Petit, 1964). Petuch, 1994: pl. 93, fig. a.
Spuriconus cherokus (Olsson & Petit, 1964). Petuch, 2004: pl. 56, fig. c.
Conus (*Lithoconus*) *jeremyi* Petuch, 1994: 354-355, pl. 93, fig. d.
Conus lemoni Petuch, 1990: 103, figs. 16, 17.
Conus (*Lithoconus*) *lemoni* (Petuch, 1990). Petuch, 1994: pl. 92, fig. l.
Spuriconus lemoni (Petuch, 1990). Petuch, 2004: pl. 90, fig. b.
Conus (*Lithoconus*) *martinshugari* Petuch, 1994: 355, pl. 93, fig. h.
Conus (*Lithoconus*) *micanopy* Petuch, 1994: 355-356, pl. 93, fig. g.
Spuriconus micanopy (Petuch, 1994). Petuch, 2004: pl. 89, fig. b.
?*Conus mercati*? Brocchi, 1814. Heilprin, 1886: 83.
Conus proteus Hwass in Bruguière, 1792: 682, no. 72, pl. 334, figs 1-2; Dall, 1890: 26.
Conus (*Lithoconus*) *spengleri* Petuch, 1991: 53-54, pl. 10, figs 2-3; 1994, pl. 93, figs j-k.
Spuriconus spengleri (Petuch, 1991). Petuch, 2004: pl. 86, fig. e.
Conus (*Lithoconus*) *streami* Petuch, 1994: 356, pl. 93, fig. e.
Spuriconus streami (Petuch, 1994). Petuch, 2004: pl. 66, fig. k.

Diagnosis.–Shell often large; outline of last whorl convex; teleoconch sutural ramps lacking spiral ornamentation; subsutural flexure asymmetrically curved; last whorl with raised spiral threads at anterior end, sometimes extending to shoulder; last whorl with color pattern typically visible in normal light and consisting of *ca.* 20 or more spiral rows of dots, dashes, or blotches, which can coalesce to form axial streaks.

Description.–Shell dextral, medium to large. Last whorl conical to broadly and/or ventricosely conical; outline convex. Shoulder angulate to subangulate. Spire low to high (generally higher in smaller individuals); outline concave. Larval shell of *ca.* two whorls, maximum diameter 0.9 mm. First several postnuclear whorls tuberculate (although these are rarely preserved). Teleoconch sutural ramps often sigmoidal in profile, forming an adaxial ridge, although can also be flat. Subsutural flexure asymmetrically curved, of moderate depth. Last whorl with raised spiral threads usually restricted to anterior third, although sometimes extending to shoulder. Color pattern on last whorl highly variable, but generally consisting of *ca.* 6-30 rows of spiral dots, dashes, or blotches, which sometimes coalesce to form axial streaks; teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 277 fossil and 50 modern shells of *Conus spurius*, including the type specimens listed below, are summarized in Table 5. In fossil *C. spurius*, MD = 0.56(SL) – 1.00 (R^2 = 0.98) and MD = 0.61(AH) + 1.39 (R^2 = 0.99). In the modern shells, MD = 0.60(SL) – 2.31 (R^2 = 0.99) and MD = 0.65(AH) + 0.42 (R^2 = 0.99).

Number of rows of pigmented elements as a function of shell

Table 5. Statistical summary of morphometric data collected from type, fossil, and modern specimens of *Conus spurius* Gmelin, 1791. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
Type Specimens								
USNM 644645 (H, *C. cherokus* Olsson & Petit, 1964)	70.7*	35.6	60.0	52.2	105	0.59	0.87	0.15
CM 35734 (H, *C. lemoni* Petuch, 1990)	55.9	33.1	48.8	42.5	126	0.68	0.87	0.13
CM 35719 (H, *C. spengleri* Petuch, 1991)	67.5	36.5	50.2	44.6	97	0.73	0.89	0.26
CM 35720 (P, *C. spengleri* Petuch, 1991)	45.3	24.4	35.7	31.3	98	0.68	0.88	0.21
UF 66431 (H, *C. jeremyi* Petuch, 1994)	30.7	16.7	24.9	22.2	99	0.67	0.89	0.19
UF 66434 (H, *C. martinshugari* Petuch, 1994)	77.7	43.4	68.2	59.2	127	0.64	0.87	0.12
UF 66433 (H, *C. micanopy* Petuch, 1994)	87.5	50.1	78.5	70.7	135	0.64	0.90	0.10
UF 66432 (H, *C. streami* Petuch, 1994)	60.1	33.6	51.6	44.7	115	0.65	0.87	0.14
All Specimens (n = 277)								
Mean	52.0	27.9	43.8	37.3	106.4	0.64	0.85	0.17
Median	49.9	26.5	41.3	35.2	105	0.64	0.85	0.16
Minimum	20.6	10.3	16.0	14.0	82	0.58	0.79	0.06
Maximum	99.8	55.1	93.7	80.1	149	0.73	0.92	0.26
MODERN SPECIMENS								
All Specimens (n = 50)								
Mean	45.6	24.8	37.4	32.3	102.8	0.66	0.86	0.19
Median	45.3	24.2	37.3	32.5	104	0.67	0.86	0.18
Minimum	17.4	7.8	12.7	11.8	65	0.61	0.83	0.09
Maximum	87.2	46.9	71.4	63.4	133	0.72	0.93	0.33

* = Slight specimen breakage prevented accurate measurement.

size.–The relationship between number of rows of spiral dots, dashes, or blotches and shell size in fossil *Conus spurius* is described by the equation NRPE = 0.17(SL) + 4.87 (R^2 = 0.48; n = 75).

Types observed.–Clench (1942) selected Gualtieri's (1742: pl. 21, fig. d) figure as the representation of the lectotype of *Conus spurius* (see also Kohn & Anderson, 2008). Observed type specimens and associated morphometric data are listed in Table 5 and include the holotypes of *C. cherokus* Olsson & Petit, 1964 (USNM 644645; Pl. 3, Figs 1-2), *C. micanopy* Petuch, 1994 (UF 66433; Pl. 3, Figs 3-4), *C. martinshugari* Petuch, 1994 (UF 66434; Pl. 3, Figs 5-6), *C. streami* Petuch, 1994 (UF 66432; Pl. 3, Figs 7-8), *C. lemoni* Petuch, 1990 (CM 35734; Pl. 3, Figs 9-10), *C. spengleri* Petuch, 1991 (CM 35719; Pl. 3, Figs 11-12; paratype CM 35720 was also observed, but is not figured here), and *C. jeremyi* Petuch, 1994 (UF 66431; Pl. 3, Figs 13-14).

Other material examined.–More than 290 lots (more than 2,000 specimens) of fossil *Conus spurius* from the collections of the FLMNH and PRI. An additional 16 lots (99 specimens) that could not be differentiated from *C. spuroides* Olsson & Harbison, 1953, were also observed. Fossil specimens observed are listed in the Appendix. Pl. 4 demonstrates the morphological characters of modern (Figs 1-2, 13-14) and fossil (Figs 3-12) *C. spurius*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Fossil shells of *Conus spurius* are common in exposures of the Tamiami Formation (Pinecrest Beds), Caloosahatchee Formation, and Bermont Formation. One specimen (UF 81074) was observed from the Jackson Bluff Formation and two specimens were observed from the Fort Thompson Formation (PRI 53706 and UF 42323). This taxon is not known from strata north of Florida. Today, *C. spurius* is common throughout the Caribbean region, but (following the pattern observed in fossil shells) is not known to occur north of Florida (Rosenberg, 2005).

Remarks.–*Conus spurius* is most similar to the sometimes co-occurring species *C. spuroides* Olsson & Harbison, 1953 and *C. evergladesensis* Petuch, 1991. Similarities among these three taxa include weakly tuberculate early postnuclear whorls,

unornamented sutural ramps, asymmetrically curved subsutural flexures (although the subsutural flexure is occasionally nearly symmetrically curved in *C. spuroides*), raised spiral threads on the last whorl, and presence of multiple rows of spiral dots, dashes, or blotches on the last whorl, which are typically visible in normal light. These taxa are best distinguished by their overall shell shapes, although continuous variation in shape metrics can sometimes make such separations difficult, particularly between some specimens of *C. spurius* and *C. spuroides*. Compared with *C. spuroides*, shells of fossil *C. spurius* usually have narrower last whorls (mean RD = 0.64, range 0.58-0.73, n = 277, vs. 0.71, range 0.67-0.77, n = 72) and shorter spires (mean RSH = 0.17, range 0.06-0.26, n = 277 , vs. 0.22, range 0.16-0.30, n = 72). This pattern can also be used to separate shells of *C. spurius* from *C. evergladesensis*, which has mean RD and RSH values of 0.75 (range 0.67-0.79, n = 49) and 0.29 (range 0.21-0.38, n = 49), respectively. Shells of *C. spurius* also often have more rows of spiral color elements (up to *ca.* 30) than specimens of *C. spuroides* (which usually have no more than *ca.* 13); because the maximum number of such rows is intermediate in *C. evergladesensis* (up to *ca.* 20 rows), this character is less reliable for distinguishing this taxon from the other two.

The name *Conus proteus* Hwass in Bruguière, 1792, was applied to fossil material from the study area by Dall (1890), but this name is a junior synonym of *C. spurius* (Kohn, 1992). Heilprin (1886: 83) doubtfully applied the name "*Conus Mercati* Brocchi?" (Brocchi, 1814), a Pliocene species from the Mederterranean region (Kohn, 1992), to fossil material from Florida, but did not figure a specimen. Heilprin's (1886) description of *C. mercati* suggests that he might have been referring to material of *C. spurius*; Dall (1890) also reached this conclusion and synonymized Heilprin's record of *C. mercati* with *C. proteus*. Olsson & Petit (1964) described *C. cherokus* on the basis of a single fossil (USNM 644645; Pl. 3, Figs 1-2), which they erroneously reported from the Waccamaw Formation of Horry County, South Carolina; Petit (1995: 127) noted this error and suggested that the shell possibly came from the Pinecrest beds (Tamiami Formation) "from Forty Mile Bend west of Coral Gables, Florida." Olsson & Petit (1964: 539) reported *C. cherokus* as being "a member of the *Conus spurius* group," but separated it from the latter species by "its shape." This separation does not seem justifiable based upon the fact that the shell characters of *C. cherokus* (particularly the coloration patterning) are consistent with those of *C. spurius* as circumscribed here; consequently, I consider *C. cherokus* a synonym of *C. spurius*.

Six additional species described by Petuch are also recognized here as synonyms of *Conus spurius*. Petuch (1990) described the heavily corded *C. lemoni* as a member of the *C. spurius* species complex and also compared the taxon with *C. lorenzianus* Dillwyn, 1817. Petuch (1990: 103) stated that it "is possible that *C. lemoni* is ancestral to both closely-related species." Petuch (1988) figured (pl. 23, fig. 1) a specimen that he described as a subspecies of *C. spurius*. This figured specimen appears very similar to the figure of the holotype of *C. spengleri* Petuch (1991: pl. 10, figs 2-3), although the reported shell lengths for the two specimens vary considerably (77 mm for the Petuch [1988] figure and 68 mm for the Petuch [1991] figure; the caption for Petuch's 1994 figure [pl. 93, figs j-k) of the holotype, however, again gives a value of 77 mm). Petuch (1991: 54) described *C. spengleri* as "an offshoot of the main *C.* (*Lithoconus*) *cherokus-C.* (*Lithoconus*) *spurius* line that did not survive past Holey Land time" (Petuch's [1990] Holey Land unit is a part of the Bermont Formation). Petuch (1994) compared *C. micanopy* Petuch, 1994, with *C. spurius*, but two additional species, *C. martinshugari* Petuch, 1994, and *C. streami* Petuch, 1994, were only compared with one another, despite their strong similarities with *C. spurius*. I consider *C. micanopy*, *C. martinshugari,* and *C. streami* to all be synonyms of *C. spurius*.

Conus daucus Hwass in Bruguière, 1792
Pl. 5, Figs 1-23; Table 6

Conus daucus Hwass in Bruguière, 1792: 651, no. 51, pl. 327, figs 3-4, 9; Dall, 1890: 28; Kohn, 1992: 77, fig. 157.
Conus (*Lithoconus*) *daucus* (Hwass in Bruguière, 1792). Olsson & Harbison, 1953: 172-173.
?*Conus* cf. *eversoni* Petuch 1987. Petuch, 1988: pl. 23, fig. 2 (non Petuch, 1987).
?*Conus griffini* Petuch, 1990: 103, figs 14-15.
?*Conus* (*Magelliconus*) *griffini* (Petuch, 1990). Petuch, 1994: pl. 94, figs c-d.
?*Cariboconus griffini* (Petuch, 1990). Petuch, 2004: pl. 87, fig. d.
?*Conus* (*Leptoconus*) *gravesae* Petuch, 1994: 352, pl. 91, fig. m.
?*Dauciconus gravesae* (Petuch, 1994). Petuch, 2004: pl. 82, fig. j.
?*Conus* (*Magelliconus*) *harbisonae* Petuch, 1994: 356, pl. 91, fig. o.

Diagnosis.–Shell small to moderately small; spire height low to moderate; protoconch paucispiral; first one or two whorls tuberculate; subsutural flexure diagonal; teleoconch sutural ramps concave and with one or more incised spiral groove(s) and intervening ribs; raised spiral threads on last whorl (typically restricted to base).

Description.–Shell dextral, small to moderately small. Last whorl conical; outline straight to slightly convex. Shoulder angulate. Spire height low to moderate; outline concave. Protoconch with *ca.* 1.75 whorls, maximum diameter *ca.* 0.7 mm. First one or two whorls weakly to strongly tuberculate. Teleoconch sutural ramps concave with one or more incised spiral groove(s) and intervening ribs. Subsutural flexure diagonal and of moderate depth. Last whorl with raised spiral threads, typically restricted to basal third of shell. Color

Table 6. Statistical summary of morphometric data collected from type and other specimens of *Conus daucus* Hwass in Bruguière, 1792. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
Type Specimens								
CM 35733 (H, *C. griffini* Petuch, 1990)	15.3	7.8	13.9	13.3	134	0.56	0.96	0.09
UF 66426 (H, *C. gravesae* Petuch, 1994)	29.3	15.8	23.9	20.8	105	0.66	0.87	0.18
UF 66427 (H, *C. harbisonae* Petuch, 1994)	17.9	9.4	15.4	14.7	116	0.61	0.95	0.14
All Specimens (n = 39)								
Mean	19.7	10.1	17.3	15.8	119.5	0.58	0.92	0.12
Median	19.4	9.9	16.7	15.7	119	0.58	0.91	0.12
Minimum	12.6	6.1	10.5	10.0	103	0.53	0.85	0.07
Maximum	29.3	15.8	23.9	21.4	139	0.66	0.97	0.18
MODERN SPECIMENS								
All Specimens (n = 11)								
Mean	26.2	14.1	22.6	20.5	113.8	0.63	0.91	0.15
Median	29.0	15.1	24.9	22.8	113	0.62	0.90	0.14
Minimum	14.9	7.6	11.5	10.4	85	0.61	0.86	0.10
Maximum	39.1	21.5	34.7	31.2	135	0.68	0.94	0.24

pattern in fossils rarely preserved, but when present consisting of *ca.* 20 rows of spiral dots; teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from the shells of 39 fossil and 11 modern specimens of *Conus daucus* are summarized in Table 6. In the fossils, MD = 0.51(SL) + 0.05 (R^2 = 0.95) and MD = 0.56(AH) + 0.40 (R^2 = 0.92). In the modern specimens, MD = 0.57(SL) - 0.90 (R^2 = 0.995) and MD = 0.61(AH) + 0.40 (R^2 = 0.998).

Types observed.–Clench (1942) designated Chemnitz's (1788: pl. 144a, fig. l) figure as lectotype for *Conus daucus* (see Kohn, 1992: 77). Observed type specimens and associated morphometric data are listed in Table 6 and include the holotypes of *C. gravesae* Petuch, 1994 (UF 66426; Pl. 5, Figs 3-4), *C. harbisonae* Petuch, 1994 (UF 66427; Pl. 5, Figs 5-6), and *C. griffini* Petuch, 1990 (CM 35733; Pl. 5, Figs 7-8).

Other material examined.–Fifteen lots (131 specimens) of fossil and eight lots of modern specimens (11 specimens) of *Conus daucus* from the collections of the FLMNH and PRI. An additional 68 lots (more than 450 specimens) that might be assignable to either *C. daucus* or *C. bassi* Petuch, 1991, were also observed. Fossil specimen lots observed are listed in the Appendix. Along with illustrating the type specimens, Pl. 5 demonstrates the morphological characters of fossil (Figs 9-19) and modern (Figs 20-23) specimens of *C. daucus*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Today, *Conus daucus* is known from throughout the Caribbean, including the coasts of Florida (Rosenberg, 2005). Fossils of *C. daucus* are known from the Caloosahatchee Formation of southern Florida; occurrence records in the Tamiami Formation (Pinecrest Beds) and Bermont Formation are dubious.

Remarks.–I have chosen to apply the name of the extant taxon *Conus daucus* to this fossil morphospecies from the Plio-Pleistocene of Florida because of the overall similarities in shell morphology (described above) that the fossil form shares with this modern species. It is appropriate to mention, however, that fossil specimens of *C. daucus* often have larger, better preserved tubercles on the early postnuclear whorls than are observed in modern specimens. Furthermore, modern specimens of *C. daucus* reach a larger size (56 mm; Walls, 1979: 391) than in the fossils that were observed during the course of this study.

As circumscribed here, fossil specimens of *Conus daucus* are most similar to specimens of the fossil species *C. bassi* Petuch, 1991, and it is sometimes not possible to distinguish between the two taxa because of their very similar overall shell shapes. Two characters, however, can sometimes be used to distinguish *C. bassi* from *C. daucus*. First, specimens of *C. bassi* show a color pattern with many more rows of spiral dots and/

Table 7. Statistical summary of morphometric data collected from specimens of *Conus marylandicus* Green, 1830.

All Specimens (n = 52)	**SL (mm)**	**MD (mm)**	**AH (mm)**	**HMD (mm)**	**SA (deg.)**	**RD**	**PMD**	**RSH**
Mean	26.3	12.0	20.1	17.0	74.9	0.60	0.85	0.24
Median	26.4	11.8	19.6	16.5	74	0.60	0.85	0.24
Minimum	14.5	6.3	10.2	9.1	60	0.53	0.79	0.17
Maximum	39.0	18.7	29.5	25.2	92	0.68	0.95	0.30

or dashes on the last whorl than *C. daucus* and can also exhibit discontinuous spiral bands that form axial streaks. Second, the subsutural-flexure shape of *C. bassi* is asymmetrically curved and of greater depth than that in *C. daucus*, in which it is diagonal. As circumscribed here, *C. daucus* only occurs in Caloosahatchee and younger-aged strata, whereas *C. bassi* definitely occurs in the older Pinecrest Beds of the Tamiami Formation and has only dubious younger records (see notes on occurrence records of *C. bassi* on pp. 41-42).

Three species described by Petuch, *Conus griffini* Petuch, 1990, *C. gravesae* Petuch, 1994, and *C. harbisonae* Petuch, 1994, are tentatively considered here to be synonyms of *C. daucus* because of their overall shell shapes, short spires, and diagonal subsutural flexures. Further exploration of the possibility that these three taxa might instead constitute one or more unique species is hampered by the fact that all three are known only by their holotypes (Petuch [1990], however, reported that a paratype of *C. griffini* exists in his personal collection) and that additional specimens similar to any of these three taxa were not discovered during the course of this investigation. Petuch's (1988) figured specimen of "*C.* cf. *eversoni*" was later described as *C. griffini* by Petuch (1990). Petuch (1990) compared *C. griffini* with the extant species *C. magellanicus* Hwass in Bruguière, 1792, which Kohn (1992) recognized as a valid species (*C. griffini* was also compared by Petuch with *C. kalafuti* da Motta, 1987). Petuch (1994) compared *C. harbisonae* to *C. griffini* and *C. gravesae* to *C. joelshugari* Petuch, 1994, the last considered here to be a synonym of *C.* cf. *largillierti* Kiener, 1845.

Conus marylandicus Green, 1830
Pl. 6, Figs 1-18; Table 7

Conus marylandicus Green, 1830: 124, pl. 3, fig. 2; Olsson, 1967: 20-21, pl. 7, fig. 5; Kohn, 1992: 225, fig. 443; Campbell, 1993: 93, fig. 455.

Conus (*Ximeniconus*) *marylandicus* (Green, 1830). Petuch, 1994, pl. 54, fig. c.

Ximeniconus marylandicus (Green, 1830). Petuch, 2004, pl. 47, fig. d.

Diagnosis.–Protoconch multispiral; early postnuclear whorls lacking tubercles and with angulate shoulders; subsutural flexure shallow and flat or gently curved; incised spiral grooves extending from base of shell to approximately halfway up last whorl.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical to ventricosely conical; outline convex to slightly sigmoidal. Shoulder carinate to sharply angulate. Aperture usually slightly wider at base than at shoulder. Spire moderate to high; outline flat to slightly concave. Larval shell multispiral. Shoulder of early postnuclear whorls angulate. Teleoconch sutural ramps generally flat to convex. Subsutural flexure shallow, flat to gently curved. Last whorl with *ca.* 10-15 incised spiral grooves on anterior half, usually smooth above but occasionally with fine, raised spiral threads to shoulder. Color pattern on last whorl consisting of *ca.* 20 rows of spiral dots.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 52 specimens of *Conus marylandicus* are summarized in Table 7. For these specimens, MD = 0.51(SL) - 1.26 (R^2 = 0.94) and MD = 0.62(AH) - 0.49 (R^2 = 0.96).

Types observed.–Because the location of Green's types of *Conus marylandicus* could not be determined, Kohn (1988; see also Kohn, 1992) designated Green's original figure (pl. 3, fig. 2; reproduced here as Pl. 6, Fig.1) as the holotype for the species. A specimen very similar to that illustrated by Green was found in the collections of the PRI (PRI 54358; James River Bluff, Surry County, Virginia, Yorktown Formation) and is figured here (Pl. 6, Fig. 2).

Other material examined.–Forty-six lots of *Conus marylandicus* at the FLMNH, PRI, and VMNH, consisting of more than 360 specimens. An additional 67 lots (more than 390 specimens) that could not be completely distinguished from *C. oniscus* Woodring,1928, were also observed. Lots examined are listed in the Appendix. Pl. 6 (Figs 2-18) demonstrates the morphological characters of *C. marylandicus*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Virginia (Yorktown Formation), North Carolina (Duplin Formation), and Florida (Tamiami and Jackson Bluff formations). I also identified specimens of *Conus marylandicus* (PRI 54669, Pl. 6, Fig. 9; PRI 54677, Pl. 6,

Fig. 10) from samples collected *in situ* (by W. D. Allmon) from an exposure of "Pinecrest Bed 1" (Petuch, 1982) that was exposed at the Quality Aggregates, Inc., Phase 6 quarry in Sarasota County, Florida. Most authors (Stanley, 1986; Lyons, 1991; and Allmon, 1993) contend that, based upon its fossil makeup, "Bed 1" is Caloosahatchee Formation. *Conus marylandicus* is not known from other exposures of the Caloosahatchee Formation (or time equivalent strata) outside of Sarasota County. Thus, it appears that *C. marylandicus* is a Pliocene species that made it into only the very earliest "Caloosahatchee time." Also see occurrence data presented by Campbell (1993) and Campbell & Campbell (1995).

Remarks.–Perhaps no cone from the Plio-Pleistocene of the southeastern U. S. has been more frequently misidentified in the literature than *Conus marylandicus*. This is undoubtedly due, at least in part, to the poor name of Green's species (as noted by Olsson, 1967). Green (1830: 124) reported that his specimens were collected by Mr. John Finch, "who found it in Maryland… ." As noted by Dall (1896), Martin (1904), and Kohn (1992), among others, however, no available evidence suggests that this species occurs in the state of Maryland. Some specimens (*e. g.*, PRI 54358; Pl. 6, Fig. 2) collected from the Yorktown Formation of Virginia closely resemble Green's figure (Pl. 6, Fig. 1), suggesting that the specimens that Green used to describe and figure *C. marylandicus* could share this provenance.

Conus marylandicus is very similar to *C. oniscus* (as circumscribed below) in overall form and color pattern, but differs consistently in several subtle characters. First, whereas the subsutural flexures of the two species are both very shallow, that of *C. marylandicus* is nearly flat or gently curving, whereas the subsutural flexure of *C. oniscus* is angulate, forming a shallow "V." Second, in later whorls, the sutural ramp of *C. marylandicus* is flat to slightly concave in profile, whereas that of *C. oniscus* is sigmoidal, forming a single, raised spiral ridge that results from the fold in the ramp. Finally, the shoulders of the early postnuclear whorls of *C. oniscus* are carinate, whereas those of *C. marylandicus* are angulate. Like *C. oniscus*, *C. marylandicus* is similar in shell morphology to the extant species *C. tornatus* G. B. Sowerby II, 1833, *C. ximenes* Gray, 1839, and *C. mahogani* Reeve, 1843, all three of which are restricted today to the eastern Pacific.

Conus* (*Contraconus*) *adversarius Conrad, 1840
Pl. 7, Figs 1-18; Pl. 8, Figs 1-8; Pl. 9, Figs 1-17;
Pl. 10, Figs 1-11; Pl. 11, Figs 1-4; Table 8

Conus adversarius Conrad, 1840: 388; 1841: 345, pl. 2, fig. 3; Tuomey & Holmes, 1857: 131, pl. 27, fig. 14; Emmons, 1858: 263, fig. 142; Dall, 1890: 26; LaVille, 1921: 369, fig. on p. 370; Mansfield, 1930: 32, pl. 1, fig. 15; Smith, 1929: 659, figs 1-4; Smith, 1945: pl. 1, figs 14-16; Olsson & Petit, 1964: 539, pl. 79, figs 1, 1a; Kamp, 1967: 22, pl. 1, figs 1-8, pl. 2, figs 1-3, 5-8; Ward & Blackwelder, 1987: pl. 45, figs 2-3; Kohn, 1992: 275, fig. 551; Campbell, 1993: 93, 252, 253, pl. 40, fig. 454; Dietl & Hendricks, 2006: fig. 1c; Hendricks, 2008: figs 1-3.

Contraconus adversarius (Conrad, 1840). Petuch, 1988: pl. 10, fig. 9; 1991: pl. 9, fig. 1; 1994: pl. 95, fig. i; 1997: 164, fig. 55f; 2004: 175, pl. 56, fig. a.

Conus adversarius tryoni (Heilprin, 1886). Olsson & Harbison, 1953: 171, pl. 27, figs 1, 1a; DuBar, 1958: 184, pl. 10, fig. 11; Missimer & Tobias, 2004: 54, fig. 6f.

Contraconus berryi Petuch, 1994: 359, pl. 95, fig. l.

Contraconus heilprini Petuch, 1994: 360, pl. 95, figs j-k; 1997: 286, fig. 106b; 2004: 225, pl. 83, fig. h.

Contraconus lindajoyceae Petuch, 1991: 55, pl. 16, figs 5-6; 1994: pl. 96, figs i-j; 1997: 70, fig. 26m; 2004: 161, pl. 51, fig. j.

Contraconus mitchellorum Petuch, 1994: 360, pl. 96, fig. d; 2004: 225, pl. 83, fig. i.

Contraconus osceolai Petuch, 1991: 55-56, pl. 9, figs 4-5; 1994: pl. 96, figs c, e; 2004: 219, pl. 80, fig. e.

Contraconus petiti Petuch, 2004: 291, pl. 72, figs i-j.

Contraconus schmidti Petuch, 1991: 56, pl. 9, figs 8-9; 1994: pl. 96, figs f-g; 1997: 205, fig. 75j; 2004: 46, pl. 5, fig. b.

Contraconus scotti Petuch, 1994: 361, pl. 96, fig. h; 1997: 288, fig. 107f; 2004: 225, pl. 83, fig. a.

Conus tryoni Heilprin, 1886, p. 82, pl. 5, fig. 10, pl. 16b, fig. 75.

Contraconus tryoni (Heilprin, 1886). Petuch, 1988: pl. 22, fig. 1; 1991: pl. 9, fig. 6: 1994: pl. 96, figs a-b; 1997: 270, fig. 99a; 2004: 219, pl. 80, fig. e.

Diagnosis.–Shell sinistral.

Description.–Shell sinistral, small to very large. Last whorl usually conical, sometimes broadly to ventricosely conical; outline typically straight, rarely sigmoidal. Shoulder angulate to rounded, occasionally undulate. Spire low to high; outline flat to concave, rarely sigmoidal. Larval shell with two whorls, maximum diameter 1.0-1.4 mm. First postnuclear spire whorl tuberculate, with larger tubercles commonly occurring in higher-spired specimens. Teleoconch sutural ramps concave to convex, sometimes with one to several raised spiral threads. Subsutural flexure symmetrically curved and moderately deep. Last whorl with raised spiral threads on anterior third, sometimes extending to shoulder. Color pattern on last whorl generally consisting of three wide, usually discontinuous spiral bands, each separated by one to several rows of spiral dots or dashes. Bands themselves sometimes appearing to be composed of coalesced rows of spiral dashes. Internal features of spiral band regions are highly variable; axial streaks common; dotted lines or weak chevrons can also be present. Teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 697 specimens of *Conus adversarius*, including most of the type specimens listed below, are summarized in Table 8. For these specimens, MD = 0.44(SL) + 1.98 (R^2 = 0.95) and MD = 0.56(AH) + 2.16

Table 8. Statistical summary of morphometric data collected from type and other specimens of *Conus adversarius* Conrad, 1840. H, holotype; L, lectotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
SPECIMENS								
Type Specimens								
ANSP 30699 (L, *C. adversarius* Conrad, 1840)	70.6	35.0	59.1	51.0	99	0.59	0.86	0.16
CM 35660 (H, *Contraconus lindajoyceae* Petuch, 1991)	79.2	29.1	55.7	50.7	57	0.52	0.91	0.30
CM 35661-1 (P, *Contraconus lindajoyceae* Petuch, 1991)	63.8	25.4	45.1	40.3	60	0.56	0.89	0.29
CM 35691 (H, *Contraconus osceolai* Petuch, 1991)	88.8	50.2	68.5	58.1	97	0.73	0.85	0.23
CM 35662 (H, *Contraconus schmidti* Petuch, 1991)	72.6	39.8	63.6	59.0	127	0.63	0.93	0.12
UF 66444 (H, *Contraconus berryi* Petuch, 1994)	64.8	35.3	54.9	47.1	111	0.64	0.86	0.15
UF 66443 (H, *Contraconus heilprini* Petuch, 1994)	32.9	18.3	24.3	21.3	89	0.75	0.88	0.26
UF 66445 (H, *Contraconus mitchellorum* Petuch, 1994)	62.6*	27.6*	49.7*	45.4*	80*	0.56	0.91	0.21
UF 66446 (H, *Contraconus scotti* Petuch, 1994)	58.2	28.9	45.7	41.7	90	0.63	0.91	0.21
AMNH 50680 (H, *Contraconus petiti* Petuch, 2004)	83.0	39.7	66.8	57.1	91	0.59	0.85	0.19
All Specimens (n = 697)								
Mean	50.4	24.0	39.0	34.7	84.7	0.63	0.89	0.23
Median	45.2	21.8	34.8	31.2	85.0	0.62	0.90	0.23
Minimum	13.1	6.3	8.6	7.8	55.0	0.51	0.77	0.08
Maximum	189.0	90.0	141.8	115.6	131.0	0.86	0.99	0.34

* = Slight specimen breakage prevented accurate measurement.

(R^2 = 0.97). Some specimens of *C. adversarius* rank among the largest known specimens of *Conus*. One specimen (UF 110404; Pl. 8, Fig. 1) has a shell length of 219 mm. Hutsell *et al.* (2001) listed only two extant species that are known to have produced larger individuals: *C. leopardus* (Röding, 1798) (221.5 mm) and *C. pulcher* Lightfoot, 1786 (254.3 mm). At this time, it is not known how shell size correlates with age in *C. adversarius*.

Types observed.–Conrad (1840) described, and later figured (1841), the first species of sinistral *Conus*, *C. adversarius*, from a small group of fossil specimens collected by James Hodge at the classic "Natural Well" locality in Duplin County, North Carolina (upper Pliocene Duplin Formation). Four possible syntypes from this series, labeled by Conrad (Moore, 1962), are in the type collections at the Academy of Natural Sciences, Philadelphia (ANSP 30699). One of these specimens (Pl. 7, Figs 1-2) closely matches Conrad's (1841) figure and was designated by Kohn (1992: 275) as lectotype for the species. Additional type specimens observed include the holotypes of *Contraconus lindajoyceae* Petuch, 1991 (CM 35660; Pl. 7, Figs 3-4), *C. schmidti* Petuch, 1991 (CM 35662; Pl. 7, Figs 5-6), *C. osceolai* Petuch, 1991 (CM 35691; Pl. 7, Figs 7-8), *C. berryi* Petuch, 1994 (UF 66444; Pl. 7, Figs 9-10), *C. heilprini* Petuch, 1994 (UF 66443; Pl. 7, Figs 11-12), *C. scotti* Petuch, 1994 (UF 66446; Pl. 7, Figs 13-14), *C. mitchellorum* Petuch, 1994 (UF 66445; Pl. 7, Figs 15-16), and *C. petiti* Petuch, 2004 (AMNH 50680; Pl. 7, Figs 17-18), and the paratypes of *C. lindajoyceae* (CM 35661) and *C. osceolai* (CM 35692). The type specimen of *Conus tryoni* Heilprin, 1886, was not observed, but is apparently part of the permanent displays at the Wagner Free Institute of Science in Philadelphia, Pennsylvania.

Other material examined.–More than 780 lots (more than 6,280 specimens) of *Conus adversarius* from the collections of the ANSP, FLMNH, PRI, and VMNH were observed. Lots examined are listed in the Appendix. Pls 8 (Figs 1-8), 9 (Figs 1-17), 10 (Figs 1-11), and 11 (Figs 1-4) demonstrate the morphological characters of *C. adversarius*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–*Conus adversarius* is restricted to Pliocene and possibly lowermost Pleistocene deposits in the southeastern U. S. (see discussion below). To the west, this species is known from one specimen (UF 113698) from a single locality (TU locality 244) in Louisiana that is of unknown stratigraphic position. In Florida, *C. adversarius* is known from the Pinecrest Beds of the Tamiami Formation. It is known from the Ochopee Limestone (UF 113709) and Campbell (1993: 149) listed the taxon as occurring in the Buckingham Limestone; these two units are both thought to be equivalent to the

Tamiami Formation (see Lyons, 1991). *Conus adversarius* also occurs in the Intracoastal Formation (one moldic specimen, UF 113414), the Jackson Bluff Formation, the Nashua Formation, and the Caloosahatchee Formation (lower and upper; Campbell, 1993: 149). In the Carolinas, *C. adversarius* is known from the Duplin Formation, the Raysor Marl, the Goose Creek Limestone (lower and upper; Campbell, 1993: 149; Campbell & Campbell, 1995), the Chowan River Formation, the James City Formation, and the Waccamaw Formation (lower and upper; Campbell, 1993: 149). *Conus adversarius* is very rare in Virginia and only a single specimen (PRI 50733) was observed from this state during the course of this study. The species is known only from "Zone 2" (see discussion by Campbell, 1993) of the Yorktown Formation in Virginia.

All sinistral *Conus* specimens observed during this study are regarded here as being from deposits that are upper Pliocene or younger in age. Campbell & Campbell (1995), however, reported *C. adversarius* (moldic material) from the lower Goose Creek Limestone, a stratum that they regarded as lower Pliocene. Thus, this taxon could span much of the Pliocene. *Conus adversarius* is known to occur in the upper layers of the time-correlative Caloosahatchee and Waccamaw formations (Campbell, 1993: 149, fig. 1), but is not known from units stratigraphically higher than these. Depending on age assignments of these units, *C. adversarius* might have persisted into the earliest Pleistocene before becoming extinct.

Remarks.–Following Conrad's (1840) description of *Conus adversarius*, Heilprin (1886) described a second fossil species of sinistral *Conus*, *C. tryoni*, from the banks of the Caloosahatchee River, Florida. He differentiated this species from *C. adversarius* on the basis of "its more ponderous proportions, the greater relative elevation of the spire, and the revolving lines on the shoulders of the whorls" (Heilprin, 1886: 82). Dall (1890: 26) designated *C. tryoni* as a synonym of *C. adversarius*, noting that "*C. Tryoni* is merely the full-grown and most perfect form of *C. adversarius.*" Olsson & Harbison (1953: 171) recognized *C. tryoni* as a subspecies of *C. adversarius*, and assigned it to that rank on the basis of its higher stratigraphic position and "sufficiently well-marked" characters. In her unpublished master's thesis, Kamp (1967) regarded *C. adversarius tryoni* as an unnecessary subspecies, and placed it in synonymy with *C. adversarius*. Dall's (1890) placement of Heilprin's (1886) *C. tryoni* within *C. adversarius* is accepted here for the reasons stated by Dall, and because the distinguishing features noted by Heilprin (the variable characters of size, height of the spire, and spiral threads on the shoulder whorls) are not considered here to be taxonomically significant for sinistral cones, including at the subspecific level. Consequently, I follow Kamp's (1967) decision to synonymize Olsson & Harbison's (1953) subspecies *C. adversarius tryoni* with *C. adversarius*. Petuch (1991, 1994, 2004) has continued to recognize *C. tryoni* as a distinct species.

Following Dall's (1890) synonymy, only one new species of sinistral *Conus* was described in the subsequent 100 years. This taxon (based on four specimens), which is the form of sinistral *Conus* most dissimilar to *C. adversarius*, was described by Kamp (1967), but was never published and is therefore nomenclaturally unavailable. It was described from a section of the Tamiami Formation (Pinecrest Beds) exposed during construction of the Alligator Alley Expressway (TU locality 797). Unfortunately, the type specimens of this species are currently lost. (Most of Tulane's southeastern U. S. collections have been transferred to FLMNH, but Kamp's types have not to date resurfaced there; R. Portell, pers. comm., 2004].) My inspection of other Pinecrest *Conus* material from the TU 797 locality at FLMNH did not result in discovery of any specimens matching Kamp's description or figures. Very similar specimens at FLMNH from a nearby locality (UF CR014; Thomas and Paul McGinty Collection), however, do agree with Kamp's description and figures. This morphology (Pl. 8, Fig. 3; Pl. 9, Fig. 7) is considered here to be consistent with that of *C. adversarius* because of the presence of tuberculate early postnuclear whorls (Pl. 8, Fig. 3), three pigmented coloration bands (Pl. 9, Fig. 7), and a similarly shaped subsutural flexure.

Examination and description of cone shell fossils from southern Florida and North Carolina by Petuch led to a proliferation of species names during the past 16 years, all of which were placed within the genus "*Contraconus*" (see discussion of this genus name below). These species include: *C. lindajoyceae*, *C. schmidti*, *C. osceolai* (all Petuch, 1991); *C. berryi*, *C. heilprini*, *C. scotti*, and *C. mitchellorum* (all Petuch, 1994); and *C. petiti* Petuch, 2004. Petuch's holotype specimens (Pl. 7, Figs 3-18) appear distinctive in shell shape when compared with the lectotype of *Conus adversarius* (Pl. 7, Figs 1-2). These specimens appear less distinctive, however, when large sample sizes are considered and morphological variation is assessed quantitatively (Table 8), leading me to conclude these represent members of only one highly variable sinistral *Conus* species (also see Campbell, 1993). Several lines of morphological evidence support this conclusion.

First, Petuch's use of spire height as a key taxonomic character for some of his sinistral cone taxa is at odds with the data collected here. For example, Pl. 10 demonstrates a continuous spire angle (SA) in 11 specimens from deposits near Sarasota, Florida. Other attributes of shell form also exhibit continuous variation and I was unable to identify (through bivariate analyses of the shell data collected here) non-overlapping morphometric clusters of shell morphologies congruent with Petuch's sinistral *Conus* species.

Second, when preserved, discrete shell characters consistent with those in *Conus adversarius* (besides sinistral coiling) further justify placement of Petuch's sinistral cone taxa within this single species. Color patterns (expressed under UV light) fully consistent with *C. adversarius* were observed in the holotypes of *C. heilprini* and *C. petiti*, and in shells similar in form to Petuch's *C. lindajoyceae* (Pl. 9, Figs 15-16) and *C. osceolai* (Pl. 9, Fig. 10). Color patterns are not preserved in Petuch's other holotypes. Additionally, well-preserved specimens of *C. adversarius* bear at least some tuberculate early postnuclear whorls (Pl. 11, Figs 3-4). These can be observed on the holotypes of *C. lindajoyceae*, *C. berryi*, *C. heilprini*, and *C. mitchellorum*. Tubercles were not observed on the holotype of *C. schmidti*, which has a poorly preserved apex, but can be observed on other low-spired sinistral cone specimens. The holotypes of *C. scotti* and *C. osceolai* also lack early postnuclear whorls, although both specimens have eroded apices. This is also the case for all specimens similar in form to the holotype of *C. osceolai* observed from the "Star Ranch" locality. Some early shoulder whorls of specimens similar to *C. osceolai*, however, do appear slightly undulate. The relationship between the number of tuberculate whorls (NTW) and spire angle (SA) and relative spire height (RSH) are described, respectively, by the following equations: SA = -5.12(NTW) + 111.24 (R^2 = 0.34, n = 32, SA range 57-116º) and RSH = 0.02(NTW) + 0.14 (R^2 = 0.36, n = 32, RSH range 0.14-0.30).

Finally, Petuch's sinistral *Conus* taxa have symmetrically curved subsutural flexure morphologies that are consistent with those of *C. adversarius* (Pl. 11, Figs 1-2).

Conus adversarius is readily differentiated from all fossil and extant *Conus* species by its sinistral coiling, which might have provided it with a survival advantage against crab predators (Dietl & Hendricks, 2006). Beyond coiling direction, *C. adversarius* is most similar to the occasionally co-occurring, uncommon dextral species *C. delessertii* Récluz (1843). Both species have similar overall shell shapes, color patterns (particularly three prominent, discontinuous bands on the last whorl), and tuberculate early postnuclear whorls. Several differences separate the two taxa, however. In *C. delessertii*, these differences include a deeper, more strongly curved subsutural flexure, incised spiral grooves on the anterior end of the shell, a generally flatter spire profile, and a multispiral protoconch. Furthermore, at least one raised spiral thread is always present on the sutural ramp of *C. delessertii*, whereas this character is only occasionally present in *C. adversarius*. These differences demonstrate that specimens of *C. delessertii* do not simply constitute aberrant dextral specimens of *C. adversarius*, despite their similarities. For details on the evolution and paleobiology of *C. adversarius*, see Hendricks (2008).

Olsson & Harbison (1953: 170) erected the subgenus name *Contraconus* to include *Conus* species having sinistral coiling (among other characters). Without explanation, Petuch (1988: 72; also see Petuch, 1991: 54) elevated *Contraconus* to generic status. With the exception of sinistral coiling, the species Petuch assigned to *Contraconus* are well circumscribed by the generic shell characters of *Conus* as defined by Linnaeus (1758) and are considered here to belong to the latter genus. As discussed above, Petuch's (2004) recognition of multiple cone shell genera within the Conidae (besides *Hemiconus* and *Conorbis*) is at odds with most modern taxonomic treatments of the group (*e. g.*, Walls, 1979; Kohn, 1992; Röckel *et al.*, 1995; Filmer, 2001). The subgenus name *Contraconus*, however, has widespread usage among amateurs and professionals working in the Cenozoic of the U. S. Coastal Plain, and so is useful for communication. Thus, *Contraconus* is accepted here as a subgeneric name, but its usage at the genus level is rejected.

Conus patricius Hinds, 1843
Pl. 11, Figs 5-14; Table 9

Conus patricius Hinds, 1843: 256.
Conus apium Woodring, 1928: 202, pl. 9, fig. 3; Olsson, 1967: 22, pl. 7, figs 4, 4a.
Conus testudinarius leonensis Mansfield, 1930: 32-33, pl. 1, fig. 14 (non *C. testudinarius* Hwass in Bruguière, 1792).

Diagnosis.–Outline of last whorl sigmoidal and with raised spiral threads on anterior half; shoulder rounded with a carina at its junction with the sutural ramp; early postnuclear whorls tuberculate; subsutural flexure symmetrically curved.

Description.–Shell dextral, moderately large. Last whorl ventricosely conical; outline sigmoidal. Shoulder rounded, but with subtle carina at junction with sutural ramp. Spire of low to moderate height; outline slightly concave. Early postnuclear whorls tuberculate. Teleoconch sutural ramps flat to convex. Subsutural flexure symmetrically curved and of moderate depth. Last whorl with spiral threads on anterior half. Color pattern on last whorl consisting of two faint, wide spiral bands.

Types observed.–The holotypes of *Conus apium* Woodring, 1928 (USNM 369351; Pl. 11, Figs 5-7), and *C. testudinarius leonensis* Mansfield, 1930 (USNM 370103; Pl. 11, Figs 8-10), were observed. Table 9 gives morphometric measurements from these highly damaged specimens.

Other material examined.–One fossil (PRI 54631; Pl. 11, Figs 11-12) and four modern specimens of *Conus patricius* from the collections of the PRI (including PRI 9794; Pl. 11, Figs 13-14).

Occurrence.–The type locality of extant *Conus patricius* is the eastern Pacific Gulf of Nicoya, Costa Rica (Kohn & Anderson, 2008). Today, *C. patricius* appears to be restricted to the eastern Pacific (Walls, 1979), although its range apparently

Table 9. Summary of morphometric data collected from type and other specimens of *Conus patricius* Hinds, 1843. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
Type Specimens								
USNM 369351 (H, *C. apium* Woodring, 1928)	57.6*	36.6*	53.1*	45.4*	136	0.69	0.85	0.08
USNM 370103 (H, *C. testudinarius leonensis* Mansfield, 1930)	40.6	20.7*	34.8*	29.2*	99.00	0.60	0.84	0.14
Other Specimen								
PRI 54631	65.8	40.5	59.8	49.7	130	0.68	0.83	0.09
MODERN SPECIMENS								
PRI 9794	73.2	40.4	63.8	53.0	110	0.63	0.83	0.13
PRI 9795	41.1	22.3	36.0	30.4	110	0.62	0.84	0.12
PRI 9796	54.6	30.8	48.5	40.6	118	0.63	0.84	0.11
PRI 9797	73.5	42.7	65.9	52.0	120	0.65	0.79	0.10

* = Significant specimen breakage prevented accurate measurement.

extended into the western Atlantic during the Plio-Pleistocene. The holotype of *C. apium* is from the Bowden Formation of Bowden, Jamaica (Woodring, 1928). Olsson figured (1967: 56, fig. 4a) a specimen that was reportedly from the "Pinecrest Beds, Kissimmee. Hoerle Coll." A single fossil specimen at the PRI (PRI 54631) has dubious information associated with it, but might be from the Caloosahatchee Formation of Hendry County, Florida. Fossil specimens of *C. patricius* are extremely rare; the specimens figured here (Pl. 11, Figs 5-14) are the only fossil representatives of the species that were observed during this investigation.

Remarks.–This distinctive taxon is not readily confused with other co-occurring species. The synonymy of *Conus apium* with *C. patricius* is supported by the overall shape of the shell, the subsutural flexure morphology, and the subtle carina at the top of the otherwise rounded shoulder. The teleoconch whorls of the holotype of *C. apium* are not well preserved, so it is not possible to confirm that they are tuberculate like they are in *C. patricius*. Mansfield's (1930) placement of his subspecies *C. testudinarius leonensis* within that species (which Kohn [1992] reported as a junior synonym of *C. ermineus* Born, 1778) is odd given that this very poorly preserved specimen shows very few shell similarities with extant *C. testudinarius* Hwass in Bruguière, 1792, which is found today in the eastern and western Atlantic (Kohn & Anderson, 2008). Given its greater similarity to *C. patricius* and the lack of better preserved fossil material for study, Mansfield's subspecies is tentatively considered here a synonym of *C. patricius*.

Conus delessertii Récluz, 1843
Pl. 12, Figs 1-13; Table 10

Conus delessertii Récluz, 1843: 2; Petuch, 1988: pl. 23, fig. 15.
Conus (*Leptoconus*) *delessertii* (Récluz, 1843). Petuch, 1994: pl. 91, fig. n.
Conus (*Leptoconus*) *duerri* Petuch, 1994: 352, pl. 91, fig. a.
Gradiconus duerri (Petuch, 1994). Petuch, 2004: pl. 69, fig. f.
Conus (*Leptoconus*) *patstreamae* Petuch, 1994: 353-354, pl. 92, fig. c.
Conus presozoni Olsson & Petit, 1964: 538, pl. 79, figs 2, 2a; Kamp, 1967: 57-59, pl. 6, figs 3-4.
Conus (*Leptoconus*) *presozoni* (Olsson & Petit, 1964). Petuch, 1994: pl. 92, fig. a.
Conus (*Leptoconus*) *susankhanae* Petuch, 1994: 354, pl. 92, fig. k.

Diagnosis.–Protoconch multispiral; early postnuclear whorls tuberculate; sutural ramps with one or two raised spiral threads, subsutural flexure symmetrically curved and deep; incised spiral grooves at base of last whorl.

Description.–Shell dextral, medium-sized to large. Last whorl conical to broadly conical; outline straight. Shoulder angulate to subangulate. Spire moderate to high; outline straight to slightly sigmoidal. Larval shell of *ca.* four whorls. First several postnuclear whorls tuberculate. Teleoconch sutural ramps slightly concave, with one or two raised spiral threads usually near center of ramp. Subsutural flexure symmetrically curved and deep. Last whorl with incised spiral grooves on anterior third. Color pattern on last whorl consisting of three continuous spiral bands overlain by rows of spiral dots and spots that sometimes coalesce to form axial streaks; between bands are spiral rows of dots overlying unpigmented shell. Teleoconch whorls with radial streaks that generally mirror the shapes of growth lines.

Morphometrics and shell shape as a function of shell size.–

Table 10. Statistical summary of morphometric data collected from type, fossil, and modern specimens of *Conus delessertii* Récluz, 1843. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
Type Specimens								
USNM 644643 (H, *C. presozoni* Olsson & Petit, 1964)	78.8*	41.8	63.2	58.0	91*	0.66	0.92	0.20
USNM 644644 (P, *C. presozoni* Olsson & Petit, 1964)	69.4*	34.9	54.5	51.6	94*	0.64	0.95	0.21
UF 66422 (H, *C. duerri* Petuch, 1994)	37.9	20.0	29.7	27.2	93	0.67	0.92	0.22
UF 66449 (H, *C. pastreamae* Petuch, 1994)	77.7	40.6	65.0	61.9	109	0.63	0.95	0.16
UF 66998 (H, *C. susankhanae* Petuch, 1994)	92.0*	51.2	74.5	69.3	105	0.69	0.93	0.19
All Specimens (n = 26)								
Mean	62.0	30.7	49.9	46.1	91.8	0.62	0.92	0.20
Median	63.6	31.8	52.7	48.2	90	0.61	0.92	0.20
Minimum	27.6	13.6	20.9	18.9	81.0	0.56	0.90	0.16
Maximum	105.0	51.2	84.4	76.4	109.0	0.69	0.96	0.24
MODERN SPECIMENS								
All Specimens (n = 17)								
Mean	38.0	18.9	28.2	26.0	76.1	0.68	0.92	0.27
Median	36.3	19.0	27.4	25.4	74.0	0.68	0.93	0.27
Minimum	18.5	8.9	12.4	11.5	63	0.61	0.90	0.21
Maximum	69.8	34.1	55.5	50.8	88	0.74	0.95	0.33

* = Slight specimen breakage prevented accurate measurement.

Morphometric data collected from 26 fossil and 17 modern specimens of *Conus delessertii*, including the type specimens listed below, are summarized inTable 10. In fossil *C. delessertii*, MD = 0.51(SL) - 0.83 (R^2 = 0.96) and MD = 0.62(AH) - 0.12 (R^2 = 0.96). In modern *C. delessertii*, MD = 0.47(SL) + 0.89 (R^2 = 0.99) and MD = 0.81(AH) - 2.67 (R^2 = 0.99).

Types observed.–A digital image of the holotype of *Conus delessertii* (MHNG 1106/66) was viewed online at The *Conus* Biodiversity Website (Kohn, 2007). Holotypes observed in person include those of *C. presozoni* Olsson & Petit, 1964 (USNM 644643; Pl. 12, Figs 1-2; several paratypes of this taxon in USNM 644644, PRI 6067, and UF 113758 were also observed), *C. susankhanae* Petuch, 1994 (UF 66998; Pl. 12, Figs 3-4), *C. duerri* Petuch, 1994 (UF 66422; Pl. 12, Figs 5-6), and *C. patstreamae* Petuch, 1994 (UF 66449; Pl. 12, Figs 7-8).

Other material examined.–More than 45 additional lots (more than 100 specimens) of fossil *Conus delessertii* were observed from the collections of the FLMNH, PRI, and VMNH. Seventeen modern specimens of *C. delessertii* from the malacological collections of the FLMNH were also observed. Along with illustrating four type specimens, Pl. 12 demonstrates the morphological characters of fossil (Figs 9, 11-12) and modern (Figs 10, 13) specimens of *C. delessertii*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The type locality of *Conus delessertii* is off of Cape Canaveral, Florida (Kohn & Anderson, 2008). In the Recent, *C. delessertii* is reported from North and South Carolina, the eastern and western coasts of Florida, Bermuda, and Mexico, and has been collected at depths ranging from 15 to 198 m (Rosenberg, 2005). Fossil specimens are known from Duplin and Robeson counties, North Carolina (Duplin Formation), Horry County, South Carolina (Waccamaw Formation), and southern Florida (Tamiami Formation, Bermont Formation, and possibly the Caloosahatchee Formation [UF 66998]). Additionally, a broken anterior portion of a shell (UF 113699) that resembles *C. delessertii* was collected at a depth of 762 m from a well of unknown stratigraphic position in Lafourche, Louisiana. Also see occurrence data presented by Campbell & Campbell (1995).

Remarks.–No available shell-character evidence suggests that the fossil species synonymized above can be justified as species separate from *Conus delessertii*. In particular, their holotypes (USNM 644643, UF 66998, UF 66422, and UF 66449) are consistent with *C. delessertii* in overall shape, shell

color pattern (when preserved), the presence of tubercles on the early postnuclear whorls (when preserved), and sutural ramp and subsutural flexure morphologies. Olsson & Petit (1964: 538) noted that *C. presozoni* "by its shape and color pattern bears considerable resemblance to *C. sozoni* Bartsch [1939; a junior synonym of *C. delessertii*] of the Recent and is probably its ancestral form."

Conus* cf. *largillierti Kiener, 1845
Pl. 13, Figs 1-28; Table 11

Conus largillierti Kiener, 1845: 212, pl. 98, fig. 3, pl. 101, figs 1, 1a.
Conus cf. *largillierti* Kiener, 1845. Dietl & Hendricks, 2006, fig. 1d.
?*Gradiconus anabathrum patglicksteinae* (Petuch, 1987). Petuch, 2004: pl. 93, fig. j.
Conus capelettii Petuch, 1990: 100, 102-103, figs 11-13.
Conus (*Leptoconus*) *capelettii* (Petuch, 1990). Petuch: 1994, pl. 91, fig. e.
Gradiconus capelettii (Petuch, 1990). Petuch, 2004: pl. 86, fig. d.
Conus (*Leptoconus*) *diegelae* Petuch, 1994: 351-352, pl. 91, fig. j.
Conus floridanus Gabb, 1869. Dall, 1890: 27; Mansfield, 1930: 32, pl. 1, fig. 13; Smith, 1930: 280-281, figs 1-2, 7; 1945: fig. 10; Kamp, 1967: 47-50, pl. 7, figs 1-15 (see remarks concerning status of *C. floridanus* Gabb, 1869).
Conus (*Leptoconus*) *floridanus* (Gabb, 1869). Olsson & Harbison, 1953: 173-174; DuBar, 1958: 185; Petuch, 1994: pl. 92, fig. j.
Conus (*Leptoconus*) *joelshugari* Petuch, 1994: 353, pl. 91, fig. k.
Conus (*Leptoconus*) *loxahatcheensis* Petuch, 1994: 353, pl. 92, fig. b.
Gradiconus loxahatcheensis (Petuch, 1994). Petuch, 2004: pl. 86, fig. h.
Conus (*Leptoconus*) *marylandicus* (Green, 1830). Olsson & Harbison, 1953: pl. 27, figs 3, 3a (non Green, 1830).
Conus (*Leptoconus*) *ronaldsmithi* Petuch, 1994: 354, pl. 92, fig. d.
Conus (*Leptoconus*) *trippae* Petuch, 1991: 52, pl. 10, figs 4-5; 1994: pl. 91, figs c-d.
Seminoleconus trippae (Petuch, 1991). Petuch, 2004: pl. 70, fig. c.
?*Conus* (*Leptoconus*) *vaughanensis* (Mansfield, 1935). Petuch, 1994: pl. 91, fig. f (non Mansfield, 1935).

Diagnosis.–Outline of last whorl straight to slightly convex; protoconch paucispiral; early postnuclear whorls tuberculate; sutural ramps unornamented; subsutural flexure symmetrically curved; incised spiral grooves on anterior quarter of last whorl.

Description.–Shell dextral, moderately small to moderately large. Last whorl conical to broadly and/or ventricosely conical; outline straight to slightly convex. Shoulder sharply angulate to angulate. Spire height moderate to high; outline slightly concave to straight. Protoconch of *ca.* two whorls, maximum diameter *ca.* 0.8 mm. Early postnuclear whorls tuberculate. Teleoconch sutural ramps flat to convex, rarely with a midsutural ridge. Subsutural flexure symmetrically curved and of moderate depth. Last whorl with incised spiral grooves on anterior quarter. Color pattern on last whorl consisting of *ca.* 10-20 rows of spiral rectangular-shaped dots, dashes, or blotches; these overlay one or more discontinuous bands that in turn frequently form cloudy blotches. Teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 232 specimens of fossil *Conus* cf. *largillierti*, including the type specimens listed below, are summarized in Table 11. In fossil *C.* cf. *largillierti*, MD = 0.48(SL) - 0.47 (R^2 = 0.97) and MD = 0.60(AH) + 0.61 (R^2 = 0.97).

Types observed.–An image of Kiener's (1845: pl. 98, fig. 3) original figure of *Conus largillierti* was viewed online (Kohn & Anderson, 2008). Holotypes observed include those of *C. floridanus* Gabb, 1869 (ANSP 80897; Pl. 13, Figs 1-2), *C. trippae* Petuch, 1991 (CM 35666; Pl. 13, Figs 6-7; a paratype of this taxon, CM 35667, was also observed; Pl. 13, Fig. 8), *C. loxahatcheensis* Petuch, 1994 (UF 66428; Pl. 13, Figs 9-10), *C. capelettii* Petuch, 1990 (CM 35731; Pl. 13, Figs 11-13), *C. diegelae* (UF 66423; Pl. 13, Figs 14-15), *C. ronaldsmithi* Petuch, 1994 (UF 66429, Pl. 13, Figs 16-17), and *C. joelshugari* Petuch, 1994 (UF 66424; Pl. 13, Figs 18-19).

Other material examined.–More than 315 lots of fossil *Conus* cf. *largillierti* (more than 5,150 specimens) from the collections of the PRI, FLMNH, and VMNH. An additional 42 lots (more than 240 specimens) that could not be differentiated from *C. sennottorum* Rehder & Abbott, 1951, were also examined. Fossil specimens examined are listed in the Appendix. Along with illustrating the type specimens, Pl. 13 demonstrates the morphological characters of modern (Figs 3-5) and fossil (Figs 20-28) *C.* cf. *largillierti*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The type locality for extant *Conus largillierti* is the Gulf of Mexico (Vink, 1985). Fossil *C.* cf. *largillierti* are present in Plio-Pleistocene strata from throughout the southeastern U. S., including the Tamiami (Pinecrest Beds), Jackson Bluff, Duplin, Canepatch, Chowan River, Caloosahatchee, Nashua, Waccamaw, James City, Bermont, Fort Thompson, and Anastasia formations.

Remarks.–This is the fossil taxon (or species complex; see below) that has frequently been referred to as *Conus floridanus* Gabb (1869) in the literature (see synonym list); most museum lots are also labeled as such. *Conus floridanus* (holotype ANSP 80897; Pl. 13, Figs 1-2) is a junior synonym of *C. anabathrum* Crosse (1865); the International Commission on Zoological Nomenclature (1989, Opinion 1539; see also Filmer, 2001) declined an appeal to suppress the virtually unused senior synonym in favor of the widely used junior synonym. It now appears, however, that several even older names might be more

Table 11. Statistical summary of morphometric data collected from type and other fossil specimens of *Conus* cf. *largillierti* Keiner, 1845. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
CM 35731 (H, *C. capelettii* Petuch, 1990)	38.2	16.7*	25.8	24.4	62	0.65	0.95	0.32
CM 35666 (H, *C. trippae* Petuch, 1991)	35.3	16.7	26.1	22.5	75	0.64	0.86	0.26
CM 35667 (P, *C. trippae* Petuch, 1991)	60.2	27.2	47.5	44.9	84	0.57	0.95	0.21
UF 66423 (H, *C. diegelae* Petuch, 1994)	36.3	16.8	27.8	25.5	82	0.60	0.92	0.23
UF 66424 (H, *C. joelshugari* Petuch, 1994)	23.8	12.0	18.6	17.4	90	0.64	0.94	0.22
UF 66428 (H, *C. loxahatcheensis* Petuch, 1994)	49.7	24.6	33.5	30.9	70	0.73	0.92	0.33
UF 66429 (H, *C. ronaldsmithi* Petuch, 1994)	33.7	16.7	25.9	23.8	85	0.64	0.92	0.23
All Specimens (n = 232)								
Mean	31.5	14.7	23.7	21.8	77.2	0.62	0.92	0.25
Median	30.7	14.2	22.9	21.0	77	0.62	0.93	0.26
Minimum	11.3	4.6	7.6	6.8	56	0.54	0.82	0.17
Maximum	65.6	31.8	51.8	49.1	100	0.73	0.97	0.37

* = Slight specimen breakage prevented accurate measurement.

appropriate for this form. I have chosen to confer the name of the extant species *C.* cf. *largillierti* Kiener, 1845, to fossils of this morphology (as described above) because the coloration patterns shown in Kiener's figures most closely match those that have been observed in fossil specimens from the study area. I acknowledge the possibility, however, that the fossil specimens that I have circumscribed here as *C.* cf. *largillierti* could additionally include one or more of the following similar extant nominal taxa: *C. philippii* Kiener, 1845, *C. anabathrum* Crosse, 1865, and *C. burryae* Clench, 1942. Resolution of this problem will require a detailed systematic study of the biology these four extant forms, especially their soft-part morphologies, shell forms, and ecologies. For this reason, I do not formally synonymize *C. floridanus* Gabb, 1869 (originally described as an extant taxon), here with *C.* cf. *largillierti*, although I assign all fossils previously referred to *C. floridanus* (beginning with Dall, 1890) to *C.* cf. *largillierti*. Once the taxonomic status of each of the nominal taxa listed above has been resolved, it might be possible to reconsider the taxonomic assignments of the specimens that I have assigned here to *C.* cf. *largillierti*.

Among co-occurring fossil taxa, *Conus* cf. *largillierti* is most similar in shell morphology to *C. sennottorum* Rehder & Abbott, 1951, and it is sometimes difficult to distinguish the two from one another. *Conus* cf. *largillierti* is best differentiated from *C. sennottorum* by its symmetrically curved subsutural flexure (which is asymmetrically curved in *C. sennottorum*) and straight to slightly convex last whorl shape (which is typically pyriform in *C. sennottorum*). Furthermore, the tubercles on the early postnuclear whorls of *C.* cf. *largillierti* are smaller than those in *C. sennottorum*.

Six of Petuch's species are placed in synonymy here with *Conus* cf. *largillierti*. *Conus capelettii* was compared by Petuch (1990) with the extant eastern Pacific (Kohn & Anderson, 2008) species *C. scalaris* Valenciennes, 1832, and with "some slender morphs of the Recent Carolinian Province" (Petuch, 1990: 103) species *C. floridanus* Gabb, 1869; he differentiated *C. capelettii* from the latter species based upon its "sharper, more carinated shoulder and in having a much higher, scalariform spire" (Petuch, 1990: 103), but inspection of his type material does not justify separating this high-spired morph from *C.* cf. *largillierti* as circumscribed here. Petuch (1991) compared *C. trippae* with *C. presozoni* Olsson & Petit, 1964 (= *C. delessertii* Récluz, 1843), but these two species differ considerably in several characters, particularly in the morphologies of their sutural ramps, subsutural flexures, and color patterns. Petuch (1994: 352) stated that "*Conus diegelae* is most similar to, and is probably descended from, the older, stratigraphically-lower *C. trippae*…" Both *C. loxahatcheensis* Petuch, 1994, and *C. ronaldsmithi* Petuch, 1994, were compared with *C. floridanus* by Petuch (1994). Finally, *C. joelshugari* Petuch, 1994, was compared by Petuch (1994) with *C. gravesae* Petuch, 1994 (which is considered here a likely synonym of *C. daucus* Hwass in Bruguière, 1792), but it shares many more similarities with *C.* cf. *largillierti* as circumscribed here (an exception is its carinated shoulder, which was reported by Petuch in the description of the species).

Petuch's (1994: pl. 91, fig. f) figure of *Conus vaughanensis* Mansfield, 1935, appears to more consistent with *C.* cf. *largillierti* than with *C. vaughanensis*, which is a Miocene species from Florida. Given that the taxonomic status of *C. anabathrum* remains unresolved, I tentatively consider Petuch's

(2004: pl. 93, fig. j) figured fossil specimen of *Gradiconus anabathrum patglicksteinae* (Petuch, 1987) to be a specimen of *C.* cf. *largillierti*.

Conus haytensis G. B. Sowerby II, 1850
Pl. 14, Figs 1-8; Table 12

Conus haytensis G. B. Sowerby II, 1850: 44; Pilsbry, 1922: 326, pl. 19, fig. 1.
Conus (*Dendroconus*) *haytensis* (G. B. Sowerby II, 1850). Pflug, 1961: 60, pl. 16, figs 1-5.
Conus druidi Olsson, 1967: 21, pl. 7, figs 2, 2b.
Conus (*Lithoconus*) *druidi* (Olsson, 1967). Petuch, 1994: pl. 93, figs b-c.
Lithoconus druidi (Olsson, 1967). Petuch: 2004, pl. 56, fig. d.

Diagnosis.–Shell can be very large; outline of last whorl slightly sigmoidal; spire height low to moderate; shoulder forming an adaxial ridge; sutural ramps with raised spiral threads on early whorls; subsutural flexure symmetrically curved; raised spiral threads at base of shell.

Description.–Shell dextral, large. Last whorl conical to broadly and/or ventricosely conical; outline slightly sigmoidal. Shoulder carinate to angulate, usually forming an adaxial ridge. Spire low to moderate; outline usually sigmoidal (concave in smaller individuals). Teleoconch sutural ramps flat to concave, with 3-8 spiral threads that become obsolete in later whorls. Subsutural flexure symmetrically curved, of moderate depth. Last whorl with prominent spiral threads on basal third to half, becoming obsolete toward shoulder. Color pattern usually consisting of three continuous bands. In at least one specimen (PRI 54697; Pl. 14, Figs 6-8), color pattern consists of three pigmented bands that overlie axial streaks near the shoulder; these are in turn overlain by *ca.* 30 rows of spiral dots and dashes. Teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 15 specimens of *Conus haytensis*, including the holotype of *C. druidi* Olsson, 1967, are summarized in Table 12. For these specimens, MD = 0.60(SL) - 3.22 (R^2 = 0.99) and MD = 0.65(AH) - 1.09 (R^2 = 0.99).

Types observed.–Sowerby (1850) did not figure or designate a type for *Conus haytensis*. Pflug (1961) designated a specimen (BMNH 83961) from the Heneken Collection as the lectotype for the species. I did not view this specimen in person, but Pflug's figures (1961: pl. 16, figs 2-3, 5) of the lectotype appear consistent with the fossils from Florida that I have assigned to *C. haytensis*, including the holotype of *C. druidi* (USNM 645160; Pl. 14, Figs 1-2), which I did observe.

Other material examined.–Twenty-five additional lots (36 specimens) of *Conus haytensis* from the PRI and FLMNH were observed and are listed in the Appendix. Two additional lots (PRI 54685 [Pl. 14, Fig. 4] and PRI 54412 [Pl. 14, Fig. 5]) from the Gurabo Formation of the Dominican Republic were also observed. An addition to figuring the holotype of *C. druidi*, Pl. 14 (Figs 3-8) demonstrates the morphological characters of *C. haytensis*, plus some of the variations that were observed among the studied specimens.

Occurrence.–*Conus haytensis* was described from the Tertiary of Santo Domingo (= Dominican Republic; Sowerby [1850] did not provide more exact locality information). The PRI has specimens (*e. g.*, PRI 54412) of *C. haytensis* from the Gurabo Formation collected at TU locality 1219, a locality described by Saunders *et al.* (1986: 64) as "Río Amina, bluffs on east side of river immediately upstream from ford that is 2 km west of Potrero and about 3 km downstream from "La Represa" (= USGS 8517)." In the southeastern U. S., *C. haytensis* is only known from Collier, Hendry, and Sarasota counties in southern Florida. As first reported by Olsson (1967), the holotype of *C. druidi* was discovered in an old collection at the USNM supposedly from La Belle, Hendry County, Florida (USNM station 22445). Exposures at La Belle are primarily of the Caloosahatchee Formation, not the

Table 12. Statistical summary of morphometric data collected from type, fossil, and modern specimens of *Conus haytensis* G. B. Sowerby II, 1850. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimen								
USNM 645160 (H, *C. druidi* Olsson, 1967)	97.5*	54.3	85.7	71.6	113*	0.63	0.84	0.12
All Specimens (n = 15)								
Mean	95.6	53.7	83.7	70.9	116.1	0.64	0.85	0.13
Median	89.0	46.5	77.5	65.0	113	0.64	0.85	0.13
Minimum	27.8	13.8	21.6	18.1	83	0.59	0.82	0.09
Maximum	179.0	106.0	163.0	133.5	143	0.71	0.88	0.22

* = Slight specimen breakage prevented accurate measurement.

Pinecrest Beds of the Tamiami Formation, as suggested by Olsson (1967). Because no other unambiguous information suggests that this species occurs in the Caloosahatchee Formation, it is likely that Olsson's locality information for the holotype of *C. druidi* is incorrect. Therefore, it is possible that in the U. S., *C. haytensis* is restricted to the Pinecrest Beds of the Tamiami Formation.

Remarks.–It is somewhat regretful that the name *Conus druidi*, well-known among amateur collectors (and frequently misapplied to large specimens of *C. spurius* Gmelin, 1791), must be subsumed in favor of the name *C. haytensis*. The holotype and other observed specimens of *C. druidi* appear to agree fully in shell characters (including color pattern) with Dominican Republic specimens, including the lectotype (BMNH 83961) and other specimens of *C. haytensis* in the collections of the PRI. This association was also made by Olsson (1967: 21) when he described the species, stating that the "shape of the cone and its fluorescent pattern places it amongst a group of fossil species such as *Conus haytensis* G. B. Sowerby II, from the Miocene [Pliocene] of Santo Domingo and *Conus molis* Brown & Pilsbry (1911) from the Gatun Miocene [Pliocene] of the Canal Zone, Panama, Costa Rica, and Columbia." *Conus molis* could also be a junior synonym of *C. haytensis*, but I have not seen any of these specimens from the locations listed by Olsson.

Conus yaquensis Gabb, 1873
Pl. 15, Figs 1-16; Table 13

Conus yaquensis Gabb, 1873: 233; Pilsbry, 1922: 331, pl. 11, fig. 6; Kamp, 1967: 51, pl. 3, figs 3a-d.
Conus (*Lithoconus*) *yaquensis* (Gabb, 1873). Petuch, 1988: pl. 19, fig. 8; 1994: pl. 92, figs f-g.
Spuriconus yaquensis (Gabb, 1873). Petuch, 2004: pl. 67, fig. h.
Conus (*Lithoconus*) *jonesorum* Petuch, 1994: pl. 92, fig. o.

Diagnosis.–Aperture slightly wider at base than near shoulder; sutural ramps sigmoidal in profile and lacking spiral ornamentation; subsutural flexure diagonal; raised spiral threads at base of shell, sometimes extending to shoulder; last whorl with reticulate (net-like) color pattern that is frequently visible in normal light.

Description.–Shell dextral, medium-sized. Last whorl conical to broadly and/or ventricosely conical; outline convex. Aperture slightly wider at base than near shoulder. Shoulder subangulate to rounded. Spire of low to moderate height; outline flat to slightly concave. Teleoconch sutural ramps sigmoidal in profile. Subsutural flexure diagonal, approximately twice as deep as wide. Last whorl with adapically elevated spiral ribbons on anterior third, in some smaller individuals persisting almost to shoulder as faint spiral threads. Color pattern on last whorl reticulate, forming *ca.* 15-20 spiral rows of unpigmented, rectangular to oval-shaped regions.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 100 shells of *Conus yaquensis*, including the type specimens listed below, are summarized in Table 13. For these specimens, MD = 0.59(SL) - 0.42 (R^2 = 0.98) and MD = 0.71(AH) - 1.04 (R^2 = 0.99).

Types observed.–The lot ANSP 2547 includes two syntypic specimens of *Conus yaquensis* from the Dominican Republic, the larger of which (Pl. 15, Figs 1-2) Pilsbry (1922) figured and designated as the type (lectotype) for the species. This specimen was observed, as was the paralectotype (Pl. 15, Fig. 3). The holotype of *C. jonesorum* (UF 66430; Pl. 15, Figs 4-5) was also observed.

Other material examined.–Seventy additional lots (more than 500 specimens) of *Conus yaquensis* were observed and are listed in the Appendix. Along with illustrating the type specimens, Pl. 15 (Figs 6-16) demonstrates the morphological characters of *C. yaquensis*, in addition to some of the variations that were observed among the studied specimens.

Table 13. Statistical summary of morphometric data collected from type and other specimens of *Conus yaquensis* Gabb, 1873. H, holotype; L, lectotype; PL, paralectotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
ANSP 2547 (L, *C. yaquensis* Gabb, 1873)	49.3*	29.7	44.3	38.5	127	0.67	0.87	0.10
ANSP 2547 (PL, *C. yaquensis* Gabb, 1873)	40.3	23.3	35.1	30.2	112	0.66	0.86	0.13
UF 66430 (H, *C. jonesorum* Petuch, 1994)	37.9	21.6	33.5	28.3	126	0.65	0.84	0.11
All Specimens (n = 100)								
Mean	38.9	22.7	33.6	27.5	118.8	0.67	0.82	0.14
Median	39.3	22.8	34.0	28.0	119.0	0.67	0.82	0.14
Minimum	19.6	10.9	16.7	13.5	102	0.63	0.76	0.08
Maximum	63.2	39.0	55.4	44.1	140	0.74	0.87	0.20

* = Slight specimen breakage prevented accurate measurement.

Occurrence.–Type locality/stratigraphic horizon unknown (Gabb [1873] gave only "Santo Domingo"). In the southeastern U. S., *Conus yaquensis* is known from the Tamiami Formation (Pinecrest Beds) of Charlotte, Collier, Hendry, Manatee, and Sarasota counties, Florida. Kamp (1967: 52) also reported this species from the Gatun Formation of Panama and "unnamed beds near Cartegena, Columbia."

Remarks.–The distinctive reticulate (or, netted) color pattern of *Conus yaquensis*, which is almost always observable under natural light, readily distinguishes it from all other co-occurring fossil species. Because this *Conus* species is easy to identify and relatively common in deposits of the Pinecrest Beds (Tamiami Formation), it could serve as a good guide fossil for recognizing these strata in the field. Despite viewing more than 500 specimens of *C. yaquensis*, I did not observe any specimens bearing early postnuclear whorls (they were eroded away in all cases), preventing inspection of relevant characters. The holotype of *C. jonesorum* Petuch, 1994 (UF 66430, Pl. 15, Figs 4-5), bears the characteristic netted coloration pattern of *C. yaquensis* and is consistent in all other aspects of shell form as well. Petuch (1994: 355), however, stated that "*Conus jonesorum* is most similar to the older, stratigraphically-lower *C. cherokus*" (here considered a junior synonym of *C. spurius*), but made no reference to *C. yaquensis*.

Conus oniscus Woodring, 1928
Pl. 16, Figs 1-21; Table 14

Conus oniscus Woodring, 1928: 207-208, pl. 10, fig. 3; Kamp, 1967: 53-55, pl. 8, figs 1-12.
Conus (*Ximeniconus*) *oniscus* (Woodring, 1928). Petuch, 1994: pl. 95, fig. d.
Conus (*Ximeniconus*) *calusa* Abbott, 1988b: 39, 41, pl. 1, figs a-b; Petuch, 1994: pl. 95, fig. f.
?*Conus diluvianus* [*sic*] Green, 1830. Tuomey & Holmes, 1857: 132, pl. 27, fig. 15 (non Green, 1830).
?*Conus diluvianus* [sic] Green, 1830. Emmons, 1858: 263-264, fig. 143 (non Green, 1830).
Conus (*Ximeniconus*) *jaroldi* Abbott, 1988a: 32, pl. 1, figs 3-4.
Conus (*Ximeniconus*) *miccosukee* Abbott, 1988b: 41, pl. 1, figs c-d; Petuch, 1994: pl. 95, fig. h.
Conus (*Leptoconus*) *robertsi* Olsson & Harbison, 1953: 175, pl. 26, fig. 3.
Conus (*Ximeniconus*) *robertsi* (Olsson & Harbison, 1953). Abbott, 1988a: pl. 1, figs 1-2; Petuch, 1994: pl. 95, fig. g.
Conus waccamawensis Smith, 1930: 286-288, figs 9, 9a, 10-12; Smith, 1945: pl. 1, fig. 9.
Conus (*Leptoconus*) *waccamawensis* (Smith, 1930). Olsson & Harbison, 1953: 175-176, pl. 26, figs 4, 4a-d.
Conus (*Ximeniconus*) *waccamawensis* (Smith, 1930). Petuch, 1994: pl. 95, figs e, m.
Ximeniconus waccamawensis (Smith, 1930). Petuch, 2004: pl. 74, fig. k, pl. 76, fig. i.

Diagnosis.–Protoconch multispiral; early postnuclear whorls smooth with carinate shoulders; teleoconch sutural ramps with midsutural spiral fold; axial growth lines prominent on sutural ramps; subsutural flexure shallow and V-shaped; incised spiral grooves on anterior half, sometimes extending to shoulder.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical to broadly and/or ventricosely conical; outline slightly convex to sigmoidal to nearly flat. Shoulder carinate to sharply angulate. Spire moderate to high; outline flat to slightly concave. Protoconch multispiral. Shoulders of early postnuclear whorls carinate. Teleoconch sutural ramps slightly concave to sigmoidal due to presence of midsutural spiral fold; axial growth lines usually prominent, outlining very shallow, angular (V-shaped) subsutural flexure. Last whorl with incised spiral grooves (forming ribs) on anterior half, sometimes extending to shoulder. Color pattern on last whorl consisting of *ca.* 20 rows of spiral dots along with two faint, discontinuous spiral bands that form axial streaks; teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 88 shells of *Conus oniscus*, including the type specimens listed below, are summarized in Table 14. For these specimens, MD = 0.48(SL) - 0.87 (R^2 = 0.90) and MD = 0.61(AH) + 0.03 (R^2 = 0.91).

Types observed.–Type specimens observed include the holotypes of *Conus oniscus* (USNM 369354; Pl. 16, Figs 1-3) and *C. waccamawensis* Smith, 1930 (ANSP 79603; Pl. 16, Figs 4-6; three additional possible paratype lots of *C. waccamawensis* were also observed and these include PRI 54702 [Pl. 16, Fig. 7], PRI 54684 [Pl. 16, Fig. 18], and PRI 54364), in addition to the holotypes of *C. jaroldi* Abbott, 1988a (UF 20000; Pl. 16, Figs 8-9), *C. robertsi* Olsson & Harbison, 1953 (ANSP 18644; Pl. 16, Figs 10-11), *C. calusa* Abbott, 1988b (UF 20516; Pl. 16, Figs 12-13), and *C. miccosukee* Abbott, 1988b (UF 20517; Pl. 16, Figs 14-15).

Other material examined.–More than 100 additional lots (more than 1,200 specimens) of *Conus oniscus* from the collections of the FLMNH, PRI, and VMNH were examined. An additional 67 lots (more than 390 specimens) that could not be conclusively distinguished from *C. marylandicus* were also examined. All of these lots are listed in the Appendix. Along with illustrating the type specimens, Pl. 16 (Figs 16-21) demonstrates the morphological characters of *C. oniscus*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The holotype of *Conus oniscus* (USNM 369354; Pl. 16, Figs 1-3) is from the Bowden Formation of Bowden, Jamaica. This species is also known from the Caloosahatchee, Jackson Bluff, Tamiami (Pinecrest Beds), and Waccamaw formations of the southeastern U. S. One lot (UF

Table 14. Statistical summary of morphometric data collected from type and other specimens of *Conus oniscus* Woodring, 1928. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
USNM 369354 (H, *C. oniscus* Woodring, 1928)	37.1	16.1	26.7	22.4	64	0.60	0.84	0.28
ANSP 79603 (H, *C. waccamawensis* Smith, 1930)	32.2	13.7*	24	21.9	70	0.57	0.91	0.26
PRI 54702 (P?, *C. waccamawensis* Smith, 1930)	22.2	9.3	16.3	15.3	68	0.57	0.94	0.27
PRI 54684 (P?, *C. waccamawensis* Smith, 1930)	27.7	11.9	20.4	18	69	0.59	0.88	0.26
PRI 54364-1 (P?, *C. waccamawensis* Smith, 1930)	29.8	12.4	22.5	20.7	69	0.55	0.92	0.24
ANSP 18644 (H, *C. robertsi* Olsson & Harbison, 1953)	27.3	14.3	21.2	17.4	83	0.67	0.82	0.22
UF 20000 (H, *C. jaroldi* Abbott, 1988a)	41.2	20.3	32.5	28.5	86	0.62	0.88	0.21
UF 20516 (H, *C. calusa* Abbott, 1988b)	26.0	15.3	19.4	16	85	0.79	0.82	0.25
UF 20517 (H, *C. miccosukee* Abbott, 1988b)	27.8	11.9	19.6	18.2	62	0.61	0.93	0.30
All Specimens (n = 88)								
Mean	27.5	12.3	20.3	18.0	70.0	0.61	0.89	0.26
Median	27.3	11.9	19.8	17.9	69	0.60	0.91	0.27
Minimum	12.7	5.3	8.5	7.7	55	0.54	0.79	0.21
Maximum	42.2	20.3	32.8	30.3	86	0.79	0.94	0.33

* = Slight specimen breakage prevented accurate measurement.

58070) is also known from the Bermont Formation.

Remarks.–*Conus oniscus* is most similar to *C. marylandicus* Green, 1830, with which it sometimes co-occurs. For differences separating the two species, see remarks associated with *C. marylandicus* (p. 23). Smith (1930) compared the species that he described, *C. waccamawensis*, with *C. marylandicus*. In terms of shell characters, *C. waccamawensis* is almost entirely consistent with *C. oniscus* (it could constitute a narrower, regional [northern] form) and is considered here a synonym of *C. oniscus* (Smith [1930: 288] himself stated that "*Conus waccamawensis* is apparently related rather closely to *Conus* (*Chelyconus*) *oniscus* Woodring"). Several lots (PRI 54684, 54364, and 54702) contain handwritten notes by Smith and probably should be recognized as paratypic lots of *C. waccamawensis*.

Olsson & Harbison (1953) described *Conus robertsi* on the basis of one specimen (ANSP 18644; Pl. 16, Figs 10-11). Although belonging to an especially wide individual, this shell otherwise has characteristics that are fully consistent with *C. oniscus* and it is considered here to be a member of that species. Three fossil taxa described by Abbott, *C. jaroldi* (1988a; Pl. 16, Figs 8-9), *C. calusa* (1988b; Pl. 16, Figs 12-13), and *C. miccosukee* (1988b; Pl. 16, Figs 14-15), also appear consistent in shell morphology with *C. oniscus* and are considered synonyms of that species. None of these three taxa were compared by Abbott (1988a, b) with *C. oniscus*, *C. waccamawensis*, or *C. marylandicus*, despite their obvious similarities to these earlier-described fossil taxa. *Conus jaroldi* and *C. miccosukee*, however, were both compared with *C. robertsi* and *C. miccosukee* was considered by Abbott (1988b) to be most similar to *C. jaroldi*. As noted for *C. marylandicus*, *C. oniscus* shares strong resemblances with the Recent eastern Pacific species *C. tornatus* G. B. Sowerby II, 1833, *C. ximenes* Gray, 1839, and *C. mahogani* Reeve, 1843.

Conus harveyensis Mansfield, 1930
Pl. 15, Figs 17-19

Conus harveyensis Mansfield, 1930: 33, pl. 1, fig. 12 (non *Conus* (*Conasprella*) *harveyensis* (Mansfield) of Petuch, 1994: pl. 94, fig. m).

Diagnosis.–Outline of last whorl convex; shoulder sharply angulate; larval shell paucispiral; first several early postnuclear whorls tuberculate; sutural ramps with several raised spiral threads; subsutural flexure symmetrically curved and deep; deep and wide spiral grooves extending from base of shell to shoulder, with intervening ribs sometimes bearing spirally arranged beads.

Description.–Shell dextral, medium-sided. Last whorl ventricosely conical; outline convex. Shoulder sharply angulate. Spire height medium; outline slightly concave to sigmoidal. Larval shell with approximately two whorls; maximum diameter *ca.* 0.8 mm. First three to four postnuclear whorls tuberculate. Teleoconch sutural ramps slightly concave to flat with several raised spiral threads. Subsutural flexure symmetrically curved and deep; depth can be nearly three and a half times width. Last whorl with deep and wide spiral grooves from base to shoulder; intervening spiral ribs

sometimes covered with spirally arranged beads.

Morphometrics.–All but one of the observed shells were highly damaged, preventing accurate measurements from being collected. Measurement data from the single well-preserved shell (UF 7519) are as follows: SL 52.0 mm, MD 25.9 mm, AH 42.5 mm, HMD 36.2 mm, and SA 90°. The associated morphometric ratios are RD 0.61, PMD 0.85, and RSH 0.18.

Material examined.–According to USNM staff (pers. comm., 2005), the holotype (USNM 370102) of *Conus harveyensis* is apparently lost and could not be procured for observation. My application of the name *C. harveyensis* to observed specimens is based upon (1) Mansfield's description and figure, and (2) observed specimen lots at the FLMNH that were identified as *C. harveyensis* by personnel of the Florida Geological Survey. In total, 5 lots (7 specimens) from the FLMNH were examined and are listed in the Appendix. Pl 15 (Figs 17-19) demonstrates the morphological characters of *C. harveyensis*.

Occurrence.–Personnel of the Florida Geological Survey collected the holotype of *Conus harveyensis* from "Harveys Creek, half a mile [ca. 0.8 km] above abandoned mill, Leon County, Fla., type and only locality" (Mansfield, 1930: 33). All specimens observed came from the Jackson Bluff Formation at Jackson Bluff, Leon County, Florida. Petuch (1994: pl. 94, fig. m) reported *C. harveyensis* from "Petuch Unit 10" of the Pinecrest Beds (Tamiami Formation) exposed at the APAC Quarry, Sarasota County, Florida, but his figured specimen is likely *C. jaspideus*, not *C. harveyensis* (see p. 17). Consequently, I consider *C. harveyensis* to be restricted to the Jackson Bluff Formation of Leon County, Florida.

Remarks.–The figure of the holotype of *Conus harveyensis* (see Mansfield, 1930: pl. 1, fig. 12) shows a shell that is much smaller (21 mm) and more biconic in appearance than the specimens figured here (Pl. 15, Figs 17-18), which have convex last whorls. Because of the small number of specimens available for study, it is unclear whether this difference in shape is related to an ontogenetic effect. In his description of *C. harveyensis*, Mansfield (1930: 33) did not mention the presence of tuberculate early postnuclear whorls, but did describe the nuclear whorls as "smooth, porcellaneous, and rounded in outline." He compared the species to the extant taxon *C. stimpsoni* Dall, 1902, and the fossil species *C. burckhardti* Böse, 1906, both of which he reported as having tuberculate early whorls. The biconically-shaped holotype of *C. stimpsoni* (USNM 107371; viewed at The *Conus* Biodiversity Website; Kohn & Anderson, 2008) appears more similar in overall shell form to *C. delessertii* than to the specimens attributed here to *C. harveyensis*. I did not observe fossil shells closely resembling the holotype of *C. stimpsoni* during the course of this study. Further, no specimens of *C. burckhardti*, a taxon that has been reported by several authors (see Kohn & Anderson, 2008) as occurring in Mexico, Costa Rica, Trinidad, and Venezuela, were observed during this project.

Conus parkeri Richards & Harbison, 1947
Pl. 17, Figs 9-10

Conus parkeri Richards & Harbison in Richards, 1947: 32-33, pl. 11, figs 1-4.

?*Conus* (*Leptoconus*) *parkeri* (Richards & Harbison in Richards, 1947). Petuch, 1994: pl. 91, fig. i.

Diagnosis and description.–As given by Richards (1947: 32-33).

Types observed.–Holotype (USNM 559928; Pl. 17, Figs 9-10): SL 30.0 mm; MD 18.2 mm. Paratype (USNM 559929): SL 27.4 mm; MD 15.8 mm. Both of these type specimens are in very poor condition. An additional paratype (ANSP 16826) was not observed.

Occurrence.–The type specimens were described as being from "Well G.S. #11, 17 miles [27.36 km] west of Boca Raton, Palm Beach County, Florida; depth 47-50 feet [14.3-15.2 m]" and were said to have come from the Caloosahatchee Formation (Richards, 1947: 33).

Remarks.–*Conus parkeri* is only known from the holotype and two paratypes. The holotype (USNM 559928, Pl. 17, Figs 9-10) and paratype closely resemble the extant (and fossil) taxon *C. sennottorum* Rehder & Abbott, 1951. Similarities with *C. sennottorum* include a moderately small shell size, a last whorl that is sigmoidal in outline, an angulate shoulder, an asymmetrically curved subsutural flexure, and the presence of incised spiral grooves on the anterior third of the last whorl. The type specimens of *C. parkeri*, however, are too poorly preserved (for instance, they lack preservation of the protoconch and earliest postnuclear whorls) to justify recognition of the fossil taxon *C. parkeri* as the senior synonym of the extant taxon *C. sennottorum*, which was described four years later.

Conus sennottorum Rehder & Abbott, 1951
Pl. 17, Figs 1-8; Table 15

Conus sennottorum Rehder & Abbott, 1951: 63-64, figs 1-2.

Conus (*Leptoconus*) *sennottorum* (Rehder & Abbott, 1951). Petuch, 1988: pl. 23, fig. 11, pl. 32, fig. 7; 1994: pl. 91, fig. g.

Diagnosis.–Outline of last whorl typically sigmoidal; protoconch paucispiral; early postnuclear whorls with large tubercles; sutural ramp lacking spiral ornamentation; subsutural flexure asymmetrically curved; anterior third of last whorl with incised spiral grooves.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical to ventricosely conical; outline sigmoidal to nearly straight. Shoulder angulate to subangulate. Spire moderate to high; outline slightly concave. Protoconch of approximately two whorls, maximum diameter *ca.* 0.8 mm. Early postnuclear whorls with large tubercles. Teleoconch sutural ramps flat to slightly concave. Subsutural flexure asymmetrically curved and of moderate depth. Last whorl with incised spiral grooves on anterior third. Color pattern in modern specimens consisting of approximately six rows of spiral dots or small blotches on posterior half of last whorl (color pattern not observed in fossil specimens).

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from the shells of seven fossil and four modern specimens of *Conus sennottorum* are summarized in Table 15. For the fossil specimens, MD = 0.49(SL) + 0.64 (R^2 = 0.90) and MD = 0.71(AH) - 0.27 (R^2 = 0.97).

Material examined.–Eight lots (28 specimens) of fossil and three lots (four specimens) of modern *Conus sennottorum* from the collections of the FLMNH and PRI. As noted above (p. 30), an additional 42 fossil lots (249 specimens) that could not be differentiated from the similar taxon *C.* cf. *largillierti* Kiener, 1845 were also examined. Observed fossil specimen lots are listed in the Appendix. Pl. 17 demonstrates the morphological characters of modern (Figs 1-2) and fossil (Figs 3-8) *C. sennottorum*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The type locality of modern *Conus sennottorum* is "50 miles [80.47 km] S.W. of Campeche, Yucatan, Mexico. 15 to 16 fathoms [27.4-29.3 m]" (Rehder & Abbott, 1951: 64). Fossil specimens are known from the Plio-Pleistocene of Florida, including the Tamiami (Pinecrest Beds) and Bermont formations; the taxon might also occur in the Caloosahatchee Formation, although unambiguous locality data are lacking.

Remarks.–As noted above, the taxon *Conus parkeri* (Pl. 17, Figs 9-10) appears to be very similar to *C. sennottorum* and could be a senior synonym. However, the poor preservation of the type and only specimens of that taxon prevent this designation from being further explored. Among other co-occurring fossil taxa, *C. sennottorum* is most similar in form to *C.* cf. *largillierti*; differences separating these two taxa were discussed above (p. 31).

Conus spuroides Olsson & Harbison, 1953
Pl. 17, Figs 11-22; Table 16

Conus (*Lithoconus*) *spuroides* Olsson & Harbison, 1953: 172, pl. 26, figs 1, 1a-d; Kamp, 1967: 55-57, pl. 6, figs 1-2; Petuch, 1991: pl. 9, fig. 15; 1994: pl. 93, fig. i.
Calusaconus spuroides (Olsson & Harbison, 1953). Petuch, 2004: pl. 80, fig. d.

Diagnosis.–Sutural ramps lacking spiral ornamentation; subsutural flexure symmetrically or asymmetrically curved and of moderate depth; last whorl with weak, raised spiral threads on basal quarter. Last-whorl color pattern typically visible in normal light and consisting of 6-13 pigmented rows of spiral blotches or dots; teleoconch whorls with radial streaks.

Description.–Shell dextral, medium-sized to moderately large. Last whorl conical to broadly and/or ventricosely conical;

Table 15. Statistical summary of morphometric data collected from fossil and modern specimens of *Conus sennottorum* Rehder & Abbott, 1951.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
FOSSIL SPECIMENS								
All Specimens (n = 7)								
Mean	30.5	15.6	22.5	19.3	79.6	0.7	0.85	0.26
Median	33.3	16.6	24.6	20.8	79	0.7	0.85	0.27
Minimum	19.6	9.7	14.5	11.1	68	0.6	0.77	0.22
Maximum	36.9	19.0	26.9	23.6	91	0.7	0.92	0.30
MODERN SPECIMENS								
All Specimens (n = 4)								
Mean	29.9	15.5	21.0	18.7	79.8	0.74	0.90	0.30
Median	29.2	15.1	19.8	17.2	81.5	0.74	0.89	0.29
Minimum	23.3	12.2	16.1	15.3	73	0.69	0.85	0.26
Maximum	37.9	19.5	28.2	25.1	83	0.80	0.95	0.37

outline slightly convex to nearly flat. Shoulder angulate to subangulate. Spire moderate to high; outline slightly concave. Early postnuclear whorls tuberculate. Teleoconch sutural ramps flat to slightly sigmoidal. Subsutural flexure asymmetrically to symmetrically curved and of moderate depth. Last whorl with weak, raised spiral threads on basal quarter, smooth above. Color pattern on last whorl consisting of 6-13 rows of spiral blotches or dots; teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 72 specimens, including the holotype (ANSP 18642) of *Conus spuroides* and 28 additional shells that are intermediate between *C. spuroides* and *C. spurius* Gmelin, 1791, are presented in Table 16. For the 72 specimens assigned to *C. spuroides*, MD = 0.60(SL) - 1.53 (R^2 = 0.98) and MD = 0.72(AH) - 0.12 (R^2 = 0.99).

Number of rows of pigmented elements as a function of shell size.–The relationship between number of rows of spiral blotches or dots and shell size in *C. spuroides* is described by the equation NRPE = 0.14(SL) + 3.07 (R^2 = 0.53; n = 34).

Type observed.–Holotype (ANSP 18642; Pl. 17, Figs 11-13).

Other material examined.–More than 80 lots (more than 450 specimens) of *Conus spuroides* from the collections of the FLMNH and PRI. As noted above (p. 20), an additional 16 lots (99 specimens) that could not be differentiated from *C. spurius* Gmelin, 1791, were also observed. All specimens examined are listed in the Appendix. Along with illustrating the holotype, Pl. 17 (Figs 14-22) demonstrates the morphological characters of *C. spuroides*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Olsson & Harbison's (1953) holotype (ANSP 18642) is from an exposure of the Caloosahatchee Formation at La Belle, Hendry County, Florida. Most observed specimens of *Conus spuroides* are from localities with exposures or spoil piles of only Caloosahatchee Formation. Two specimen lots (UF 56050 and 93070), however, are from localities with exposures of only Tamiami Formation and one lot (UF 117305) was apparently collected from the Bermont Formation. Further,

Table 16. Statistical summary of morphometric data collected from type and other specimens of *Conus spuroides* Olsson & Harbison, 1953, as well as specimens intermediate in form between *Conus spuroides* and *Conus spurius* Gmelin, 1791. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
CONUS SPUROIDES								
Type Specimen								
ANSP 18642 (H, *C. spuroides* Olsson & Harbison, 1953)	42.4	23.7	33.3	28.0	92	0.71	0.84	0.21
All Specimens (n = 72)								
Mean	37.7	21.1	29.6	25.3	93.54	0.71	0.85	0.22
Median	35.2	19.7	27.1	23.3	94.50	0.71	0.85	0.21
Minimum	23.4	11.9	17.1	14.4	73	0.67	0.82	0.16
Maximum	61.2	35.5	49.5	41.2	112	0.77	0.89	0.30
INTERMEDIATES								
All Specimens (n = 28)								
Mean	29.5	15.8	23.0	19.8	91.7	0.69	0.86	0.22
Median	27.6	14.5	21.7	18.7	93.5	0.69	0.86	0.22
Minimum	21.1	11.1	16.0	13.8	75	0.64	0.81	0.16
Maximum	44.0	24.6	34.3	29.3	113	0.76	0.94	0.28
***CONUS SPUROIDES* & INTERMEDIATES**								
All Specimens (n = 100)								
Mean	35.4	19.6	27.8	23.8	93	0.70	0.86	0.22
Median	34.3	18.9	26.4	22.4	94	0.70	0.85	0.22
Minimum	21.1	11.1	16.0	13.8	73	0.64	0.81	0.16
Maximum	61.2	35.5	49.5	41.2	113	0.77	0.94	0.30

a small number of additional specimen lots (see Appendix) were observed that come from localities that are known to have contained mixed stratigraphic assemblages, including the APAC Quarry (Tamiami and Caloosahatchee formations) and the Star Ranch Pit (Caloosahatchee and Bermont formations). These occurrence records aside, and given no other substantiated indications to the contrary, I conclude that *C. spuroides* might be restricted to the Caloosahatchee Formation of Florida; substantiation of the occurrence of *C. spuroides* in the underlying Tamiami Formation and overlying Bermont Formation will require new *in situ* specimens of known stratigraphic position to be discovered in the field.

Remarks.–*Conus spuroides* is very similar in form to *C. spurius* Gmelin, 1791, and it can sometimes be difficult to distinguish the two species. Many shells labeled as *C. spuroides* in museum collections are *C. spurius*. See the remarks associated with *C. spurius* (pp. 20-21) for morphological differences that are useful for separating these two taxa. *Conus spuroides* is also very similar to *C. evergladesensis* Petuch, 1991, although fossils of the two taxa are not thought to co-occur (*C. spuroides* is apparently restricted to the Caloosahatchee Formation; *C. evergladesensis* is confined to the overlying Bermont Formation).

Conus miamiensis Petuch, 1986
Pl. 18, Figs 1-8; Table 17

Conus (*Virgiconus*) *miamiensis* Petuch, 1986: 407, pl. 3, figs 11-12; Petuch, 1988: pl. 16, figs 5-6; Petuch, 1994: pl. 95, figs a-b.
Virgiconus miamiensis (Petuch, 1986). Petuch, 2004: pl. 60, fig. l.

Diagnosis.–Shell with very low spire; protoconch mammillate; sutural ramps sigmoidal in profile, with spiral grooves on first several early postnuclear whorls and fine, raised spiral threads on later whorls; subsutural flexure diagonal; last whorl with raised spiral threads extending from base of shell to shoulder.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical to ventricosely conical; outline straight to slightly convex; maximum diameter reached beneath shoulder. Shoulder angulate to subangulate. Spire height low; outline flat to concave. When preserved, larval shell protruding above later teleoconch whorls, maximum diameter *ca.* 0.7 mm. Teleoconch sutural ramps sigmoidal in profile; spiral grooves present on first several early postnuclear whorls and fine, raised spiral treads on later whorls. Subsutural flexure diagonal; depth approximately one and one-half times width. Last whorl with raised spiral threads often extending from anterior end to shoulder (although becoming nearly obsolete toward the shoulder in some specimens). Color pattern on last whorl consisting of *ca.* 30 rows of spiral dots or dashes, with pigmentation occurring on top of the spiral threads.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 32 specimens, including MCZ 113027 and 113028, are summarized in Table 17. For these specimens, MD = 0.59(SL) - 0.77 (R^2 = 0.95) and MD = 0.61(AH) - 0.15 (R^2 = 0.95).

Types observed.–Holotype (MCZ 113027, previously MCZ 29229; Pl. 18, Figs 1-2) and paratype (MCZ 113028, previously MCZ 29237).

Other material examined.–Thirty-four additional specimen lots (more than 200 specimens) of *Conus miamiensis* from the collections of the FLMNH and PRI. Lots examined are listed in the Appendix. Along with illustrating the holotype, Pl. 18 (Figs 3-8) demonstrates the morphological characters of *C. miamiensis*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Petuch's types are from the Tamiami Formation (Pinecrest Beds) exposed at the Bird Road locality, Miami-Dade County, Florida (UF locality DA001). Observed specimen lots also come from Pinecrest Beds exposed in Collier, Charlotte, Manatee, and Sarasota counties, Florida. A single specimen (UF 114799), however, was observed that is apparently from a locality (UF Locality HN004) in Hendry County, Florida, that predominantly contains material from the Caloosahatchee Formation. Aside from this single record, *C. miamiensis* is restricted to the Tamiami Formation of southern Florida.

Remarks.–A species very closely resembling *Conus miamiensis* was described and figured by Kamp (1967: 59-61, pl. 5, figs 5-7) in her thesis, but was never published; this name is consequently unavailable. Kamp's "types" are present in the FLMNH as UF 112310, 115828 (Pl. 18, Fig. 3), 115829 (Pl. 18, Fig. 4), and 115830 (Pl. 18, Figs 7-8). I consider these to be specimens of *C. miamiensis*, because they fully agree with Petuch's types.

Petuch (1986) correctly noted the general similarity of *Conus miamiensis* to some members of the extant Indo-Pacific clade (Duda & Kohn, 2005) containing the species *C. virgo* Linnaeus, 1758, *C. emaciatus* Reeve, 1849, *C. flavidus* Lamarck, 1810, *C. frigidus* Reeve, 1848, and *C. terebra* Born, 1778. Among co-occurring species, *C. miamiensis* can be confused with the low-spired taxon *C. paranobilis* Petuch, 1991, but lacks the distinctive color pattern (a pigmented netting surrounding white blotches or tents), stepped spire whorls, and tubercles on the early postnuclear whorls that characterize *C. paranobilis*.

Conus hertwecki Petuch, 1988
Pl. 18, Figs 9-10

Conus hertwecki Petuch, 1988: 56-57, pl. 18, figs 3-4.
Conus (*Conasprella*) *hertwecki* (Petuch, 1988). Petuch, 1994: pl. 94,

Table 17. Statistical summary of morphometric data collected from type and other specimens of *Conus miamiensis* Petuch, 1986. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
MCZ 113027 (H, *C. miamiensis* Petuch, 1986)	31.5	18.7	30.7	26.8	164	0.61	0.87	0.02
MCZ 113028 (P, *C. miamiensis* Petuch, 1986)	22.9	13.7	21.1	17.7	142	0.65	0.84	0.08
All Specimens (n = 32)								
Mean	24.9	14.0	23.3	20.2	144.7	0.60	0.87	0.07
Median	23.4	13.6	22.3	19.4	143.5	0.60	0.87	0.07
Minimum	17.2	9.6	15.9	13.9	125	0.54	0.84	0.02
Maximum	36.2	20.8	35.6	30.4	164	0.65	0.90	0.11

fig. f.

Description.–Shell dextral, small. Last whorl conical; outline slightly convex. Aperture slightly wider at base than near shoulder. Shoulder angulate; undulations on final quarter of last shoulder whorl might be tubercles. Spire height moderate; outline slightly concave. Teleoconch sutural ramps sigmoidal. Subsutural flexure asymmetrically curved; depth approximately equal to width. Last whorl with strong spiral chords on anterior half, becoming weaker toward shoulder.

Type observed.–Holotype (USNM 427968; Pl. 18, Figs 9-10). Shell length 14.9 mm; maximum diameter 7.5 mm; apertural height 12.9 mm; height of maximum diameter 12.3 mm; spire angle 111º. Shell is in very good condition. No other specimens known.

Occurrence.–Holotype was "collected with reef corals, dredged in Mule Pen Quarry, East of Naples, Collier County, Florida, from approximately 20 m depth" (Petuch, 1988: 56) and is from the Tamiami Formation (Pinecrest Beds).

Remarks.–This is a distinctive looking specimen that cannot be readily placed with any other co-occurring species. Because it is represented by a single specimen, however, this taxon cannot be further evaluated at this time. Petuch (1988) compared *Conus hertwecki* to the extant western Pacific taxon *C. proximus* G. B. Sowerby II, 1859, which does have a very similar overall shell form (*e.g.*, see Röckel *et al.*, 1995).

Conus violetae Petuch, 1988
Pl. 18, Figs 11-19; Table 18

Conus violetae Petuch, 1988: 57, pl. 18, figs 5-6, 15-16.
Conus (*Leptoconus*) *violetae* (Petuch, 1988). Petuch, 1994: pl. 92, figs m-n.
Seminoleconus violetae (Petuch, 1988). Petuch, 2004: pl. 53, fig. f.
Conus consobrinus G. B. Sowerby II, 1850. Kamp, 1967: 43-47, pl. 6, figs 5-6 (non G. B. Sowerby II, 1850).

Diagnosis.–Most teleoconch whorls with radially elongate tubercles (absent in mature specimens); sutural ramps with two incised spiral grooves; subsutural flexure asymmetrically curved; last whorl with raised spiral threads on anterior third and one or two rows of fine spiral beads below shoulder; color pattern on last whorl usually visible in normal light and consisting of 7-13 rows of spiral, square dots or blotches; teleoconch whorls with radial blotches.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical; outline nearly straight to slightly sigmoidal. Shoulder angulate with radially elongate tubercles in smaller individuals; shoulder smooth in mature individuals. Spire moderate to high; outline flat to slightly concave. Early postnuclear whorls tuberculate. Teleoconch sutural ramps slightly convex to sigmoidal with two weak incised spiral grooves. Subsutural flexure asymmetrically curved; width approximately one and a half to two times depth. Last whorl with raised spiral threads on anterior third; one or two rows of fine spiral beads present just below shoulder. Color pattern on last whorl consisting of *ca.* 7-13 rows of spiral, square dots or blotches; teleoconch whorls with radial blotches.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from six specimens of *Conus violetae*, including the holotype (USNM 427969), are summarized in Table 18. For these specimens, MD = 0.56(SL) - 1.55 (R^2 = 0.99) and MD = 0.65(AH) + 0.36 (R^2 = 0.99).

Type observed.–Holotype (USNM 427969; Pl. 18, Figs 11-13).

Other material examined.–Total of 9 lots (12 specimens) of *Conus violetae* from the collections of FLMNH and PRI. Specimens examined are listed in the Appendix. Along with illustrating the holotype, Pl. 18 (Figs 14-19) demonstrates the morphological characters of *C. violetae*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The holotype is from Mule Pen Quarry, Collier County, Florida, Tamiami Formation, Pinecrest Beds (Petuch, 1988). *Conus violetae* is only known from

Table 18.—Statistical summary of morphometric data collected from type and other specimens of *Conus violetae* Petuch, 1988. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimen								
USNM 427969 (H, *C. violetae* Petuch, 1988)	22.1*	11.0*	16.0*	14.6*	72	0.69	0.91	0.28
All Specimens (n = 6)								
Mean	26.6	13.4	20.1	18.2	79.2	0.67	0.91	0.25
Median	25.6	12.6	19.4	17.8	77.5	0.67	0.91	0.25
Minimum	16.0	7.6	11.0	10.0	66	0.64	0.88	0.21
Maximum	35.5	19.0	28.2	25.5	94	0.69	0.94	0.31

* = Slight specimen breakage prevented accurate measurement.

the Tamiami Formation (Pinecrest Beds) exposed in Collier County, Florida.

Remarks.–As noted by Petuch (1988), *Conus violetae* shares some similarity with *C. spuroides* in overall shape and color pattern, but is readily distinguished from that species by its radially elongate tubercles, which are present on the shoulders of many of the teleoconch whorls, and its fine spiral beads beneath the shoulder.

In her unpublished Masters thesis, Kamp (1968) described *Conus consobrinus* G. B. Sowerby II, 1850, as occurring in the Pinecrest Beds of the Tamiami Formation. I found and examined two of her specimens, UF 115832 (Pl. 18, Figs 14-15) and UF 115833 (Pl. 18, Figs 18-19), and I conclude that these are not consistent with *C. consobrinus*, a fossil taxon from the Dominican Republic. Pflug (1961) designated a lectotype for *C. consobrinus* (BMNH 83962, Heneken Collection), which he also figured (Pflug, 1961: pl. 17, figs 1-2). His figures of the lectotype, in addition to those of several other specimens, show few similarities with *C. violetae* beyond the presence of similar elongate tubercles on the teleoconch whorls, grooves on the teleoconch sutural ramps, and spiral beads on the last whorl (in *C. violetae*, two rows of spiral beads occur beneath the shoulder, but in some specimens of *C. consobrinus*, rows of spiral beads appear to cover much of the last whorl). In particular, some specimens of *C. consobrinus* are much larger than *C. violetae* (*e.g.*, the lectotype of *C. consobrinus* has SL = 65 mm [Pflug, 1961]; the largest observed specimen of *C. violetae* has SL = 35.5 mm) and most specimens have last whorls that are more elongate in shape (Pflug's figure [pl. 17, fig. 1] of the lectotype appears to have RD = 0.60) than those of *C. violetae* (which have RD ranging 0.64-0.69).

Conus bassi Petuch, 1991
Pl. 19, Figs 1-12; Table 19

Conus (*Leptoconus*) *bassi* Petuch, 1991: 51, pl. 9, figs 7, 13; 1994: pl. 91, fig. b.
Dauciconus bassi (Petuch, 1991). Petuch, 2004: pl. 61, fig. b.

Diagnosis.–Shoulder sharply angulate to angulate; early postnuclear whorls weakly tuberculate; sutural ramps with spiral grooves and prominent growth lines; subsutural flexure asymmetrically curved; last whorl with raised spiral threads on anterior third, sometimes extending weakly to shoulder.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical; outline straight to slightly convex near shoulder. Shoulder sharply angulate to angulate. Spire of low to moderate height; outline slightly concave. First several postnuclear whorls weakly tuberculate. Teleoconch sutural ramps slightly concave to slightly convex or sigmoidal, with several spiral grooves; radial growth lines prominent. Subsutural flexure asymmetrically curved; depth approximately one and a half times width. Last whorl with raised spiral threads on basal third, sometimes extending weakly toward shoulder. Last whorl color pattern consisting of *ca.* 25-30 rows of spiral dots or dashes. In some specimens (*e.g.*, Pl. 19, Figs 8, 11), there also appear to be two discontinuous spiral bands (on either side of the midline of the shell) that form axial streaks. Teleoconch whorls with radial streaks.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 29 specimens of *Conus bassi*, including the type specimens listed below, are summarized in Table 19. For these specimens, MD = 0.49(SL) + 0.03 (R^2 = 0.93) and MD = 0.57(AH) + 0.26 (R^2 = 0.96).

Types observed.–Observed holotype (CM 35663; Pl. 19, Figs 1-2) and one paratype (CM 35664).

Other material examined.–Thirty-eight lots (135 specimens) of *Conus bassi* from the collections of FLMNH and PRI. As noted above (p. 22), an additional 68 lots (more than 450 specimens) were observed that might be assignable to either *C. bassi* or *C. daucus*. Fossil specimen lots observed are listed in the Appendix. Along with illustrating the holotype, Plate 19 (Figs 3-12) demonstrates the morphological characters of *C. bassi*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The holotype (CM 35663) and paratype (CM 35664) are from the APAC Quarry, Sarasota County,

Table 19. Statistical summary of morphometric data collected from type and other specimens of *Conus bassi* Petuch, 1991. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
CM 35663 (H, *C. bassi* Petuch, 1991)	34.8	18.8	30.0	27.0	115	0.63	0.90	0.14
CM 35664 (P, *C. bassi* Petuch, 1991)	30.2	13.9	24.8	23.5	96	0.56	0.95	0.18
All Specimens (n = 29)								
Mean	30.6	15.0	25.7	24.2	103.1	0.59	0.94	0.16
Median	30.2	14.6	24.8	23.5	103	0.58	0.94	0.17
Minimum	21.7	10.4	17.8	16.5	83	0.53	0.90	0.10
Maximum	43.1	20.5	35.7	33.5	125	0.63	0.96	0.22

Florida, and were collected from "Unit 7" (Petuch, 1982) of the Pinecrest Beds (Petuch, 1991). Thirty-six of the 40 observed lots of *Conus bassi* are from exposures of the Tamiami Formation (Pinecrest Beds) in southern Florida, including those in Collier, Glades, Manatee, and Sarasota counties. Lot PRI 40213 (7 specimens) is from the DeSoto Pits (DeSoto County, Florida), which might contain specimens from the Caloosahatchee and/or Bermont formations. Additional occurrence records are recognized by single specimen lots, including the Jackson Bluff Formation (UF 79448; Leon County, Florida), the Caloosahatchee Formation (PRI 44074; Hendry County, Florida), and the Bermont Formation (UF 58069). I have not, however, been able to verify these non-Tamiami Formation occurrence records in original field collections.

Remarks.–*Conus bassi* shares some similarities with the extant species *C. daucus* (including fossils) and *C. amphiurgus* (the latter was also mentioned in Petuch's original description). These similarities include overall last whorl shape, often low spire height, grooves and tubercles on the early postnuclear whorls (see description of *C. daucus* on p. 21; furthermore, Walls [1979: 91] reported that the "earliest 2 or 3 whorls" of *C. amphiurgus* are "weakly nodulose"), and prominent radial growth lines on the sutural ramps. Two characters (color pattern and subsutural flexure morphology) that can sometimes be used to distinguish between *C. daucus* and *C. bassi* were discussed above (pp. 22-23) in the remarks about fossil specimens of *C. daucus*. *Conus bassi* is also similar to *C. burnetti* n. sp.; see p. 45.

Conus evergladesensis Petuch, 1991
Pl. 20, Figs 1-9; Table 20

Conus (*Lithoconus*) *evergladesensis* Petuch, 1991: 53, pl. 9, figs 10-12; 1994: pl. 92, figs h-i.

Calusaconus evergladesensis (Petuch, 1991). Petuch, 2004: pl. 89, fig. e.

Calusaconus tomeui Petuch, 2004: 290-291, pl. 85, fig. h.

Diagnosis.–Last whorl often sigmoidal in outline; spire height usually high; sutural ramps lacking spiral ornamentation; subsutural flexure asymmetrically curved; last whorl with raised spiral threads on anterior third (sometimes extending to shoulder); color pattern typically visible in normal light and consisting of up to 20 rows of spiral dashes or blotches on last whorl and radial blotches on teleoconch whorls.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical to broadly and/or ventricosely conical; outline convex to sigmoidal. Shoulder angulate to subangulate. Spire height usually high, sometimes moderate; outline flat to concave. Larval shell paucispiral. Early postnuclear whorls tuberculate. Teleoconch sutural ramps concave to convex, often sigmoidal in profile in later whorls. Subsutural flexure asymmetrically curved, of moderate depth. Last whorl with spiral threads on basal third, sometimes extending faintly to shoulder. Last whorl color pattern consisting of 6-20 rows (number increasing with shell size) of spiral dashes and blotches that sometimes coalesce to form larger blotches; teleoconch whorls with radial blotches.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 49 specimens of *Conus evergladesensis*, including ANSP 52842, one specimen from CM 35718, and three from AMNH 50678, are summarized in Table 20. For these specimens, MD = 0.59(SL) - 1.34 (R^2 = 0.97) and MD = 0.69(AH) + 1.24 (R^2 = 0.98).

Number of rows of pigmented elements as a function of shell size.–The relationship between the number of rows of spiral dashes or blotches and shell shape in *Conus evergladesensis* is described by the equation NRPE = 0.48(SL) - 1.17 (R^2 = 0.77; n = 45).

Types observed.–The identity of the holotype of *Conus evergladesensis* requires clarification. Petuch (1991: 53) designated ANSP 52843 as the holotype for *C. evergladesensis* (which he described as 27 mm long) and he designated ANSP

Table 20. Statistical summary of morphometric data collected from type and other specimens of *Conus evergladesensis* Petuch, 1991. H, holotype; P, paratype. ANSP 52843 is the true holotype of *C. evergladesensis*, not ANSP 52842; see text for details (pp. 42-43).

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
ANSP 52843 (H, *C. evergladesensis* Petuch, 1991)	26.5	13.5	17.3	15.3	65	0.78	0.88	0.35
ANSP 52843-a (P, *C. evergladesensis* Petuch, 1991)	32.0	16.7	21.7	18.8	72	0.77	0.87	0.32
ANSP 52843-b (P, *C. evergladesensis* Petuch, 1991)	23.5	12.6	16.6	13.7	74	0.76	0.83	0.29
ANSP 52842 (P, *C. evergladesensis* Petuch, 1991)	32.4	17.1	23.0	20.5	78	0.74	0.89	0.29
CM 35718 (P, *C. evergladesensis* Petuch, 1991)	28.9	14.6	19.0	16.0	69	0.77	0.84	0.34
AMNH 50678 (H, *Calusaconus tomeui* Petuch, 2004)	32.7	18.0	25.2	21.8	92	0.72	0.87	0.23
All Specimens (n = 49)								
Mean	28.8	15.5	20.7	17.7	79.9	0.75	0.85	0.29
Median	27.3	14.6	19.2	16.4	79	0.75	0.85	0.29
Minimum	17.3	9.1	12.1	10.4	58	0.67	0.80	0.21
Maximum	43.9	25.2	33.2	29.1	99	0.79	0.91	0.38

52842 and CM 35716 as paratypic lots. The specimen that he figured as the holotype (Petuch, 1991: pl. 9, figs 10-11) is described in its figure caption as having a length of 27 mm and a specimen figured as a paratype is described as having a length of 34 mm. The specimen cataloged at the ANSP as the holotype of *C. evergladesensis* (ANSP 52842; Pl. 20, Fig. 3) contains a handwritten note identifying it as such, but I conclude that it should instead be considered as a paratype. Petuch's figures (1991: pl. 9, figs 10-11) of the holotype match one of the three specimens in the "paratypic" lot ANSP 52843. I conclude that this specimen (Pl. 20, Figs 1-2), which I measured as SL = 26.5 mm, is in fact the specimen that Petuch (1991: pl. 9, figs 10-11) figured as the holotype of *C. evergladesensis* and that ANSP 52842 (Pl. 20, Fig. 3) is a paratype, and could be the specimen figured as such by Petuch (1991: pl. 9, fig. 12). An additional paratypic lot (CM 35718) of *C. evergladesensis* and the holotype of *Calusaconus tomeui* (AMNH 50678; Pl. 20, Figs 4-5) were also observed.

Other material examined.–More than 25 additional lots (more than 100 specimens) of *Conus evergladesensis* at FLMNH and PRI were observed. Lots examined are listed in the Appendix. Along with illustrating the type specimens, Pl. 20 (Figs 6-9) demonstrates the morphological characters of *C. evergladesensis*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–Only known from Palm Beach County, Florida. Restricted to the Bermont Formation.

Remarks.–*Conus evergladesensis* is most similar in morphology to *C. spurius* and *C. spuroides*; see the remarks for those two species (pp. 20-21, 39) for differences separating them from *C. evergladesensis*.

I consider Petuch's (2004) species *Calusaconus tomeui* to be a synonym of *Conus evergladesensis*. Petuch (2004: 291) noted the similarities in "size, shape, and color pattern" between these two taxa and stated that *C. evergladesensis* was the descendant of *C. tomeui* and that *C. tomeui* "forms the perfect morphological intermediate between the older, completely smooth *C. spuroides* from the Caloosahatchee Formation and the completely sculptured *C. evergladesensis* from the upper Bermont Formation." Specimens of *C. spuroides* (see Pl. 17, Figs 11-22), however, do have raised spiral threads on the anterior quarter of the last whorl and some specimens of *C. evergladesensis* have spiral threads that do not generally extend much further than approximately one-third or one-half the way up the last whorl from the anterior end of the shell. The morphological differences supposedly separating these two taxa (primarily the extent of spiral-thread sculpturing on the last whorl) do not justify the establishment of *C. tomeui* as a fossil species distinct from *C. evergladesensis*.

Conus paranobilis Petuch, 1991
Pl. 20, Figs 10-22; Table 21

Conus (*Leptoconus*) *paranobilis* Petuch, 1991: 51-52, pl. 10, fig. 1; 1994: pl. 91, fig. h.
Eugeniconus paranobilis (Petuch, 1991). Petuch, 2004: pl. 61, fig. c.
Eugeniconus irisae Petuch, 2004: 293-294, pl. 61, fig. l.

Diagnosis.–Spire low to moderate; shoulder carinate; early postnuclear whorls tuberculate; sutural ramps with several raised spiral threads on earliest whorls and pronounced axial growth lines; subsutural flexure symmetrically curved; raised spiral threads at base of last whorl.

Description.–Shell dextral, moderately small to medium-sized. Last whorl conical; outline straight to slightly convex. Shoulder carinate. Spire low to moderate; whorls often

Table 21. Statistical summary of morphometric data collected from type and other specimens of *Conus paranobilis* Petuch, 1991. H, holotype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
CM 35665 (H, *C. paranobilis* Petuch, 1991)	23.7	12.3	22.3	21.3	149	0.55	0.96	0.06
AMNH 50681 (H, *Eugeniconus irisae* Petuch, 2004)	29.8	14.7	26.8	24.3	144	0.55	0.91	0.10
All Specimens (n = 10)								
Mean	32.3	16.3	29.4	26.1	133.8	0.56	0.89	0.09
Median	30.0	15.4	27.4	24.2	133.0	0.55	0.88	0.09
Minimum	23.6	11.7	21.0	18.0	123	0.54	0.85	0.06
Maximum	52.1	25.5	47.5	43.0	149	0.59	0.96	0.13

stepped; outline flat to concave; apex mammillate in very low-spired individuals. Poorly preserved protoconchs on two specimens (UF 114766, PRI 54488) appear paucispiral. First two or three postnuclear whorls tuberculate. Teleoconch sutural ramps nearly flat in early whorls, concave to sigmoidal in later whorls, with several raised spiral threads on earliest whorls; axial growth lines often pronounced. Subsutural flexure symmetrically curved; depth approximately one and one-half to two times width. Last whorl with raised spiral threads on anterior third, sometimes extending to shoulder in larger specimens. Color pattern on last whorl consisting of pigmented axial flames that sometimes merge to form reticulations surrounding unpigmented regions that are blotch- or tent-shaped.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 10 specimens, including the type specimens listed below, are summarized in Table 21. For these specimens, MD = 0.48(SL) + 0.86 (R^2 = 0.99) and MD = 0.52(AH) + 1.04 (R^2 = 0.99).

Types observed.–Holotype (CM 35665; Pl. 20, Figs 10-11) of *Conus paranobilis* and holotype of *Eugeniconus irisae* (AMNH 50681; Pl. 20, Figs 12-13).

Other material examined.–Sixteen additional specimen lots (32 specimens) of *Conus paranobilis* from the collections of FLMNH and PRI were observed. Lots examined are listed in the Appendix. Along with illustrating the type specimens, Pl. 20 (Figs 14-22) demonstrates the morphological characters of *C. paranobilis*, in addition to some of the variations that were observed among the studied specimens.

Occurrence.–The holotype of *Conus paranobilis* was collected from the Tamiami Formation (Pinecrest Beds) exposed at the APAC Quarry, Sarasota County, Florida. Specimens are also known from Pinecrest Beds exposed in Manatee, Collier, and Okeechobee counties, Florida. *Conus paranobilis* is restricted to the Tamiami Formation of southern Florida.

Remarks.–Petuch's holotype of *Eugeniconus irisae* appears indistinguishable in shell characteristics from the holotype of *Conus paranobilis*. Petuch (2004: 294) characterized the color pattern of *E. irisae* as "finely triangle-patterned," thereby differentiating it from the "coarsely triangle-patterned" *C. paranobilis*. In my examination of the holotype of *E. irisae*, however, I could see no color pattern on the last whorl (including under ultraviolet light), making it impossible to verify this claim. Petuch (2004: 294) also differentiated *E. irisae* from *C. paranobilis* by noting its "more slender shell with a narrower shoulder," its "distinctly canaliculate spire whorls," and its "smoother shell"; I have, however, observed variation in more than 30 shells of *C. paranobilis*, and these attributes do not seem substantial enough to justify the recognition of this additional, co-occurring species, which was described based on two specimens (the holotype, AMNH 50681, and a paratype reportedly [Petuch, 2004: 293] located in Petuch's personal research collection).

Conus paranobilis could be confused with the co-occurring, low-spired species *C. miamiensis*. See the discussion of *C. miamiensis* (p. 39) for attributes separating these two species.

Conus protocardinalis Petuch, 1991
Pl. 18, Figs 20-21

Conus (*Stephanoconus*) *protocardinalis* Petuch, 1991: 54, pl. 9, fig. 14.

Conus (*Purpuriconus*) *protocardinalis* (Petuch, 1991). Petuch, 1994: pl. 94, figs a-b.

Purpuriconus protocardinalis (Petuch, 1991). Petuch, 2004: pl. 81, fig. f.

Description.–Shell dextral, small. Last whorl broadly conical; outline slightly convex. Shoulder angulate, with weak undulations. Spire high and stepped; outline flat. Teleoconch sutural ramps concave. Subsutural flexure symmetrically curved. Last whorl with raised spiral threads on anterior third.

Type observed.–Holotype (CM 35693; Pl. 18, Figs 20-21). Shell length 22.0 mm; maximum diameter 11.5 mm; apertural height 15.3 mm, height of maximum diameter 14.1

mm, spire angle 73º. Early teleoconch whorls are missing and preserved whorls are eroded; lip is broken.

Occurrence.–Holotype is "from canal dredging (20 m depth) along Miami Canal, 1 km north of Broward-Palm Beach County levee in Palm Beach County, Florida" (Petuch, 1991: 54) and is reportedly from the Caloosahatchee Formation. Petuch (1994: pl. 94, fig. a) figured a second specimen of *Conus protocardinalis*, which is apparently from his personal collection. He provided the following locality information for this specimen: "Griffin Bros. pit, Holey Land area, Palm Beach Co." (Petuch, 1994: 230), Florida. No other specimens are known.

Remarks.–Significant shell damage makes this specimen difficult to evaluate. Several characteristics, however, suggest that it represents a distinctive species. These include the overall shape of the shell, the presence of shoulder undulations, and the presence of a symmetrically curved subsutural flexure. The color pattern described by Petuch (1991: 54; "single band of pale-brown flammules around midbody") was not observed in the holotype under ultraviolet light and no obvious color patterns are visible in normal light (Pl. 18, Fig. 20). Further exploration of the status of this species will be possible only with the discovery of more fossil material. Petuch compared this species with the extant taxon *Conus cardinalis*. This shell also resembles the extant taxon *C. ammiralis regius* Gmelin, 1791.

Conus burnetti n. sp.
Pl. 19, Figs 13-24; Table 22

Diagnosis.–Shoulder with a ridge-forming carina; late sutural ramps convex with raised spiral threads and grooves; subsutural flexure asymmetrically curved; anterior third of last whorl with raised spiral threads, sometimes extending weakly toward shoulder.

Description.–Shell dextral, moderately small. Last whorl conical to broadly conical; outline slightly convex to sigmoidal. Shoulder carinate, forming a prominent ridge. Spire height moderate to high; outline slightly concave to flat. Early sutural ramps flat to convex; later ramps convex, with several raised spiral threads and intervening grooves. Subsutural flexure asymmetrically curved; depth slightly greater than width. Last whorl with raised spiral threads on basal third, sometimes extending weakly toward shoulder. Color pattern on last whorl consisting of elongate axial streaks on posterior half that are overlain by *ca.* 20-25 rows of spiral dots and 4-8 narrow bands, both of which cover the last whorl; teleoconch whorls with radial streaks that appear to follow growth lines.

Morphometrics and shell shape as a function of shell size.–Morphometric data collected from 17 specimens of *Conus burnetti*, all of which are type specimens, are summarized in Table 22. For these specimens, MD = 0.51(SL) + 0.37 (R^2 = 0.79) and MD = 0.61(AH) + 1.18 (R^2 = 0.86).

Type specimens here designated.–Holotype, UF 115840 (Pl. 19, Figs 13-18); figured paratypes include PRI 54720 (Pl. 19, Fig. 19), UF 115841 (Pl. 19, Fig. 20), PRI 54721 (Pl. 19, Fig. 21), UF 115842 (Pl. 19, Fig. 22), UF 115843 (Pl. 19, Fig. 23), and PRI 54722 (Pl. 19, Fig. 24); additional paratypic lots are UF 115673 (1 specimen), UF 58638 (1 specimen), UF 114758 (9 specimens), UF 114760 (7 specimens), UF 114768 (4 specimens), and PRI 46036 (1 specimen). This species was first recognized in fossil material from the McGinty Collection, FLMNH; presumably, the UF type specimens were originally collected by one or both of the McGinty brothers (Paul and Thomas). Additional specimens of *Conus burnetti* are present in the McGinty Collections at the FLMNH (currently uncatalogued).

Type locality and occurrence.–The holotype (UF 115840) and paratypic lots UF 115841, 115842, 114758, and 114760 were collected from Tamiami Formation (Pinecrest Beds) spoil material at UF locality CR014 (Alligator Alley 03, Collier County, Florida), which is herein designated as the type locality. This material was located along Alligator Alley (FL Rte. 84), 21.5 mi (34.6 km) east of the intersection with FL Rte. 29. UF 115673 and 115843 were collected from UF locality CR007: Alligator Alley 01; UF 114768 was collected from UF locality CR021: Alligator Alley 04; all three of these previous UF localities are in Collier County, Florida. Four PRI paratypic lots (PRI 46036, 54720, 54721, and 54722) were also collected from spoil piles of Tamiami Formation along Alligator Alley (FL Rte. 84/U. S. Rte. I-75) and are presumably from Collier County, Florida. An additional specimen (UF 58638) is from UF locality HN022: Hendry County Rockpit, Caloosahatchee Formation, Hendry County, Florida. With the exception of this single specimen, *C. burnetti* is not known outside of Collier County and is likely restricted to the Tamiami Formation (Pinecrest Beds) of southern Florida.

Etymology.–This species is named for Burnett Smith (1877-1958) in honor of his contributions to our understanding of Plio-Pleistocene *Conus* from the southeastern U. S. (Smith, 1929, 1930, 1945) and his service and significant donations of fossil material to the Paleontological Research Institution.

Remarks.–*Conus burnetti* is most similar to the co-occurring fossil species *C. bassi*, particularly in regard to its color pattern and the shape of its subsutural flexure (see Pl. 19). *Conus burnetti*, however, can be distinguished from *C. bassi* in (1) its greater mean relative diameter (RD = 0.66, range 0.62-0.72, n = 17, in *C. burnetti*; RD = 0.59, range 0.53-0.63, n = 29, in *C. bassi*), (2) its usually convex sutural ramps on late teleoconch whorls, and (3) its carinate, ridge-forming shoulder. The new species is otherwise distinct in

Table 22. Statistical summary of morphometric data collected from type and other specimens of *Conus burnetti* n. sp. H, holotype; P, paratype.

	SL (mm)	MD (mm)	AH (mm)	HMD (mm)	SA (deg.)	RD	PMD	RSH
Type Specimens								
UF 115840 (H, *C. burnetti* n. sp.)	26.9	13.6	20.8	19.0	85	0.65	0.91	0.23
PRI 54720 (P, *C. burnetti* n. sp.)	29.2	16.0	24.2	22.7	105	0.66	0.94	0.17
PRI 54721 (P, *C. burnetti* n. sp.)	27.2	15.4	21.4	19.8	95	0.72	0.93	0.21
PRI 54722 (P, *C. burnetti* n. sp.)	27.1	14.8	22.9	21.6	109	0.65	0.94	0.15
UF 115673 (P, *C. burnetti* n. sp.)	22.7	11.3	17.5	16.1	83	0.65	0.92	0.23
UF 115843 (P, *C. burnetti* n. sp.)	24.8	12.4	19.6	18.2	90	0.63	0.93	0.21
UF 115841 (P, *C. burnetti* n. sp.)	29.9	14.5	22.4	21.0	80	0.65	0.94	0.25
UF 115842 (P, *C. burnetti* n. sp.)	34.4	18.3	27.6	25.6	93	0.66	0.93	0.20
UF 114758-4 (P, *C. burnetti* n. sp.)	27.8	14.7	22.6	21.4	98	0.65	0.95	0.19
UF 114758-5 (P, *C. burnetti* n. sp.)	28.9	15.1	23.6	22.0	98	0.64	0.93	0.18
UF 114758-6 (P, *C. burnetti* n. sp.)	26.3	13.3	19.8	18.3	82	0.67	0.92	0.25
UF 114758-7 (P, *C. burnetti* n. sp.)	28.5	14.6	22.2	20.5	88	0.66	0.92	0.22
UF 114760-1 (P, *C. burnetti* n. sp.)	27.0	15.0	21.6	20.4	97	0.70	0.94	0.20
UF 114760-2 (P, *C. burnetti* n. sp.)	23.5	13.6	18.8	17.3	97	0.72	0.92	0.20
UF 114760-3 (P, *C. burnetti* n. sp.)	29.1	15.2	23.2	21.3	92	0.65	0.92	0.20
UF 114768-1 (P, *C. burnetti* n. sp.)	27.9	14.2	23	20.4	100	0.62	0.89	0.18
UF 114768-2 (P, *C. burnetti* n. sp.)	26.8	14.5	21.7	20.5	100	0.67	0.94	0.19
All Specimens (n = 17)								
Mean	27.5	14.5	21.9	20.4	93.6	0.66	0.93	0.20
Median	27.2	14.6	22.2	20.5	95	0.65	0.93	0.20
Minimum	22.7	11.3	17.5	16.1	80	0.62	0.89	0.15
Maximum	34.4	18.3	27.6	25.6	109	0.72	0.95	0.25

shell form from other co-occurring fossil *Conus* taxa.

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Appendix. Database of fossil *Conus* material observed in the present study. Sorted first by species name, second by stratigraphic formation, third by locality name. Specimens observed at the Virginia Museum of Natural History (VMNH) are not cataloged; lot identifiers refer to samples collected and arranged stratigraphically. Type specimens identified as holotypes (H), paratypes (P), lectotypes (L), paralectotypes (PL), or syntypes (S). States: FL, Florida; LA, Louisiana; NC, North Carolina; SC, South Carolina; VA, Virginia. Stratigraphic abbreviations: ANA, Anastasia Formation; BERM, Bermont Formation; BOW, Bowden Formation; CAL, Caloosahatchee Formation (bed number sometimes in parentheses); FT, Fort Thompson Formation (bed number or stratigraphic position sometimes in parentheses); CANE, Canepatch Formation; CHOW, Chowan River Formation; DUP, Duplin Formation; INTRA, Intracoastal Formation; JB, Jackson Bluff Formation; JC, James City Formation; NASH, Nashua Formation; RAY, Raysor Marl; TAM (PB), Pinecrest Beds of the Tamiami Formation (Pinecrest Bed number sometimes given in parentheses); TAM (OCH), Ochopee Limestone of the Tamiami Formation; WACC, Waccamaw Formation; YORK, Yorktown Formation (zone sometimes given in parentheses); ?, expression of uncertainty or missing information. See Table 2 for age assignments of most of these strata; the Intracoastal and Bowden formations are both Pliocene in age (see Scott, 1997, and Jones, 1997, respectively) and the Canepatch Formation is Pleistocene in age (DuBar *et al.*, 1974). The reader should be aware that specimen lots from equivalent localities could bear different locality names, especially when they are housed at different museums. Paleontological Research Institution (PRI) specimen lots could bear UF locality information if collected by JRH.

Museum Lot	Species	No.	State	County	Locality Code	Locality Name	Formation
PRI 46044	*adversarius*	5	FL	?		"Johnson Brothers Rock Pit"	?
ANSP 1189	*adversarius*	6	NC	Duplin		?	?
ANSP 779	*adversarius*	3	NC	Duplin		?	?
PRI 4156E	*adversarius*	3	SC	?	PRI 1275	?	?
PRI 50725	*adversarius*	3	NC	?		?	?
PRI 50729	*adversarius*	1	SC	?	PRI 1275	?	?
PRI 50731	*adversarius*	3	NC	?		?	?
PRI 53511	*adversarius*	1	?	?		?	?
PRI 53538	*adversarius*	1	NC	?		?	?
VMNH uncat.	*adversarius*	2	?	?		?	?
ANSP 58860	*adversarius*	2	FL	Charlotte		2 mi (3.22 km) N of Bermont	?
UF 112560	*adversarius*	2	FL	Glades	UF GL024	Big Bear Beach 01	?
UF 42081	*adversarius*	14	FL	Glades	UF GL024	Big Bear Beach 01	?
ANSP 52518	*adversarius*	22	FL	Highlands		Brighton	?
PRI 53498	*adversarius*	5	FL	Glades	PRI 1990	Caloosahatchee Canal [2.5 mi (4.02 km) E of Ortona Locks]	?
PRI 54647	*adversarius*	1	FL	Glades	PRI 1990	Caloosahatchee Canal [2.5 mi (4.02 km) E of Ortona Locks]	?
PRI 53502	*adversarius*	1	FL	Glades	PRI 1991	Caloosahatchee Canal [3 mi (4.83 km) E of Ortona Locks]	?
PRI 53503	*adversarius*	3	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?

PRI 53516	*adversarius*	10	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
PRI 53500	*adversarius*	1	FL	Hendry	PRI 1988	Caloosahatchee Canal (S of FL Rt. 78, LaBelle)	?
UF 47278	*adversarius*	1	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
VMNH 80BB10	*adversarius*	1	FL	Hendry?		Caloosahatchee Pit	?
VMNH 80BB10	*adversarius*	2	FL	Hendry?		Caloosahatchee Pit	?
ANSP 14921	*adversarius*	1	FL	Hendry?		Caloosahatchee River	?
ANSP 14922	*adversarius*	2	FL	Hendry?		Caloosahatchee River	?
ANSP 15030	*adversarius*	3	FL	Hendry?		Caloosahatchee River	?
ANSP 15031	*adversarius*	3	FL	Hendry?		Caloosahatchee River	?
ANSP 537	*adversarius*	1	FL	Hendry?		Caloosahatchee River	?
ANSP 537	*adversarius*	9	FL	Hendry?		Caloosahatchee River	?
ANSP 61338	*adversarius*	1	FL	Hendry		Caloosahatchee River (N side, S of FL Rte. 78)	?
PRI 53521	*adversarius*	1	FL	Hendry?	PRI 1393	Caloosahatchee River at Ft. Thompson?	?
PRI 46047	*adversarius*	2	FL	Okeechobee?		Canal 65D	?
ANSP 57463	*adversarius*	8	FL	Collier		Carnestown	?
ANSP 58474	*adversarius*	2	FL	Collier		Carnestown	?
UF 20405	*adversarius*	4	FL	Putnam	UF PU002	Crescent Lake Canal	?
PRI 50723	*adversarius*	2	NC	?		Curry ?	?
VMNH uncat.	*adversarius*	1	FL	DeSoto		DL's Pit, Arcadia	?
VMNH uncat.	*adversarius*	1	FL	DeSoto		DL's Pit, Arcadia	?
ANSP 14710	*adversarius*	1	NC	?		Fort Barnwell	?
ANSP 70350	*adversarius*	2	FL	Lee or Hendry		Fort Denard	?
ANSP 70351	*adversarius*	2	FL	Lee or Hendry		Fort Denard	?
ANSP 70352	*adversarius*	7	FL	Lee or Hendry		Fort Denard	?
UF 110404	*adversarius*	1	FL	Hendry	UF HN031	Fort Lee	?
UF 56673	*adversarius*	10	FL	Hendry	UF HN031	Fort Lee	?
UF 56783	*adversarius*	10	FL	Hendry	UF HN031	Fort Lee	?
ANSP 69375	*adversarius*	14	FL	Lee		N of Fort Myers	?

PRI 50747	*adversarius*	11	FL	Glades		Harney Lake Canal	?
ANSP 55267	*adversarius*	3	FL	Glades		Harney Pond Canal	?
ANSP 70561	*adversarius*	1	FL	Glades		Harney Pond Canal	?
ANSP 70651	*adversarius*	5	FL	Glades		Harney Pond Canal	?
ANSP 70751	*adversarius*	9	FL	Glades		Harney Pond Canal	?
ANSP 70753	*adversarius*	6	FL	Glades		Harney Pond Canal	?
ANSP 70754	*adversarius*	2	FL	Glades		Harney Pond Canal	?
ANSP 70925	*adversarius*	1	FL	Glades		Harney Pond Canal	?
PRI 50746	*adversarius*	12	FL	Glades		Harney Pond Canal	?
PRI 50743	*adversarius*	2	FL	Glades	PRI 1954	Harney Pond Store	?
ANSP 79133	*adversarius*	7	FL	Charlotte?		Hendrickson's Quarry, SE of Punta Gorda	?
UF 33427	*adversarius*	1	FL	Dade	UF DA005	Homestead 01	?
ANSP 75526	*adversarius*	3	FL	Hendry		John Swindel's Pit, 1 mi E of Clewiston	?
PRI 53501	*adversarius*	1	FL	Okeechobee?	PRI 1999	Kissimmee Canal	?
PRI 53497	*adversarius*	1	FL	Okeechobee	PRI 1982	Kissimmee Canal, Fort Basinger at lock S65D	?
PRI 53495	*adversarius*	4	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 53499	*adversarius*	7	FL	Highlands	PRI 1984	Kissimmee Canal, upper end of Long Cypress slash, S of lock S65D	?
UF 62113	*adversarius*	6	FL	Okeechobee/ Highlands	UF OB003	Kissimmee River (general)	?
UF 62122	*adversarius*	17	FL	Okeechobee/ Highlands	UF OB003	Kissimmee River (general)	?
UF 22064	*adversarius*	15	FL	Okeechobee	UF OB005	Kissimmee River 02	?
PRI 2239H	*adversarius*	1	FL	Okeechobee		Kissimmee River Canal C38, lock 65D	?
PRI 50291	*adversarius*	7	FL	Okeechobee	PRI 1981	Kissimmee River lock S65D	?
PRI 50292	*adversarius*	4	FL	Okeechobee	PRI 1981	Kissimmee River lock S65D	?
PRI 49058	*adversarius*	1	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 2166H	*adversarius*	1	FL	?		near Kissimmee River	?
ANSP 53956	*adversarius*	24	FL	Palm Beach		14 mi (22.53 km) S of mouth of Lake Harbor (on banks of a dredged canal)	?
PRI 1504C	*adversarius*	2	FL	?		Lake Okeechobee	?
PRI 2900F	*adversarius*	1	FL	?		Lake Okeechobee	?
PRI 50741	*adversarius*	1	FL	?		Lake Okeechobee	?
PRI 4538F	*adversarius*	1	FL	Glades?		NW shore of Lake Okeechobee	?

ANSP 79134	*adversarius*	1	NC	Columbus		N shore of Lake Waccamaw	?
ANSP 54589	*adversarius*	3	FL	Palm Beach		Loxahatchee	?
ANSP 58643	*adversarius*	2	FL	Dade		30 km W of Miami	?
PRI 50739	*adversarius*	1	FL	Collier		Naples	?
ANSP 54068	*adversarius*	6	FL	Sarasota		Newburn Pit Mine	?
ANSP 54070	*adversarius*	7	FL	Sarasota		Newburn Pit Mine	?
ANSP 54072	*adversarius*	30	FL	Sarasota		Newburn Pit Mine	?
ANSP 57620	*adversarius*	1	FL	Sarasota		Newburn Pit Mine	?
ANSP 59739	*adversarius*	27	FL	Sarasota		Newburn Pit Mine	?
PRI 881F	*adversarius*	1	FL	Pinellas		North St. Petersburg	?
UF 15695	*adversarius*	1	FL	Glades	UF GL012	Ortona Lock 03	?
PRI 50740	*adversarius*	2	FL	Glades		Ortona Locks	?
ANSP 55999	*adversarius*	2	FL	Glades		Richards Waterfall	?
ANSP 18051	*adversarius*	20	FL	Pinellas		St. Petersburg	?
PRI 1079F	*adversarius*	2	FL	Hillsborough		St. Petersburg	?
PRI 1413E	*adversarius*	3	FL	Hillsborough		St. Petersburg	?
ANSP 18565	*adversarius*	1	FL	Pinellas		St. Petersburg	?
ANSP 56218	*adversarius*	1	NC	Bladen		Tar Heel	?
ANSP 61524	*adversarius*	3	FL	Broward		16 mi (25.75 km) NW of Terrytown	?
ANSP 52051	*adversarius*	3	FL	Broward		25 mi (40.23 km) W of Terrytown	?
UF 113698	*adversarius*	1	LA	Lafourche Parish	UF 4104 / TU 244	None	?
UF 22329	*adversarius*	1	FL	Highlands	UF 3244	None	?
UF 5549	*adversarius*	1	FL	Glades	UF 2929	None	?
PRI 50742	*adversarius*	1	FL	Okeechobee		?	CAL
PRI 53508	*adversarius*	1	FL	Palm Beach		?	CAL
UF 102373	*adversarius*	5	FL	Okeechobee	UF OB012	101 Ranch Pit 02A	CAL
UF 102378	*adversarius*	1	FL	Okeechobee	UF OB012	101 Ranch Pit 02A	CAL
UF 107791	*adversarius*	1	FL	Okeechobee	UF OB012	101 Ranch Pit 02A	CAL
UF 36903	*adversarius*	4	FL	DeSoto	UF DE011	Arcadia 01	CAL
UF 36987	*adversarius*	1	FL	DeSoto	UF DE011	Arcadia 01	CAL
UF 60567	*adversarius*	1	FL	Hendry	UF HN008	Caloosahatchee Canal 02	CAL
UF 113840	*adversarius*	9	FL	Hendry	UF HN045	Caloosahatchee River	CAL

UF 113841	*adversarius*	22	FL	Hendry	UF HN045	Caloosahatchee River	CAL
UF 26713	*adversarius*	94	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 2817	*adversarius*	240	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 35196	*adversarius*	31	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 9330	*adversarius*	5	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 98865	*adversarius*	1	FL	Hendry	UF HN034	Caloosahatchee River 11	CAL
UF 99444	*adversarius*	1	FL	Hendry	UF HN036	Caloosahatchee River 13	CAL
PRI 53517	*adversarius*	1	FL	Glades		Caloosahatchee River near Ortona	CAL
PRI 46052	*adversarius*	3	FL	Hendry		Clewiston	CAL
UF 22735	*adversarius*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 46496	*adversarius*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 46541	*adversarius*	3	FL	Hendry	UF HN017	Clewiston	CAL
UF 46610	*adversarius*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 52649	*adversarius*	5	FL	Hendry	UF HN017	Clewiston	CAL
UF 57681	*adversarius*	1	FL	Hendry	UF HN017	Clewiston	CAL
ANSP 58970	*adversarius*	10	FL	Hendry		Clewiston	CAL
UF 8406	*adversarius*	2	FL	Hendry	UF HN001	Clewiston 01	CAL
UF 8409	*adversarius*	3	FL	Hendry	UF HN001	Clewiston 01	CAL
UF 1720	*adversarius*	2	FL	Hendry	UF HN021	Clewiston 04	CAL
PRI 50737	*adversarius*	1	FL	Hendry		Cochran Shell Pit	CAL
PRI 53537	*adversarius*	19	FL	Hendry		Cochran Shell Pit	CAL
UF 112293	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 113763	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 113773	*adversarius*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 113784	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14194	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14995	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 15778	*adversarius*	4	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 23479	*adversarius*	6	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24035	*adversarius*	21	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24036	*adversarius*	32	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24079	*adversarius*	18	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24283	*adversarius*	4	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24969	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL

UF 25031	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 36071	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 52769	*adversarius*	4	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54437	*adversarius*	8	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54445	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54695	*adversarius*	12	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54763	*adversarius*	19	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 55095	*adversarius*	13	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 55110	*adversarius*	12	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 55133	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 57335	*adversarius*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 57947	*adversarius*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 58040	*adversarius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 58185	*adversarius*	3	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 36160	*adversarius*	2	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 36724	*adversarius*	8	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 36769	*adversarius*	1	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 36845	*adversarius*	2	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 37096	*adversarius*	1	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 36227	*adversarius*	1	FL	DeSoto	UF DE004	DeSoto Shell Pit 02	CAL
UF 36674	*adversarius*	3	FL	DeSoto	UF DE004	DeSoto Shell Pit 02	CAL
UF 41000	*adversarius*	3	FL	DeSoto	UF DE010	DeSoto Shell Pit 05	CAL
UF 113847	*adversarius*	2	FL	Glades	UF GL029 / TU 524	Fisheating Creek 01	CAL
UF 85460	*adversarius*	5	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 85558	*adversarius*	2	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 85597	*adversarius*	3	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 86469	*adversarius*	3	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 15533	*adversarius*	2	FL	Glades	UF GL015	Frierson Farm 2	CAL
PRI 46053	*adversarius*	4	FL	Hendry		Hendry County Rockpit	CAL
PRI 54673	*adversarius*	1	FL	Hendry		Hendry County Rockpit	CAL
PRI 54941	*adversarius*	1	FL	Hendry		Hendry County Rockpit	CAL
UF 113833	*adversarius*	2	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
UF 58473	*adversarius*	2	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
PRI 40227	*adversarius*	7	FL	Hendry		LaBelle	CAL
PRI 41078	*adversarius*	1	FL	Hendry		LaBelle	CAL

PRI 50738	*adversarius*	1	FL	Hendry		LaBelle	CAL
PRI 54658	*adversarius*	1	FL	Hendry		LaBelle	CAL
PRI 50735	*adversarius*	1	FL	Hendry		LaBelle (opposite Silva's)	CAL
UF 12323	*adversarius*	1	FL	Hendry	UF HN018	LaBelle East 04	CAL
UF 99550	*adversarius*	1	FL	Hendry	UF HN018	LaBelle East 04	CAL
UF 98561	*adversarius*	5	FL	Hendry	UF HN029	LaBelle East 05 (type locality of Caloosahatchee Formation)	CAL
PRI 50055	*adversarius*	64	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 50060	*adversarius*	30	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50061	*adversarius*	27	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50062	*adversarius*	64	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 50759	*adversarius*	2	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50760	*adversarius*	4	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50761	*adversarius*	7	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50762	*adversarius*	10	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50763	*adversarius*	17	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50764	*adversarius*	21	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50765	*adversarius*	22	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 50766	*adversarius*	36	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 53522	*adversarius*	1	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 53527	*adversarius*	1	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54656	*adversarius*	1	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 40222	*adversarius*	1	FL	Hendry		LaBelle Pit	CAL
PRI 41093	*adversarius*	8	FL	Hendry		LaBelle Pit	CAL
PRI 41094	*adversarius*	1	FL	Hendry		LaBelle Pit	CAL
UF 112314	*adversarius*	3	FL	Hendry	UF HN044 / TU 792	LaBelle West 02	CAL
CM 35691 (H, *C. osceolai*)	*adversarius*	1	FL	Palm Beach	CM SL989	Lake Harbor	CAL
CM 35692 (P, *C. osceolai*)	*adversarius*	1	FL	Palm Beach	CM SL989	Lake Harbor	CAL
UF 18068	*adversarius*	1	FL	Sarasota	UF SO016	Macasphalt Shell Pit A	CAL
UF 113846	*adversarius*	9	FL	Palm Beach	UF PB027 / TU 583	Miami Canal 06	CAL
UF 113848	*adversarius*	1	FL	Palm Beach	UF PB032 / TU 745	Miami Canal 09	CAL
UF 15566	*adversarius*	2	FL	Glades	UF GL005	Moore Haven Marl Pit	CAL
UF 92448	*adversarius*	84	FL	Pinellas	UF PI010	North St. Petersburg	CAL

UF 12384	*adversarius*	5	FL	Glades	UF GL006	Ortona Lock 02	CAL
UF 35592	*adversarius*	5	FL	Glades	UF GL023	Ortona Lock 05	CAL
ANSP 57734	*adversarius*	24	FL	Charlotte		Shell Creek	CAL
ANSP 58877	*adversarius*	2	FL	Charlotte		Shell Creek	CAL
UF 90958	*adversarius*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 91139	*adversarius*	25	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92190	*adversarius*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 114455	*adversarius*	1	FL	Levy	UF LV033	Waccasassa 03	CAL
UF 100203	*adversarius*	26	FL	Hendry	UF 3550	None	CAL
UF 272	*adversarius*	1	FL	Hendry	UF 1680	None	CAL
UF 58540	*adversarius*	2	FL	Hendry	UF 3788	None	CAL
UF 97997	*adversarius*	1	FL	Hendry	UF 3548	None	CAL
UF 113859	*adversarius*	2	FL	Hillsborough	UF PI010 / TU 68	North St. Petersburg	CAL
PRI 53505	*adversarius*	7	FL	Sarasota		Quality Aggregates Phase 06, SE corner	CAL (B 1)
UF 112486	*adversarius*	11	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 112493	*adversarius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 113836	*adversarius*	5	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 50021	*adversarius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 50366	*adversarius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 112484	*adversarius*	6	FL	Glades	UF GL010	Caloosahatchee Canal 05	CAL / BERM (MIX)
UF 112561	*adversarius*	3	FL	Glades	UF GL010	Caloosahatchee Canal 05	CAL / BERM (MIX)
UF 42218	*adversarius*	2	FL	DeSoto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
PRI 40229	*adversarius*	8	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 113726	*adversarius*	25	FL	DeSoto	UF DE018	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 66443 (H, *C. heilprini*)	*adversarius*	1	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
UF 66445 (H, *C. mitchellorum*)	*adversarius*	1	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
UF 66628 (P, *C. heilprini*)	*adversarius*	1	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
UF 90708	*adversarius*	12	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
UF 95927	*adversarius*	3	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
PRI 53494	*adversarius*	15	FL	Palm Beach		Miami Canal, S of FL Rte. 80	CAL / BERM (MIX)
UF 57040	*adversarius*	15	FL	Glades	UF GL001	Ortona Lock 01	CAL / BERM (MIX)
UF 112313	*adversarius*	49	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)

UF 112557	*adversarius*	21	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)
UF 115821	*adversarius*	1	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)
PRI 50333	*adversarius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 50334	*adversarius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 50335	*adversarius*	5	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 50336	*adversarius*	19	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 50337	*adversarius*	10	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 112306	*adversarius*	15	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 62574	*adversarius*	1	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 63735	*adversarius*	1	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 64511	*adversarius*	11	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 64658	*adversarius*	4	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 64860	*adversarius*	6	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 66446 (H, *C. scotti*)	*adversarius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 41382	*adversarius*	5	FL	Palm Beach		Star Ranch Pit	CAL / BERM (MIX)
PRI 41385	*adversarius*	1	FL	Palm Beach		Star Ranch Pit	CAL / BERM (MIX)
PRI 53496	*adversarius*	4	FL	Palm Beach		Miami Canal #2	CAL / BERM (MIX)?
UF 15078	*adversarius*	2	FL	Hendry	UF HN024	Fort Thompson 01 (type locality of Fort Thompson Formation)	CAL / FT (MIX)
PRI 53510	*adversarius*	8	FL	Lee	UF LE019	Bonita Grande Rock and Sand Pit	CAL?
ANSP 54573	*adversarius*	11	FL	Hendry		5-7 mi (8.05-11.27 km) W of Clewiston	CAL?
ANSP 54579	*adversarius*	7	FL	Hendry		5-7 mi (8.05-11.27 km) W of Clewiston	CAL?
ANSP 18050	*adversarius*	3	FL	Hendry		LaBelle	CAL?
ANSP 54588	*adversarius*	3	FL	Hendry		LaBelle	CAL?
ANSP 69431	*adversarius*	1	FL	Hendry		LaBelle	CAL?
ANSP 69432	*adversarius*	1	FL	Hendry		LaBelle	CAL?
ANSP 70752	*adversarius*	1	FL	Hendry		LaBelle	CAL?
PRI 53514	*adversarius*	3	FL	Hendry?		LaBelle?	CAL?
PRI 53523	*adversarius*	9	FL	Hendry?		LaBelle?	CAL?
PRI 53524	*adversarius*	30	FL	Hendry?		LaBelle?	CAL?
VMNH 92LW58	*adversarius*	1	NC	Bladen		Elizabethtown (town dump)	CHOW
PRI 50728	*adversarius*	2	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 50754	*adversarius*	13	NC	Duplin	PRI 2000	Holmes Pit	DUP

PRI 53506	*adversarius*	8	NC	Duplin	PRI 2000	Holmes Pit	DUP
VMNH 83LW1	*adversarius*	5	NC	Robeson		Lumber River	DUP
VMNH 90LW1	*adversarius*	2	NC	Robeson		Lumberton	DUP
VMNH 95LW	*adversarius*	5	NC	Robeson		Lumberton	DUP
VMNH 95LW + 2 ft	*adversarius*	3	NC	Robeson		Lumberton	DUP
VMNH uncat.	*adversarius*	3	NC	Robeson		Lumberton	DUP
VMNH 90LW1-A	*adversarius*	1	NC	Robeson		Lumberton, back from river	DUP
VMNH uncat.	*adversarius*	3	NC	Robeson		Lumberton, Lumberton River	DUP
VMNH 74LW74	*adversarius*	2	NC	Duplin		dug pond NE of Magnolia, on NC Rte. 1003 ca. 3 mi (4.83 km) from Magnolia	DUP
ANSP 4662	*adversarius*	1	NC	Duplin		Natural Well	DUP
PRI 50719	*adversarius*	3	NC	Duplin		Natural Well	DUP
PRI 50720	*adversarius*	3	NC	Duplin		Natural Well	DUP
PRI 50721	*adversarius*	1	NC	Duplin		Natural Well	DUP
PRI 53512	*adversarius*	3	NC	Duplin		Natural Well	DUP
PRI 53518	*adversarius*	1	NC	Duplin		Natural Well	DUP
PRI 8742	*adversarius*	1	NC	Duplin		Natural Well	DUP
PRI 50726	*adversarius*	8	NC	Duplin	PRI 67/1294	Natural Well	DUP
ANSP 14697	*adversarius*	2	NC	Duplin		Natural Well	DUP
PRI 50730	*adversarius*	1	NC	Duplin		Natural Well	DUP
UF 113861	*adversarius*	7	NC	Duplin	UF ZN003 / TU 376	Natural Well (type locality of Duplin Formation)	DUP
UF 12570	*adversarius*	3	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 82597	*adversarius*	2	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 82742	*adversarius*	2	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 82983	*adversarius*	30	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
VMNH uncat.	*adversarius*	2	NC	Duplin		Natural Well (type locality of Duplin Formation)	DUP

VMNH uncat.	*adversarius*	5	NC	Duplin		Natural Well (type locality of Duplin Formation)	DUP
VMNH Field #21-1	*adversarius*	1	SC	?		Ned Moore Farm	DUP
VMNH 76LW43	*adversarius*	4	NC	Craven		New Bern, Martin Marietta	DUP
VMNH 77BB193	*adversarius*	2	NC	Bladen		Robeson Farm, Tar Heel	DUP
VMNH 77BB193	*adversarius*	4	NC	Bladen		Robeson Farm, Tar Heel	DUP
VMNH 95LW	*adversarius*	6	NC	Bladen		Robeson Farm, Tar Heel	DUP
VMNH 95LW	*adversarius*	78	NC	Robeson		Rozier Farm, Lumber Farm	DUP
PRI 50724	*adversarius*	3	NC			Strickland's Marl Pit	DUP
PRI 53504	*adversarius*	9	NC	Duplin	PRI 1450	Strickland's Marl Pit	DUP
PRI 53519	*adversarius*	1	NC	Duplin	PRI 1450	Strickland's Marl Pit	DUP
VMNH 73LW3	*adversarius*	1	NC	Craven		Superior Limestone Company	DUP
VMNH 73LW4(A)	*adversarius*	3	NC	Craven		Superior Limestone Company	DUP
VMNH 73LW5	*adversarius*	4	NC	Craven		Superior Stone Quarry	DUP
ANSP 30699 (L, S, *C. adversarius*)	*adversarius*	4	NC	Duplin		Natural Well	DUP
ANSP 15034	*adversarius*	5	NC	Duplin		?	DUP?
PRI 50767	*adversarius*	14	SC	Florence		Kirby Farm Pond	DUP?
PRI 50768	*adversarius*	59	SC	Florence		Kirby Farm Pond	DUP?
PRI 49057	*adversarius*	2	NC	Craven		New Bern	DUP?
UF 113414	*adversarius*	1	FL	Liberty	UF LI005	Langston Quarry 01	INTRA
PRI 50745	*adversarius*	2	FL	Liberty		Alum Bluff	JB
VMNH 90LW9	*adversarius*	1	FL	Liberty		Alum Bluff	JB
UF 113842	*adversarius*	10	FL	Liberty	UF LI002 / TU 72	Alum Bluff 01A	JB
UF 80957	*adversarius*	3	FL	Liberty	UF LI002	Alum Bluff 01A	JB
UF 3070	*adversarius*	1	FL	Leon	UF LN003	Harvey's Creek	JB
UF 7001	*adversarius*	5	FL	Leon	UF LN003	Harvey's Creek	JB
ANSP 53155	*adversarius*	1	FL	Leon		Jackson Bluff	JB
VMNH 74LW51	*adversarius*	1+?	FL	Leon		Jackson Bluff	JB
VMNH 74LW52	*adversarius*	2+?	FL	Leon		Jackson Bluff	JB
VMNH 74LW52	*adversarius*	3+?	FL	Leon		Jackson Bluff	JB
VMNH 90LW16	*adversarius*	1	FL	Leon		Jackson Bluff	JB

ANSP 17339	*adversarius*	2	FL	Leon		Jackson Bluff	JB
PRI 5119C	*adversarius*	1	FL	Leon	PRI 172	Jackson Bluff	JB
UF 77699	*adversarius*	3	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 77912	*adversarius*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 79811	*adversarius*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 111629	*adversarius*	7	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 112494	*adversarius*	81	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 79263	*adversarius*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 79455	*adversarius*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 79514	*adversarius*	3	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80042	*adversarius*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80255	*adversarius*	2	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80599	*adversarius*	14	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 81040	*adversarius*	3	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 83771	*adversarius*	5	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 7527	*adversarius*	91	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 7647	*adversarius*	3	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 7692	*adversarius*	4	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 78918	*adversarius*	5	FL	Leon	UF LN002	Jackson Bluff 02	JB
AMNH 50680 (H, *C. petiti*)	*adversarius*	1	NC	Beaufort		Lee Creek Mine	JC
ANSP 63026	*adversarius*	2	NC	Beaufort		Lee Creek Mine	JC
VMNH 72LW1(B)	*adversarius*	1	NC	Beaufort		Lee Creek Mine	JC
VMNH 72LW2	*adversarius*	1	NC	Beaufort		Lee Creek Mine	JC
VMNH 72LW2	*adversarius*	5	NC	Beaufort		Lee Creek Mine	JC
VMNH 79BB6	*adversarius*	1	NC	Beaufort		Lee Creek Mine	JC
VMNH uncat.	*adversarius*	1	NC	Beaufort		Lee Creek Mine	JC
UF 104990	*adversarius*	22	FL	Putnam	UF PU004	Cracker Swamp Ranch 01	NASH
UF 105103	*adversarius*	16	FL	Putnam	UF PU004	Cracker Swamp Ranch 01	NASH
UF 105398	*adversarius*	23	FL	Putnam	UF PU004	Cracker Swamp Ranch 01	NASH
UF 48775	*adversarius*	2	FL	Putnam	UF PU003	Nashua Bluffs 01	NASH
UF 92726	*adversarius*	2	FL	Putnam	UF PU005	Old Nashua Landing	NASH
UF 92727	*adversarius*	6	FL	Putnam	UF PU005	Old Nashua Landing	NASH
VMNH 74LW14	*adversarius*	4	SC	Sumter		Tearcoat Branch	RAY

VMNH 74LW14	*adversarius*	15	SC	Sumter		Tearcoat Branch	RAY
VMNH 74LW32	*adversarius*	3	SC	Sumter		Tearcoat Branch	RAY
VMNH 74LW32	*adversarius*	17	SC	Sumter		Tearcoat Branch	RAY
VMNH 90LW2	*adversarius*	10	SC	Sumter		Tearcoat Branch	RAY
UF 40947	*adversarius*	1	FL	Sarasota	UF SO021	Richardson Road Shell Pit 01C	TAM
ANSP 69698	*adversarius*	1	FL	Collier		Sunniland	TAM (OCH)
UF 113709	*adversarius*	3	FL	Collier	UF 4105	None	TAM (OCH)
UF 66444 (H, *C. berryi*)	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 4)
UF 93071	*adversarius*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93111	*adversarius*	72	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93204	*adversarius*	3	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 112211	*adversarius*	3	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 112212	*adversarius*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 112213	*adversarius*	4	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 112309	*adversarius*	68	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113703	*adversarius*	13	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113704	*adversarius*	6	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113713	*adversarius*	7	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113714	*adversarius*	8	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113715	*adversarius*	10	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 113716	*adversarius*	13	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 115825	*adversarius*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 49030	*adversarius*	63	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 49050	*adversarius*	4	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 49054	*adversarius*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 60253	*adversarius*	4	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 65051	*adversarius*	2	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 112312	*adversarius*	21	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 113711	*adversarius*	3	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114210	*adversarius*	8	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114211	*adversarius*	10	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114212	*adversarius*	8	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114824	*adversarius*	27	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 115811	*adversarius*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)

UF 115819	*adversarius*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 115820	*adversarius*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 115824	*adversarius*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
CM 35660 (H, *C. lindajoyceae*)	*adversarius*	1	FL	Sarasota	CM SL986	APAC Quarry	TAM (PB)
CM 35661 (P, *C. lindajoyceae*)	*adversarius*	3	FL	Sarasota	CM SL986	APAC Quarry	TAM (PB)
PRI 50119	*adversarius*	4	FL	Sarasota		APAC Quarry - South Center Pit (NS face)	TAM (PB)
UF 113851	*adversarius*	6	FL	Dade	UF DA015 / TU 1493	Arvida Pits	TAM (PB)
PRI 46046	*adversarius*	3	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 49046	*adversarius*	18	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 54664	*adversarius*	1	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 54666	*adversarius*	1	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 46048	*adversarius*	6	FL	Hendry		Big Cypress (Across canal from TU 1044)	TAM (PB)
UF 22250	*adversarius*	1	FL	Broward	UF BD003	Big Cyress 01	TAM (PB)
UF 13471	*adversarius*	3	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 60375	*adversarius*	11	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 112481	*adversarius*	43	FL	Highlands	UF HG002	Brighton Canal 01	TAM (PB)
UF 113839	*adversarius*	41	FL	Highlands	UF HG009	Brighton Canal 02	TAM (PB)
UF 113707	*adversarius*	1	FL	Charlotte	UF CH045	Elkcam Waterway 01	TAM (PB)
UF 112307	*adversarius*	5	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 115812	*adversarius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 115815	*adversarius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 115816	*adversarius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 115818	*adversarius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 50608	*adversarius*	8	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 50620	*adversarius*	8	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 60334	*adversarius*	15	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 60478	*adversarius*	2	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 61160	*adversarius*	26	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 61173	*adversarius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 112495	*adversarius*	23	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 112496	*adversarius*	23	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 113712	*adversarius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 114848	*adversarius*	1	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)

UF 3857	*adversarius*	4	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59128	*adversarius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59132	*adversarius*	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59348	*adversarius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59867	*adversarius*	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59905	*adversarius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60342	*adversarius*	3	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 62772	*adversarius*	1	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 62887	*adversarius*	1	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 62951	*adversarius*	2	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65461	*adversarius*	37	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65638	*adversarius*	9	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 62283	*adversarius*	1	FL	Okeechobee	UF OB008	Fort Basinger 04	TAM (PB)
UF 62348	*adversarius*	9	FL	Okeechobee	UF OB008	Fort Basinger 04	TAM (PB)
UF 112559	*adversarius*	10	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 115817	*adversarius*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 115822	*adversarius*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61552	*adversarius*	6	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61689	*adversarius*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61703	*adversarius*	3	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61930	*adversarius*	8	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
PRI 46050	*adversarius*	3	FL	Highlands	TU 730	Fort Basinger, Kissimmee River	TAM (PB)
UF 22023	*adversarius*	6	FL	Dade	UF DA004	Fortymile Bend 01	TAM (PB)
UF 35642	*adversarius*	28	FL	Dade	UF DA004	Fortymile Bend 01	TAM (PB)
UF 35648	*adversarius*	14	FL	Dade	UF DA004	Fortymile Bend 01	TAM (PB)
UF 113855	*adversarius*	7	FL	Dade	UF DA014 / TU 525	Fortymile Bend 02	TAM (PB)
UF 113849	*adversarius*	16	FL	Dade	UF DA016 / TU 737	Fortymile Bend 03	TAM (PB)
UF 113853	*adversarius*	2	FL	Glades	UF GL028 / TU 522	Harney Pond Canal 03	TAM (PB)
UF 26638	*adversarius*	1	FL	Glades	UF GL018	Herbert Hoover Dyke 02	TAM (PB)
UF 35835	*adversarius*	6	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 35865	*adversarius*	24	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 112478	*adversarius*	31	FL	Highlands	UF HG006	Kissimmee River 03	TAM (PB)
UF 112479	*adversarius*	96	FL	Highlands	UF HG006	Kissimmee River 03	TAM (PB)
UF 113736	*adversarius*	2	FL	Highlands	UF HG006	Kissimmee River 03	TAM (PB)
UF 35407	*adversarius*	7	FL	Charlotte	UF CH028	Lomax-King Pit A	TAM (PB)

UF 113775	*adversarius*	2	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 43320	*adversarius*	7	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 44441	*adversarius*	2	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 111166	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111403	*adversarius*	22	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111404	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111405	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111409	*adversarius*	19	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111410	*adversarius*	44	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111548	*adversarius*	6	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111549	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111551	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111552	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111553	*adversarius*	7	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111554	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111555	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111556	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111582	*adversarius*	13	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111583	*adversarius*	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111584	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111585	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111630	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112553	*adversarius*	34	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112591	*adversarius*	7	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113033	*adversarius*	6	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113034	*adversarius*	32	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113035	*adversarius*	9	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113038	*adversarius*	14	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113781	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113837	*adversarius*	14	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113838	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 115827	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 32754	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 32762	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 32859	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

UF 32866	*adversarius*	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 33194	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 33310	*adversarius*	13	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 33357	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 33375	*adversarius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 38787	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 38794	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 38884	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 38983	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 39030	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 39147	*adversarius*	9	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 39238	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 40525	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 46317	*adversarius*	6	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 46339	*adversarius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 46363	*adversarius*	7	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 50912	*adversarius*	6	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 98199	*adversarius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
CM 35662 (H, *C. schmidti*)	*adversarius*	1	FL	Collier	CM SL990	Mule Pen Quarry	TAM (PB)
PRI 40228	*adversarius*	1	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 46051	*adversarius*	2	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 49653	*adversarius*	4	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
UF 112308	*adversarius*	25	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 112552	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 113764	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 113774	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 113792	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 113829	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 115813	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 115814	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 14640	*adversarius*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 42461	*adversarius*	37	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 42496	*adversarius*	2	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 42692	*adversarius*	5	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)

UF 43004	*adversarius*	5	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 55422	*adversarius*	9	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
ANSP 76139	*adversarius*	3	FL	Sarasota		Quality Aggregates	TAM (PB)
ANSP 76340	*adversarius*	2	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 40223	*adversarius*	1	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 40226	*adversarius*	2	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 41085	*adversarius*	1	FL	Sarasota		Quality Aggregates Phase 02	TAM (PB)
PRI 52916	*adversarius*	11	FL	Sarasota		Quality Aggregates Phase 02, E end	TAM (PB)
PRI 52917	*adversarius*	3	FL	Sarasota		Quality Aggregates Phase 02, E end	TAM (PB)
PRI 41574	*adversarius*	6	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53513	*adversarius*	15	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53525	*adversarius*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53526	*adversarius*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53581	*adversarius*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 54680	*adversarius*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
UF 88834	*adversarius*	1	FL	Sarasota	UF SO022	Quality Aggregates Phase 07	TAM (PB)
UF 88919	*adversarius*	1	FL	Sarasota	UF SO022	Quality Aggregates Phase 07	TAM (PB)
UF 89009	*adversarius*	2	FL	Sarasota	UF SO022	Quality Aggregates Phase 07	TAM (PB)
PRI 50297	*adversarius*	5	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 50298	*adversarius*	4	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 50299	*adversarius*	5	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 50300	*adversarius*	15	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53179	*adversarius*	53	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53180	*adversarius*	36	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 54701	*adversarius*	1	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
UF 112163	*adversarius*	9	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53164	*adversarius*	133	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53165	*adversarius*	34	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53166	*adversarius*	61	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 54688	*adversarius*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 54708	*adversarius*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 49991	*adversarius*	24	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)

PRI 50516	*adversarius*	34	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 50517	*adversarius*	4	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 50518	*adversarius*	14	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 53189	*adversarius*	6	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 53197	*adversarius*	16	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54655	*adversarius*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54693	*adversarius*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 100280	*adversarius*	6	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 100609	*adversarius*	4	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113850	*adversarius*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113860	*adversarius*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113719	*adversarius*	3	FL	Sarasota	UF SO013	Richardson Road Pit 01B	TAM (PB)
UF 113725	*adversarius*	32	FL	Sarasota	UF SO013	Richardson Road Pit 01B	TAM (PB)
UF 27835	*adversarius*	2	FL	Sarasota	UF SO013	Richardson Road Pit 01B	TAM (PB)
UF 41383	*adversarius*	2	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 53062	*adversarius*	3	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 53169	*adversarius*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 53611	*adversarius*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 53640	*adversarius*	2	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 53932	*adversarius*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 88708	*adversarius*	4	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 89039	*adversarius*	4	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 92154	*adversarius*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 38687	*adversarius*	5	FL	Okeechobee	UF 2664	None	TAM (PB)
PRI 40224	*adversarius*	4	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40225	*adversarius*	13	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 41837	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46043	*adversarius*	4	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46049	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46054	*adversarius*	15	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 50120	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 50736	*adversarius*	4	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 50748	*adversarius*	15	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53520	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53532	*adversarius*	52	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)

PRI 54657	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54665	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54672	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54681	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54682	*adversarius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 55203	*adversarius*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53077	*adversarius*	9	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
PRI 53078	*adversarius*	59	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
PRI 54694	*adversarius*	1	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
PRI 53529	*adversarius*	9	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53530	*adversarius*	45	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53531	*adversarius*	33	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53533	*adversarius*	8	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53534	*adversarius*	11	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53535	*adversarius*	9	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53536	*adversarius*	13	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
UF 113856	*adversarius*	6	FL	Broward	UF BD008 / TU 741	Coral Springs 02	TAM (PB) / CAL (MIX)
UF 113844	*adversarius*	11	FL	Broward	UF BD009 / TU 742	Coral Springs 03	TAM (PB) / CAL (MIX)
UF 113845	*adversarius*	6	FL	Collier	UF CR020 / TU 1175	Corkskrew Island 02	TAM (PB) / CAL (MIX)
UF 3843	*adversarius*	3	FL	Glades	UF GL017	Harney Pond Canal 02	TAM (PB) / CAL (MIX)
UF 112475	*adversarius*	15	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 112476	*adversarius*	14	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 115823	*adversarius*	1	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 49176	*adversarius*	3	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 49585	*adversarius*	9	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 50003	*adversarius*	2	FL	Highlands	UF HG001	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 113854	*adversarius*	1	FL	Okeechobee	UF OB020 / TU 736	Kissimmee River 04	TAM (PB) / CAL (MIX)
UF 101016	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110412	*adversarius*	22	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110415	*adversarius*	22	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112562	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112563	*adversarius*	26	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113730	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113732	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 113761	*adversarius*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113762	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113767	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113776	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113778	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113780	*adversarius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113782	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113783	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113790	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113791	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 115826	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117243	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 13677	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16216	*adversarius*	23	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16225	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16226	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16298	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16304	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18042	*adversarius*	20	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18045	*adversarius*	17	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18061	*adversarius*	24	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18121	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 23201	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 25996	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 28802	*adversarius*	18	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 28803	*adversarius*	9	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29036	*adversarius*	12	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29131	*adversarius*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29239	*adversarius*	15	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29616	*adversarius*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29782	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29910	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30362	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30469	*adversarius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30540	*adversarius*	10	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 30566	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30693	*adversarius*	17	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31046	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31921	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32538	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32542	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32692	*adversarius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32891	*adversarius*	11	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33004	*adversarius*	15	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33013	*adversarius*	40	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33020	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33138	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33235	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33539	*adversarius*	9	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33609	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33815	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33860	*adversarius*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33897	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33958	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34006	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34024	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34076	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34100	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34169	*adversarius*	18	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34253	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34357	*adversarius*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34454	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34551	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34565	*adversarius*	18	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34578	*adversarius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34604	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34670	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34695	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34787	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34793	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 34831	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34882	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34981	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 3669	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 39903	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 40506	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 44087	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 46208	*adversarius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 47737	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 47771	*adversarius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 47828	*adversarius*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96133	*adversarius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9757	*adversarius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9758	*adversarius*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9939	*adversarius*	13	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 113857	*adversarius*	2	FL	Glades	UF GL031 / TU 802	Ortona Lock 06	TAM (PB) / CAL (MIX)
UF 113777	*adversarius*	2	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 113785	*adversarius*	2	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 31138	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 31210	*adversarius*	3	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 31216	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 33710	*adversarius*	13	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 35938	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 1	TAM (PB) / CAL (MIX)
UF 37977	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 1	TAM (PB) / CAL (MIX)
UF 37458	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 2	TAM (PB) / CAL (MIX)
UF 46857	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 49789	*adversarius*	2	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 64022	*adversarius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
PRI 41819	*adversarius*	1	FL	Sarasota		Sarasota	TAM (PB) / CAL (MIX)
PRI 50744	*adversarius*	1	FL	Sarasota		Sarasota	TAM (PB) / CAL (MIX)
PRI 50056	*adversarius*	3	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 50057	*adversarius*	3	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 50058	*adversarius*	7	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 50059	*adversarius*	1	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 50296	*adversarius*	7	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)

PRI 53507	*adversarius*	8	FL	Sarasota		Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 53509	*adversarius*	3	FL	Sarasota		Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 53515	*adversarius*	4	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
UF 116722	*adversarius*	1	FL	Charlotte	UF CH014 / TU 283A	Flamingo Waterway 01	TAM (PB) / FT (MIX)
PRI 46125	*adversarius*	1	FL	Collier?		Alligator Alley	TAM (PB) ?
PRI 50293	*adversarius*	5	FL	Collier?		Alligator Alley	TAM (PB) ?
UF 113852	*adversarius*	19	FL	Collier	UF CR021 / TU 796	Alligator Alley 04	TAM (PB) ?
PRI 46045	*adversarius*	2	FL	Collier?		Alligator Alley 133	TAM (PB) ?
ANSP 56258	*adversarius*	1	NC	Columbus		Acme	WACC
PRI 50715	*adversarius*	17	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50716	*adversarius*	7	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50717	*adversarius*	8	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50718	*adversarius*	2	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50722	*adversarius*	1	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50732	*adversarius*	1	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50749	*adversarius*	26	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50752	*adversarius*	16	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 50753	*adversarius*	41	NC	Columbus	PRI 112/1446	Acme	WACC
VMNH 74LW27	*adversarius*	1	NC	Brunswick		Calabash	WACC
VMNH 74LW27D	*adversarius*	1	NC	Brunswick		Calabash	WACC
VMNH 74LW27E	*adversarius*	2	NC	Brunswick		Calabash	WACC
VMNH 78BB12	*adversarius*	1	NC	Brunswick		Calabash	WACC
VMNH uncat.	*adversarius*	1	NC	Brunswick		Calabash	WACC
VMNH 79BB10?	*adversarius*	3	NC	Brunswick		Calabash Pit	WACC
VMNH 74LW27-D	*adversarius*	1	NC	Brunswick		Calabash, W wall	WACC
UF 113738	*adversarius*	1	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113739	*adversarius*	49	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113740	*adversarius*	184	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113746	*adversarius*	9	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113751	*adversarius*	7	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113834	*adversarius*	5	SC	Horry	UF ZS015	Crescent Beach 01	WACC
VMNH 78BB180	*adversarius*	1	SC	Horry	USGS 26245	Little River Pit; Cedar Creek Village Inc. Pit	WACC
PRI 50734	*adversarius*	1	SC	Horry		Myrtle Beach	WACC

PRI 50750	*adversarius*	7	NC	Columbus	PRI 113	Neils Eddy Landing	WACC
PRI 50751	*adversarius*	14	NC	Columbus	PRI 113	Neils Eddy Landing	WACC
VMNH 77BB181	*adversarius*	1	NC	Columbus		Neils Eddy Landing	WACC
VMNH 77BB181	*adversarius*	2	NC	Columbus		Neils Eddy Landing	WACC
PRI 50727	*adversarius*	2	SC	Horry		Nixon's Landing, Waccamaw River	WACC
ANSP 63229	*adversarius*	1	NC	Columbus		Old Dock	WACC
PRI 53528	*adversarius*	1	NC	Columbus		Old Dock	WACC
VMNH 77BB174	*adversarius*	3	NC	Columbus		Old Dock	WACC
VMNH 77BB176	*adversarius*	1	NC	Columbus		Old Dock	WACC
VMNH NC73	*adversarius*	3	NC	Columbus		Old Dock	WACC
VMNH uncat.	*adversarius*	1	NC	Columbus		Old Dock	WACC
VMNH uncat.	*adversarius*	1	NC	Columbus		Old Dock	WACC
UF 112488	*adversarius*	25	NC	Columbus	UF ZN022	Old Dock 01	WACC
UF 112489	*adversarius*	25	NC	Columbus	UF ZN022	Old Dock 01	WACC
VMNH 77BB21	*adversarius*	1	SC	Horry		Parkers Landing, Waccamaw River	WACC
VMNH 78BB143	*adversarius*	1	SC	Horry		Parkers Landing, Waccamaw River	WACC
UF 113843	*adversarius*	2	NC	Columbus	UF 2846 / TU 559	None	WACC
PRI 50733	*adversarius*	1	VA	Hampton City		Rice's Pit	YORK
PRI 46121	*bassi*	5	FL	?		"Johnson Brothers Rock Pit"	?
PRI 54383	*bassi*	7	FL	?		"Johnson Brothers Rock Pit"	?
PRI 54349	*bassi*	1	FL	Glades		Harney Lake Canal	?
PRI 49029	*bassi*	2	FL	Glades		Lake Hicpochee	?
PRI 46041	*bassi*	8	FL	Glades?		5.5 mi (8.85 km) W of Ortona Locks, N side of river	?
UF 58069	*bassi*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
PRI 44074	*bassi*	1	FL	Hendry		Clewiston Borrow Pit	CAL
PRI 46088	*bassi*	9	FL	Hendry		Cochran Shell Pit	CAL
PRI 3869F	*bassi*	1	FL	?		near Fort Myers	CAL
PRI 54394	*bassi*	1	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54628	*bassi*	40	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 40213	*bassi*	7	FL	DeSoto		DeSoto Shell Pits	CAL / BERM (MIX)
UF 79448	*bassi*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB

CM 35663 (H, *C. bassi*)	*bassi*	1	FL	Sarasota		APAC Quarry	TAM (PB 7)
CM 35664 (P, *C. bassi*)	*bassi*	1	FL	Sarasota		APAC Quarry	TAM (PB 7)
PRI 52921	*bassi*	1	FL	Sarasota		Quality Aggregates Phase 02, E end	TAM (PB 7)
PRI 53194	*bassi*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB 7)
PRI 54636	*bassi*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 115836	*bassi*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115839	*bassi*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71321	*bassi*	9	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 26601	*bassi*	1	FL	Glades	UF GL018	Herbert Hoover Dyke 02	TAM (PB)
UF 111631	*bassi*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 115835	*bassi*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 115837	*bassi*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 115838	*bassi*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42390	*bassi*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 56054	*bassi*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 53185	*bassi*	4	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53176	*bassi*	2	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53177	*bassi*	5	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 54725	*bassi*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 54726	*bassi*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53192	*bassi*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113717	*bassi*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
PRI 9808	*bassi*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40204	*bassi*	4	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46034	*bassi*	5	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54724	*bassi*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
UF 114785	*bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16174	*bassi*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 64020	*bassi*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 58638 (P, *C. burnetti*)	*burnetti*	1	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
PRI 46036 (P, *C. burnetti*)	*burnetti*	1	FL	Collier?		Alligator Alley	TAM (PB)

PRI 54720 (P, *C. burnetti*)	*burnetti*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54721 (P, *C. burnetti*)	*burnetti*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54722 (P, *C. burnetti*)	*burnetti*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 115673 (P, *C. burnetti*)	*burnetti*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115843 (P, *C. burnetti*)	*burnetti*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114758 (P, *C. burnetti*)	*burnetti*	9	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114760 (P, *C. burnetti*)	*burnetti*	7	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 115840 (H, *C. burnetti*)	*burnetti*	1	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 115841 (P, *C. burnetti*)	*burnetti*	1	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 115842 (P, *C. burnetti*)	*burnetti*	1	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114768 (P, *C. burnetti*)	*burnetti*	4	FL	Collier	UF CR021	Alligator Alley 04	TAM (PB)
CM 35733 (H, *C. griffini*)	*daucus*	1	FL	Palm Beach	CM SL994	North New River Canal, "dredged from 15 m depth in North New River Canal, along US Highway 27, 30 km south of South Bay" (Petuch, 1990: 103)	BERM
UF 115805	*daucus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 115806	*daucus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 115807	*daucus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25013	*daucus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 49195	*daucus*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54681	*daucus*	98	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
PRI 54637	*daucus*	1	FL	Collier	TU 1175	Corkskrew Island	CAL
UF 98551	*daucus*	4	FL	Hendry	UF HN029	LaBelle East 05 (type locality of Caloosahatchee Formation)	CAL
PRI 41088	*daucus*	16	FL	Hendry		LaBelle Pit	CAL
PRI 54670	*daucus*	1	FL	Hendry		LaBelle Pit	CAL
PRI 54678	*daucus*	1	FL	Hendry		LaBelle Pit	CAL

UF 66426 (H, *C. gravesae*)	*daucus*	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 352)	CAL ?
UF 66427 (H, *C. harbisonae*)	*daucus*	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 356)	CAL ?
PRI 54630	*daucus*	1	FL	Lee	UF LE019	Bonita Grande Rock and Sand Pit	CAL ?
UF 53708	*daucus* and/or *bassi*	1	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53715	*daucus* and/or *bassi*	4	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 2818	*daucus* and/or *bassi*	101	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 59307	*daucus* and/or *bassi*	1	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 9483	*daucus* and/or *bassi*	7	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 116735	*daucus* and/or *bassi*	1	FL	Hendry	UF HN047 / TU 529	Caloosahatchee River 16B	CAL
UF 25934	*daucus* and/or *bassi*	5	FL	Hendry	UF HN017	Clewiston	CAL
UF 57181	*daucus* and/or *bassi*	1	FL	Hendry	UF HN017	Clewiston	CAL
UF 117359	*daucus* and/or *bassi*	3	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14249	*daucus* and/or *bassi*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 23492	*daucus* and/or *bassi*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24356	*daucus* and/or *bassi*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25699	*daucus* and/or *bassi*	42	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54451	*daucus* and/or *bassi*	16	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 57546	*daucus* and/or *bassi*	10	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 58275	*daucus* and/or *bassi*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL

UF 85481	*daucus* and/or *bassi*	2	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 86491	*daucus* and/or *bassi*	4	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 86583	*daucus* and/or *bassi*	2	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 15671	*daucus* and/or *bassi*	2	FL	Hendry	UF HN023	Fort Denaud Rock Pit	CAL
UF 114857	*daucus* and/or *bassi*	1	FL	Hendry	UF HN022 / TU 726	Hendry County Rockpit	CAL
UF 58439	*daucus* and/or *bassi*	1	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
UF 117363	*daucus* and/or *bassi*	3	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 92528	*daucus* and/or *bassi*	33	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 117295	*daucus* and/or *bassi*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 90805	*daucus* and/or *bassi*	16	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 90962	*daucus* and/or *bassi*	2	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92192	*daucus* and/or *bassi*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 98055	*daucus* and/or *bassi*	1	FL	Hendry	UF 3548	None	CAL
UF 98153	*daucus* and/or *bassi*	1	FL	Hendry	UF 3548	None	CAL
UF 116736	*daucus* and/or *bassi*	1	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 50374	*daucus* and/or *bassi*	11	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 42203	*daucus* and/or *bassi*	1	FL	DeSoto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
UF 42204	*daucus* and/or *bassi*	1	FL	DeSoto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
UF 113729	*daucus* and/or *bassi*	1	FL	DeSoto	UF DE018	DeSoto Shell Pits (general)	CAL / BERM (MIX)

UF 116672	*daucus* and/or *bassi*	1	FL	DeSoto	UF DE018 / TU 1512	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 6928	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO004	Sarasota-Bradenton Airport Quarry	TAM
UF 116658	*daucus* and/or *bassi*	5	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 117266	*daucus* and/or *bassi*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93256	*daucus* and/or *bassi*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 116715	*daucus* and/or *bassi*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 114826	*daucus* and/or *bassi*	12	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114896	*daucus* and/or *bassi*	8	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 61610	*daucus* and/or *bassi*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 10954	*daucus* and/or *bassi*	10	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 10955	*daucus* and/or *bassi*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 117261	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 111132	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111638	*daucus* and/or *bassi*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112559	*daucus* and/or *bassi*	10	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112601	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 114753	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 116661	*daucus* and/or *bassi*	3	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117240	*daucus* and/or *bassi*	4	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)

UF 117256	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 117286	*daucus* and/or *bassi*	3	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117367	*daucus* and/or *bassi*	2	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117372	*daucus* and/or *bassi*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 117276	*daucus* and/or *bassi*	2	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 110414	*daucus* and/or *bassi*	43	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 114790	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16173	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16176	*daucus* and/or *bassi*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18051	*daucus* and/or *bassi*	39	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29376	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58986	*daucus* and/or *bassi*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9748	*daucus* and/or *bassi*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 114773	*daucus* and/or *bassi*	3	FL	Collier	UF CR021 / TU 796	Alligator Alley 04	TAM (PB)?
PRI 53579	*delessertii*	1	FL	Sarasota		?	?
PRI 54356	*delessertii*	1	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
PRI 54392	*delessertii*	1	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 2092H	*delessertii*	1	FL	?		Kissimmee River Canal, near structure 65D	?
UF 113699	*delessertii*	1	LA	Lafourche Parish	UF 4104 / TU 244	None	?
UF 117293	*delessertii*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
PRI 54304	*delessertii*	2	FL	Dade		Capeletti Brothers Pit 11	BERM
UF 52965	*delessertii*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM

UF 52970	*delessertii*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53276	*delessertii*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 55331	*delessertii*	5	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 55358	*delessertii*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56990	*delessertii*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
PRI 54485	*delessertii*	1	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
PRI 54698	*delessertii*	1	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
UF 114797	*delessertii*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 66998 (H, *C. susankhanae*)	*delessertii*	1	FL	Palm Beach	UF PB011	Miami Canal 03	CAL
PRI 54353	*delessertii*	1	FL	Palm Beach		Miami Canal #2	CAL / BERM (MIX)
PRI 53580	*delessertii*	3	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 53628	*delessertii*	1	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 54484	*delessertii*	1	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 54692	*delessertii*	1	NC	Duplin	PRI 2000	Holmes Pit	DUP
VMNH 95LW	*delessertii*	1	NC	Robeson		Rozier Farm; Lumber Farm	DUP
PRI 52918	*delessertii*	1	FL	Sarasota		Quality Aggregates Phase 02, E end	TAM (PB 7)
UF 66422 (H, *C. duerri*)	*delessertii*	1	FL	Highlands	UF 4132	"Kissimmee River dredging at Fort Basinger, Highlands County" (Petuch, 1994: 352)	TAM (PB)
UF 113835	*delessertii*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 117269	*delessertii*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 117294	*delessertii*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60320	*delessertii*	4	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60425	*delessertii*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 113700	*delessertii*	12	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 113800	*delessertii*	22	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 117285	*delessertii*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 116662	*delessertii*	4	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65438	*delessertii*	8	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 117259	*delessertii*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 117371	*delessertii*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61558	*delessertii*	2	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 111406	*delessertii*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111407	*delessertii*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111408	*delessertii*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

UF 117302	*delessertii*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 66449 (H, *C. patstreamae*)	*delessertii*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 116666	*delessertii*	1	FL	Okeechobee	UF 2664	None	TAM (PB)
PRI 44072	*delessertii*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 45035	*delessertii*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53074	*delessertii*	1	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
UF 113702	*delessertii*	1	FL	Highlands	UF HG001 / TU 770	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 29380	*delessertii*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9756	*delessertii*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
PRI 6067 (P, *C. presozoni*)	*delessertii*	1	SC	Horry		Crescent Beach	WACC
USNM 644643 (H, *C. presozoni*)	*delessertii*	1	SC	Horry		Crescent Beach	WACC
USNM 644644 (P, *C. presozoni*)	*delessertii*	1	SC	Horry		Crescent Beach	WACC
UF 113758 (P, *C. presozoni*)	*delessertii*	5	SC	Horry	UF ZS015	Crescent Beach 01	WACC
PRI 41141	*evergladesensis*	3	FL	Palm Beach		New South Bay Canal	?
PRI 44069	*evergladesensis*	4	FL	Palm Beach	TU 201	Belle Glade	BERM
PRI 46065	*evergladesensis*	3	FL	Palm Beach	TU 732	Belle Glade	BERM
PRI 46071	*evergladesensis*	11	FL	Palm Beach	TU 201	Belle Glade	BERM
PRI 46656	*evergladesensis*	1	FL	Palm Beach	TU 732	Belle Glade	BERM
PRI 54728	*evergladesensis*	1	FL	Palm Beach	TU 201	Belle Glade	BERM
PRI 54729	*evergladesensis*	1	FL	Palm Beach	TU 201	Belle Glade	BERM
UF 115844	*evergladesensis*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 14112	*evergladesensis*	2	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 42024	*evergladesensis*	10	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50498	*evergladesensis*	3	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50561	*evergladesensis*	22	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
ANSP 52842 (H, *C. evergladesensis*)	*evergladesensis*	1	FL	Palm Beach		North New River Canal; “canal dredging (15 m depth) along North New River Canal, along U.S. Highway 27, 22 km south of South Bay” (Petuch, 1991: 53)	BERM

ANSP 52843 (P, *C. evergladesensis*)	*evergladesensis*	3	FL	Palm Beach		North New River Canal; "canal dredging (15 m depth) along North New River Canal, along U.S. Highway 27, 22 km south of South Bay" (Petuch, 1991: 53)	BERM
AMNH 50678 (H, *C. tomeui*)	*evergladesensis*	1	FL	Palm Beach		Palm Beach Aggregates, Inc.	BERM
CM 35718 (P, *C. evergladesensis*)	*evergladesensis*	3	FL	Palm Beach	CM SL994	South Bay	BERM
PRI 44076	*evergladesensis*	1	FL	Palm Beach		South Bay	BERM
PRI 44077	*evergladesensis*	6	FL	Palm Beach	TU 978	South Bay	BERM
PRI 46115	*evergladesensis*	3	FL	Palm Beach	TU 978	South Bay	BERM
PRI 54507	*evergladesensis*	1	FL	Palm Beach	TU 978	South Bay	BERM
UF 115845	*evergladesensis*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117290	*evergladesensis*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57979	*evergladesensis*	16	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58162	*evergladesensis*	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58163	*evergladesensis*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58164	*evergladesensis*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58165	*evergladesensis*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 52071	*evergladesensis*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52079	*evergladesensis*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
PRI 54319	*evergladesensis*	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 118664	*harveyensis*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 68869	*harveyensis*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 77698	*harveyensis*	2	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 79807	*harveyensis*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80218	*harveyensis*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 7519	*harveyensis*	1	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 110405	*haytensis*	1	FL	Hendry	UF HN031	Fort Lee	?
UF 56785	*haytensis*	2	FL	Hendry	UF HN031	Fort Lee	?
USNM 645160 (H, *C. druidi*)	*haytensis*	1	FL	Hendry		LaBelle	CAL?
UF 47515	*haytensis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 47679	*haytensis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
PRI 46090	*haytensis*	4	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 43111	*haytensis*	2	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)

PRI 43114	*haytensis*	1	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)
PRI 46111	*haytensis*	2	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)
PRI 54697	*haytensis*	1	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)
UF 35880	*haytensis*	3	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 110372	*haytensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 110373	*haytensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111425	*haytensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113865	*haytensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
PRI 41078	*haytensis*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53075	*haytensis*	2	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
UF 110413	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 13859	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18056	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29382	*haytensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30677	*haytensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31554	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32537	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32543	*haytensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31125	*haytensis*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
USNM 427968 (H, *C. hertwecki*)	*hertwecki*	1	FL	Collier		Mule Pen Quarry	TAM (PB)
PRI 54347	*jaspideus*	3	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
UF 53714	*jaspideus*	3	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53717	*jaspideus*	4	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
PRI 46124	*jaspideus*	1	FL	Hendry?		Cochran Shell Pit?	?
PRI 54706	*jaspideus*	1	FL	Hendry?		Cochran Shell Pit?	?
PRI 54348	*jaspideus*	4	FL	Glades		Harney Lake Canal (at bridge, FL Rte. 78)	?
PRI 54444	*jaspideus*	11	FL	?	PRI 1343	W of Jupiter	?
PRI 54446	*jaspideus*	1	FL	Okeechobee	PRI 1981	Kissimmee River Locks S65D	?
PRI 54419	*jaspideus*	3	FL	?		Lake Okeechobee	?
PRI 54408	*jaspideus*	2	FL	?	PRI 1947	canal connecting Kissimmee Lake to Lake Okeechobee	?
PRI 49061	*jaspideus*	4	FL	Glades		Ortona Locks	?
UF 3784	*jaspideus*	2	FL	Pinellas	UF PI009	Snell Isle	?

UF 22686	*jaspideus*	3	FL	Palm Beach	UF 2693	None	?
UF 22687	*jaspideus*	2	FL	Palm Beach	UF 2693	None	?
PRI 54420	*jaspideus*	3	FL	St. Lucie	UF SL003	Dickerson Pit	ANA
PRI 54425	*jaspideus*	2	FL	St. Lucie	UF SL003	Dickerson Pit	ANA
PRI 54429	*jaspideus*	7	FL	St. Lucie	UF SL003	Dickerson Pit	ANA
UF 111517	*jaspideus*	3	FL	St. Lucie	UF SL003	Dickerson Pit 01	ANA
UF 111963	*jaspideus*	1	FL	St. Lucie	UF SL003	Dickerson Pit 01	ANA
UF 116738	*jaspideus*	21	FL	Palm Beach	UF PB029 / TU 777	North Palm Beach 01	ANA
PRI 54445	*jaspideus*	65	FL	?	PRI 1133	Pamlico, Hypoluxo Pit	ANA ?
UF 66438 (H, *C. hyshugari*)	*jaspideus*	1	FL	Palm Beach	UF 4134	"North New River Canal dredging, 20 miles [32.19 km] south of South Bay" (Petuch, 1994: 356)	BERM
UF 66440 (H, *C. palmbeachensis*)	*jaspideus*	1	FL	Palm Beach	UF 4134	"North New River Canal dredging, 20 miles [32.19 km] south of South Bay" (Petuch, 1994: 358)	BERM
PRI 46095	*jaspideus*	5	FL	Palm Beach	TU 201	Belle Glade	BERM
PRI 46099	*jaspideus*	4	FL	Palm Beach		Belle Glade	BERM
PRI 54707	*jaspideus*	1	FL	Palm Beach	TU 201	Belle Glade	BERM
PRI 4281H	*jaspideus*	6	FL	Palm Beach		S of Belle Glade	BERM
PRI 4283H	*jaspideus*	7	FL	Palm Beach		S of Belle Glade	BERM
UF 14094	*jaspideus*	2	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 42025	*jaspideus*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 49101	*jaspideus*	5	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 49828	*jaspideus*	8	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50127	*jaspideus*	2	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50431	*jaspideus*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50500	*jaspideus*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50562	*jaspideus*	13	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50568	*jaspideus*	5	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50973	*jaspideus*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 6630	*jaspideus*	3	FL	Palm Beach	UF PB001 / TU 201	Belle Glade 01	BERM
UF 8544	*jaspideus*	10	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 117264	*jaspideus*	3	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 117307	*jaspideus*	6	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54262	*jaspideus*	3	FL	Glades	UF GL008	Caloosahatchee River 04	BERM

UF 54520	*jaspideus*	2	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54540	*jaspideus*	6	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 57666	*jaspideus*	14	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 113867	*jaspideus*	126	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 117308	*jaspideus*	6	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 117309	*jaspideus*	2	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55766	*jaspideus*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55769	*jaspideus*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55903	*jaspideus*	7	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55911	*jaspideus*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55915	*jaspideus*	2	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55937	*jaspideus*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 56089	*jaspideus*	3	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 52745	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52747	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52748	*jaspideus*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52841	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52954	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52963	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53284	*jaspideus*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53313	*jaspideus*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 55357	*jaspideus*	4	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56963	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56964	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56970	*jaspideus*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56979	*jaspideus*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 66436 (H, *C. maureenae*)	*jaspideus*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 116739	*jaspideus*	1	FL	Hendry	UF HN048 / TU 808	Felda 01	BERM
PRI 54427	*jaspideus*	1	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
PRI 54441	*jaspideus*	3	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
PRI 54442	*jaspideus*	19	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
PRI 54679	*jaspideus*	1	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
UF 13552	*jaspideus*	1	FL	Hillsborough	UF HI001	Leisey Shell Pit 01	BERM
UF 57654	*jaspideus*	26	FL	Hillsborough	UF HI001	Leisey Shell Pit 01	BERM

UF 37268	*jaspideus*	1	FL	Hillsborough	UF HI014	Leisey Shell Pit 03	BERM
PRI 54431	*jaspideus*	63	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
UF 114843	*jaspideus*	11	FL	Palm Beach	UF PB016 / TU 580	North New River Canal 01	BERM
PRI 46094	*jaspideus*	4	FL	Palm Beach		South Bay	BERM
PRI 54354	*jaspideus*	7	FL	Palm Beach	TU 978	South Bay	BERM
PRI 54671	*jaspideus*	1	FL	Palm Beach	TU 978	South Bay	BERM
UF 117272	*jaspideus*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117315	*jaspideus*	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57996	*jaspideus*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58077	*jaspideus*	25	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58078	*jaspideus*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 114796	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117251	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117299	*jaspideus*	2	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117300	*jaspideus*	4	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117314	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51378	*jaspideus*	6	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51387	*jaspideus*	10	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51619	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51640	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51743	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51846	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51850	*jaspideus*	2	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52297	*jaspideus*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 98750	*jaspideus*	4	FL	Charlotte	UF CH039	Alligator Creek (South Prong) 01	CAL
UF 98774	*jaspideus*	1	FL	Charlotte	UF CH039	Alligator Creek (South Prong) 01	CAL
UF 99859	*jaspideus*	1	FL	Charlotte	UF CH042	Alligator Creek 03	CAL
PRI 54439	*jaspideus*	100	FL	Hendry	PRI 1411	Caloosahatchee River [2 mi (3.22 km) W of LaBelle]	CAL
PRI 54440	*jaspideus*	1	FL	Hendry	PRI 1411	Caloosahatchee River [2 mi (3.22 km) W of LaBelle]	CAL
UF 117278	*jaspideus*	2	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 117335	*jaspideus*	3	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 2821	*jaspideus*	108	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 117263	*jaspideus*	1	FL	Hendry	UF HN017	Clewiston	CAL

UF 57168	*jaspideus*	6	FL	Hendry	UF HN017	Clewiston	CAL
UF 57170	*jaspideus*	1	FL	Hendry	UF HN017	Clewiston	CAL
PRI 46096	*jaspideus*	2	FL	Hendry		Cochran Shell Pit	CAL
PRI 46126	*jaspideus*	1	FL	Hendry		Cochran Shell Pit	CAL
PRI 49059	*jaspideus*	1	FL	Hendry		Cochran Shell Pit	CAL
UF 117232	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117235	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117263	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117273	*jaspideus*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117360	*jaspideus*	9	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24120	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24357	*jaspideus*	3	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25700	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54443	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54612	*jaspideus*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 60003	*jaspideus*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
PRI 54428	*jaspideus*	6	FL	Collier	TU 1175	Corkskrew Island	CAL
UF 47895	*jaspideus*	1	FL	De Soto	UF DE001	DeSoto Shell Pit 01	CAL
UF 86564	*jaspideus*	18	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 114855	*jaspideus*	2	FL	Hendry	UF HN022 / TU 726	Hendry County Rockpit	CAL
UF 58456	*jaspideus*	2	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
UF 98571	*jaspideus*	1	FL	Hendry	UF HN029	LaBelle East 05 (type locality of Caloosahatchee Formation)	CAL
PRI 54396	*jaspideus*	40	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54434	*jaspideus*	118	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54435	*jaspideus*	3	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54663	*jaspideus*	1	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54422	*jaspideus*	3	FL	Hendry		LaBelle Pit	CAL
UF 116707	*jaspideus*	1	FL	Hendry	UF HN044 / TU 792	LaBelle West 02	CAL
UF 116733	*jaspideus*	13	FL	Palm Beach	UF PB027 / TU 583	Miami Canal 06	CAL
UF 117365	*jaspideus*	2	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 92622	*jaspideus*	64	FL	Pinellas	UF PI010	North St. Petersburg	CAL
PRI 54432	*jaspideus*	35	FL	Charlotte		Shell Creek	CAL
UF 90847	*jaspideus*	12	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 90901	*jaspideus*	205	FL	Charlotte	UF CH007	Shell Creek (general)	CAL

UF 90996	*jaspideus*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92191	*jaspideus*	18	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92224	*jaspideus*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 98011	*jaspideus*	4	FL	Hendry	UF 3548		CAL
UF 94887	*jaspideus*	1	FL	Charlotte	UF CH038	Alligator Creek 01A	CAL (B 2)
UF 86655	*jaspideus*	34	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL (IN SITU)
UF 116726	*jaspideus*	10	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 116727	*jaspideus*	16	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 117316	*jaspideus*	2	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 57678	*jaspideus*	2	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 112485	*jaspideus*	1	FL	Glades	UF GL010 / TU 767	Caloosahatchee Canal 05	CAL / BERM (MIX)
UF 117341	*jaspideus*	2	FL	DeSoto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
UF 114871	*jaspideus*	11	FL	DeSoto	UF DE018 / TU 1512	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 116673	*jaspideus*	26	FL	DeSoto	UF DE018 / TU 1512	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 117271	*jaspideus*	4	FL	DeSoto	UF DE018	DeSoto Shell Pits (general)	CAL / BERM (MIX)
PRI 54382	*jaspideus*	1	FL	Palm Beach		Miami Canal, S of FL Rte. 80 at "X Canal"	CAL / BERM (MIX)
UF 112316	*jaspideus*	1	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)
UF 112555	*jaspideus*	1	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)
PRI 54384	*jaspideus*	22	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 54410	*jaspideus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 117331	*jaspideus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 62579	*jaspideus*	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 67247	*jaspideus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 66442 (H, *C. wilsoni*)	*jaspideus*	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 359)	CAL?
PRI 54422	*jaspideus*	7	FL	Lee	UF LE019	Bonita Grande Rock and Sand Pit	CAL?
PRI 54449	*jaspideus*	39	FL	Hendry		LaBelle, canal bank near Silva's	CAL?
PRI 54430	*jaspideus*	17	FL	Charlotte	UF CH027	Handy Phil Pit	FT
UF 100197	*jaspideus*	2	FL	Hendry	UF HN042	Banana Branch 01	FT (B 3)
PRI 54423	*jaspideus*	8	FL	Charlotte	UF CR027	Handy Phil Pit	FT (IN SITU)
UF 43868	*jaspideus*	2	FL	Hillsborough	UF HI014	Leisey Shell Pit 03A	FT (UPPER)
UF 50273	*jaspideus*	1	FL	Hillsborough	UF HI014	Leisey Shell Pit 03A	FT (UPPER)
UF 66425 (H, *C. sarasotaensis*)	*jaspideus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)

UF 66439 (H, *C. susanae*)	*jaspideus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)
UF 66435 (H, *C. marymansfieldae*)	*jaspideus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 7)
UF 66437 (H, *C. jaclynae*)	*jaspideus*	1	FL	Highlands	UF 4132	"Kissimmee River dredging at Fort Basinger" (Petuch, 1994: 357)	TAM (PB)
UF 66441 (H, *C. laurenae*)	*jaspideus*	1	FL	Highlands	UF 4132	"Kissimmee River dredging at Fort Basinger" (Petuch, 1994: 357)	TAM (PB)
UF 116657	*jaspideus*	9	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93112	*jaspideus*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93217	*jaspideus*	3	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93251	*jaspideus*	9	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
PRI 54426	*jaspideus*	1	FL	Collier ?		Alligator Alley	TAM (PB)
UF 47678	*jaspideus*	22	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 60305	*jaspideus*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71309	*jaspideus*	26	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71484	*jaspideus*	9	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114828	*jaspideus*	84	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114893	*jaspideus*	6	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114894	*jaspideus*	32	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
PRI 46098	*jaspideus*	2	FL	Collier?		Alligator Alley, 6.4 mi [10.30 km] W of L-28 Interceptor Canal	TAM (PB)
PRI 54453	*jaspideus*	2	FL	Collier?		Alligator Alley, 6.4 mi [10.30 km] W of L-28 Interceptor Canal	TAM (PB)
UF 116706	*jaspideus*	2	FL	Dade	UF DA015 / TU 1493	Arvida Pits	TAM (PB)
UF 13427	*jaspideus*	1	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 114866	*jaspideus*	4	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 116665	*jaspideus*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 117229	*jaspideus*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 117246	*jaspideus*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 117270	*jaspideus*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 61002	*jaspideus*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 114844	*jaspideus*	65	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 114852	*jaspideus*	13	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 117233	*jaspideus*	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117323	*jaspideus*	3	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)

UF 117330	*jaspideus*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117332	*jaspideus*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59929	*jaspideus*	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60272	*jaspideus*	22	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60341	*jaspideus*	65	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60371	*jaspideus*	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60505	*jaspideus*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117244	*jaspideus*	2	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 62864	*jaspideus*	2	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 117231	*jaspideus*	3	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 114958	*jaspideus*	1	FL	Dade	UF DA014 / TU 525	Fortymile Bend 02	TAM (PB)
UF 117241	*jaspideus*	2	FL	Glades	UF GL018	Herbert Hoover Dyke 02	TAM (PB)
UF 26626	*jaspideus*	2	FL	Glades	UF GL018	Herbert Hoover Dyke 02	TAM (PB)
UF 112597	*jaspideus*	5	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 117368	*jaspideus*	7	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
PRI 46097	*jaspideus*	6	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
UF 114879	*jaspideus*	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 114959	*jaspideus*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42379	*jaspideus*	2	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42936	*jaspideus*	13	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 55419	*jaspideus*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 55428	*jaspideus*	6	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 40219	*jaspideus*	4	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 54634	*jaspideus*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53184	*jaspideus*	16	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53173	*jaspideus*	5	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53174	*jaspideus*	11	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53188	*jaspideus*	21	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114960	*jaspideus*	7	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114967	*jaspideus*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113760	*jaspideus*	6	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
PRI 54424	*jaspideus*	13	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54447	*jaspideus*	5	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
UF 115000	*jaspideus*	3	FL	Collier	UF CR020 / TU 1175	Corkskrew Island 02	TAM (PB) / CAL (MIX)

UF 26531	*jaspideus*	6	FL	Glades	UF GL017	Harney Pond Canal 02	TAM (PB) / CAL (MIX)
UF 112568	*jaspideus*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112570	*jaspideus*	145	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16172	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16175	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18049	*jaspideus*	16	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18055	*jaspideus*	92	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29912	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30676	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31519	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34177	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 47991	*jaspideus*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 57299	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 7799	*jaspideus*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96134	*jaspideus*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9746	*jaspideus*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9749	*jaspideus*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117336	*jaspideus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 43502	*jaspideus*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 116721	*jaspideus*	2	FL	Charlotte	UF CH014 / TU 283A	Flamingo Waterway 01	TAM (PB) / FT (MIX)
UF 114776	*jaspideus*	27	FL	Collier	UF CR021 / TU 796	Alligator Alley 04	TAM (PB)?
UF 112491	*jaspideus*	2	NC	Columbus	UF ZN022 / TU 870	Old Dock 01	WACC
PRI 54315	*largillierti* and/or *sennottorum*	23	FL	Okeechobee	PRI 1981	Kissimmee River Locks S65D	?
PRI 54346	*largillierti* and/or *sennottorum*	5	FL	?		Lake Okeechobee	?
UF 114798	*largillierti* and/or *sennottorum*	4	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 117319	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 117320	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50560	*largillierti* and/or *sennottorum*	7	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50563	*largillierti* and/or *sennottorum*	20	FL	Palm Beach	UF PB001	Belle Glade 01	BERM

UF 54083	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 54088	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 53299	*largillierti* and/or *sennottorum*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
PRI 54312	*largillierti* and/or *sennottorum*	6	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
PRI 54318	*largillierti* and/or *sennottorum*	21	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
PRI 44075	*largillierti* and/or *sennottorum*	3	FL	Palm Beach	TU 978	South Bay	BERM
PRI 46657	*largillierti* and/or *sennottorum*	3	FL	Palm Beach	TU 978	South Bay	BERM
PRI 49050	*largillierti* and/or *sennottorum*	4	FL	Palm Beach		South Bay	BERM
UF 57958	*largillierti* and/or *sennottorum*	3	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57985	*largillierti* and/or *sennottorum*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57988	*largillierti* and/or *sennottorum*	7	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57990	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58071	*largillierti* and/or *sennottorum*	10	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58081	*largillierti* and/or *sennottorum*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58083	*largillierti* and/or *sennottorum*	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117298	*largillierti* and/or *sennottorum*	2	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117301	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52076	*largillierti* and/or *sennottorum*	3	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117369	*largillierti* and/or *sennottorum*	11	FL	Hendry	UF HN017	Clewiston	CAL

UF 57169	*largillierti* and/or *sennottorum*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 25703	*largillierti* and/or *sennottorum*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54440	*largillierti* and/or *sennottorum*	11	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
PRI 49051	*largillierti* and/or *sennottorum*	2	FL	Collier	TU 1175	Corkskrew Island	CAL
UF 12374	*largillierti* and/or *sennottorum*	1	FL	Glades	UF GL006	Ortona Lock 02	CAL
PRI 54310	*largillierti* and/or *sennottorum*	54	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64536	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64537	*largillierti* and/or *sennottorum*	7	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64733	*largillierti* and/or *sennottorum*	7	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64734	*largillierti* and/or *sennottorum*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 114789	*largillierti* and/or *sennottorum*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 13495	*largillierti* and/or *sennottorum*	1	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 117370	*largillierti* and/or *sennottorum*	2	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 117267	*largillierti* and/or *sennottorum*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 117277	*largillierti* and/or *sennottorum*	5	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 117325	*largillierti* and/or *sennottorum*	2	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 54328	*largillierti* (cf.)	6	FL	?		"Johnson Brothers Rock Pit"	?
UF 42034	*largillierti* (cf.)	1	FL	Glades	UF GL024	Big Bear Beach 01	?
PRI 54381	*largillierti* (cf.)	2	FL	Glades	PRI 1990	Caloosahatchee Canal [2.5 mi (4.02 km) E of Ortona Locks]	?

PRI 54355	*largillierti* (cf.)	5	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
UF 117252	*largillierti* (cf.)	1	FL	Glades	UFGL025	Caloosahatchee Canal 06	?
UF 117262	*largillierti* (cf.)	3	FL	Glades	UFGL025	Caloosahatchee Canal 06	?
UF 53374	*largillierti* (cf.)	2	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53706	*largillierti* (cf.)	4	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
VMNH 80BB10	*largillierti* (cf.)	1	FL	Hendry?		Caloosahatchee Pit	?
UF 20502	*largillierti* (cf.)	1	FL	Putnam	UF PU002	Crescent Lake Canal	?
PRI 54390	*largillierti* (cf.)	1	FL	Highlands	PRI 1983	Cypress Slash, N of Lock S65E, W side of Kissimmee Canal	?
VMNH uncat.	*largillierti* (cf.)	1	FL	DeSoto		DL's Pit, Arcadia	?
PRI 54350	*largillierti* (cf.)	5	FL	Glades		Harney Lake Canal (at bridge, FL Rte. 78)	?
PRI 54393	*largillierti* (cf.)	9	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 54668	*largillierti* (cf.)	1	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 54676	*largillierti* (cf.)	1	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 54388	*largillierti* (cf.)	9	FL	Highlands	PRI 1984	Kissimmee Canal, upper end of Long Cypress slash, S of lock S65D	?
PRI 2097H	*largillierti* (cf.)	1	FL	?		Kissimmee River Canal, near structure 65D	?
PRI 46040	*largillierti* (cf.)	1	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 46067	*largillierti* (cf.)	2	FL	Okeechobee		E side of Kissimmee River, B-108-East	?
PRI 54329	*largillierti* (cf.)	1	FL	Glades		Lake Hicpochee, N side of river	?
PRI 1507C	*largillierti* (cf.)	2	FL	?		Lake Okeechobee	?
PRI 54409	*largillierti* (cf.)	2	FL	?	PRI 1947	canal connecting Kissimmee Lake to Lake Okeechobee	?
UF 46257	*largillierti* (cf.)	1	FL	Hillsborough	UF HI015	Leisey Shell Pit 03B	?
PRI 54314	*largillierti* (cf.)	2	FL	St. Lucie	UF SL003	Dickerson Pit	ANA
PRI 4329H	*largillierti* (cf.)	8	FL	Palm Beach		S of Belle Glade	BERM
UF 14090	*largillierti* (cf.)	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 42027	*largillierti* (cf.)	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 49102	*largillierti* (cf.)	4	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 50499	*largillierti* (cf.)	9	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 113779	*largillierti* (cf.)	215	FL	Glades	UF GL008 / TU 759	Caloosahatchee River 04	BERM
UF 54260	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54261	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM

UF 54265	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54528	*largillierti* (cf.)	10	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54545	*largillierti* (cf.)	6	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54551	*largillierti* (cf.)	3	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54940	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 57644	*largillierti* (cf.)	18	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 57664	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 57665	*largillierti* (cf.)	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 113868	*largillierti* (cf.)	41	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 113869	*largillierti* (cf.)	242	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 117304	*largillierti* (cf.)	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 117333	*largillierti* (cf.)	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 117340	*largillierti* (cf.)	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55734	*largillierti* (cf.)	6	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55758	*largillierti* (cf.)	12	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55767	*largillierti* (cf.)	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55914	*largillierti* (cf.)	3	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55942	*largillierti* (cf.)	5	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55950	*largillierti* (cf.)	2	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 56074	*largillierti* (cf.)	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
CM 35731 (H, *C. capelettii*)	*largillierti* (cf.)	1	FL	Dade	CM SL587	Capeletti Brothers Pit 11	BERM
CM 35732 (P, *C. capelettii*)	*largillierti* (cf.)	1	FL	Dade	CM SL587	Capeletti Brothers Pit 11	BERM
UF 117321	*largillierti* (cf.)	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52810	*largillierti* (cf.)	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52851	*largillierti* (cf.)	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52962	*largillierti* (cf.)	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 55344	*largillierti* (cf.)	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
PRI 54311	*largillierti* (cf.)	1	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
UF 59183	*largillierti* (cf.)	3	FL	Palm Beach	UF PB013	Holey Land 01	BERM
UF 59189	*largillierti* (cf.)	6	FL	Palm Beach	UF PB013	Holey Land 01	BERM
PRI 54308	*largillierti* (cf.)	95	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
PRI 54317	*largillierti* (cf.)	2	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
PRI 54646	*largillierti* (cf.)	1	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM

UF 114842	*largillierti* (cf.)	23	FL	Palm Beach	UF PB016 / TU 580	North New River Canal 01	BERM
UF 116737	*largillierti* (cf.)	23	FL	Palm Beach	UF PB028 / TU 747	North New River Canal 03	BERM
PRI 46068	*largillierti* (cf.)	5	FL	Palm Beach	TU 978	South Bay	BERM
UF 114749	*largillierti* (cf.)	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117291	*largillierti* (cf.)	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117338	*largillierti* (cf.)	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57981	*largillierti* (cf.)	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58072	*largillierti* (cf.)	12	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117226	*largillierti* (cf.)	4	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51387	*largillierti* (cf.)	10	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51845	*largillierti* (cf.)	3	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52130	*largillierti* (cf.)	5	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52296	*largillierti* (cf.)	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52302	*largillierti* (cf.)	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52306	*largillierti* (cf.)	9	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 66428 (H, *C. loxahatcheensis*)	*largillierti* (cf.)	1	FL	Palm Beach	UF 4133	"US Highway 441 construction dig at 20-Mile Bend, Loxahatchee area" (Petuch, 1994: 353)	BERM?
VMNH 80BB5	*largillierti* (cf.)	1	FL	Charlotte		Bermont; Shell Creek	CAL
UF 114807	*largillierti* (cf.)	1	FL	Hendry	UF HN045 / TU 202	Caloosahatchee River	CAL
UF 114751	*largillierti* (cf.)	1	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 117347	*largillierti* (cf.)	2	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 2820	*largillierti* (cf.)	4	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 2822	*largillierti* (cf.)	94	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 9461	*largillierti* (cf.)	7	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 58323	*largillierti* (cf.)	1	FL	Glades	UF GL026	Caloosahatchee River 08	CAL
UF 58330	*largillierti* (cf.)	5	FL	Glades	UF GL026	Caloosahatchee River 08	CAL
PRI 46064	*largillierti* (cf.)	6	FL	Hendry		Clewiston	CAL
UF 52674	*largillierti* (cf.)	4	FL	Hendry	UF HN017	Clewiston	CAL
UF 8462	*largillierti* (cf.)	9	FL	Hendry	UF HN001	Clewiston 01	CAL
PRI 44068	*largillierti* (cf.)	2	FL	Hendry		Clewiston Borrow Pit	CAL
UF 117346	*largillierti* (cf.)	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117361	*largillierti* (cf.)	8	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14148	*largillierti* (cf.)	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 15792	*largillierti* (cf.)	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL

UF 24768	*largillierti* (cf.)	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24769	*largillierti* (cf.)	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54452	*largillierti* (cf.)	17	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 117322	*largillierti* (cf.)	1	FL	De Soto	UF DE001	De Soto Shell Pit 01	CAL
UF 85484	*largillierti* (cf.)	2	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
PRI 3873F	*largillierti* (cf.)	1	FL	?		near Fort Myers	CAL
UF 116731	*largillierti* (cf.)	67	FL	Glades	UF GL030 / TU 519	Harney Pond Canal 04	CAL
UF 114856	*largillierti* (cf.)	3	FL	Hendry	UF HN022 / TU 726	Hendry County Rockpit	CAL
UF 117343	*largillierti* (cf.)	1	FL	Hendry	UF HN018	LaBelle East 04	CAL
PRI 53629	*largillierti* (cf.)	101	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 53630	*largillierti* (cf.)	50	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 53631	*largillierti* (cf.)	108	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54397	*largillierti* (cf.)	2	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54438	*largillierti* (cf.)	1	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 40201	*largillierti* (cf.)	1	FL	Hendry		LaBelle Pit	CAL
PRI 40202	*largillierti* (cf.)	2	FL	Hendry		LaBelle Pit	CAL
PRI 40203	*largillierti* (cf.)	2	FL	Hendry		LaBelle Pit	CAL
PRI 40557	*largillierti* (cf.)	2	FL	Hendry		LaBelle Pit	CAL
PRI 54343	*largillierti* (cf.)	9	FL	Hendry		LaBelle Pit	CAL
UF 116716	*largillierti* (cf.)	3	FL	Hendry	UF HN044 / TU 792	LaBelle West 02	CAL
PRI 54450	*largillierti* (cf.)	4	FL	Hendry		LaBelle, canal bank near Silva's	CAL
UF 117362	*largillierti* (cf.)	28	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 117373	*largillierti* (cf.)	1	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 35582	*largillierti* (cf.)	7	FL	Glades	UF GL023	Ortona Lock 05	CAL
PRI 54433	*largillierti* (cf.)	12	FL	Charlotte		Shell Creek	CAL
UF 117296	*largillierti* (cf.)	25	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92225	*largillierti* (cf.)	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
PRI 54323	*largillierti* (cf.)	7	FL	Sarasota		Quality Aggregates Phase 06, SE corner	CAL (B 1)
UF 86498	*largillierti* (cf.)	1	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL (IN SITU)
UF 86547	*largillierti* (cf.)	3	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL (IN SITU)
UF 86550	*largillierti* (cf.)	1	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL (IN SITU)
PRI 54344	*largillierti* (cf.)	2	FL	Palm Beach		?	CAL / BERM (MIX)
UF 116725	*largillierti* (cf.)	30	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 117334	*largillierti* (cf.)	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)

UF 57677	*largillierti* (cf.)	2	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 42131	*largillierti* (cf.)	1	FL	De Soto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
UF 42205	*largillierti* (cf.)	4	FL	DeSoto	UF DE017	Davis Shell Pit 04	CAL / BERM (MIX)
PRI 40218	*largillierti* (cf.)	1	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
PRI 40220	*largillierti* (cf.)	1	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 113727	*largillierti* (cf.)	11	FL	DeSoto	UF DE018	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 116676	*largillierti* (cf.)	21	FL	DeSoto	UF DE018 / TU 1512	DeSoto Shell Pits (general)	CAL / BERM (MIX)
PRI 54322	*largillierti* (cf.)	3	FL	Palm Beach		Miami Canal, S of FL Rte. 80 at "X Canal"	CAL / BERM (MIX)
UF 15659	*largillierti* (cf.)	2	FL	Glades	UF GL001	Ortona Lock 01	CAL / BERM (MIX)
UF 112556	*largillierti* (cf.)	7	FL	Palm Beach	UF PB021 / TU 1023	Pahokee 01	CAL / BERM (MIX)
UF 62600	*largillierti* (cf.)	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64538	*largillierti* (cf.)	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 15630	*largillierti* (cf.)	1	FL	Hendry	UF HN028	Fort Thompson 02	CAL / FT (MIX)
UF 66423 (H, *C. diegelae*)	*largillierti* (cf.)	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 352)	CAL?
UF 66424 (H, *C. joelshugari*)	*largillierti* (cf.)	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 353)	CAL?
UF 66429 (H, *C. ronaldsmithi*)	*largillierti* (cf.)	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 354)	CAL?
PRI 54313	*largillierti* (cf.)	3	FL	Lee	UF LE019	Bonita Grande Rock and Sand Pit	CAL?
UF 1702	*largillierti* (cf.)	2	FL	Hendry	UF HN021	Clewiston 04	CAL?
VMNH uncat.	*largillierti* (cf.)	1	SC	Horry		Canepatch Pit (type locality of Canepatch Formation)	CANE
VMNH 92LW58	*largillierti* (cf.)	1	NC	Bladen		Elizabethtown (town dump)	CHOW
PRI 54316	*largillierti* (cf.)	2	NC	Duplin	PRI 2000	Holmes Pit	DUP
VMNH 83LW1	*largillierti* (cf.)	14	NC	Robeson		Lumber River	DUP
VMNH 90LW1	*largillierti* (cf.)	1	NC	Robeson		Lumberton	DUP
VMNH 90LW1	*largillierti* (cf.)	3	NC	Robeson		Lumberton	DUP
VMNH 95LW	*largillierti* (cf.)	13	NC	Robeson		Lumberton	DUP
VMNH uncat.	*largillierti* (cf.)	4	NC	Robeson		Lumberton	DUP
VMNH uncat.	*largillierti* (cf.)	2	NC	Robeson		Lumberton	DUP
VMNH 90LW1-A	*largillierti* (cf.)	1	NC	Robeson		Lumberton, back from river	DUP

VMNH uncat.	*largillierti* (cf.)	5	NC	Robeson		Lumberton, Lumberton River	DUP
VMNH 95LW	*largillierti* (cf.)	15	NC	Robeson		Rozier Farm, Lumber Farm	DUP
VMNH 95LW + 2 ft.	*largillierti* (cf.)	5	NC	Robeson		Rozier Farm, Lumber Farm	DUP
PRI 54307	*largillierti* (cf.)	65	FL	Charlotte	UF CH027	Handy Phil Pit	FT
PRI 54309	*largillierti* (cf.)	29	FL	Charlotte	UF CH027	Handy Phil Pit	FT (IN SITU)
UF 3069	*largillierti* (cf.)	2	FL	Leon	UF LN003	Harvey's Creek	JB
UF 6984	*largillierti* (cf.)	4	FL	Leon	UF LN003	Harvey's Creek	JB
UF 1980	*largillierti* (cf.)	4	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 69000	*largillierti* (cf.)	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 70035	*largillierti* (cf.)	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 78608	*largillierti* (cf.)	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 79236	*largillierti* (cf.)	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 79474	*largillierti* (cf.)	3	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80192	*largillierti* (cf.)	2	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80266	*largillierti* (cf.)	3	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80267	*largillierti* (cf.)	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 80556	*largillierti* (cf.)	5	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 79810	*largillierti* (cf.)	28	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 7193	*largillierti* (cf.)	20	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 7465	*largillierti* (cf.)	1	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 7469	*largillierti* (cf.)	21	FL	Leon	UF LN002	Jackson Bluff 02	JB
VMNH uncat.	*largillierti* (cf.)	1	NC	Beaufort		Lee Creek Mine	JC
UF 116664	*largillierti* (cf.)	2	FL	Putnam	UF PU003	Nashua Bluffs 01	NASH
UF 92728	*largillierti* (cf.)	3	FL	Putnam	UF PU005	Old Nashua Landing	NASH
UF 92865	*largillierti* (cf.)	2	FL	Putnam	UF PU005	Old Nashua Landing	NASH
UF 52453	*largillierti* (cf.)	1	FL	Okeechobee	UF OB006	Rucks Pit	NASH
PRI 50128	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry - South Center Pit (NS Face)	TAM (PB 7)
PRI 52920	*largillierti* (cf.)	3	FL	Sarasota		Quality Aggregates Phase 02, E end	TAM (PB 7)
UF 116659	*largillierti* (cf.)	38	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93188	*largillierti* (cf.)	17	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
PRI 54325	*largillierti* (cf.)	4	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54342	*largillierti* (cf.)	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54661	*largillierti* (cf.)	1	FL	Collier?		Alligator Alley	TAM (PB)

UF 116708	*largillierti* (cf.)	64	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116713	*largillierti* (cf.)	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116714	*largillierti* (cf.)	3	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116717	*largillierti* (cf.)	2	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 71432	*largillierti* (cf.)	12	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71446	*largillierti* (cf.)	46	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114823	*largillierti* (cf.)	18	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114892	*largillierti* (cf.)	2	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114898	*largillierti* (cf.)	3	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 116718	*largillierti* (cf.)	12	FL	Dade	DA015 / TU 1493	Arvida Pits	TAM (PB)
PRI 54324	*largillierti* (cf.)	3	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)
UF 13419	*largillierti* (cf.)	3	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 13494	*largillierti* (cf.)	1	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 112482	*largillierti* (cf.)	1	FL	Highlands	UF HG002 / TU 520	Brighton Canal 01	TAM (PB)
UF 112551	*largillierti* (cf.)	2	FL	Highlands	UF HG002 / TU 520	Brighton Canal 01	TAM (PB)
UF 116963	*largillierti* (cf.)	1	FL	Highlands	UF HG009 / TU 752	Brighton Canal 02	TAM (PB)
UF 113705	*largillierti* (cf.)	1	FL	Charlotte	UF CH045 / TU 756	Elkcam Waterway 01	TAM (PB)
UF 113706	*largillierti* (cf.)	2	FL	Charlotte	UF CH045 / TU 756	Elkcam Waterway 01	TAM (PB)
UF 113696	*largillierti* (cf.)	282	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 113697	*largillierti* (cf.)	235	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 50655	*largillierti* (cf.)	3	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60317	*largillierti* (cf.)	42	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60422	*largillierti* (cf.)	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60479	*largillierti* (cf.)	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60497	*largillierti* (cf.)	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 61009	*largillierti* (cf.)	24	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 113701	*largillierti* (cf.)	138	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 114851	*largillierti* (cf.)	72	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 117284	*largillierti* (cf.)	3	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117297	*largillierti* (cf.)	3	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117303	*largillierti* (cf.)	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 117339	*largillierti* (cf.)	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59129	*largillierti* (cf.)	5	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59136	*largillierti* (cf.)	5	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59924	*largillierti* (cf.)	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)

UF 59934	*largillierti* (cf.)	2	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60344	*largillierti* (cf.)	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 62865	*largillierti* (cf.)	1	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65439	*largillierti* (cf.)	1	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65463	*largillierti* (cf.)	48	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 117310	*largillierti* (cf.)	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61553	*largillierti* (cf.)	2	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61933	*largillierti* (cf.)	5	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61935	*largillierti* (cf.)	7	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 26636	*largillierti* (cf.)	6	FL	Glades	UF GL018	Herbert Hoover Dyke 02	TAM (PB)
UF 112480	*largillierti* (cf.)	2	FL	Highlands	UF HG006 / TU 730	Kissimmee River 03	TAM (PB)
UF 16180	*largillierti* (cf.)	20	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 18123	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 111428	*largillierti* (cf.)	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111429	*largillierti* (cf.)	17	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111437	*largillierti* (cf.)	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111636	*largillierti* (cf.)	8	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111637	*largillierti* (cf.)	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112593	*largillierti* (cf.)	32	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112594	*largillierti* (cf.)	43	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112596	*largillierti* (cf.)	11	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117249	*largillierti* (cf.)	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 84239	*largillierti* (cf.)	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 98197	*largillierti* (cf.)	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
PRI 49049	*largillierti* (cf.)	5	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
UF 114878	*largillierti* (cf.)	1	FL	Collier	UF CR004 / TU 1177	Mule Pen Quarry	TAM (PB)
UF 117225	*largillierti* (cf.)	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42385	*largillierti* (cf.)	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42664	*largillierti* (cf.)	2	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42683	*largillierti* (cf.)	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42694	*largillierti* (cf.)	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 54443	*largillierti* (cf.)	1	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 53182	*largillierti* (cf.)	53	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53171	*largillierti* (cf.)	32	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53172	*largillierti* (cf.)	34	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)

PRI 53187	*largillierti* (cf.)	59	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 53195	*largillierti* (cf.)	7	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54635	*largillierti* (cf.)	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114961	*largillierti* (cf.)	3	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114970	*largillierti* (cf.)	2	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113718	*largillierti* (cf.)	1	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
UF 113721	*largillierti* (cf.)	14	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
UF 38717	*largillierti* (cf.)	3	FL	Okeechobee	UF 2664	None	TAM (PB)
CM 35666 (H, *C. trippae*)	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
CM 35667 (P, *C. trippae*)	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40211	*largillierti* (cf.)	3	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40230	*largillierti* (cf.)	4	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40525	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 41744	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54327	*largillierti* (cf.)	7	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54341	*largillierti* (cf.)	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54345	*largillierti* (cf.)	5	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46066	*largillierti* (cf.)	4	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53076	*largillierti* (cf.)	78	FL	Sarasota		APAC Quarry, North Pit	TAM (PB) / CAL (MIX)
PRI 53071	*largillierti* (cf.)	5	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
UF 115001	*largillierti* (cf.)	2	FL	Collier	UF CR020 / TU 1175	Corkskrew Island 02	TAM (PB) / CAL (MIX)
UF 112477	*largillierti* (cf.)	1	FL	Highlands	UF HG001 / TU 770	Kissimmee River 01	TAM (PB) / CAL (MIX)
UF 117247	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117250	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 40467	*largillierti* (cf.)	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9752	*largillierti* (cf.)	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110416	*largillierti* (cf.)	60	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117254	*largillierti* (cf.)	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117311	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117327	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29377	*largillierti* (cf.)	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 35003	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 35042	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 46238	*largillierti* (cf.)	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58807	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58894	*largillierti* (cf.)	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 116732	*largillierti* (cf.)	1	FL	Glades	UF GL031	Ortona Lock 06	TAM (PB) / CAL (MIX)
UF 41414	*largillierti* (cf.)	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 2	TAM (PB) / CAL (MIX)
UF 43504	*largillierti* (cf.)	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 114772	*largillierti* (cf.)	1	FL	Collier	UF CR021 / TU 796	Alligator Alley 04	TAM (PB)?
PRI 54360	*largillierti* (cf.)	12	NC	Columbus		Acme	WACC
PRI 54379	*largillierti* (cf.)	2	NC	Columbus		Acme	WACC
PRI 54645	*largillierti* (cf.)	1	NC	Columbus		Acme	WACC
PRI 53632	*largillierti* (cf.)	66	NC	Columbus		Acme	WACC
PRI 54306	*largillierti* (cf.)	46	NC	Columbus	PRI 1446	Acme	WACC
PRI 54374	*largillierti* (cf.)	40	NC	Columbus		Acme	WACC
VMNH 74LW27	*largillierti* (cf.)	1	NC	Brunswick		Calabash	WACC
VMNH uncat.	*largillierti* (cf.)	1	NC	Brunswick		Calabash	WACC
VMNH uncat.	*largillierti* (cf.)	1	NC	Columbus		stream near Cavers?	WACC
UF 113744	*largillierti* (cf.)	545	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113747	*largillierti* (cf.)	354	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113757	*largillierti* (cf.)	499	SC	Horry	UF ZS015	Crescent Beach 01	WACC
PRI 54370	*largillierti* (cf.)	15	NC	Columbus	PRI 113	Neils Eddy Landing	WACC
PRI 54376	*largillierti* (cf.)	5	NC	Columbus		Old Dock	WACC
VMNH NC73	*largillierti* (cf.)	1	NC	Columbus		Old Dock	WACC
VMNH uncat.	*largillierti* (cf.)	1+	NC	Columbus		Old Dock	WACC
UF 112490	*largillierti* (cf.)	1	NC	Columbus	UF ZN022 / TU 870	Old Dock 01	WACC
VMNH 77BB174	*largillierti* (cf.)	7	NC	Columbus		Old Dock; 0.6 mi (0.97 km) N of NC Rte. 130 and Hallsboro Road intersect on NC Rte. 130, N side of road	WACC
VMNH 77BB21 (77LW(E)?)	*largillierti* (cf.)	2	SC	Horry		Parkers Landing, Waccamaw River	WACC
VMNH WA17	*largillierti* (cf.)	1	SC	Horry		Parkers Landing, bank of Waccamaw River, 1.1 mi (1.77 km) E of Red Bluff Bridge	WACC
VMNH WA56, upstream from	*largillierti* (cf.)	1	SC	Horry		SC9 Bridge, 4 mi (6.44 km) upstream from on Little (ICW) River	WACC

VMNH WA56, upstream from	*largillierti* (cf.)	1	SC	Horry		SC9 Bridge, 4 mi (6.44 km) upstream from on Little (ICW) River	WACC
VMNH 78BB-6 (WA56A)	*largillierti* (cf.)	2	SC	Horry		WA56, ICW, bank, NE end of Windy Hill Airstrip	WACC
UF 115014	*largillierti* (cf.)	2	NC	Columbus	UF 2846 / TU 559		WACC
UF 115015	*largillierti* (cf.)	3	NC	Columbus	UF 2846 / TU 559		WACC
PRI 46120	*marylandicus*	4	FL	?		"Johnson Brothers Rock Pit"	?
PRI 54669	*marylandicus*	1	FL	Sarasota		Quality Aggregates Phase 06, SE corner	CAL (B 1)
PRI 54677	*marylandicus*	1	FL	Sarasota		Quality Aggregates Phase 06, SE corner	CAL (B 1)
PRI 54403	*marylandicus*	1	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 54699	*marylandicus*	1	NC	Duplin	PRI 2000	Holmes Pit	DUP
PRI 54363	*marylandicus*	1	NC	Duplin		Natural Well	DUP
UF 82703	*marylandicus*	3	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 82912	*marylandicus*	10	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 78488	*marylandicus*	3	FL	Leon	UF LN004	Jackson Bluff (general)	JB
PRI 54398	*marylandicus*	4	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54653	*marylandicus*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 54705	*marylandicus*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 53183	*marylandicus*	4	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53175	*marylandicus*	7	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53190	*marylandicus*	16	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54662	*marylandicus*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 40216	*marylandicus*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54399	*marylandicus*	2	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54400	*marylandicus*	8	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54448	*marylandicus*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
VMNH uncat.	*marylandicus*	1	VA	Suffolk		Chuckatuck	YORK
PRI 54358	*marylandicus*	1	VA	Surry		James River Bluff	YORK
VMNH 93LW16	*marylandicus*	5	VA	James City		Kingsmill Cliff, below marine, possible contamination from Rushmere	YORK
VMNH uncat.	*marylandicus*	4	VA	Middlesex		Martiau	YORK
VMNH 92LW55	*marylandicus*	1	VA	Southampton		Nottoway River, Sycamore Bend	YORK

PRI 52915	*marylandicus*	3	VA	Hampton City		Rice's Pit	YORK
PRI 54365	*marylandicus*	1	VA	Hampton City		Rice's Pit	YORK
PRI 54366	*marylandicus*	1	VA	Hampton City		Rice's Pit	YORK
PRI 54368	*marylandicus*	11	VA	Hampton City		Rice's Pit	YORK
PRI 54686	*marylandicus*	1	VA	Hampton City		Rice's Pit	YORK
VMNH 70LW1	*marylandicus*	11	VA	Hampton City		Rice's Pit	YORK
VMNH 70LW266	*marylandicus*	2	VA	Hampton City		Rice's Pit	YORK
VMNH 70LW266	*marylandicus*	6	VA	Hampton City		Rice's Pit	YORK
VMNH Loc. #75	*marylandicus*	3	VA	Hampton City		Rice's Pit	YORK
VMNH uncat.	*marylandicus*	2	VA	Hampton City		Rice's Pit	YORK
VMNH uncat.	*marylandicus*	2	VA	Hampton City		Rice's Pit	YORK
PRI 54367	*marylandicus*	12	VA	York		Zook's Pit	YORK
UF 5995	*marylandicus*	14	VA	Suffolk	UF ZV005	Chuckatuck	YORK (Z 2)
UF 5967	*marylandicus*	13	VA	Hampton	UF ZV002	Hampton	YORK (Z 2)
UF 11141	*marylandicus*	131	VA	?	UF 2976	None	YORK (Z 2)
UF 115808	*marylandicus*	1	VA	?	UF 2976	None	YORK (Z 2)
UF 115809	*marylandicus*	1	VA	?	UF 2976	None	YORK (Z 2)
UF 115810	*marylandicus*	1	VA	?	UF 2976	None	YORK (Z 2)
UF 6038	*marylandicus*	61	VA	?	UF 2976	None	YORK (Z 2)
PRI 4159E	*marylandicus*	1	VA	?	PRI 1291	James River, Grove Landing	YORK?
PRI 54359	*marylandicus*	1	VA	?		U.S. Mine Filling Station near Stony Point, York River	YORK?
PRI 46038	*miamiensis*	7	FL	?		?	?
UF 114799	*miamiensis*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
PRI 54487	*miamiensis*	1	FL	Collier	TU 1175	Corkskrew Island	CAL
PRI 50295	*miamiensis*	9	FL	Collier ?		Alligator Alley	TAM (PB)

PRI 54727	*miamiensis*	1	FL	Collier ?		Alligator Alley	TAM (PB)
UF 112310	*miamiensis*	3	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 115828	*miamiensis*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 115829	*miamiensis*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 115830	*miamiensis*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 71440	*miamiensis*	20	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 112311	*miamiensis*	5	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
UF 114827	*miamiensis*	84	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 117184	*miamiensis*	2	FL	Dade	UF DA015 / TU 1493	Arvida Pits	TAM (PB)
UF 13432	*miamiensis*	1	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 49058	*miamiensis*	2	FL	Charlotte	UF CH028	Lomax-King Pit A	TAM (PB)
UF 111422	*miamiensis*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111634	*miamiensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 113733	*miamiensis*	2	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 114754	*miamiensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
PRI 50280	*miamiensis*	6	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
UF 115831	*miamiensis*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42386	*miamiensis*	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42387	*miamiensis*	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 56119	*miamiensis*	6	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
MCZ 113027 (H, *C. miamiensis*)	*miamiensis*	1	FL	Dade	MCZ 1736	SW 146th Avenue and Bird Road	TAM (PB)
MCZ 113028 (P, *C. miamiensis*)	*miamiensis*	1	FL	Dade	MCZ 1736	SW 146th Avenue and Bird Road	TAM (PB)
PRI 44070	*miamiensis*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
UF 10952	*miamiensis*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 10953	*miamiensis*	7	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 16171	*miamiensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18060	*miamiensis*	13	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 57274	*miamiensis*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 97056	*miamiensis*	8	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9751	*miamiensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 114777	*miamiensis*	4	FL	Collier	UF CR021 / TU 796	Alligator Alley 04	TAM (PB)?
PRI 2120H	*oniscus*	1	FL	?		?	?
PRI 54404	*oniscus*	7	FL	Okeechobee	PRI 1981	Kissimmee River Locks S65D	?

PRI 46083	*oniscus*	5	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 54703	*oniscus*	1	FL	Okeechobee	TU 932	E side f Kissimmee River, B-108-East	?
PRI 54704	*oniscus*	1	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 54407	*oniscus*	5	FL	?	PRI 1947	canal connecting Kissimmee Lake to Lake Okeechobee	?
USNM 369354 (H, *C. oniscus*)	*oniscus*	1				Bowden, Jamaica	BOW
PRI 46081	*oniscus*	11	FL	Hendry		Clewiston	CAL
PRI 41097	*oniscus*	3	FL	Hendry		LaBelle Pit	CAL
PRI 54401	*oniscus*	4	FL	Sarasota		Quality Aggregates Phase 06, SE corner	CAL (B 1)
PRI 54405	*oniscus*	3	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 46037	*oniscus*	2	FL	Collier?		Alligator Alley	TAM (PB)
PRI 46119	*oniscus*	2	FL	Collier?		Alligator Alley, 6.4 mi (10.30 km) W of L-28 Interceptor Canal	TAM (PB)
PRI 46084	*oniscus*	1	FL	Hendry	TU 1044	Big Cypess	TAM (PB)
PRI 46085	*oniscus*	2	FL	Okeechobee	TU 729	Structure 65D	TAM (PB)
PRI 54675	*oniscus*	1	FL	Okeechobee	TU 729	Structure 65D	TAM (PB)
PRI 54406	*oniscus*	1	FL	?		Kissimmee River	TAM (PB) / CAL (MIX)
PRI 2207H	*oniscus*	1	FL	?		Kissimmee River	TAM (PB) / CAL (MIX)
PRI 55202	*oniscus*	1	NC	Columbus		Acme	WACC
VMNH uncat.	*oniscus*	4	NC			Cape Fear River, below Donoho Creek	?
PRI 53539	*oniscus*	1	NC	?		Curry	?
PRI 3748H	*oniscus*	1	FL	?		North St. Petersburg	?
UF 58070	*oniscus*	4	FL	Palm Beach	UF PB005	South Bay 02	BERM
VMNH 80BB5	*oniscus*	2	FL	Charlotte		Bermont; Shell Creek	CAL
UF 57690	*oniscus*	1	FL	Hendry	UF HN017	Clewiston	CAL
UF 25701	*oniscus*	12	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 20000 (H, *C. jaroldi*)	*oniscus*	1	FL	Palm Beach	UF PB010	Miami Canal 01	CAL
UF 20516 (H, *C. calusa*)	*oniscus*	1	FL	Palm Beach	UF PB010	Miami Canal 01	CAL
UF 20517 (H, *C. miccosukee*)	*oniscus*	1	FL	Palm Beach	UF PB010	Miami Canal 01	CAL
UF 112315	*oniscus*	1	FL	Palm Beach	UF PB014 / TU 1536	Star Ranch 01	CAL / BERM (MIX)
UF 62607	*oniscus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)

UF 64550	*oniscus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
ANSP 18644 (H, *C. robertsi*)	*oniscus*	1	FL	Hendry		5-7 miles W of Clewiston	CAL ?
VMNH 83LW1	*oniscus*	4	NC	Robeson		Lumber River	DUP
VMNH 90LW1	*oniscus*	1	NC	Robeson		Lumberton	DUP
VMNH 95LW	*oniscus*	4	NC	Robeson		Lumberton	DUP
VMNH uncat.	*oniscus*	2	NC	Robeson		Lumberton	DUP
VMNH uncat.	*oniscus*	1	NC	Duplin		Natural Well (type locality of Duplin Formation)	DUP
VMNH 76LW43	*oniscus*	3	NC	Craven		New Bern, Martin Marietta	DUP
VMNH 95LW	*oniscus*	*ca.* 4	NC	Bladen		near Robeson Farm, Tar Heel, Cape Fear River	DUP
VMNH 95LW + 2 ft.	*oniscus*	1	NC	Robeson		Rozier Farm, Lumber Farm	DUP
UF 68816	*oniscus*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 78084	*oniscus*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
VMNH uncat.	*oniscus*	4	NC	Beaufort		Lee Creek Mine	JC
UF 53783	*oniscus*	1	NC	Beaufort	UF ZN005	Lee Creek Mine (general)	JC
VMNH 74LW32	*oniscus*	2	SC	Sumter		Tearcoat Branch	RAY
VMNH 90LW2	*oniscus*	2	SC	Sumter		Tearcoat Branch	RAY
UF 116656	*oniscus*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 71343	*oniscus*	2	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71421	*oniscus*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 13435	*oniscus*	1	FL	Dade	UF DA001	Bird Road	TAM (PB)
UF 60980	*oniscus*	10	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60981	*oniscus*	25	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 61006	*oniscus*	10	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 59898	*oniscus*	4	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60207	*oniscus*	3	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60209	*oniscus*	15	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 60238	*oniscus*	8	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 112483	*oniscus*	1	FL	Highlands	UF HG006 / TU 730	Kissimmee River 03	TAM (PB)
UF 111134	*oniscus*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111420	*oniscus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111421	*oniscus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

UF 111633	*oniscus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112602	*oniscus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 117366	*oniscus*	9	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 113722	*oniscus*	13	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
PRI 40524	*oniscus*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
UF 117328	*oniscus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112564	*oniscus*	12	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112565	*oniscus*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112566	*oniscus*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 112567	*oniscus*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29374	*oniscus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 54074	*oniscus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 38299	*oniscus*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
PRI 54362	*oniscus*	2	NC	Columbus		Acme	WACC
PRI 54369	*oniscus*	31	NC	Columbus	PRI 112/1446	Acme	WACC
PRI 54372	*oniscus*	40	NC	Columbus	PRI 1446	Acme	WACC
PRI 54373	*oniscus*	14	NC	Columbus		Acme	WACC
PRI 54378	*oniscus*	1	NC	Columbus		Acme	WACC
VMNH #95	*oniscus*	2	NC	Columbus		Acme	WACC
PRI 43129	*oniscus*	2	NC	Brunswick		Calabash	WACC
VMNH 74LW27	*oniscus*	1	NC	Brunswick		Calabash	WACC
VMNH 74LW27	*oniscus*	3	NC	Brunswick		Calabash	WACC
VMNH 74LW27	*oniscus*	3	NC	Brunswick		Calabash	WACC
VMNH 74LW27D	*oniscus*	3	NC	Brunswick		Calabash	WACC
VMNH 74LW27E	*oniscus*	1	NC	Brunswick		Calabash	WACC
VMNH uncat.	*oniscus*	1	NC	Brunswick		Calabash	WACC
VMNH uncat.	*oniscus*	3	NC	Brunswick		Calabash	WACC
VMNH 77BB26	*oniscus*	3	NC	Brunswick		Calabash excavation at ICW	WACC
VMNH 79BB10?	*oniscus*	5	NC	Brunswick		Calabash Pit	WACC
VMNH 74LW27D	*oniscus*	4	NC	Brunswick		Calabash, W wall	WACC
VMNH uncat.	*oniscus*	3	NC	Columbus		stream near Cavers?	WACC
UF 113752	*oniscus*	8	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113753	*oniscus*	163	SC	Horry	UF ZS015	Crescent Beach 01	WACC

UF 113754	*oniscus*	160	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113755	*oniscus*	76	SC	Horry	UF ZS015	Crescent Beach 01	WACC
UF 113756	*oniscus*	223	SC	Horry	UF ZS015	Crescent Beach 01	WACC
PRI 54371	*oniscus*	72	NC	Columbus	PRI 113	Neils Eddy Landing	WACC
VMNH 77BB181	*oniscus*	2	NC	Columbus		Neils Eddy Landing	WACC
ANSP 79603 (H, *C. waccamawensis*)	*oniscus*	1	SC	Horry		Nixon's Landing, Waccamaw River	WACC
PRI 54361 (P?, *C. waccamawensis*)	*oniscus*	7	SC	Horry		Nixon's Landing, Waccamaw River	WACC
PRI 54364 (P?, *C. waccmawensis*)	*oniscus*	2	SC	Horry		Nixon's Landing, Waccamaw River	WACC
PRI 54684 (P?, *C. waccamawensis*)	*oniscus*	1	SC	Horry		Nixon's Landing, Waccamaw River	WACC
PRI 54702 (P?, *C. waccamawensis*)	*oniscus*	1	SC	Horry		Nixon's Landing, Waccamaw River	WACC
PRI 54375	*oniscus*	36	NC	Columbus		Old Dock	WACC
VMNH uncat.	*oniscus*	4	NC	Columbus		Old Dock	WACC
VMNH uncat.	*oniscus*	1	NC	Columbus		Old Dock	WACC
VMNH uncat.	*oniscus*	2	NC	Columbus		Old Dock	WACC
VMNH uncat.	*oniscus*	11	NC	Columbus		Old Dock	WACC
VMNH uncat.	*oniscus*	50+	NC	Columbus		Old Dock	WACC
VMNH 78BB109	*oniscus*	11	NC	Columbus		Old Dock, 0.45 mi (0.72 km) S of intersect of NC Rte. 130 and NC Rte. 192 to Hallsbord, E side of Rt. 130	WACC
VMNH 77BB174	*oniscus*	23	NC	Columbus		Old Dock; 0.6 mi (0.97 km) N of Rt. 130 and Hallsboro Road, intersect on NC Rte. 130, N side of road	WACC
VMNH 77BB21 (77LW(E)?)	*oniscus*	2	SC	Horry		Parkers Landing, Waccamaw River	WACC
VMNH WA56, upstream from	*oniscus*	1	SC	Horry		SC9 Bridge, 4 mi (6.44 km) upstream from Little (ICW) River	WACC
VMNH WA56, upstream from	*oniscus*	1	SC	Horry		SC9 Bridge, 4 mi (6.44 km) upstream from Little (ICW) River	WACC
VMNH 78BB-6 (WA56A)	*oniscus*	5	SC	Horry		WA56, ICW, bank, NE end of Windy Hill Airstrip	WACC
VMNH 78BB110	*oniscus*	8	NC	Bladen		Walkers Bluff; Cape Fear River	WACC

PRI 54411	*oniscus*	5	NC	Bladen		Walkers Bluff	WACC ?
VMNH uncat.	*oniscus*	1	?	?		Deep Creek Pit Floor, #30 sieve	YORK
VMNH uncat.	*oniscus*	26	VA	Hampton City		Rice's Pit	YORK
UF 20496	*oniscus* and/or *marylandicus*	2	FL	Putnam	UF PU002	Crescent Lake Canal	?
UF 22083	*oniscus* and/or *marylandicus*	2	FL	Okeechobee	UF OB005	Kissimmee River 02	?
UF 2823	*oniscus* and/or *marylandicus*	2	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 9344	*oniscus* and/or *marylandicus*	1	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 52546	*oniscus* and/or *marylandicus*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 56630	*oniscus* and/or *marylandicus*	13	FL	Hendry	UF HN017	Clewiston	CAL
UF 57439	*oniscus* and/or *marylandicus*	5	FL	Hendry	UF HN017	Clewiston	CAL
UF 25702	*oniscus* and/or *marylandicus*	7	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54441	*oniscus* and/or *marylandicus*	3	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54693	*oniscus* and/or *marylandicus*	6	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 55112	*oniscus* and/or *marylandicus*	8	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 92437	*oniscus* and/or *marylandicus*	18	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 95937	*oniscus* and/or *marylandicus*	3	FL	Palm Beach	UF PB012	Griffin Brothers Pit 01	CAL / BERM (MIX)
UF 63805	*oniscus* and/or *marylandicus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64344	*oniscus* and/or *marylandicus*	3	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64651	*oniscus* and/or *marylandicus*	9	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64732	*oniscus* and/or *marylandicus*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)

UF 82930	*oniscus* and/or *marylandicus*	1	NC	Duplin	UF ZN003	Natural Well (type locality of Duplin Formation)	DUP
UF 117260	*oniscus* and/or *marylandicus*	1	FL	Leon	UF LN003	Harvey's Creek	JB
UF 117275	*oniscus* and/or *marylandicus*	1	FL	Leon	UF LN004	Jackson Bluff (general)	JB
UF 79809	*oniscus* and/or *marylandicus*	1	FL	Leon	UF LN001	Jackson Bluff 01	JB
UF 117274	*oniscus* and/or *marylandicus*	1	FL	Leon	UF LN002	Jackson Bluff 02	JB
UF 48770	*oniscus* and/or *marylandicus*	2	FL	Putnam	UF PU003	Nashua Bluffs 01	NASH
UF 98148	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)
UF 117227	*oniscus* and/or *marylandicus*	2	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 117228	*oniscus* and/or *marylandicus*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 116710	*oniscus* and/or *marylandicus*	6	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116711	*oniscus* and/or *marylandicus*	6	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116957	*oniscus* and/or *marylandicus*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 117234	*oniscus* and/or *marylandicus*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71291	*oniscus* and/or *marylandicus*	13	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114825	*oniscus* and/or *marylandicus*	18	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 116719	*oniscus* and/or *marylandicus*	2	FL	Dade	UF DA015 / TU 1493	Arvida Pits	TAM (PB)
UF 116720	*oniscus* and/or *marylandicus*	1	FL	Dade	UF DA015 / TU 1493	Arvida Pits	TAM (PB)
UF 50646	*oniscus* and/or *marylandicus*	9	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 50647	*oniscus* and/or *marylandicus*	7	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)

UF 60962	*oniscus* and/or *marylandicus*	19	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60982	*oniscus* and/or *marylandicus*	4	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60983	*oniscus* and/or *marylandicus*	4	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60985	*oniscus* and/or *marylandicus*	3	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 114846	*oniscus* and/or *marylandicus*	38	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 114853	*oniscus* and/or *marylandicus*	14	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 57150	*oniscus* and/or *marylandicus*	16	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59126	*oniscus* and/or *marylandicus*	7	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 62863	*oniscus* and/or *marylandicus*	7	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 62952	*oniscus* and/or *marylandicus*	8	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 61483	*oniscus* and/or *marylandicus*	6	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61525	*oniscus* and/or *marylandicus*	3	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61756	*oniscus* and/or *marylandicus*	2	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61952	*oniscus* and/or *marylandicus*	17	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61953	*oniscus* and/or *marylandicus*	9	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 35863	*oniscus* and/or *marylandicus*	2	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 96200	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 43309	*oniscus* and/or *marylandicus*	2	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 117288	*oniscus* and/or *marylandicus*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

UF 98198	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 42383	*oniscus* and/or *marylandicus*	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 14757	*oniscus* and/or *marylandicus*	1	FL	Highlands	UF 3057	None	TAM (PB)
UF 38696	*oniscus* and/or *marylandicus*	6	FL	Okeechobee	UF 2664	None	TAM (PB)
UF 29375	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96049	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96297	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96780	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9750	*oniscus* and/or *marylandicus*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110191	*oniscus* and/or *marylandicus*	51	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 114791	*oniscus* and/or *marylandicus*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 115016	*oniscus* and/or *marylandicus*	1	NC	Columbus	UF 2846 / TU 559	None	WACC
PRI 54488	*paranobilis*	1	FL	?		"Johnson Brothers Rock Pit"	?
PRI 54486	*paranobilis*	1	FL	Collier	TU 1175	Corkskrew Island	CAL
PRI 54626	*paranobilis*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 114766	*paranobilis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114767	*paranobilis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115846	*paranobilis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 118539	*paranobilis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71333	*paranobilis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114756	*paranobilis*	6	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114761	*paranobilis*	4	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 118540	*paranobilis*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
CM 35665 (H, *C. paranobilis*)	*paranobilis*	1	FL	Sarasota	CM SL986	APAC Quarry	TAM (PB)
UF 115847	*paranobilis*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)

UF 63900	*paranobilis*	6	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 111423	*paranobilis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
PRI 54627	*paranobilis*	4	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 53178	*paranobilis*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
AMNH 50681 (H, *C. irisae*)	*paranobilis*	1	FL	Collier		Mule Pen Quarry	TAM (PB)
USNM 559928 (H, *C. parkeri*)	*parkeri*	1	FL	Palm Beach		Well G.S. #11, 17 mi (27.36 km) W of Boca Raton	CAL?
USNM 559929 (P, *C. parkeri*)	*parkeri*	1	FL	Palm Beach		Well G.S. #11, 17 mi (27.36 km) W of Boca Raton	CAL?
USNM 369351 (H, *C. apium*)	*patricius*	1				Bowden, Jamaica	BOW
PRI 54631	*patricius*	1	FL	Hendry?		LaBelle?	CAL?
USNM 370103 (H, *C. testudinarius leonensis*)	*patricius*	1	FL	Leon	FGS 8647?	Harvey's Creek [0.5 mi (0.8 km) above abandoned mill)	JB
CM 35693 (H, *C. protocardinalis*)	*protocardinalis*	1	FL	Palm Beach		Miami Canal; "canal dredging (20 m depth) along Miami Canal, 1 km north of Broward-Palm Beach County Line" (Petuch, 1991: 54)	CAL
PRI 54339	*sennottorum*	2	FL	Palm Beach		?	?
PRI 54351	*sennottorum*	1	FL	Palm Beach		Miami Canal #2	?
PRI 54321	*sennottorum*	19	FL	Palm Beach		Miami Canal, S of FL Rte. 80 at "X Canal"	?
PRI 54660	*sennottorum*	1	FL	Palm Beach	TU 978	South Bay	BERM
PRI 54667	*sennottorum*	1	FL	Palm Beach		South Bay	BERM
PRI 54674	*sennottorum*	1	FL	Palm Beach	TU 978	South Bay	BERM
PRI 54326	*sennottorum*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 117283	*sennottorum*	2	FL	Dade	UF DA001	Bird Road	TAM (PB)
PRI 54330	*spurius*	1	FL	Glades	PRI 1990	Caloosahatchee Canal [2.5 mi (4.02 km) E of Ortona Locks]	?
PRI 54334	*spurius*	1	FL	Glades	PRI 1991	Caloosahatchee Canal [3 mi (4.83 km) E of Ortona Locks]	?
UF 47046	*spurius*	9	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 47050	*spurius*	6	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53341	*spurius*	9	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53372	*spurius*	1	FL	Glades	UF GL025	Caloosahatchee Canal 06	?

UF 53373	*spurius*	1	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
UF 53716	*spurius*	1	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
PRI 53705	*spurius*	1	FL			Caloosahatchee River (near Ft. Myers)	?
PRI 3899F	*spurius*	1	FL	?		near Fort Myers	?
PRI 2148H	*spurius*	1	FL	?		Kissimmee River (dredged)	?
PRI 46113	*spurius*	2	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 49053	*spurius*	1	FL	Okeechobee	TU 932	E side of Kissimmee River, B-108-East	?
PRI 54331	*spurius*	1	FL	Hendry?		LaBelle? (dubious record)	?
PRI 54293	*spurius*	1	FL	?	PRI 1947	canal connecting Kissimmee Lake to Lake Okeechobee	?
PRI 46055	*spurius*	1	FL	Palm Beach	TU 732	Belle Glade	BERM
UF 14089	*spurius*	1	FL	Palm Beach	UF PB001	Belle Glade 01	BERM
UF 116723	*spurius*	22	FL	Glades	UF GL008 / TU 759	Caloosahatchee River 04	BERM
UF 116980	*spurius*	4	FL	Glades	UF GL008 / TU 759	Caloosahatchee River 04	BERM
UF 117306	*spurius*	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54228	*spurius*	2	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54230	*spurius*	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54523	*spurius*	20	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54532	*spurius*	11	FL	Hendry	UF GL008	Caloosahatchee River 04	BERM
UF 54550	*spurius*	1	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 54922	*spurius*	2	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 57645	*spurius*	3	FL	Glades	UF GL008	Caloosahatchee River 04	BERM
UF 113866	*spurius*	23	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 113870	*spurius*	154	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 115804	*spurius*	1	FL	Glades	UF GL011 / TU 803	Caloosahatchee River 05	BERM
UF 27655	*spurius*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55765	*spurius*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55770	*spurius*	14	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55902	*spurius*	3	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55949	*spurius*	1	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
UF 55950	*spurius*	6	FL	Glades	UF GL011	Caloosahatchee River 05	BERM
PRI 54305	*spurius*	2	FL	Dade		Capeletti Brothers Pit 11	BERM
UF 117248	*spurius*	2	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52746	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52755	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM

UF 52820	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52961	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52964	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 52980	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53239	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53279	*spurius*	4	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53312	*spurius*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 53319	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 55367	*spurius*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56954	*spurius*	1	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
UF 56972	*spurius*	3	FL	Dade	UF DA006	Capeletti Brothers Pit 11	BERM
PRI 53702	*spurius*	8	FL	Dade	UF DA013	Florida Rock Miami Quarry	BERM
CM 35720 (P, *C. spengleri*)	*spurius*	1	FL	Broward/ Palm Beach	CM SL988	Griffin Brothers Pit	BERM
CM 35734 (H, *C. lemoni*)	*spurius*	1	FL	Broward-Palm Beach	CM SL988	Griffin Brothers Pit	BERM
CM 35735 (P, *C. lemoni*)	*spurius*	1	FL	Broward-Palm Beach	CM SL988	Griffin Brothers Pit	BERM
UF 59186	*spurius*	7	FL	Palm Beach	UF PB013	Holey Land 01	BERM
PRI 53700	*spurius*	17	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
PRI 53701	*spurius*	24	FL	Collier	UF CR017	Longan Lakes 01B Pit	BERM
PRI 44026	*spurius*	1	FL	Palm Beach		South Bay	BERM
PRI 54380	*spurius*	1	FL	Palm Beach	TU 978	South Bay	BERM
PRI 54506	*spurius*	4	FL	Palm Beach	TU 978	South Bay	BERM
UF 117292	*spurius*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 117337	*spurius*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 3883	*spurius*	11	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57983	*spurius*	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 57994	*spurius*	1	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 58082	*spurius*	2	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 114787	*spurius*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 117317	*spurius*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51843	*spurius*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 51892	*spurius*	1	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52075	*spurius*	8	FL	Palm Beach	UF PB007	South Bay 04	BERM

UF 52122	*spurius*	7	FL	Palm Beach	UF PB007	South Bay 04	BERM
UF 52125	*spurius*	9	FL	Palm Beach	UF PB007	South Bay 04	BERM
CM 35719 (H, *C. spengleri*)	*spurius*	1	FL	Broward/ Palm Beach	CM SL988	Griffin Brothers Pit	BERM
UF 98858	*spurius*	1	FL	Hendry	UF HN034	Caloosahatchee River 11	CAL
UF 22736	*spurius*	1	FL	Hendry	UF HN017	Clewiston	CAL
UF 117345	*spurius*	6	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14172	*spurius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 14205	*spurius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25697	*spurius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25698	*spurius*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 54454	*spurius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 58087	*spurius*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
PRI 54386	*spurius*	1	FL	Collier	TU 1175	Corkskrew Island	CAL
UF 117344	*spurius*	2	FL	Hendry	UF HN018	La Belle East 04	CAL
UF 99734	*spurius*	3	FL	Hendry	UF HN029	La Belle East 05 (type locality of Caloosahatchee Formation)	CAL
UF 117364	*spurius*	2	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 92403	*spurius*	3	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 35581	*spurius*	1	FL	Glades	UF GL023	Ortona Lock 05	CAL
PRI 53711	*spurius*	24	FL	Sarasota		Quality Aggregates Phase 06	CAL (B 1)
UF 116728	*spurius*	4	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 50539	*spurius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 54104	*spurius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 57670	*spurius*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
PRI 40207	*spurius*	1	FL	DeSoto		De Soto Shell Pits (general)	CAL / BERM (MIX)
PRI 40527	*spurius*	1	FL	DeSoto		De Soto Shell Pits (general)	CAL / BERM (MIX)
UF 116674	*spurius*	2	FL	DeSoto	UF DE018 / TU 1512	De Soto Shell Pits (general)	CAL / BERM (MIX)
PRI 41148	*spurius*	1	FL	Palm Beach		Griffin Brothers Pit	CAL / BERM (MIX)
PRI 54700	*spurius*	1	FL	Palm Beach		Griffin Brothers Pit	CAL / BERM (MIX)
PRI 53703	*spurius*	5	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 62585	*spurius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 63803	*spurius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64539	*spurius*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64931	*spurius*	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)

UF 15085	*spurius*	1	FL	Hendry	UF HN024	Fort Thompson 01 (type locality of Fort Thompson Formation)	CAL / FT (MIX)
UF 66433 (H, *C. micanopy*)	*spurius*	1	FL	Palm Beach	UF 4131	"Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor" (Petuch, 1994: 355)	CAL ?
PRI 53706	*spurius*	1	FL	Charlotte	UF CH027	Handy Phil Pit	FT
UF 42323	*spurius*	1	FL	Charlotte	UF CH024	Schwabach Shell Pit 02	FT
UF 81074	*spurius*	1	FL	Liberty	UF LI002	Alum Bluff 01A	JB
UF 96956	*spurius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)
UF 98188	*spurius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)
UF 66432 (H, *C. streami*)	*spurius*	1	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB 3)
UF 40516	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 4)
PRI 50129	*spurius*	1	FL	Sarasota		APAC Quarry - South Center Pit (NS Face)	TAM (PB 7)
PRI 53196	*spurius*	10	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB 7)
UF 117265	*spurius*	1	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
UF 93113	*spurius*	7	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)
PRI 54288	*spurius*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 46056	*spurius*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 114762	*spurius*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114762	*spurius*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116709	*spurius*	11	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116712	*spurius*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116956	*spurius*	1	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 116961	*spurius*	30	FL	Collier	UF CR007 / TU 797	Alligator Alley 01	TAM (PB)
UF 117245	*spurius*	8	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71448	*spurius*	69	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114818	*spurius*	18	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
PRI 46057	*spurius*	1	FL	Collier?		Alligator Alley, 6.4 mi (10.30 km) W of L-28 Interceptor Canal	TAM (PB)
PRI 43802	*spurius*	1	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 46076	*spurius*	3	FL	Hendry		Big Cypress	TAM (PB)
PRI 46031	*spurius*	3	FL	Hendry	TU 1044	Big Cypress ("5th Place")	TAM (PB)
PRI 46030	*spurius*	5	FL	Hendry	TU 1044 (opposite of)	Big Cypress (across canal from TU 1044)	TAM (PB)
UF 112487	*spurius*	2	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 112492	*spurius*	13	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)

UF 114863	*spurius*	1	FL	Okeechobee	UF OB001 / TU 729	Fort Basinger 01	TAM (PB)
UF 50645	*spurius*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 50657	*spurius*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60321	*spurius*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60423	*spurius*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60477	*spurius*	5	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60481	*spurius*	1	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 60482	*spurius*	2	FL	Okeechobee	UF OB001	Fort Basinger 01	TAM (PB)
UF 114850	*spurius*	1	FL	Okeechobee	UF OB002 / TU 728	Fort Basinger 02	TAM (PB)
UF 117230	*spurius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59140	*spurius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 59931	*spurius*	1	FL	Okeechobee	UF OB002	Fort Basinger 02	TAM (PB)
UF 62877	*spurius*	4	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65453	*spurius*	12	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 65643	*spurius*	31	FL	Okeechobee	UF OB007	Fort Basinger 03	TAM (PB)
UF 112558	*spurius*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61484	*spurius*	1	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
UF 61925	*spurius*	3	FL	Highlands	UF HG003	Fort Basinger 05	TAM (PB)
USNM 644645 (H, *C. cherokus*)	*spurius*	1	FL	?		Forty Mile Bend	TAM (PB)
UF 35836	*spurius*	2	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 36008	*spurius*	9	FL	Hendry	UF HN027	Interceptor Canal 01	TAM (PB)
UF 18124	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 3670	*spurius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 10956	*spurius*	5	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 10957	*spurius*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 16215	*spurius*	37	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 44449	*spurius*	1	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 111126	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111419	*spurius*	48	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111424	*spurius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111426	*spurius*	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111427	*spurius*	10	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111430	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111431	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

UF 111432	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111433	*spurius*	11	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111434	*spurius*	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111435	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111436	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111438	*spurius*	31	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111632	*spurius*	7	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111640	*spurius*	8	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111641	*spurius*	3	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111642	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111643	*spurius*	4	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111644	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111645	*spurius*	8	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111646	*spurius*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111647	*spurius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112590	*spurius*	47	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112592	*spurius*	36	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112595	*spurius*	15	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112598	*spurius*	10	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112600	*spurius*	1	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 112604	*spurius*	15	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 114886	*spurius*	1	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117242	*spurius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 117268	*spurius*	7	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117287	*spurius*	15	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 117289	*spurius*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
PRI 44078	*spurius*	1	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 46072	*spurius*	1	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 54287	*spurius*	4	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
PRI 54654	*spurius*	1	FL	Collier	TU 1177	Mule Pen Quarry	TAM (PB)
UF 42377	*spurius*	19	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42384	*spurius*	2	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42680	*spurius*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42695	*spurius*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 48900	*spurius*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)

UF 56047	*spurius*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 56141	*spurius*	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 66434 (H, *C. martinshugari*)	*spurius*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 66431 (H, *C. jeremyi*)	*spurius*	1	FL	Glades	UF GL022	Ortona Lock 04 (general)	TAM (PB)
PRI 53707	*spurius*	1	FL	Sarasota		Quality Aggregates	TAM (PB)
PRI 41576	*spurius*	1	FL	Sarasota		Quality Aggregates Phase 02	TAM (PB)
PRI 41577	*spurius*	4	FL	Sarasota		Quality Aggregates Phase 02	TAM (PB)
PRI 41561	*spurius*	6	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 41563	*spurius*	14	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 41578	*spurius*	5	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53710	*spurius*	11	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 54291	*spurius*	7	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 54292	*spurius*	2	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 54296	*spurius*	2	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 54691	*spurius*	1	FL	Sarasota		Quality Aggregates Phase 06	TAM (PB)
PRI 53181	*spurius*	89	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53167	*spurius*	63	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53168	*spurius*	44	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53186	*spurius*	79	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54687	*spurius*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114965	*spurius*	2	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113720	*spurius*	9	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
UF 113724	*spurius*	20	FL	Sarasota	UF SO013	Richardson Road Shell Pit 01B	TAM (PB)
UF 38690	*spurius*	1	FL	Okeechobee	UF 2664	None	TAM (PB)
UF 48894	*spurius*	1	FL	Okeechobee	UF 2664	None	TAM (PB)
UF 50959	*spurius*	2	FL	Okeechobee	UF 2664	None	TAM (PB)
PRI 40199	*spurius*	15	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 40208	*spurius*	11	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 44071	*spurius*	2	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 9798	*spurius*	3	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46059	*spurius*	5	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46070	*spurius*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)

PRI 46075	*spurius*	11	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46112	*spurius*	2	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54290	*spurius*	3	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54387	*spurius*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53709	*spurius*	52	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 53072	*spurius*	62	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
PRI 53073	*spurius*	36	FL	Sarasota		APAC Quarry - North Pit	TAM (PB) / CAL (MIX)
PRI 46058	*spurius*	8	FL	Sarasota	TU 1000 + Johnson Pit	APAC Quarry and "Johnson Brothers Rock Pit"	TAM (PB) / CAL (MIX)
PRI 53070	*spurius*	44	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53708	*spurius*	9	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 53708	*spurius*	9	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
PRI 54293	*spurius*	3	FL	Sarasota		APAC Quarry or Quality Aggregates	TAM (PB) / CAL (MIX)
UF 115002	*spurius*	6	FL	Collier	UF CR020 / TU 1175	Corkskrew Island 02	TAM (PB) / CAL (MIX)
UF 14535	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18046	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18047	*spurius*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18052	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18122	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29378	*spurius*	9	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29379	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 46219	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58883	*spurius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58895	*spurius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 97057	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110249	*spurius*	30	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110411	*spurius*	18	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 114792	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117253	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 13814	*spurius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18043	*spurius*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18044	*spurius*	35	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18050	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18058	*spurius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 29373	*spurius*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31574	*spurius*	9	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34043	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34839	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 41986	*spurius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 46220	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96135	*spurius*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96385	*spurius*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96773	*spurius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9755	*spurius*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 37428	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 37437	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 38285	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 38440	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 64021	*spurius*	4	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 31118	*spurius*	2	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 31240	*spurius*	3	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01	TAM (PB) / CAL (MIX)
UF 37960	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 1	TAM (PB) / CAL (MIX)
UF 38286	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 1	TAM (PB) / CAL (MIX)
UF 35914	*spurius*	2	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 38303	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 43505	*spurius*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
UF 52354	*spurius*	7	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 6	TAM (PB) / CAL (MIX)
PRI 54303	*spurius*	3	FL	Sarasota	PRI 2047	Warren Brothers Pit	TAM (PB) / CAL (MIX)
PRI 54298	*spurius* and/or *spuroides*	3	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
PRI 54338	*spurius* and/or *spuroides*	2	FL	Hendry	PRI 1987	Caloosahatchee Canal [3 mi (4.83 km) SW of LaBelle]	?
PRI 3749H	*spurius* and/or *spuroides*	1	FL	?		North St. Petersburg	?
PRI 54302	*spurius* and/or *spuroides*	4	FL	Hendry		Caloosahatchee River (opposite Silva's)	CAL
PRI 46069	*spurius* and/or *spuroides*	2	FL	Hendry		Clewiston	CAL
PRI 46073	*spurius* and/or *spuroides*	4	FL	Hendry		Clewiston	CAL

PRI 49054	*spurius* and/or *spuroides*	3	FL	Hendry		Clewiston	CAL
PRI 53698	*spurius* and/or *spuroides*	24	FL	Hendry	PRI 1260/1263	La elle Picnic Grounds	CAL
PRI 54395	*spurius* and/or *spuroides*	12	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 40210	*spurius* and/or *spuroides*	15	FL	Hendry		LaBelle Pit	CAL
PRI 41089	*spurius* and/or *spuroides*	7	FL	Hendry		LaBelle Pit	CAL
PRI 40206	*spurius* and/or *spuroides*	3	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
PRI 40212	*spurius* and/or *spuroides*	4	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 114765	*spurius* and/or *spuroides*	1	FL	Leon	UF LN001 / TU 60	Jackson Bluff 01	JB
PRI 40209	*spurius* and/or *spuroides*	6	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 49047	*spurius* and/or *spuroides*	8	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54336	*spuroides*	7	FL	Glades	PRI 1990	Caloosahatchee Canal [2.5 mi (4.02 km) E of Ortona Locks]	?
PRI 54295	*spuroides*	2	FL	Glades	PRI 1991	Caloosahatchee Canal [3 mi (4.83 km) E of Ortona Locks]	?
PRI 54333	*spuroides*	4	FL	Glades	PRI 1991	Caloosahatchee Canal [3 mi (4.83 km) E of Ortona Locks]	?
PRI 54734	*spuroides*	1	FL	Glades	PRI 1991	Caloosahatchee Canal [3 mi (4.83 km) E of Ortona Locks]	?
UF 53701	*spuroides*	2	FL	Glades	UF GL025	Caloosahatchee Canal 06	?
VMNH uncat.	*spuroides*	1	FL	DeSoto		DL's Pit, Arcadia	?
PRI 54357	*spuroides*	3	FL	Glades		Harney Pond Canal	?
PRI 54335	*spuroides*	4	FL	Highlands	PRI 1985	Kissimmee Canal, Long Cypress Slash	?
PRI 54337	*spuroides*	2	FL	Highlands	PRI 1984	Kissimmee Canal, upper end of Long Cypress slash, S of lock S65D	?
PRI 54332	*spuroides*	40	FL	Hendry?		LaBelle? (dubious record)	?
PRI 54289	*spuroides*	1	FL	Glades		Lake Hicpochee, N side of river	?
PRI 54652	*spuroides*	1	FL	Glades		Lake Hicpochee, N side of river	?

PRI 54730	*spuroides*	1	FL	Glades		Lake Hicpochee, N side of river	?
PRI 53704	*spuroides*	1	FL	?		Lake Okeechobee	?
PRI 4539F	*spuroides*	1	FL	Glades?		NW shore of Lake Okeechobee	?
UF 15701	*spuroides*	1	FL	Glades	UF GL012	Ortona Lock 03	?
PRI 54300	*spuroides*	1	FL	Glades		Ortona Locks	?
UF 117305	*spuroides*	5	FL	Palm Beach	UF PB005	South Bay 02	BERM
UF 60650	*spuroides*	1	FL	Hendry	UF HN008	Caloosahatchee Canal 02	CAL
UF 2819	*spuroides*	98	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 9355	*spuroides*	5	FL	Hendry	UF HN002	Caloosahatchee River 01	CAL
UF 15188	*spuroides*	1	FL	Hendry	UF HN026	Caloosahatchee River 06	CAL
UF 58328	*spuroides*	2	FL	Glades	UF GL026	Caloosahatchee River 08	CAL
UF 116734	*spuroides*	1	FL	Hendry	UF HN047 / TU 529	Caloosahatchee River 16B	CAL
PRI 54391	*spuroides*	1	FL	Hendry		Clewiston	CAL
UF 56640	*spuroides*	9	FL	Hendry	UF HN017	Clewiston	CAL
UF 56843	*spuroides*	2	FL	Hendry	UF HN017	Clewiston	CAL
UF 57182	*spuroides*	3	FL	Hendry	UF HN017	Clewiston	CAL
UF 57427	*spuroides*	1	FL	Hendry	UF HN017	Clewiston	CAL
PRI 53699	*spuroides*	12	FL	Hendry		Cochran Shell Pit	CAL
PRI 54732	*spuroides*	1	FL	Hendry		Cochran Shell Pit	CAL
PRI 54735	*spuroides*	1	FL	Hendry		Cochran Shell Pit	CAL
UF 114783	*spuroides*	7	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 15795	*spuroides*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 23522	*spuroides*	33	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 24767	*spuroides*	2	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 25709	*spuroides*	12	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 58177	*spuroides*	1	FL	Hendry	UF HN004	Cochran Shell Pit	CAL
UF 36776	*spuroides*	1	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 36797	*spuroides*	2	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 47894	*spuroides*	1	FL	DeSoto	UF DE001	DeSoto Shell Pit 01	CAL
UF 117318	*spuroides*	1	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 86612	*spuroides*	3	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL
UF 15009	*spuroides*	1	FL	Hendry	UF HN023	Fort Denaud Rock Pit	CAL
UF 114786	*spuroides*	1	FL	Hendry	UF HN022	Hendry County Rockpit	CAL
UF 114854	*spuroides*	13	FL	Hendry	UF HN022 / TU 726	Hendry County Rockpit	CAL

ANSP 18642 (H, *C. spuroides*)	*spuroides*	1	FL	Hendry		LaBelle	CAL
UF 12352	*spuroides*	2	FL	Hendry	UF HN018	LaBelle East 04	CAL
PRI 53697	*spuroides*	40	FL	Hendry	PRI 1411	LaBelle Picnic Grounds	CAL
PRI 54301	*spuroides*	4	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
PRI 54659	*spuroides*	1	FL	Hendry	PRI 1260/1263	LaBelle Picnic Grounds	CAL
UF 92519	*spuroides*	1	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 92621	*spuroides*	5	FL	Pinellas	UF PI010	North St. Petersburg	CAL
UF 12373	*spuroides*	1	FL	Glades	UF GL006	Ortona Lock 02	CAL
UF 92222	*spuroides*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 92223	*spuroides*	1	FL	Charlotte	UF CH007	Shell Creek (general)	CAL
UF 58532	*spuroides*	2	FL	Hendry	UF 3788	None	CAL
UF 86544	*spuroides*	1	FL	Charlotte	UF CH036	Forsberg Shell Pit 01	CAL (IN SITU)
UF 116724	*spuroides*	11	FL	Glades	UF GL009 / TU 768	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 54103	*spuroides*	1	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
UF 57674	*spuroides*	5	FL	Glades	UF GL009	Caloosahatchee Canal 04	CAL / BERM (MIX)
PRI 40526	*spuroides*	1	FL	DeSoto		DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 113728	*spuroides*	3	FL	DeSoto	UF DE018	DeSoto Shell Pits (general)	CAL / BERM (MIX)
UF 116675	*spuroides*	10	FL	DeSoto	UF DE018 / TU 1512	DeSoto Shell Pits (general)	CAL / BERM (MIX)
PRI 54297	*spuroides*	1	FL	Palm Beach		Miami Canal #2	CAL / BERM (MIX)
PRI 54385	*spuroides*	8	FL	Palm Beach		Miami Canal, S of FL Rte. 80 at "X Canal"	CAL / BERM (MIX)
UF 15661	*spuroides*	5	FL	Glades	UF GL001	Ortona Lock 01	CAL / BERM (MIX)
PRI 53696	*spuroides*	13	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 54320	*spuroides*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 54731	*spuroides*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 54733	*spuroides*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 117239	*spuroides*	5	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 62599	*spuroides*	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 63276	*spuroides*	2	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 63807	*spuroides*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64735	*spuroides*	3	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
UF 64748	*spuroides*	1	FL	Palm Beach	UF PB014	Star Ranch 01	CAL / BERM (MIX)
PRI 41389	*spuroides*	2	FL	Palm Beach		Star Ranch Pit	CAL / BERM (MIX)
UF 93070	*spuroides*	10	FL	Charlotte	UF CH010	Acline Shell Pit	TAM (PB)

UF 56050	*spuroides*	3	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 40523	*spuroides*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
UF 114999	*spuroides*	2	FL	Collier	UF CR020 / TU 1175	Corkskrew Island 02	TAM (PB) / CAL (MIX)
UF 3833	*spuroides*	2	FL	Glade	UF GL017	Harney Pond Canal 02	TAM (PB) / CAL (MIX)
UF 14536	*spuroides*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34032	*spuroides*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
PRI 54508	*violetae*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 114763	*violetae*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114764	*violetae*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115832	*violetae*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115833	*violetae*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 115834	*violetae*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71443	*violetae*	2	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114755	*violetae*	3	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114897	*violetae*	1	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
USNM 427969 (H, *C. violetae*)	*violetae*	1	FL	Collier		Mule Pen Quarry	TAM (PB)
ANSP 2547 (L, PL, *C. yaquensis*)	*yaquensis*	2				Santo Domingo, Dominican Republic	?
UF 66430 (H, *C. jonesorum*)	*yaquensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB 3)
PRI 46100	*yaquensis*	1	FL	Collier?		Alligator Alley	TAM (PB)
PRI 50294	*yaquensis*	1	FL	Collier?		Alligator Alley	TAM (PB)
UF 117257	*yaquensis*	1	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 71447	*yaquensis*	10	FL	Collier	UF CR007	Alligator Alley 01	TAM (PB)
UF 114819	*yaquensis*	40	FL	Collier	UF CR014	Alligator Alley 03	TAM (PB)
UF 114895	*yaquensis*	13	FL	Collier	UF CR014 / TU 933	Alligator Alley 03	TAM (PB)
PRI 49619	*yaquensis*	3	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
PRI 54689	*yaquensis*	1	FL	Hendry	TU 1044	Big Cypress	TAM (PB)
UF 35344	*yaquensis*	1	FL	Charlotte	UF CH028	Lomax-King Pit A	TAM (PB)
UF 10934	*yaquensis*	30	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 96199	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB)
UF 44431	*yaquensis*	1	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 44442	*yaquensis*	1	FL	Sarasota	UF SO009	Macasphalt Shell Pit 01 (original pit)	TAM (PB)
UF 111155	*yaquensis*	2	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)

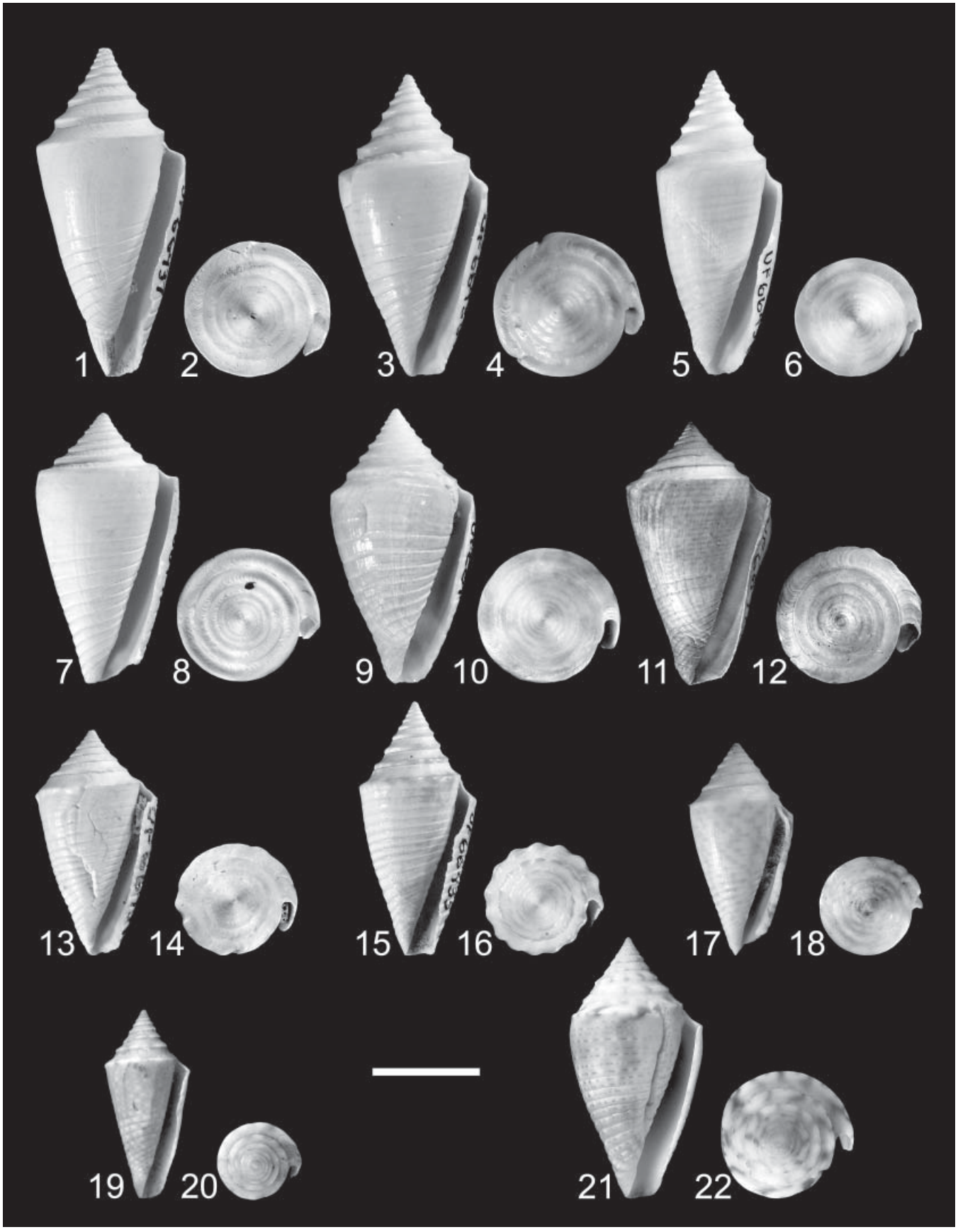
UF 111418	*yaquensis*	11	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111635	*yaquensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 111639	*yaquensis*	1	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 112603	*yaquensis*	1	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 113731	*yaquensis*	3	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 114884	*yaquensis*	35	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 116660	*yaquensis*	1	FL	Sarasota	UF SO017 / TU 1000	Macasphalt Shell Pit B	TAM (PB)
UF 96942	*yaquensis*	5	FL	Sarasota	UF SO017	Macasphalt Shell Pit B	TAM (PB)
UF 42381	*yaquensis*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42495	*yaquensis*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
UF 42986	*yaquensis*	1	FL	Collier	UF CR004	Mule Pen Quarry	TAM (PB)
PRI 50403	*yaquensis*	6	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 50404	*yaquensis*	4	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 54683	*yaquensis*	1	FL	Sarasota	UF SO023	Quality Aggregates Phase 07A	TAM (PB)
PRI 53169	*yaquensis*	28	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 53170	*yaquensis*	15	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 54644	*yaquensis*	1	FL	Manatee		Quality Aggregates Phase 08	TAM (PB)
PRI 49990	*yaquensis*	17	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54643	*yaquensis*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54690	*yaquensis*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
PRI 54696	*yaquensis*	1	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 114972	*yaquensis*	3	FL	Manatee	UF MA008	Quality Aggregates Phase 09	TAM (PB)
UF 113723	*yaquensis*	2	FL	Sarasota	UF SO013 / TU 1524	Richardson Road Shell Pit 01B	TAM (PB)
UF 3671	*yaquensis*	10	FL	Sarasota		Warren Brothers Pit	TAM (PB)
PRI 40214	*yaquensis*	4	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 41567	*yaquensis*	25	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 46101	*yaquensis*	18	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54389	*yaquensis*	3	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54642	*yaquensis*	1	FL	Sarasota		APAC Quarry	TAM (PB) / CAL (MIX)
PRI 54695	*yaquensis*	1	FL	Sarasota	TU 1000	APAC Quarry	TAM (PB) / CAL (MIX)
UF 101013	*yaquensis*	6	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 110418	*yaquensis*	88	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 13887	*yaquensis*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18048	*yaquensis*	14	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)

UF 18053	*yaquensis*	3	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 18057	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 29381	*yaquensis*	9	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 30690	*yaquensis*	40	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 31553	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 32884	*yaquensis*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 33139	*yaquensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 34029	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 35002	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 35160	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 44156	*yaquensis*	4	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 57273	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 58962	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96152	*yaquensis*	16	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96377	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96599	*yaquensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 96779	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9754	*yaquensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 9912	*yaquensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117312	*yaquensis*	2	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 117342	*yaquensis*	1	FL	Sarasota	UF SO001	Macasphalt Shell Pit	TAM (PB) / CAL (MIX)
UF 35513	*yaquensis*	1	FL	Sarasota	UF SO019	Richardson Road Shell Pit 01 - Phase 1	TAM (PB) / CAL (MIX)

PLATES

PLATE 1

Figure — Page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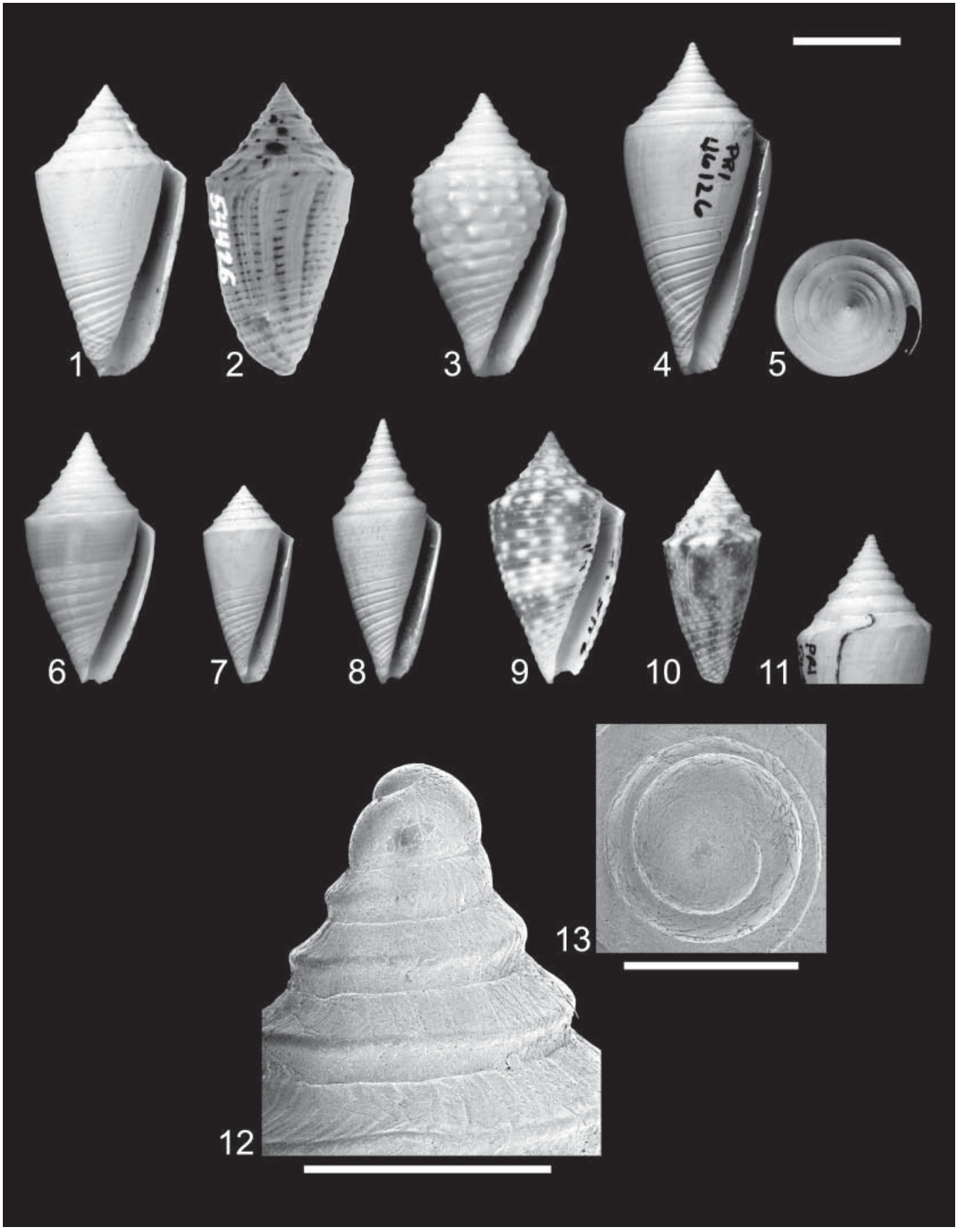
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PLATE 2

Figure Page

1-13. *Conus jaspideus* Gmelin, 1791. Scale bars = 1 cm (Figs 5 [pertains to Figs 1-11] and 12); 500 µm (Fig. 13). 17

1-2. PRI 54426. Alligator Alley, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 27.3 mm. Fig. 2 is an inverse image of the specimen photographed under ultraviolet light.

3. PRI 54707. Belle Glade, Palm Beach County, Florida. Bermont Formation. SL 26.5 mm.

4-5. PRI 46126. Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 31.1 mm; MD 13.9 mm.

6. PRI 54706. Cochran Shell Pit, Hendry County, Florida? Caloosahatchee Formation? SL 23.5 mm.

7. PRI 54663. PRI locality 1263, La Belle, Hendry County, Florida. Caloosahatchee Formation. SL 18.5 mm.

8. PRI 54671. Tulane University locality 978, South Bay, Palm Beach County. Bermont Formation. SL 24.8 mm.

9. PRI 9793. Sanibel Island (4 fathoms), Lee County, Florida. Recent. SL 23.6 mm.

10. PRI 54714. Sunshine Skyway, Tampa Bay, Florida. Recent. SL 20.0 mm.

11. PRI 54679. UF locality DA013, Florida Rock Miami Quarry, Miami-Dade County, Florida. Bermont Formation. MD 12.7 mm. Black line outlines growth line showing shape of subsutural flexure.

12-13. PRI 54634. Quality Aggregates, Inc., Phase 6, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. Scanning electron photomicrographs of protoconch (larval shell).

PLATE 3

Figure Page

1-14. Type specimens of *Conus spurius* Gmelin, 1791. Scale bar = 1 cm. 19

1-2. Holotype of *Conus cherokus* Olsson & Petit, 1964 (USNM 644645). Southern Florida, perhaps "Forty Mile Bend west of Coral Gables", *not* Myrtle Beach, South Carolina (Petit, 1995: 127). Tamiami Formation, Pinecrest Beds. SL 70.7 mm; MD 35.6 mm.

3-4. Holotype of *Conus micanopy* Petuch, 1994 (UF 66433). UF locality 4131. "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 355), Florida. Caloosahatchee Formation? SL 87.5 mm; MD 50.1 mm.

5-6. Holotype of *Conus martinshugari* Petuch, 1994 (UF 66434). UF locality CR004: Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 77.7 mm; MD 43.4 mm.

7-8. Holotype of *Conus streami* Petuch, 1994 (UF 66432). UF locality SO013: Richardson Road Shell Pit 01B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 60.1 mm; MD 33.6 mm.

9-10. Holotype of *Conus lemoni* Petuch, 1990 (CM 35734). Griffin Brothers Pit, Broward-Palm Beach County line, Florida. Bermont Formation. SL 55.9 mm; MD 33.1 mm.

11-12. Holotype of *Conus spengleri* Petuch, 1991 (CM 35719). Griffin Brothers Pit, Broward-Palm Beach County line, Florida. Bermont Formation. SL 67.5 mm; MD 36.5 mm.

13-14. Holotype of *Conus jeremyi* Petuch, 1994 (UF 66431). UF locality GL022: Ortona Lock 04 (General), Glades County, Florida. Tamiami Formation, Pinecrest Beds. SL 30.7 mm; MD 16.7 mm.

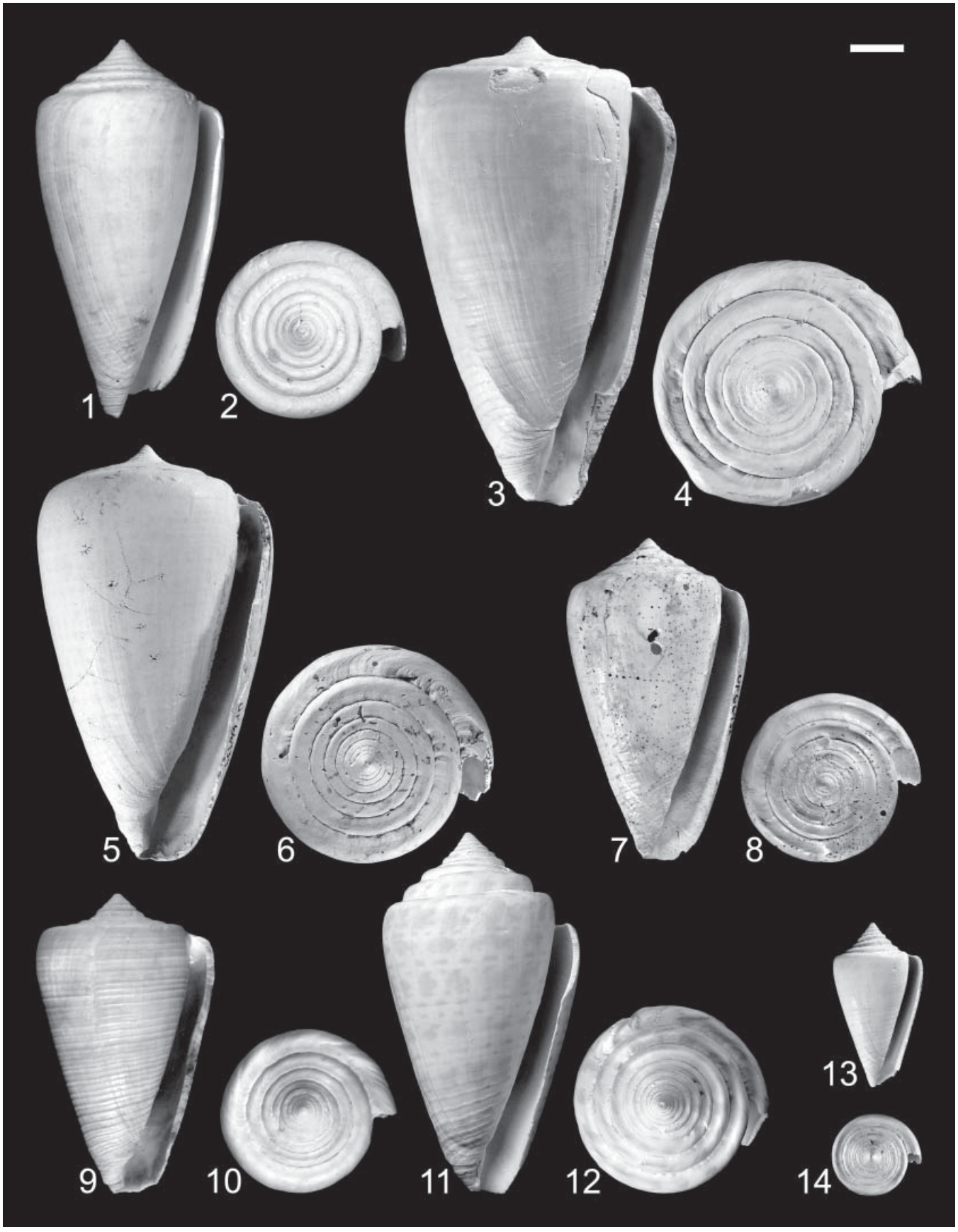
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PLATE 4

Figure Page

1-14. *Conus spurius* Gmelin, 1791. Scale bars = 1 cm (Fig. 5, pertains to Figs 1-13); 1 mm (Fig. 14). 19

1-2. PRI 24827. San Carlos Bay, Sanibel, Lee County, Florida. Recent. SL 60.6 mm; MD 33.8 mm.

3. UF 114762. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 64.2 mm. Inverse image of specimen photographed under ultraviolet light.

4-5. PRI 54687. UF locality MA008: Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 70.4 mm; MD 34.7 mm.

6-7. PRI 44026. South Bay, Palm Beach County, Florida. Bermont Formation? SL 89.2 mm; MD 54.4 mm.

8. PRI 54691. Quality Aggregates, Inc., Phase 6, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 69.3 mm.

9. UF 115804. UF locality GL011: Caloosahatchee River 05, Glades County, Florida. Bermont Formation. SL 32.3 mm.

10. PRI 54700. Griffin Brothers Pit, Broward-Palm Beach County line, Florida. Bermont Formation. SL 58.9 mm. Inverse image of specimen photographed under ultraviolet light.

11. PRI 44078. Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 62.4 mm.

12. PRI 54654. Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 62.5 mm.

13-14. UF(MAL) 142344-1. Off of Panama City (22 fathoms), Bay County, Florida. Recent. SL 22.1 mm. Fig. 14 is a scanning electron micrograph of the protoconch and early postnuclear whorls of the specimen shown in Fig. 13; arrow indicates position of initiation of postlarval shell growth.

PLATE 5

Figure Page

1-23. Type and other specimens of *Conus daucus* Hwass in Bruguière, 1792. Scale bars = 1 cm (Fig. 2, pertains to Fig 1-17, 19-21); 1 mm (Figs 18, 22-23). 21

1-2. UF(MAL) 128029. Off Palm Beach County, Florida. Recent. SL 33.0 mm; MD 18.6 mm.

3-4. Holotype of *Conus gravesae* Petuch, 1994 (UF 66426). UF locality 4131. "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 352), Florida. Caloosahatchee Formation? SL 29.3 mm; MD 15.8 mm.

5-6. Holotype of *Conus harbisonae* Petuch, 1994 (UF 66427). UF locality 4131. "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 356), Florida. Caloosahatchee Formation? SL 17.9 mm; MD 9.4 mm.

7-8. Holotype of *Conus griffini* Petuch, 1990 (CM 35733). Dredged "from 15 m depth in North New River Canal, along US Highway 27, 30 km south of South Bay, Palm Beach County, Florida" (Petuch, 1990: 103). Bermont Formation. SL 15.3 mm; MD 7.8 mm.

9. UF 115805. UF locality HN004: Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 17.9 mm; MD 8.5 mm.

10-11. PRI 54630. UF locality LE019: Bonita Grande Rock and Sand Pit, Lee County, Florida. Caloosahatchee Formation? SL 17.3 mm; MD 9.1 mm. Inverse images of specimen under ultraviolet light.

12-13. PRI 54670. La Belle Pit, Hendry County, Florida. Caloosahatchee Formation. SL 27.2 mm; MD 14.2 mm.

14-15. UF 23492. UF locality HN004: Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 24.1 mm; MD 11.8 mm.

16. UF 115806. UF locality HN004: Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 26.0 mm.

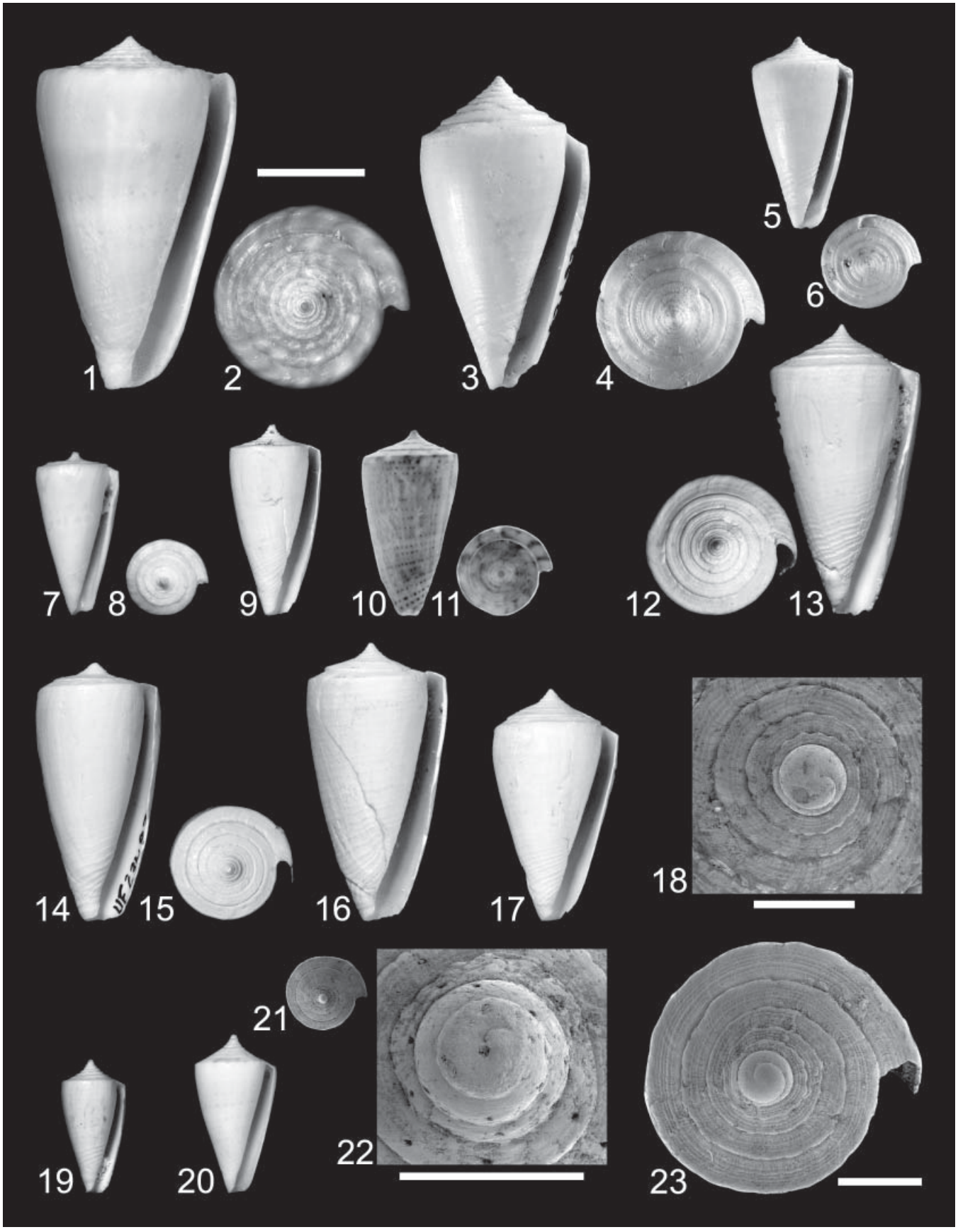
17. UF 115807. UF locality HN004: Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 21.7 mm.

18. PRI 54637. Tulane University location 1175: Collier County, Florida. Caloosahatchee Formation. Scanning electron photomicrograph.

19. PRI 54678. La Belle Pit, Hendry County, Florida. Caloosahatchee Formation. SL 12.6 mm.

20-22. UF(MAL) 123151-1. Off Palm Beach County, Florida (50 fathoms). Recent. SL 14.9 mm; MD 7.6 mm. Figs 21-22 are scanning electron photomicrographs (Fig. 21 is scaled to Fig. 20). [Note added in proof: A. Kohn (pers. comm., 25 September 2008) suggested that this specimen could be *C. amphiurgus*.]

23. UF(MAL) 128712. Palm Beach County, Florida. Recent. Scanning electron photomicrograph. [Note added in proof: A. Kohn (pers. comm., 25 September 2008) suggested that this specimen could be *C. amphiurgus*.]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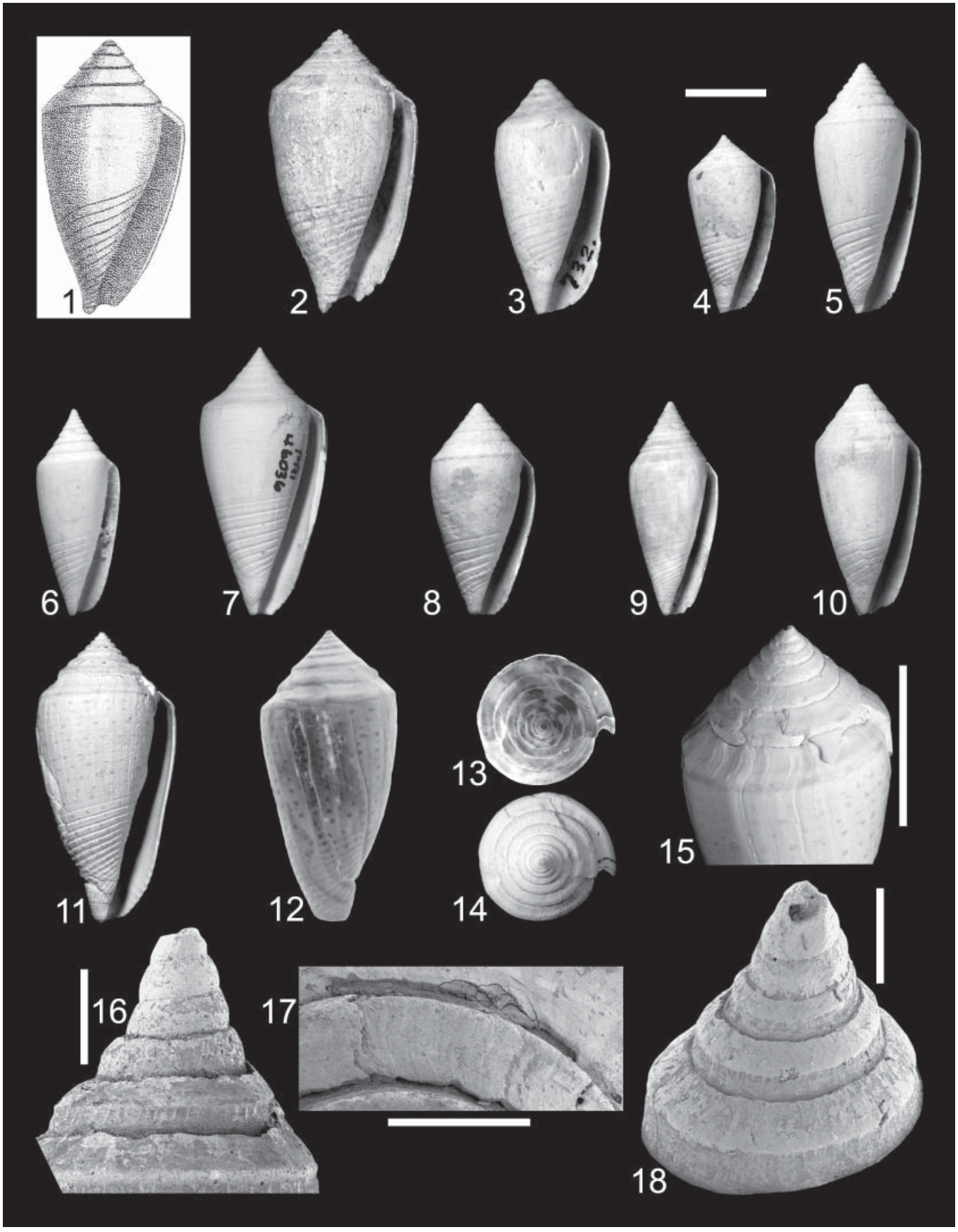
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PLATE 6

Figure Page

1. Holotype of *Conus marylandicus*. Kohn (1988) designated Green's (1830: pl. 3, fig. 2) original figure, reproduced here, as representing the holotype for this species.
2. PRI 54358. James River Bluff, Surry County, Virginia. Yorktown Formation. SL 35.2 mm.
3. PRI 54359. U.S. Mine Filling Station near Stony Point, York River, Virginia. Yorktown Formation? SL 29.3 mm.
4. UF 115808. Chesapeake, Virginia. Yorktown Formation, Zone 2. SL 22.2 mm.
5. PRI 54699. PRI locality 2000: Holmes Pit, Duplin County, North Carolina. Duplin Formation. SL 31.2 mm.
6. PRI 54705. Alligator Alley, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 25.7 mm.
7. PRI 54653. Alligator Alley, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 33.3 mm.
8. PRI 54662. UF locality MA008: Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 26.4 mm.
9. PRI 54669. Quality Aggregates, Inc., Phase 6, SE Corner, Sarasota County, Florida. Caloosahatchee Formation (Pinecrest Bed 1 of Petuch, 1982). SL 26.7 mm.
10. PRI 54677. Quality Aggregates, Inc., Phase 6, SE Corner, Sarasota County, Florida. Caloosahatchee Formation (Pinecrest Bed 1 of Petuch, 1982). SL 28.8 mm.

11-15. PRI 54686. Rice Memorial Fossil Pit, Hampton County, Virginia. Yorktown Formation. SL 36.2 mm; MD 17.2 mm. Figs 12-13 are inverse images of specimen photographed under ultraviolet light.

16-17. UF 115809. Chesapeake, Virginia. Yorktown Formation, Zone 2. Scanning electron photomicrographs.

16. Protoconch and early postnuclear whorls.
17. Sutural ramp of early postnuclear whorl.

18. UF 115810. Chesapeake, Virginia. Yorktown Formation, Zone 2. Scanning electron photomicrograph of protoconch and early postnuclear whorls.

PLATE 7

Figure — Page

1-18. Type specimens of *Conus adversarius* Conrad, 1840. Scale bar = 1 cm. 24

1-2. Lectotype (ANSP 30699). Natural Well, Duplin County, North Carolina. Duplin Formation. SL 70.6 mm; MD 35.0 mm.

3-4. Holotype of *Contraconus lindajoyceae* Petuch, 1991 (CM 35660). APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 79.2 mm; MD 29.1 mm.

5-6. Holotype of *Contraconus schmidti* Petuch, 1991 (CM 35662). Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 72.6 mm; MD 39.8 mm.

7-8. Holotype of *Contraconus osceolai* Petuch, 1991 (CM 35691). From "canal dredging (20 m depth) along Miami Canal, 16 km south of Lake Harbor, Palm Beach County, Florida, Caloosahatchee Formation" (Petuch, 1991: 55). SL 88.8 mm; MD 50.2 mm.

9-10. Holotype of *Contraconus berryi* Petuch, 1994 (UF 66444). UF locality SO017: Macasphalt Shell Pit B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 64.8 mm; MD 35.3 mm.

11-12. Holotype of *Contraconus heilprini* Petuch, 1994 (UF 66443). UF locality PB012: Griffin Brothers Pit 01, Palm Beach County, Florida. Probably Caloosahatchee Formation. SL 32.9 mm; MD 18.3 mm.

13-14. Holotype of *Contraconus scotti* Petuch, 1994 (UF 66446). UF locality PB014: Star Ranch 01, Palm Beach County, Florida. Probably Caloosahatchee Formation. SL 58.2 mm; MD 28.9 mm.

15-16. Holotype of *Contraconus mitchellorum* Petuch, 1994 (UF 66445). UF locality PB012: Griffin Brothers Pit 01, Palm Beach County, Florida. Probably Caloosahatchee Formation. SL 62.6 mm; MD 27.6 mm.

17-18. Holotype of *Contraconus petiti* Petuch, 2004 (AMNH 50680). Collected "in the Edenhouse Member of the Chowan River Formation, in the Lee Creek Texasgulf Mine, Aurora, Beaufort County, North Carolina" (Petuch, 2004: 291). SL 83.0 mm; MD 39.7 mm.


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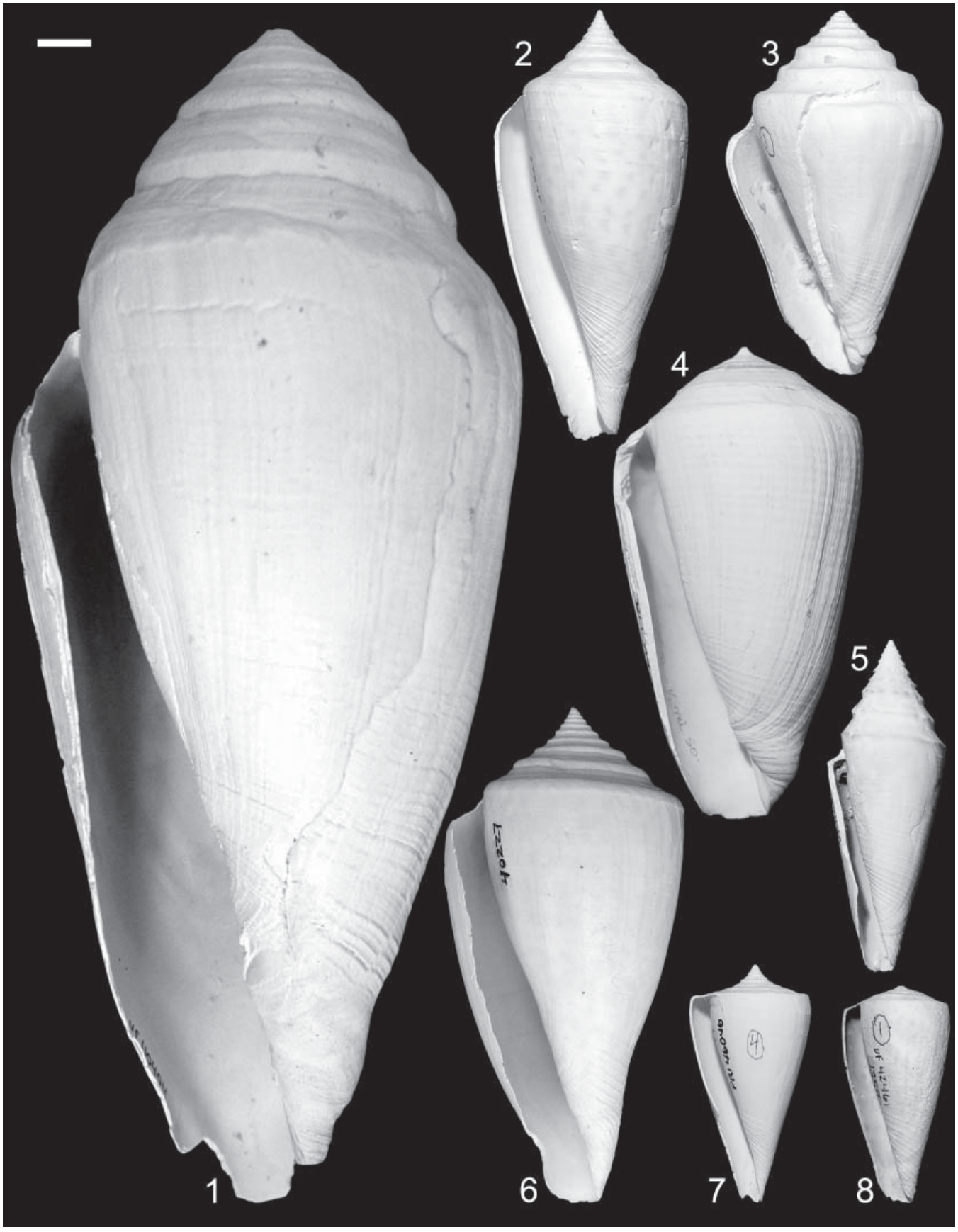
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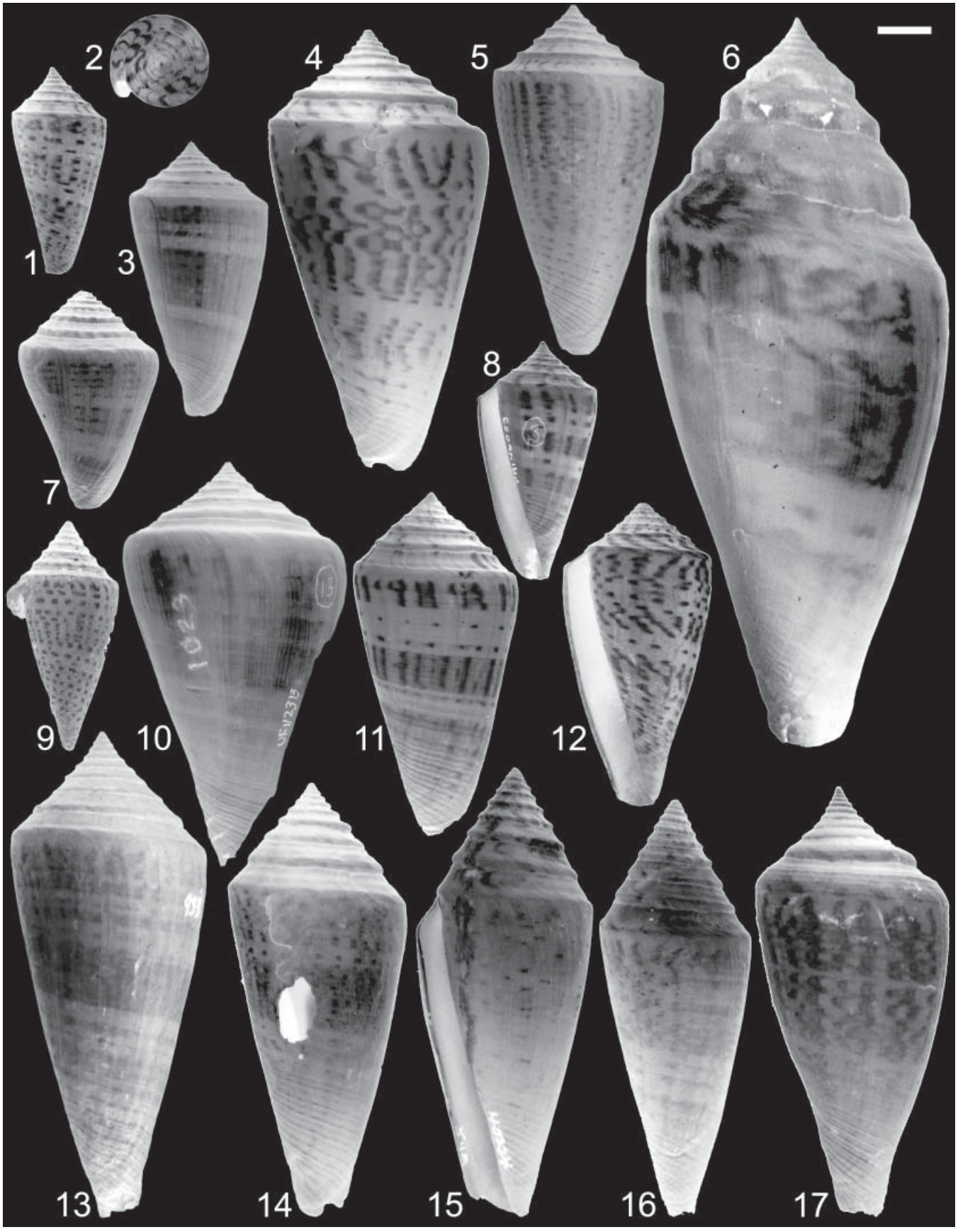
PLATE 8

Figure Page

PLATE 9

Figure Page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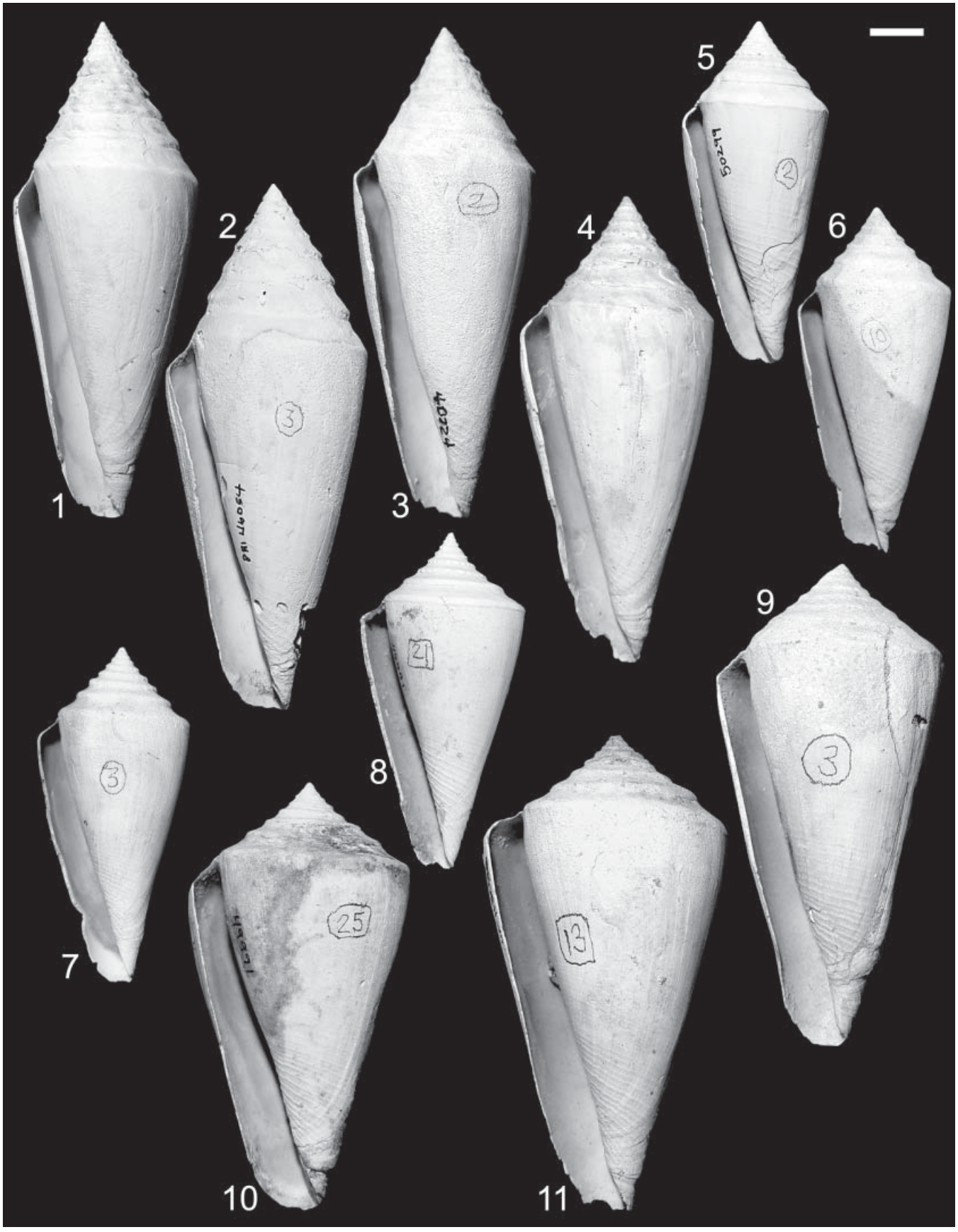
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PLATE 10

Figure Page

PLATE 11

Figure — Page

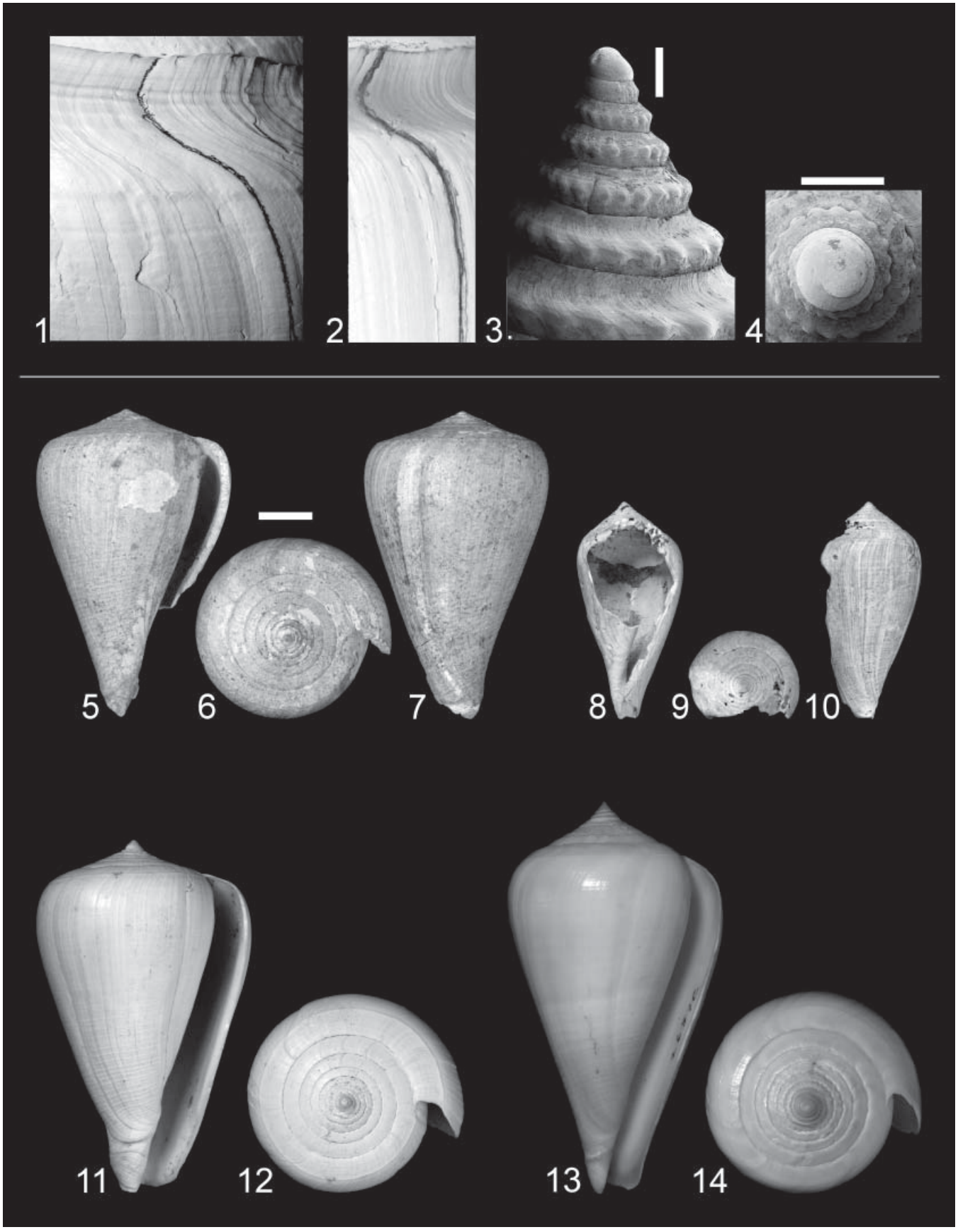
1-14. Specimens of *Conus adversarius* Conrad, 1840 and *Conus patricius* Hinds, 1843. Scale bars = 1 cm (Fig. 6, pertains to Figs 5-14); 1 mm (Figs 3-4).

1-4. *Conus adversarius* Conrad, 1840 24

1. PRI 54647. PRI locality 1990: Caloosahatchee Canal, 2.5 miles [4.02 km] east of Ortona Locks. Formation unknown. Black line traces growth lines, detailing subsutural flexure shape.
2. PRI 54682. APAC Quarry, Sarasota County, Florida. Probably Tamiami Formation, Pinecrest Beds. Black line traces growth lines, detailing subsutural flexure shape.
3-4. PRI 55203. APAC Quarry, Sarasota County, Florida. Probably Tamiami Formation, Pinecrest Beds. Scanning electron photomicrographs of protoconch and early postnuclear whorls.

5-14. *Conus patricius* Hinds, 1843 27

5-7. Holotype of *Conus apium* Woodring, 1928 (USNM 369351). Bowden, Jamaica. Bowden Formation. SL 57.6 mm; MD 36.6 mm.
8-10. Holotype of *Conus testudinarius leonensis* Mansfield, 1930 (USNM 370103). Harvey's Creek, Leon County, Florida. Jackson Bluff Formation? SL 40.6 mm; MD 20.7 mm.
11-12. PRI 54631. Locality information uncertain. Possibly from Hendry County, Florida. Caloosahatchee Formation? SL 65.8 mm; maximum MD 40.5 mm.
13-14. PRI 9794. Panama. Recent. SL 73.2 mm; MD 40.4 mm.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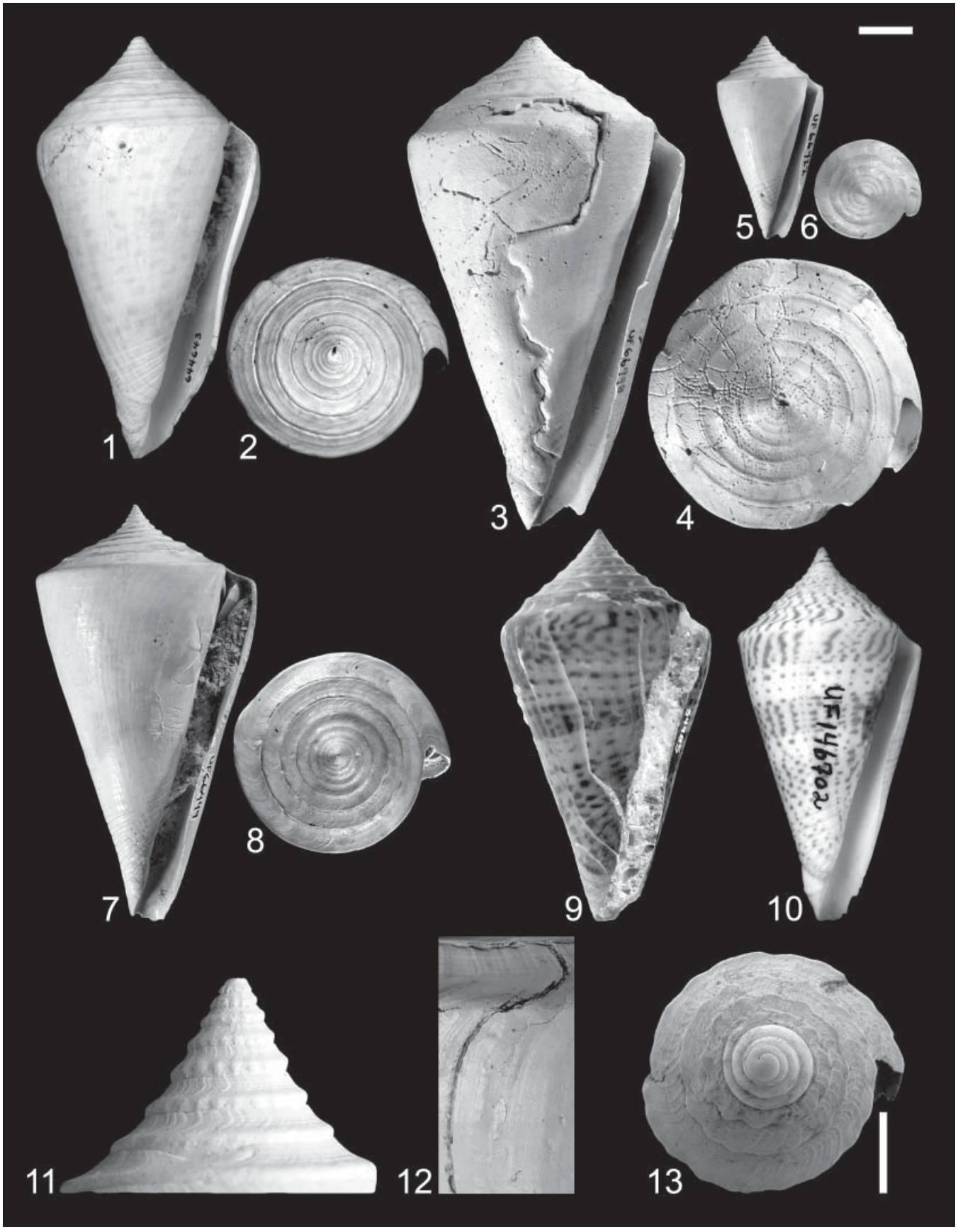
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PLATE 12

Figure Page

1-2. Holotype of *Conus presozoni* Olsson & Petit, 1964 (USNM 644643). Crescent Beach, Horry County, South Carolina. Waccamaw Formation. SL 78.8 mm; MD 41.8 mm.

3-4. Holotype of *Conus susankhanae* Petuch, 1994 (UF 66998). UF locality PB011: Miami Canal 03, Palm Beach County, Florida. Caloosahatchee Formation. SL 92.0 mm; MD 51.2 mm.

5-6. Holotype of *Conus duerri* Petuch, 1994 (UF 66422). UF locality 4132. "Kissimmee River dredging at Fort Basinger, Highlands County" (Petuch, 1994: 352), Florida. Tamiami Formation, Pinecrest Beds. SL 37.9 mm; MD 20.0 mm.

7-8. Holotype of *Conus patstreamae* Petuch, 1994 (UF 66449). UF locality SO017: Macasphalt Shell Pit B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 77.7 mm; MD 40.6 mm.

9. PRI 54698. UF locality DA013: Florida Rock Miami Quarry, Miami-Dade County, Florida. Bermont Formation. SL 73.1 mm. Inverse image of specimen photographed under ultraviolet light.

10. UF(MAL) 146702. Northeast of Alvaro Obregon, Gulf of Campeche, Mexico. Recent specimen. Collected at a depth of 25 fathoms (45.7 m). SL 69.8 mm.

11. PRI 53579. Sarasota County, Florida. Formation unknown. SL 73.2 mm.

12. PRI 54692. PRI locality 2000: Duplin County, North Carolina. Duplin Formation. Detail of subsutural flexure.

13. UF(MAL) 168985. Off Destin, Okaloosa County, Florida (18-20 fathoms [32.9-36.6 m]). Recent specimen. Scanning electron photomicrograph.

PLATE 13

Figure Page

1-28. Holotype of *Conus floridanus* Gabb, 1869 and type and other specimens of *Conus* cf. *largillierti* Kiener, 1845. Scale bars = 1 cm (Fig. 7, pertains to Figs 1-26); 1 mm (Figs 27-28).

1-2. "*Conus floridanus*" Gabb, 1869. Holotype of *Conus floridanus* Gabb, 1869 (ANSP 80897). Tampa Bay, Florida. Recent. SL 48.4 mm. 30

3-28. *Conus* cf. *largillierti* Kiener, 1845. 30

3-4. UF(MAL) 25628. Off Charleston County, South Carolina (45.7 m). Recent. SL 43.6 mm; MD 23.2 mm.

5. PRI 9792. Locality unknown. Recent. SL 45.4 mm.

6-7. Holotype of *Conus trippae* Petuch, 1991 (CM 35666). APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 35.3 mm; MD 16.7 mm.

8. Paratype of *Conus trippae* Petuch, 1991 (CM 35667). APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 60.2 mm.

9-10. Holotype of *Conus loxahatcheensis* Petuch, 1994 (UF 66428). UF locality 4133. From "US Highway 441 construction dig at 20-Mile Bend, Loxahatchee area, west of West Palm beach [*sic*], Palm Beach County" (Petuch, 1994: 353), Florida. Bermont Formation? SL 49.7 mm; MD 24.6 mm.

11-13. Holotype of *Conus capelettii* Petuch, 1990 (CM 35731). Capeletti Brothers Pit 11, Miami-Dade County, Florida. Bermont Formation. SL 38.2 mm; MD 16.7 mm. Fig. 13 is inverse image of specimen under ultraviolet light.

14-15. Holotype of *Conus diegelae* Petuch, 1994 (UF 66423). UF locality 4131. From "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 352), Florida. Caloosahatchee Formation? SL 36.3 mm; MD 16.8 mm.

16-17. Holotype of *Conus ronaldsmithi* Petuch, 1994 (UF 66429). UF locality 4131. From "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 354), Florida. Caloosahatchee Formation? SL 33.7 mm; MD 16.7 mm.

18-19. Holotype of *Conus joelshugari* Petuch, 1994 (UF 66424). UF locality 4131. From "Miami Canal dredging, 20 miles [32.19 km] south of Lake Harbor, Palm Beach County" (Petuch, 1994: 353), Florida. Caloosahatchee Formation? SL 23.8 mm; MD 12.0 mm.

20. PRI 54329. Label indicates "Lake Hicpochee, north side of river." Formation unknown. SL 33.2 mm.

21. PRI 54646. UF locality CR017: Longan Lakes 01B Pit, Collier County, Florida. Bermont Formation. SL 50.2 mm.

22. PRI 54645. Acme, Columbus County, North Carolina. Waccamaw Formation. SL 33.8 mm.

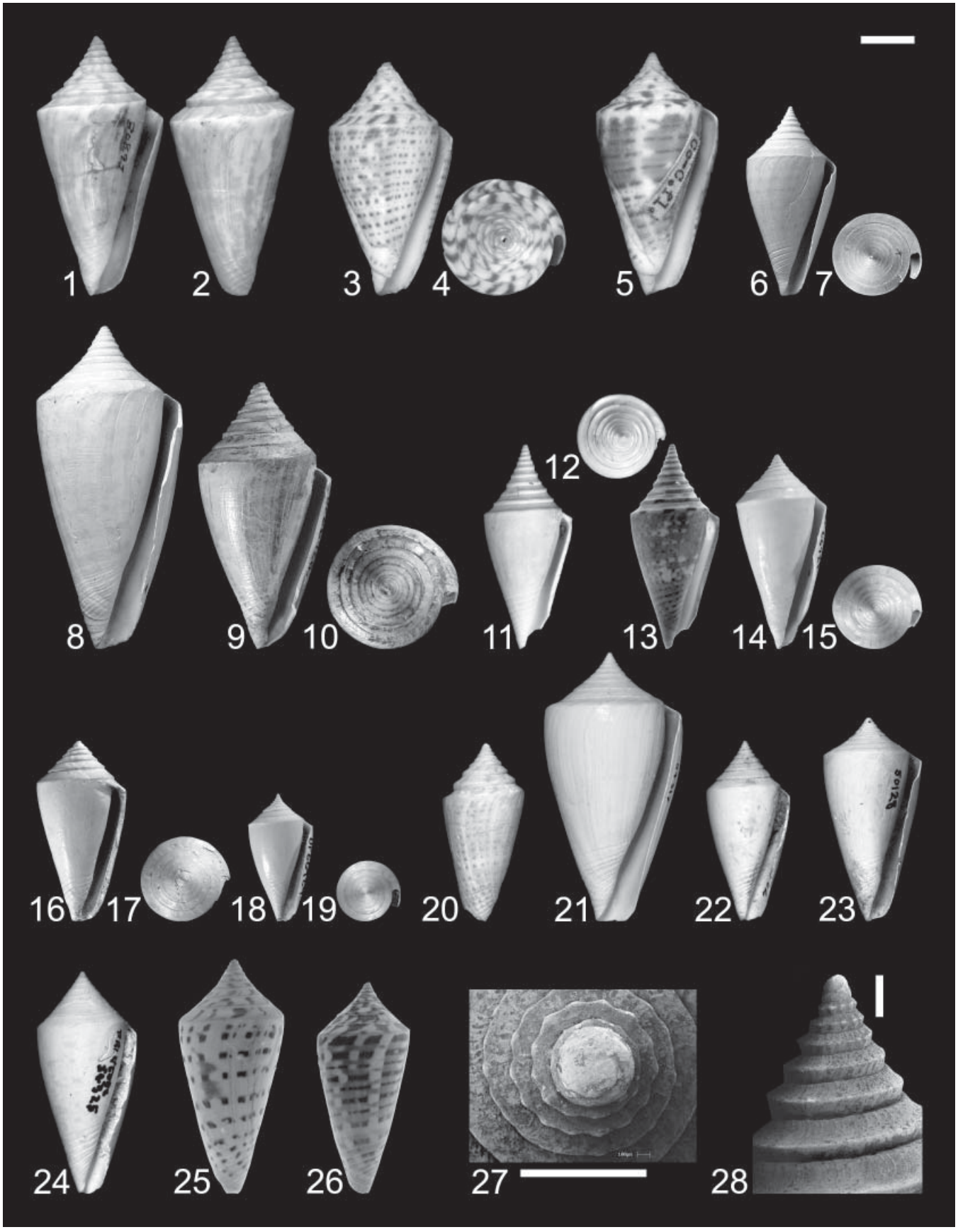
23. PRI 50128. APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Bed 7 (collected *in situ*). SL 38.1 mm.

24. PRI 54661. Alligator Alley (U. S. Rte. I-75), probably Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 41.5 mm.

25. PRI 54676. PRI locality 1985: Kissimmee Canal, Long Cypress Slash, Highlands County, Florida. Tamiami Formation, Pinecrest Beds? SL 43.8 mm. Inverse image of specimen under ultraviolet light.

26. PRI 54668. PRI locality 1985: Kissimmee Canal, Long Cypress Slash, Highlands County, Florida. Tamiami Formation, Pinecrest Beds? SL 39.5 mm. Inverse image of specimen under ultraviolet light.

27-28. PRI 54635. Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. Scanning electron photomicrographs of protoconch and early postnuclear whorls.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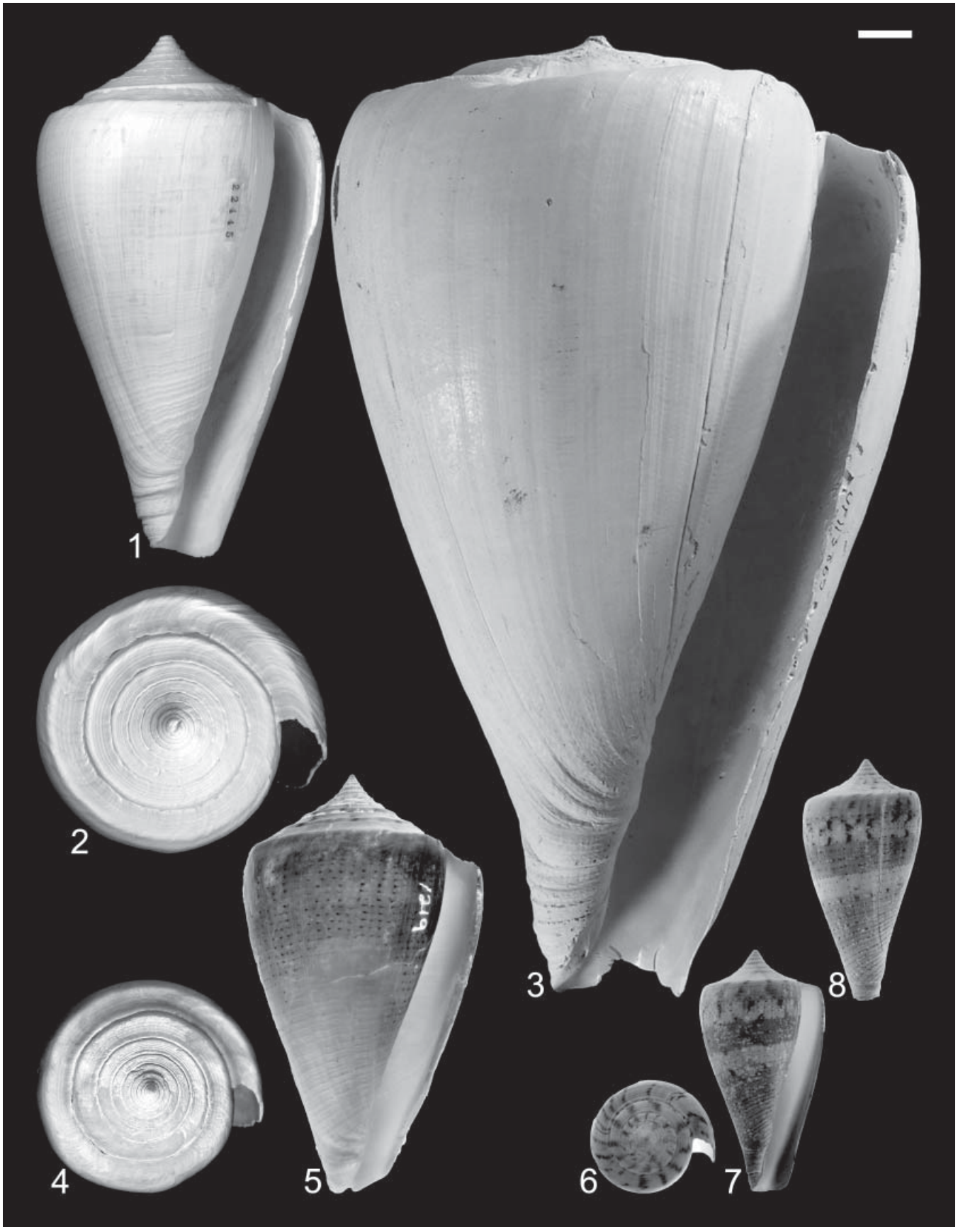
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PLATE 14

Figure — Page

1-8. *Conus haytensis* G. B. Sowerby II, 1850. Scale bar = 1 cm. 32

1-2. Holotype of *Conus druidi* Olsson, 1967 (USNM 645160). USNM locality 22445: La Belle, Florida (Olsson, 1967). (This locality information is considered suspect; see pp. 32-33 for details). Tamiami Formation, Pinecrest Beds? SL 97.5 mm; MD 54.3 mm.

3. UF 113865. UF locality SO017: Macasphalt Shell Pit B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 179 mm.

4. PRI 54685. Tulane University locality 1219: "Río Amina, bluffs on east side of river immediately upstream from ford that is 2 km west of Potrero and about 3 km downstream from "La Represa" (= USGS 8517)" (Saunders *et al.*, 1986: 64), Dominican Republic. Gurabo Formation. MD 42.8 mm.

5. PRI 54412. Tulane University locality 1219: "Río Amina, bluffs on east side of river immediately upstream from ford that is 2 km west of Potrero and about 3 km downstream from "La Represa" (= USGS 8517)" (Saunders *et al.*, 1986: 64), Dominican Republic. Gurabo Formation. SL 78.1 mm. Inverse image of specimen photographed under ultraviolet light.

6-8. PRI 54697. Near Tulane University location 1044: Big Cypress, Hendry County, Florida. Tamiami Formation, Pinecrest Beds. SL 45.1 mm; MD 23.3 mm. Inverse images of specimen photographed under ultraviolet light.

PLATE 15

Figure Page

1-19. Type and other specimens of *Conus yaquensis* Gabb, 1873, and non-type specimens of *Conus harveyensis* Mansfield, 1930. Scale bars = 1 cm (Fig. 6, pertains to Figs 1-16; Figs 17-18); 1 mm (Fig. 19).

1-16. *Conus yaquensis* Gabb, 1873. 33

1-2. Lectotype (ANSP 2547). Dominican Republic. Formation unknown. SL 49.3 mm; MD 29.7 mm.

3. Paralectotype (ANSP 2547). Dominican Republic. Formation unknown. SL 40.3 mm.

4-5. Holotype of *Conus jonesorum* Petuch, 1994 (UF 66430). UF locality SO017: Macasphalt Shell Pit B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 37.9 mm; MD 21.6 mm.

6. PRI 54644. Quality Aggregates, Inc., Phase 8, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 58.8 mm.

7. PRI 54643. UF locality MA008: Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 46.0 mm.

8. PRI 54642. APAC Quarry, Sarasota County, Florida. Probably Tamiami Formation, Pinecrest Beds. SL 30.1 mm.

9. PRI 54683. UF locality UF SO023: Quality Aggregates, Inc., Phase 7A, Sarasota County, Florida. Tamiami Formation, Florida. SL 37.9 mm.

10-11. PRI 54689. Tulane University locality 1044: Big Cypress, Hendry County, Florida. Tamiami Formation, Pinecrest Beds. SL 44.8 mm; MD 24.5 mm. Inverse images of specimen photographed under ultraviolet light.

12. PRI 54690. UF locality MA008: Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 42.4 mm. Inverse images of specimen photographed under ultraviolet light.

13-14. PRI 54695. APAC Quarry, Sarasota County, Florida. Probably Tamiami Formation, Pinecrest Beds. SL 32.8 mm.

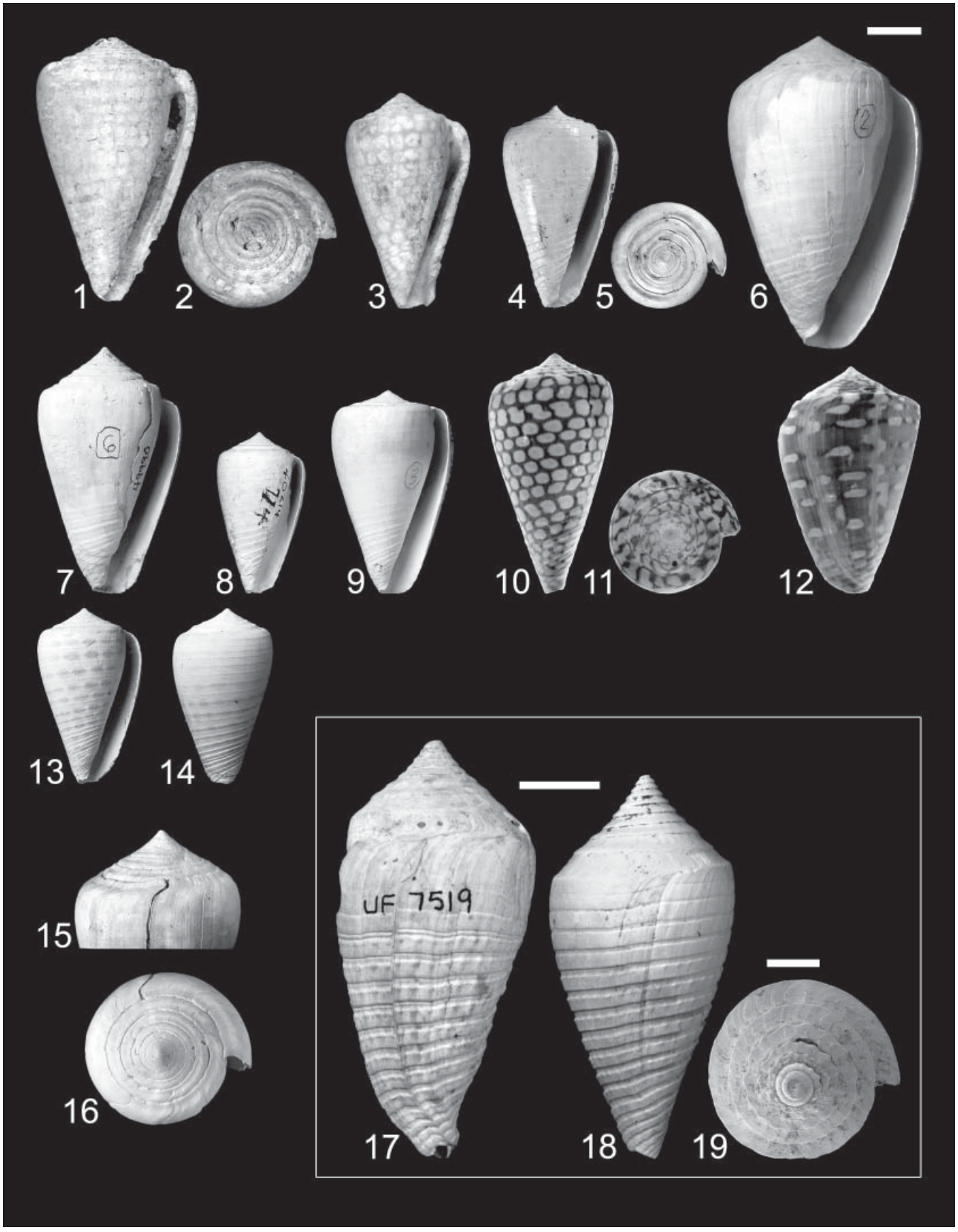
15-16. PRI 54696. UF locality MA008: Quality Aggregates, Inc., Phase 9, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. MD 31.1 mm. Black line traces growth line showing shape of subsutural flexure.

17-19. *Conus harveyensis* Mansfield, 1930. 35

17. UF 7519. UF locality LN002: Jackson Bluff 02, Leon County, Florida. Jackson Bluff Formation. SL 52.0 mm.

18. UF 80218. UF locality LN001: Jackson Bluff 01, Leon County, Florida. Jackson Bluff Formation. SL 47.8 mm (broken).

19. UF 118664. UF locality LN004: Jackson Bluff (general), Leon County, Florida. Jackson Bluff Formation. Scanning electron photomicrograph of protoconch and early postnuclear whorls.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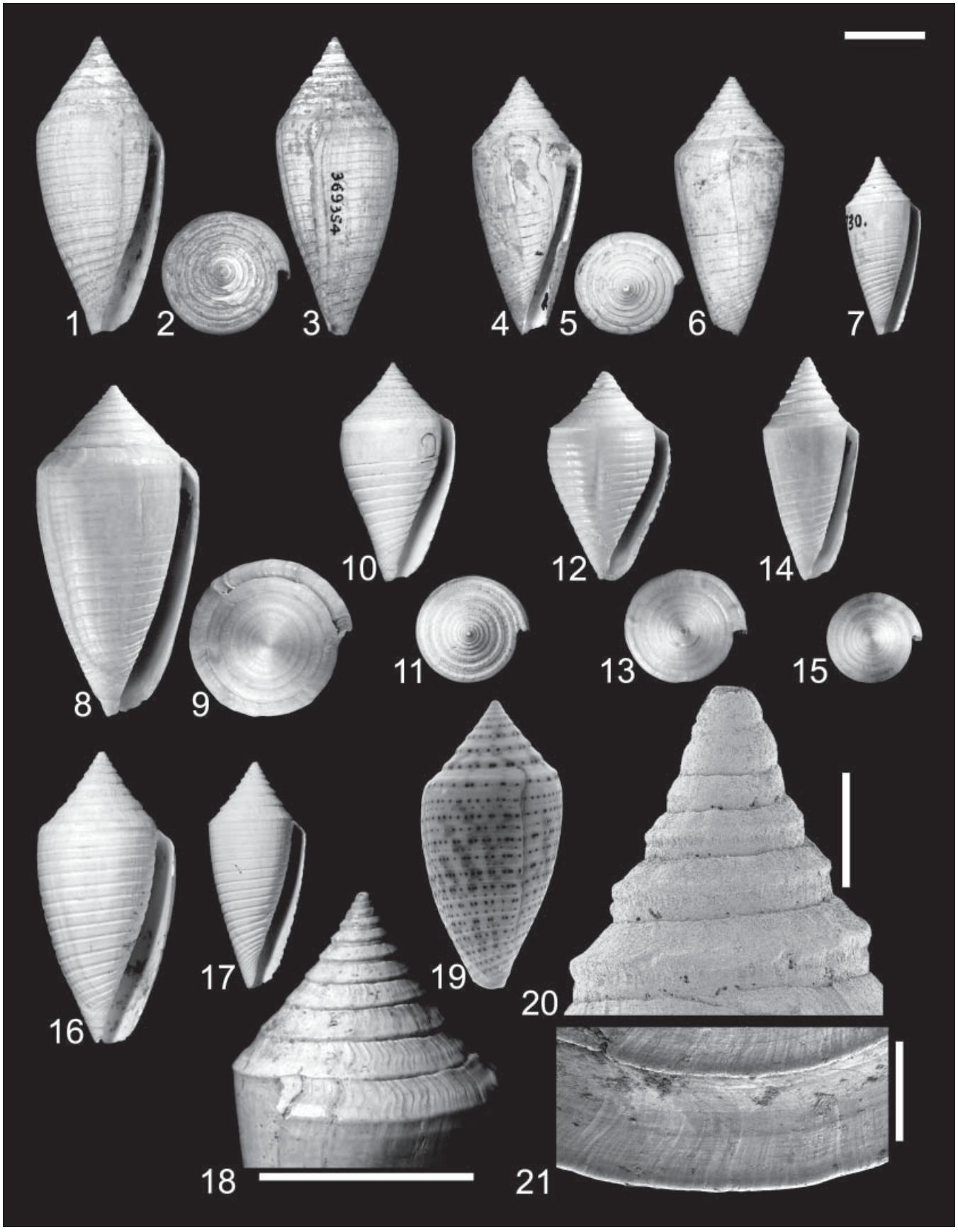
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PLATE 16

Figure Page

PLATE 17

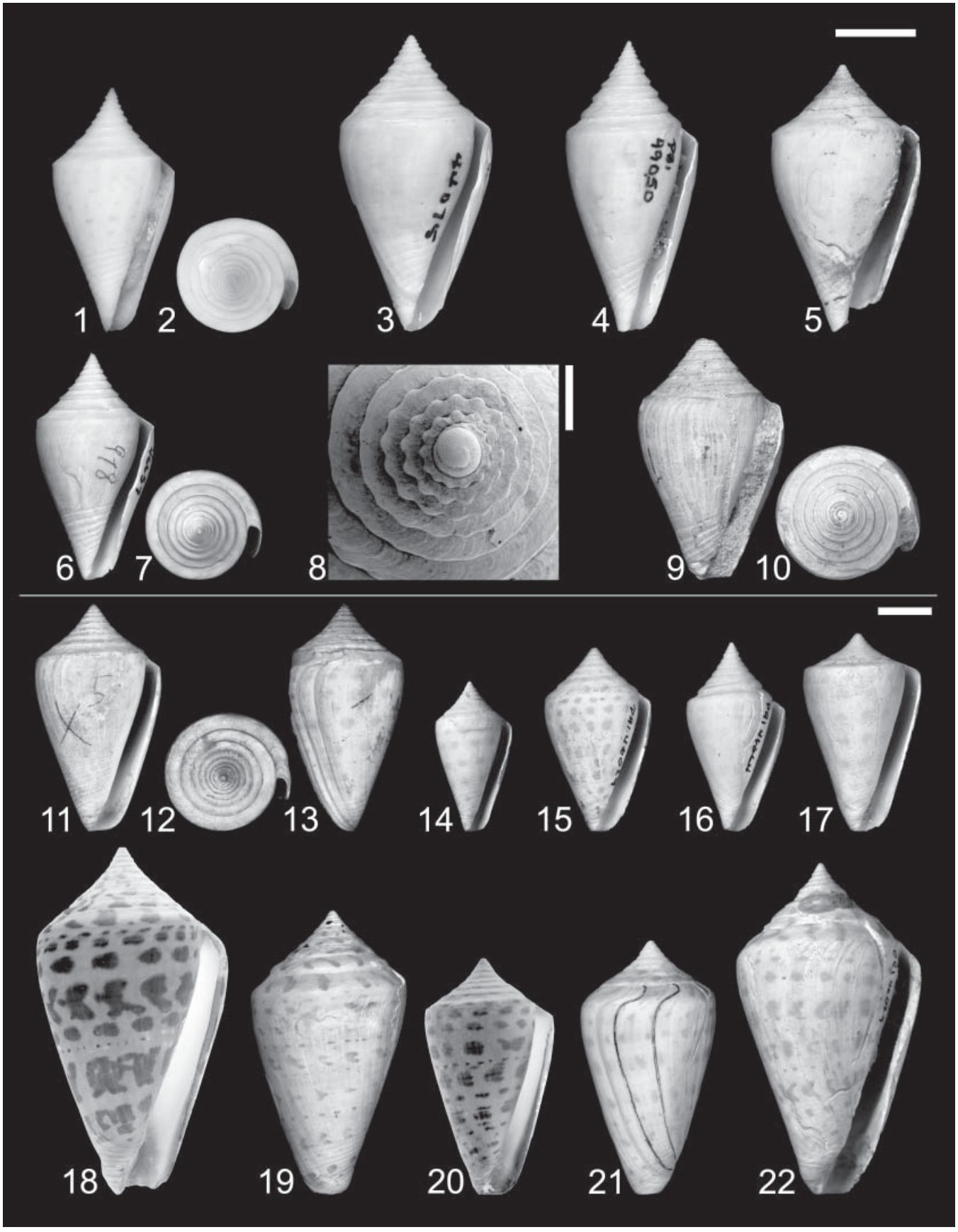
Figure Page

1-22. Specimens of *Conus sennottorum* Rehder & Abbott, 1951, holotype of *Conus parkeri* Richards & Harbison, 1947, and type and other specimens of *Conus spuroides* Olsson & Harbison, 1953. Scale bars = 1 cm (Fig. 5, pertains to Figs 1-7 and 9-10; Fig. 17, pertains to Figs 11-22); 1 mm (Fig. 8).

1-8. *Conus sennottorum* Rehder & Abbott, 1951. 36
1-2. UF(MAL) 62570-1. Matanzas Province, Cuba. Recent. SL 30.5 mm; MD 15.4 mm.
3. PRI 54674. Tulane University locality 978: South Bay, Palm Beach County, Florida. Bermont Formation. SL 36.9 mm.
4. PRI 54667. South Bay, Palm Beach County, Florida. Bermont Formation. SL 36.4 mm.
5. PRI 54351. "Miami Canal #2." Formation unknown. SL 33.3 mm.
6-7. PRI 54660. Tulane University locality 978: South Bay, Palm Beach County, Florida. Bermont Formation. SL 28.2 mm; MD 14.8 mm.
8. UF 50431. UF locality PB001: Belle Glade 01, Palm Beach County, Florida. Bermont Formation. Scanning electron photomicrograph of protoconch and early postnuclear whorls.

9-10. *Conus parkeri* Richards & Harbison, 1947. 36
9-10. Holotype (USNM 559928). "Well G.S. #11, 17 miles [27.36 km] west of Boca Raton, Palm Beach County, Florida; depth 47-50 feet [14.3-15.2 m]" (Richards, 1947: 33). Reported as being from the Caloosahatchee Formation. SL 30.0 mm; MD 18.2 mm.

11-22. *Conus spuroides* Olsson & Harbison, 1953. 37
11-13. Holotype (ANSP 18642). La Belle, Hendry County, Florida. Caloosahatchee Formation. SL 42.4 mm; MD 23.7 mm.
14. PRI 54659. PRI locality 1263: La Belle, Hendry County, Florida. Caloosahatchee Formation. SL 28.0 mm.
15. PRI 54652. Lake Hicpochee, Glades County, Florida. Caloosahatchee Formation? SL 34.3 mm.
16. PRI 54391. Clewiston, Hendry County, Florida. Caloosahatchee Formation. SL 35.3 mm.
17. PRI 54735. Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 37.0 mm.
18. PRI 54734. PRI locality 1991: Caloosahatchee Canal, 3 miles [4.83 km] east of Ortona Locks, Glades County, Florida. Caloosahatchee Formation? SL 64.8 mm. Inverse image of specimen photographed under ultraviolet light.
19. PRI 54733. UF locality PB014: Star Ranch 01, Palm Beach County, Florida. Probably Caloosahatchee Formation. SL 53.0 mm.
20. PRI 54732. Cochran Shell Pit, Hendry County, Florida. Caloosahatchee Formation. SL 44.1 mm.
21. PRI 54731. UF locality PB014: Star Ranch 01, Palm Beach County, Florida. Probably Caloosahatchee Formation. SL 47.4 mm. Black lines trace growth lines, detailing variation in subsutural flexure shape.
22. PRI 54730. Lake Hicpochee, Glades County, Florida. Caloosahatchee Formation? SL 62.0 mm.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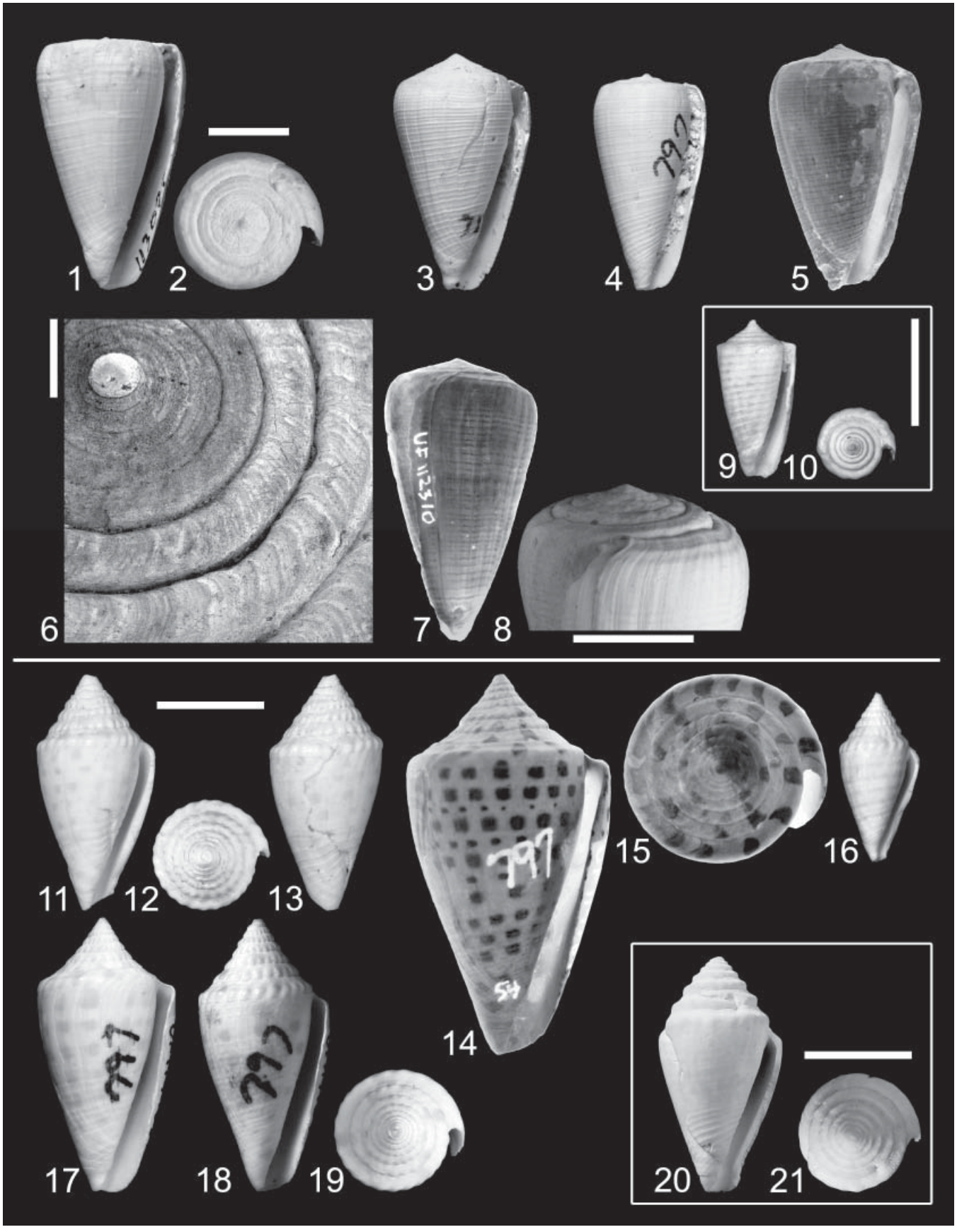
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PLATE 18

Figure Page

1-21. Type and other specimens of *Conus miamiensis* Petuch, 1986, holotype of *C. hertwecki* Petuch, 1988, type and other specimens of *C. violetae* Petuch, 1988, and holotype of *C. protocardinalis*, 1991. Scale bars = 1 cm (Fig. 2, pertains to Figs 1-5, 7; Fig. 8; Figs 9-10; Fig. 12, pertains to Figs 11-19; Figs 20-21); 1 mm (Fig. 6).

1-8. *Conus miamiensis* Petuch, 1986. 39
1-2. Holotype (MCZ 113027). MCZ locality 1736: SW 146th Avenue and Bird Road, Miami, Dade County, Florida. Tamiami Formation, Pinecrest Beds. SL 31.5 mm; MD, 18.7 mm.
3. UF 115828. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 29.5 mm.
4. UF 115829. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 27.0 mm.
5. PRI 54727. Alligator Alley (U. S. Rte. I-75), probably Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 30.7 mm. Inverse image of specimen photographed under ultraviolet light.
6. UF 115831. UF locality CR004: Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. Scanning electron photomicrograph.
7-8. UF 115830. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 35.3 mm.
7. Inverse image of specimen photographed under ultraviolet light.
8. Diameter = 19.2 mm.

9-10. Holotype of *Conus hertwecki* Petuch, 1988 (USNM 427968). Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 14.9 mm; MD 7.5 mm. 39

11-19. *Conus violetae* Petuch, 1988. 40
11-13. Holotype (USNM 427969). Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 22.1 mm; MD 11.0 mm.
14-15. UF 115832. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 35.5 mm; MD 19.0 mm.
16. UF 115834. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 16.0 mm.
17. UF 114763. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 25.7 mm.
18-19. UF 115833. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 25.5 mm; MD 12.3 mm.

20-21. Holotype of *Conus protocardinalis* Petuch, 1991 (CM 35693). From "canal dredging (20 m depth along Miami Canal, 1 km north of Broward-Palm Beach County levee in Palm Beach County, Florida" (Petuch, 1991: 54). Caloosahatchee Formation? SL 22.0 mm; MD 11.5 mm. 44

PLATE 19

Figure Page

1-24. Type and other specimens of *Conus bassi* Petuch, 1991 and *C. burnetti* n. sp. Scale bar = 1 cm (Figs 1-11, 13-17, 19-24); 5 mm (Figs 12, 18).

1-12. *Conus bassi* Petuch, 1991. 41

1-2. Holotype (CM 35663). APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 34.8 mm; MD 18.8 mm.

3. UF 115835. UF locality SO017: Macasphalt Shell Pit B, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 37.4 mm.

4. PRI 9808. APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 43.1 mm.

5. UF 115836. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 23.0 mm.

6. UF 115837. UF locality CR004: Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 36.9 mm.

7. UF 115838. UF locality CR004: Mule Pen Quarry, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 26.0 mm.

8. UF 115839. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 31.2 mm. Inverse image of specimen photographed under ultraviolet light.

9. PRI 54726. Quality Aggregates, Inc., Phase 8, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 29.7 mm. Inverse image of specimen photographed under ultraviolet light.

10. PRI 54725. Quality Aggregates, Inc., Phase 8, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 22.8 mm. Inverse image of specimen photographed under ultraviolet light.

11. PRI 54636. Alligator Alley (U.S. Rte. I-75), probably Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 25.3 mm. Inverse image of specimen photographed under ultraviolet light.

12. PRI 54724. APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds.

13-24. *Conus burnetti* n. sp. 45

13-18. Holotype (UF 115840). UF locality CR014: Alligator Alley 03, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 26.9 mm; MD 13.6 mm. Figs 16-17 are inverse images of specimen photographed under ultraviolet light.

19. Paratype (PRI 54720). Alligator Alley, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 29.2 mm. Inverse image of specimen photographed under ultraviolet light.

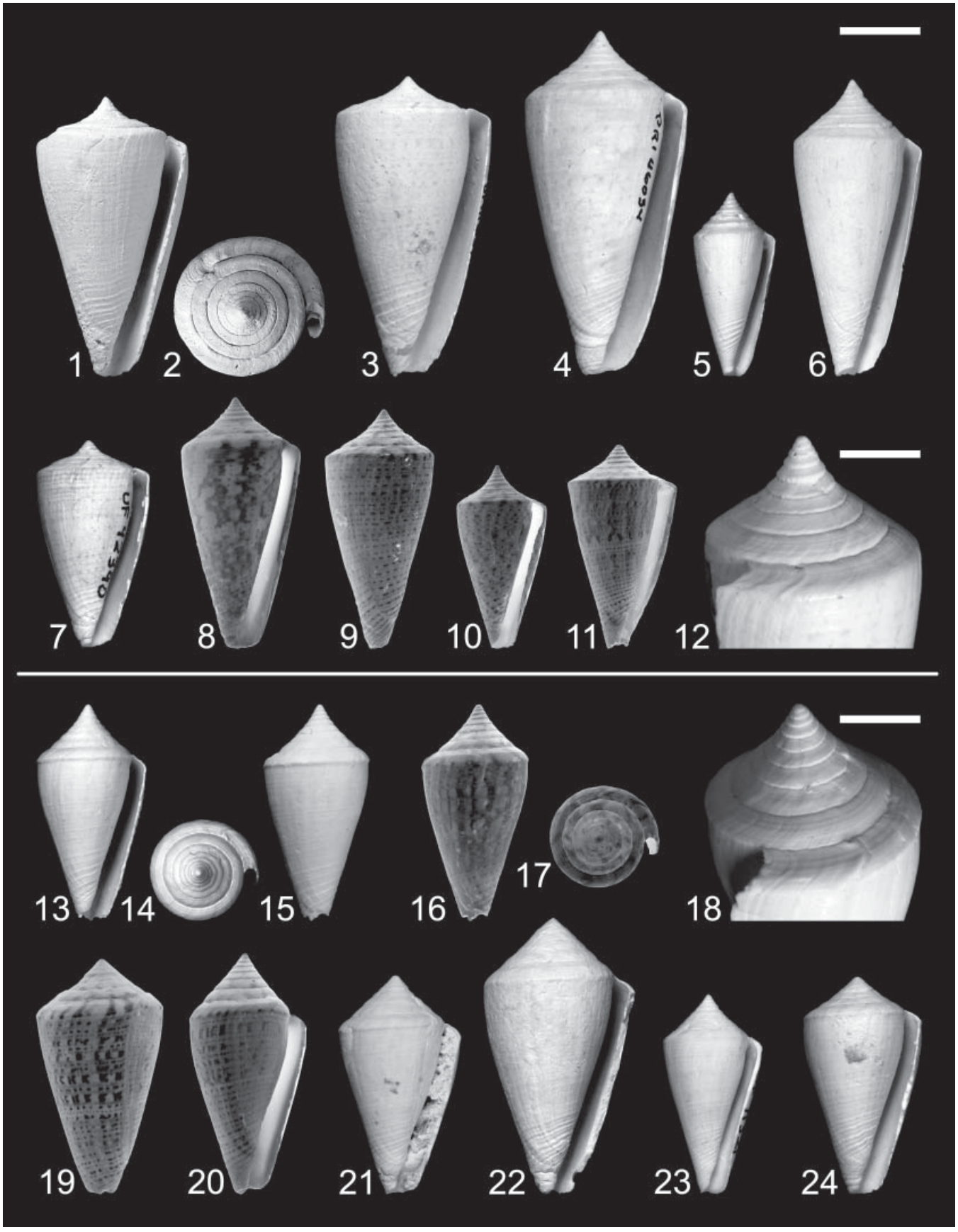
20. Paratype (UF 115841). UF locality CR014: Alligator Alley 03, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 29.9 mm. Inverse image of specimen photographed under ultraviolet light.

21. Paratype (PRI 54721). Alligator Alley (U.S. Rte. I-75), probably Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 27.2 mm.

22. Paratype (UF 115842). UF locality CR014: Alligator Alley 03, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 34.4 mm.

23. Paratype (UF 115843). UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 24.8 mm.

24. Paratype (PRI 54722). Alligator Alley, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 27.1 mm.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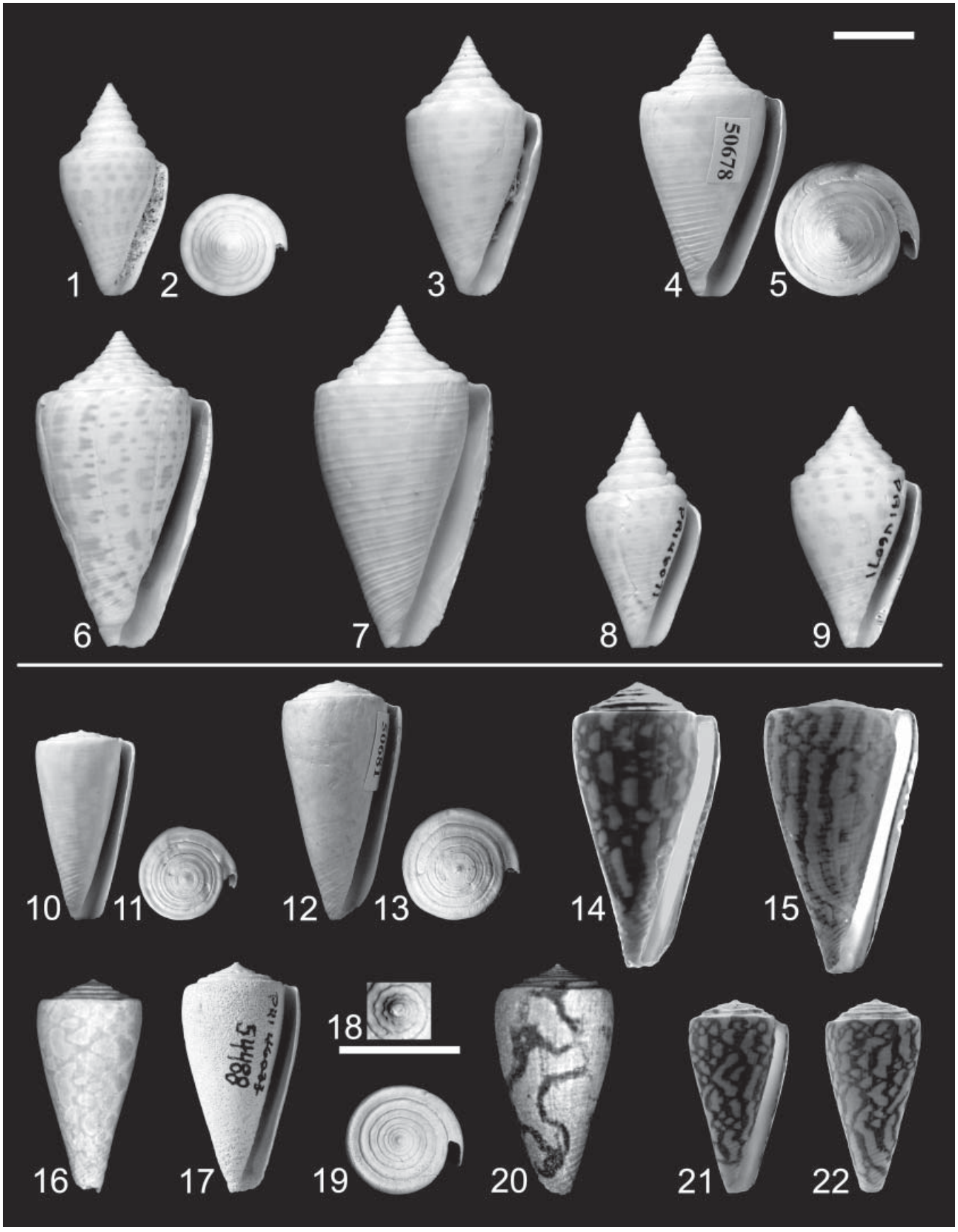
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PLATE 20

Figure Page

1-22. Type and other specimens of *Conus evergladesensis* Petuch, 1991, and *C. paranobilis* Petuch, 1991. Scale bars = 1 cm (Fig. 5, pertains to Figs 1-17, 19-22); 5 mm (Fig. 18).

1-9. *Conus evergladesensis* Petuch, 1991. 42

1-2. Holotype (ANSP 52843-1; one of three specimens in lot; see pp. 42-43 for details). From "canal dredging (15 m depth) along North New River Canal, 22 km south of South Bay" (Petuch, 1991: 53), Palm Beach County, Florida. Bermont Formation. SL 26.5 mm; MD 13.5 mm.

3. Paratype (ANSP 52842). From "canal dredging (15 m depth) along North New River Canal, 22 km south of South Bay" (Petuch, 1991: 53), Palm Beach County, Florida. Bermont Formation. SL 32.4 mm.

4-5. Holotype of *Calusaconus tomeui* Petuch, 2004 (AMNH 50678). "Palm Beach Aggregates, Inc. quarry, Loxahatchee, Palm Beach County, Florida" (Petuch, 2004: 290). Bermont Formation. SL 32.7 mm; MD 18.0 mm.

6. UF 115845. UF locality PB005: South Bay 02, Palm Beach County, Florida. Bermont Formation. SL 39.5 mm.

7. UF 115844. UF locality PB001: Belle Glade 01, Palm Beach County, Florida. SL 42.6 mm.

8. PRI 54729. Belle Glade, Palm Beach County, Florida. Bermont Formation. SL 29.4 mm.

9. PRI 54728. Belle Glade, Palm Beach County, Florida. Bermont Formation. SL 30.1 mm.

10-22. *Conus paranobilis* Petuch, 1991. 43

10-11. Holotype (CM 35665). APAC Quarry, Sarasota County, Florida. Tamiami Formation, Pinecrest Beds. SL 23.7 mm; MD 12.3 mm.

12-13. Holotype of *Eugeniconus irisae* Petuch, 2004 (AMNH 50681). "Florida Rock Industries, Inc., Naples quarry (old Mule Pen Quarry), East Naples, Collier County, Florida" (Petuch, 2004: 293). Tamiami Formation, Pinecrest Beds. SL 29.8 mm; MD 14.7 mm.

14. UF 115846. UF locality CR007: Alligator Alley 01, Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 35.5 mm. Inverse image of specimen photographed under ultraviolet light.

15. PRI 53178. Quality Aggregates, Inc., Phase 8, Manatee County, Florida. Tamiami Formation, Pinecrest Beds. SL 34.1 mm. Inverse image of specimen photographed under ultraviolet light.

16. UF 115847. UF locality OB001: Fort Basinger 01, Okeechobee County, Florida. Tamiami Formation, Pinecrest Beds. SL 26.5 mm. Photographed under ultraviolet light, but image not inversed.

17-20. PRI 54488. "Johnson Brothers Rock Pit." Locality details and formation unknown. SL 28.7 mm; MD 14.7 mm. Fig. 20 is an inverse image of specimen photographed under ultraviolet light.

21-22. PRI 54626. Alligator Alley (U.S. Rte. I-75), probably Collier County, Florida. Tamiami Formation, Pinecrest Beds. SL 24.0 mm. Inverse images of specimen photographed under ultraviolet light.

INDEX

Note: Only taxa (and associated publications) formally treated in the systematics section of this work are included in this index; taxa mentioned elsewhere (*e. g.*, in remarks) are not. Individual species can be found in the index by searching for their original names as published [*e. g.*, *Conus* (*Lithoconus*) *evergladesensis* Petuch, 1991], their names as subsequently used [*e. g.*, *Calusaconus evergladesensis* (Petuch, 1991)], or their species epithets (*e. g.*, *evergladesensis*). Appendix pagination is provided for taxon species epithets, but not other information (*e. g.*, locality name, formation).

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