THE CONE COLLECTOR

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THE CONE COLLECTOR

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On the Cover:
Purpuriconus richardbinghami **(Petuch, 1992) Image courtesy of Charlotte Thorpe**

Note from the Editor

The current year of 2010 is turning out to be truly exceptional for TCC.

In October we will have our First International Cone Meeting, in Stuttgart, Germany. And now I have the pleasure of introducing our first Special Issue.

The size of John Tucker's present article would not allow us to include it in a regular number and its obvious interest certainly advised against splitting it into several consecutive issues. Presenting it as Special Issue #14A was the natural solution for those problems.

The need for a revision of Western Atlantic Cones has been long felt. Every once in a while we do indeed hear that someone or other is working on it, but no release dates loom in the horizon. This of course means that every contribution to a better understanding of that most interesting geographical zone is quite welcome.

Hence, we heartily welcome John Tucker's extensive comments on the series of articles published by Danker Vink back in the 80s, as an important piece of information that will certainly help us to find our way amidst what is certainly a rather complicated issue.

I personally thank John for submitting this paper to TCC and I hope that everybody will enjoy it.

A.M.

Danker L. N. Vink's
The Conidae of the Western Atlantic

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Introduction

In 1984, Danker Vink published part I of 'The Conidae of the Western Atlantic' in *La Conchiglia*. A total of 15 parts appeared between 1984 and 1990. It, thus, has been 20 years or longer since these parts appeared. Understanding of what Vink actually said appears to be fading among collectors.

Because I think that the Vink papers are an important contribution to the systematics of Western Atlantic cone shells, I decided to review these papers. The goal is to review the 62 taxa that Vink covered in his 15 parts (Table 1), and to present images that are as close as possible to those used by Vink in his papers. I do suggest revisions, but I have tried to keep those in the context of the Vink species.

I also present the range information as published by Vink. In a few instances I did add comments to this range information. Herein, I use the generic taxonomy of Tucker & Tenorio, 2009.

In his papers Vink presented partial synonymies. In this review, I extracted species names that Vink considered synonyms and call them Synonymous names. With few exceptions, I do not reproduce Vink's synonymies. In some instances I add species names as synonyms. When I do this, these are marked by Addition(s) suggested by Tucker.

This is not a revision. In such a paper, study of other museum collections would be required. I also do not present statistical information or graphics. I certainly have the data to do so but in this context I prefer not to.

Where possible I reproduce images of the type specimens, when the type is an actual shell, many courtesy of Alan Kohn (Conus Biodiversity Website, biology.burke.washington.edu/conus) and the institutional collections acknowledged in my figures. I do not reproduce representatives of types for those not represented by actual specimens. In each of my figures with a few exceptions, I only present 4 or 5 images to keep the focus on what Vink said. For more figures refer back to the Vink papers. I also give the photo credit for each image of a primary type. Specimens labeled JKT are in my private collection and I made the images of those as well as those from other colletions without a photo credit.

The Vink papers

Introduction

For the species in each Vink paper, I reproduce the name applied by Vink, a portion of Vink's synonymy, and the geographic range cited by Vink. Where needed, I give a further systematic evaluation.

Part I

1. *Dauciconus daucus* (Hwass in Bruguière, 1792)

(Figs. 1, 2)

Synonymous names from Vink
Conus pastinaca Lamarck, 1810
Conus mamillaris Green, 1830
Conus aurisiensis Reeve, 1843
Conus castus Reeve, 1844

Additions suggested by Tucker
Conus (Dauciconus) boui da Motta, 1988a (Fig. 2B)
Conus norai da Motta and G. Raybaudi Massilia, 1992 (Fig. 2C)
Conus riosi Petuch, 1986a (Fig. 2D)
Conus (Dauciconus) worki Petuch, 1998a* (Fig. 2A)

Range: Widespread in the Caribbean from the Florida Keys to the little islands off the coast of Venezuela. The species is not found near the shores of the mainland of South America. Vink attributed records from Surinam & Brazil (Van Mol, 1973; Van Mol et al., 1967; Rios, 1975) to *Dauciconus sanderi* with query rather than to *D. daucus*.

Comments: Vink (1984A) showed a wide range of color morphs in his figures 1a-1j as I do in my figures (Figs. 1A-E). Subsequent authors have described a number of species based on the color patterns found in the southern portion of the species range similar to those illustrated by Vink, 1984A (Figs. 2A-D).

Regardless, newly described taxa associated by me with *Dauciconus daucus* share a number of similarities. All have broad shouldered shells with depressed usually concave spire. All have 2 to 4 well developed cords on the early and middle spire whorls.

Specimens with more complicated color patterns, i.e., those with dark midbody markings, tend to come from the southern Caribbean or Brazil. However, typical specimens of the carrot cone occur in those places as well. Thus, I do not believe that the southern specimens could really represent a subspecies. For those who are interested in recognizing the Brazilian populations, *Dauciconus daucus riosi* (Petuch, 1986a) is the senior name. *Dauciconus daucus boui* (da Motta, 1988a) is the senior name for the central Caribbean shells.

*: The asterisk indicates taxa that were listed as congeners for the particular genus by Tucker & Tenorio (2009). In that volume we used other references as the basis for the species group taxa that we listed as congeners. However, in this review my examination of type figures and specimens suggest the synonymies that I list here and below. These are hypotheses not statements of fact.

2. *Dauciconus attenuatus* (Reeve, 1844)

(Figs. 3, 4)

Synonymous names from Vink
Conus fasciatus A. Adams, 1855.
Conus bifasciatus G. B. Sowerby II, 1857.
Conus ustickei Miller in Nowell-Usticke, 1959 (Fig. 4C)

Additions suggested by Tucker
Conus aureonimbosus Petuch, 1987 (Fig. 4D)
Conus honkeri Petuch, 1988* (Figs. 4A & B)
Conus glicksteini Petuch, 1987*

Range: Vink (1984A) listed records from off Florida, Cuba, St. Croix, St. Thomas, Guadeloupe, Martinique, Barbados and Curaçao.

Comments: *Dauciconus attenuatus* seems to be a fairly well understood species. My figure (Fig. 3) shows shells that are typical for the species and similar to Vink's figs. 2a-2h. Vink (1984A) is one of the few authors to show the range in size, shape, and pattern that this species expresses.

Figures such as Vink's suggest that some recently described species are within the range of variation shown by Vink for *D. attenuatus* (see Fig. 4).

3. *Gradiconus flamingo* (Petuch, 1980a)

(Figs. 5B and A).

Range: The species is only known from off the south east coast of Florida.

Comments: Vink (1984A) did not agree with my equating *Gradiconus flamingo* with *G. flavescens* (Tucker, 1984). Vink maintained that the two can be separated by ecology with *G. flamingo* being an off shore species (type locality was cited as 47.5 m off Dania, Broward County, Florida by Petuch, 1980a), whereas *G. flavescens* occupies shallow back reef areas. The latter is not correct. I have numerous specimens of *G. flavescens* col-

lected in waters deeper than 20 m off the east coast of Florida (see Fig. 5).

The snails that Vink (1984A) illustrated as *flamingo* in his figs. 3a and 3b are possibly two species. The specimen shown in Vink's fig. 3b may be a juvenile *Dauciconus amphiurgus*. The only reliable means to distinguish *D. amphiurgus* juveniles from specimens of *Graciconus flamingo* are structures of the spire and protoconch. The spire tops of *D. amphiurgus* have 2 to 4 spiral cords on the whorl tops and a multispiral protoconch. The spire tops of *G. flamingo* (and *G. flavescens*) have the cords obsolete in the early whorls and have paucispiral protoconchs of about 2 whorls (Tucker & Tenorio, 2009). The shells shown in my Fig. 5 demonstrate the difficulty. Figs. 5A and C, I think are juvenile *D. amphiurgus*, whereas fig 5B is a specimen similar to what Petuch (1980a) (my Fig. 5D, the holotype of *G. flamingo*) described as *G. flamingo*.

The question remains are *Gradiconus flamingo* and *G. flavescens* conspecific. I must admit that I probably erred in equating the two. However, that does not mean that I can distinguish them. The best way seems to be the anterior end coloration. In *G. flamingo* (and juvenile *D. amphiurgus*, see my Figs. 5A and C) the anterior end is brown colored. This coloration is usually darker than the coloration at midbody. In *G. flavescens*, the anterior end is colored the same shade as the body markings and often is mostly white (Fig. 32)

Part II

4. *Dauciconus amphiurgus* (Dall, 1889)

(Figs. 6, 7)

Synonymous names from Vink
Conus juliae Clench, 1942 (Fig. 7D)

Addition suggested by Tucker
Conus patglicksteinae Petuch, 1987 (Fig. 7C)

Range: Atlantic and Gulf coasts of Florida, off Yucatan.

Comments: This species is highly variable in shell shape and coloration. Juveniles look much different from adults. Compare my Figs. 5A and C to shells shown in Fig 6A-C. Vink (1984B) illustrated this range of variation in his figures 4a-e.

Vink (1984B) also stated clearly that *Dauciconus juliae* (see my Fig. 7D for an image of the holotype) was contained in this range of variability, as did Walls (1979). This is a conclusion I agree with. Some question (e.g., Coomans et al., 1980) whether Dall's holotype of *Dauciconus amphiurgus* (Figs. 7A and B) could be conspecific with shells like the holotype of *Dauciconus juliae* (Fig. 7D). However, if you compare the range of variation in specimens shown in Fig. 6A-E, then one should be able to include specimens like the holotype of *D. amphiurgus* (Fig. 7A & B) and *D. juliae* (Fig. 7D) in that range. Petuch (1987) described *Dauciconus patglicksteinae* (see Fig. 7C, originally as a subspecies of *Gradiconus floridanus*, see below for that species). This shell is unlikely to be a *Gradiconus*. The description was brief but the type should be examined for cords on the whorl tops. If they are present, the specimen is certainly synonymous with *Dauciconus amphiurgus*.

Unfortunately, Vink's figure of radular teeth (Vink's fig. 2) is misleading. The tooth of *Purpuriconus ziczac* (= *archetypus* and *brasiliensis*) is not like the teeth figured. Instead, they have a row of serrations as would be expected in a species of *Purpuriconus* (Fig. 124-8).

5. *Purpuriconus mayaguensis* (Nowell-Usticke, 1968)

Range: West and North coast of Puerto Rico.

Comments: The printing of Vink's paper was flawed by an error in the text. The *Conus amphiurgus* heading and synonymy are perched atop the account for *Conus mayaguensis*. The *Conus mayaguensis* heading and synonymy are perched over the account of *Conus amphiur-*

gus. This being understood, *Conus mayaguensis* Nowell-Usticke, 1968 is number 5 and *Conus amphiurgus* Dall, 1889 is number 4.

It happens that I do not have any specimens similar to those shown by Vink (1984B) in his fig. 5a-e. However, the details in the account indicate that these specimens are what I identify as *Purpuriconus ziczac ziczac* (Mühlfeld, 1816). This species is discussed in detail below. It is sufficient to note that Puerto Rico is the northern most record for this species. Vink (1984B) correctly pointed out that *P. mayaguensis* could be confused with *Dauciconus amphiurgus*. However, the protoconch of ***P. mayaguensis*** is paucispiral of about 2 whorls, whereas that of *D. amphiurgus* is multispiral of about 3.5 whorls.

6. *Chelyconus ermineus* (Born, 1778)

(Fig. 8)

Synonymous names from Vink
Conus testudinatius Hwass in Bruguière, 1792
Conus portoricanus Hwass in Bruguière, 1792
Cucullus barathrum Röding, 1798
Conus coerulescens Schröter, 1803
Conus narcissus Lamarck, 1810
Conus aspersus G. B. Sowerby II, 1833
Conus caerulans Küster, 1838
Conus verrucosus piraticus Clench, 1942
Conus perryae Clench, 1942

Range: Florida & Bahamas to Brazil and West Africa.

Comments: Vink (1984B) noted the variability of this species and justified inclusion of the above synonyms that he considered to be based on West Atlantic material (see my Figs 8A-D). There are also others based on West African material. Juvenile *Chelyconus ermineus* can be particularly difficult. In these specimens the shoulders can be angular and nodulose much as they are in *Pionoconus magus*.

Part III

7. *Dauciconus sanderi* (Wils & Moolenbeek, 1979)

(Figs. 9-11)

Synonymous names from Vink
Conus hunti Wils & Moolenbeek, 1979 (Fig. 9E)
Conus sorenseni Sander, 1982a (Fig. 9B)
Conus knudseni Sander, 1982a (Fig. 9C)

Addition suggested by Tucker
Conus carioca Petuch, 1986a (Fig. 9D)
Conus perprotractus Petuch, 1987 (Fig. 9A)
Conus poulosi Petuch, 1993a* (Fig. 9G)

Range: From Barbados to Brazil

Comments: Vink & Sander (1983) presented evidence that the three synonyms and *Dauciconus sanderi* all of which were collected in Barbados were conspecific (Fig. 9). Vink (1985A) summarized these findings and considered all of them synonymous. Initially as specimens dredged from off Barbados appeared in collections, most of them were small having shell lengths of about 20 mm (see Fig. 10A-10C). Wils & Moolenbeek (1979) described these as *Conus sanderi* (Fig. 9F) and *Conus hunti* (fig. 9E). Years later, what I interpret to be larger adults began to become available (Figs. 9A & D, Figs. 11A-D). Once this happened two new names were proposed. These include *Conus carioca* Petuch, 1986 (see Fig. 9D) and *Conus perprotractus* (Petuch, 1987) (see Fig. 9A). I believe both to be adults of the small shells so common in the Barbadian dredging.

Part IV

Purpuriconus archetypus (Crosse, 1865)

Comments: Vink (1985B) divided this species into 3 separate subspecies. Likely *Purpuriconus mayaguensis* (Nowell-Usticke, 1968, see number 5 above) should

also have been included into what Vink identified as *P. a. archetypus*. Unfortunately, Vink's text does not give much help in separating the three subspecies.

8. *Purpuriconus archetypus archetypus* (Crosse, 1865)

(Fig. 12)

Range: Along the Brazilian coast, from Cabo Frio, State of Rio de Janeiro to the Amazon River, also the Abrolhos, Grenada & Grenadines, Lesser Antilles.

Addition suggested by Tucker
Conus baiano Coltro, 2004
Conus bertarollae Costa & Simone, 1997
Conus cargilei Coltro, 2004
Conus mauricioi Coltro, 2004

Comments: The range of *P. a. archetypus* and the range of *P. a. beddomei* apparently overlap in the Grenadines. However, *P. a. archetypus* and *P. a. brasiliensis* seem much more similar to each other than either is to *P. a. beddomei*. The morph that Vink identified from the Grenadines has little development of interrupted spiral lines on the brown areas of the shell or the white areas. The holotypes of *P. a. archetypus* (Fig. 14D) and *P. a. brasiliensis* (Fig. 14F) look similar to each other to me.

8A. *Purpuriconus archetypus beddomei* (G. B. Sowerby III, 1901)

(Figs. 13C, D, & 14E)

Range: Confined to the Grenadines with records from Carriacou and Mustique.

Comments: This subspecies is easier to identify with the near absence of spiral lines and the characteristic white markings (Fig. 14E).

8B. *Purpuriconus archetypus brasiliensis* (Clench, 1942) (Figs. 13A & B)

Range: Confined to the States of Espirito Santo & Rio de Janeiro, Brazil.

Comments: This subspecies seems to me to be conspecific with *P. a. archetypus* (compare Figs 14D & F). Vink (1985B) also failed to provide distinguishing traits.

Summary for *Purpuriconus archetypus*: I think Vink was correct to consider this species polytypic. However, I believe that his text better supports two subspecies rather than three. The specimens of *P. a. archetypus* and *P. a. brasiliensis* are from the geographic areas defined by Vink (1985B). However, I find no way to distinguish specimens such as Fig. 13A from Fig. 12B.

I do think that Vink made a strong case to recognize two well marked subspecies, namely a Brazilian and Puerto Rican one and a southern Caribbean one. The question that remains is what should they be called. Vink (1985B) was unaware of the species described as *Conus ziczac* by Mühlfeld, 1816. The type of *Conus ziczac* (Fig. 14A & B) is obviously a specimen of *Purpuriconus beddomei* (Fig. 13C & D, and 14E).

Filmer (2001) suggested that *C. ziczac* as a senior synonym should be considered a *nomen oblitum* and *C. beddomei* should take precedence under reversal of precedence rules of the code. These are the conditions that must be met: 23.9.1.1-the senior synonym not been used as a valid name after 1899 and 23.9.1.2-the junior synonym has been used as its presumed valid name in at least 25 works, published by at least 10 authors in the immediately preceding 50 years. Neither of these conditions has been met. Kohn (1992) used the name *Conus ziczac* as a valid species in his chronological studies (Kohn, 1992). Kohn's usage predates the current code edition. He further listed it as valid in Table 12 on page 200 (Kohn, 1992). I think Kohn had misidentified the type of *Conus ziczac* as a specimen of *Gradiconus flavescens*, but that is not material to the argument. I, also, think it is unlikely that the second

requirement has been met. *Conus beddomei* was only revived some 30 years ago by studies published by Vink (1980) and by Coomans et al. (1982). I doubt that there exists the requisite 25 works by the 10 authors required. Even if my presumption is proven incorrect, the first requirement is not met. One could argue that to the Commission that revival of *ziczac* threatens the stability of nomenclature. The commission might accept such a petition, but considering the recent arrival of the use of *C. beddomei* and descriptions of synonyms such as *C. abrolhosensis* Petuch, 1987 (Fig. 14C), existence of nomenclatural stability among conids seems poorly founded.

Consequently, I prefer to identify two subspecies. The first is *Purpuriconus ziczac ziczac* (Mühlfeld, 1816) with populations in the southern Caribbean. The second is *P. z. archetypus* (Crosse, 1865) with populations mostly in Brazil and possibly in Puerto Rico (*mayaguensis*).

9. *Stephanoconus regius* (Gmelin, 1791)

(Fig. 15)

Synonymous names from Vink
Conus leucostictus Gmelin, 1791
Conus citrinus Gmelin, 1791
Conus nebulosus Hwass in Bruguière, 1792
Cucullus coronacivica Röding, 1798
Conus spurius Röding, 1798

Addition suggested by Tucker
Stephanoconus gadesi (Espinosa and Ortea, 2005)

Range: Widespread throughout the Caribbean, in the Western Atlantic from Georgia to the State of Bahia, Brazil

Comments: Other than the yellow colored variant (*citrinus* Gmelin, Fig. 15A) the species is rather uniform. However, juveniles (e.g. the recently described *Stephanoconus gadesi*) can be deceiving.

Part V

Spuriconus spurius (Gmelin, 1791)

Comments: Vink (1985C) divided this variable species into six geographic subspecies. I list each with images similar to Vink's and from the same geographic regions as Vink's specimens. Because they were poorly differentiated, I leave it to the readers to decide whether any can be recognized. I do think, however, that the southern Caribbean subspecies of *Spuriconus spurius lorenzianus* and *S. s. baylei* are distinctive.

10. *Spuriconus spurius spurius* (Gmelin, 1791)

(Fig. 16)

Synonymous names from Vink
Conus proteus Hwass in Bruguière, 1792
Conus leoninus Hwass in Bruguière, 1792
Cucullus ferugineus Röding, 1798
Cucullus syriacus Röding, 1798
Cucullus leoninus Röding, 1798
Conus ochraceus Lamarck, 1810

Range: Bahamas, Greater Antilles, Virgin Islands, and Lesser Antilles as far as Martinique, coastline of Florida, and Gulf of Mexico

Comments: In Vink's text he included Venezuela and Colombia. I think this was an error and these two locations are in the ranges of other subspecies. There are three 'northern' subspecies identified by Vink. They include *Spuriconus spurius spurius* (Fig. 16), *S. s. aureofasciatus* (Fig. 17) and *S. s. atlanticus* (Fig. 18). Many other authors also identify these subspecies. The problem is that no one gives any traits by which they can be distinguished from each other. Color patterns are frequently mentioned but in the geographic ranges of the northern races color patterns supposedly characteristic

of one race appear among shells from all the others.

10A. *Spuriconus spurius aureofasciatus* (Rehder & Abbott, 1951a) (Fig. 17)

Range: deeper water in the Gulf of Mexico in particular off Yucatan

Comments: This subspecies supposedly has solid color lines and bars in the color pattern (Fig. 17C, the holotype). However, that appears to be a variant color pattern, and can occur in the geographic ranges of all the other northern subspecies. Vink cites spiral rows of orange banding over the color spots as another identifying feature.The specimens that I examined from the geographic range of the subspecies as laid out by Vink did not have this feature (fig.17A, B, D, E). I have also found that the anterior third of the body tends to have minute ridges.

To make the problem with using coloration to identify subspecies clear, note that Vink (1985C) has *Spuriconus s. aureofasciatus* (Vink's Fig. 10Ab) and *S. s. atlanticus* (Vink's Fig. 10Cb) pictured from Yucatan. Subspecies should not occur sympatrically.

10B. *Spuriconus spurius quadratus* (Röding, 1798)

(Fig. 18)

Range: off the coast of Central America from British Honduras, Honduras, Panama & Colombia.

Comments: This subspecies is one of the three southern subspecies. They include *Spuriconus spurius quadratus* (Fig. 18), *S. s. lorenzianus* (Fig. 21), and *S. s. baylei* (Fig. 20). The southern subspecies differ from the three northern subspecies in having taller spires for the most part and having body whorls ornamented with minute ridges. Two of the subspecies including *S. s. quadratus* (Fig. 18) and S. s. lorenzianus (Fig. 21) also seem to have more numerous rows of spots. Consequently, the spots are smaller then they usually are in the other four subspecies.

Vink (1988B) in a footnote on page 15 agreed with Coomans et al. (1986) that *Cucullus quadratus* Röding, 1798, was actually a species from the Red Sea (*Asprella erythraensis* (Reeve, 1843)). The name *quadratus* is not then applicable to this subspecies of *Spuriconus spurius*. It should be considered synonymous with *S. s. lorenzianus* pending a more definitive study of the complex.

10C. *Spuriconus spurius atlanticus* (Clench, 1942)

(Fig. 19)

Synonymous name from Vink
Conus leoninus Hwass in Bruguière, 1792

Range: Atlantic coast of Florida, gulf coast of Florida, Texas, and Mexico and further south along the coast of Venezuela to Cumana in eastern Venezuela.

Comments: *Spuriconus spurius atlanticus* has always been a diffuse concept among authors. Generally, the only distinguishing trait is that there are brown blotches overlaying the brown spots (e.g., Figs. 19G and I). Unfortunately this trait occurs in all of the northern races recognized by Vink (1985C). Vink cites records for this subspecies in Yucatan, Venezuela, and Sanibel Island, Florida, which overlaps ranges of nearly all the other subspecies. I think the range should be limited to Florida and continental areas of the northern Gulf of Mexico. The range of *S. s. spurius* then should be limited to the central Caribbean. Vink presented no method that can be profitably used to distinguish these two subspecies and from comparison of Fig. 16 and Fig. 19 it seems unlikely that one will be found. *S. s. atlanticus* possibly should be regarded as a synonym of *S. s. spurius*.

10D. *Spuriconus spurius lorenzianus* (Dillwyn, 1817)

(Fig. 20)

Synonymous names from Vink
Conus flammeus Lamarck, 1810
Conus undatus Kiener, 1845
Conus weinkauffii Loebbecke, 1882
Conus phlogopus Tomlin, 1937

Range: Off the Caribbean coast of Colombia

Comments: As noted above this is one of three southern subspecies. It occurs between *Spuriconus spurius quadratus* (sensu Vink, Fig. 18) to the west and *S. s. baylei* (Fig. 21) to the east. Ridges that extend the full length of the body whorl are the hallmark of this subspecies. Such ridges only reach midbody in *S. s. quadratus* (sensu Vink) and *S. s. baylei*. In the northern subspecies ridges are pretty well limited to the anterior third of the body whorl. The subspecies *S. s. quadratus* (sensu Vink) and *S. s. baylei* may be intergrade populations between the northern subspecies and *S. s. lorenzianus*.

10E. *Spuriconus spurius baylei* (Jousseaume, 1872) (

Fig. 21)

Synonymous name from Vink
Conus spurius arubaensis Nowell-Usticke, 1968

Range: Dredged in 10 to 20 m in the Golfo de Venezuela, off the Guajira Peninsula, Colombia and Aruba.

Comments: *Spuriconus spurius baylei* makes up the eastern end of the group of three southern subspecies. It like *S. s. quadratus* (sensu Vink) has minute ridges on the anterior half of the shell. Other than the ridges it is difficult to distinguish shells of this subspecies from those of the three northern subspecies. However, shells from the range laid out by Vink really do look different from those of the northern subspecies. This may be due to the more rounded slightly swollen shoulder that accompanies at strongly elevated and concave spire. The color markings of this southern subspecies are often distinctly black (Fig. 21). Black coloration does not occur to any great degree in the northern subspecies.

I would like to add a further note to suggest a research project using *Spuriconus spurius*. It seems to me that this species more or less forms a ring of populations around the Caribbean. I would think that a molecular comparison of these many populations would be extremely interesting. Such research could suggest whether these diverse morphologies pointed out by Vink are full species or not. Moreover, it could suggest patterns of gene flow in the dynamic Caribbean region.

Finally, I suggest that Vink (1985C) provided a wonderful review of this group. However, I think he over split them. In my collection, I identify a northern subspecies (*Spuriconus spurius spurius*) and a southern one (*S. s. lorenzianus*). The northern subspecies includes *S. s. atlanticus* and *S. s. aureofasciatus* as synonyms. The southern one includes *S. s. quadratus* (sensu Vink) and *S. s. baylei* as synonyms. Using this northern/southern dichotomy makes identifying individual shells much simpler. If the body is ornamented with ridges that reach the midbody, then it is the southern subspecies, *S. s. lorenzianus*. If the body is smoother, then the shell is *S. s. spurius*. Hopefully the geographic data with the shell will correspond to the distribution provided by Vink.

11. *Gradiconus sennottorum* (Rehder & Abbott, 1951a)

(Fig. 22)

Range: Only known from the Gulf of Mexico [mostly from Yucatan]

Comments: When narrowly defined as Vink did, *Gradiconus sennottorum* is easy to recognize. It essentially is a turnip shaped white shell with some scattered

brown markings in spiral rows (Figs. 22A & B). The problem is that several other taxa have been described from all around the West Atlantic with short conical or turnip shaped shells (covered later). These are all *Gradiconus*. They have paucispiral protoconchs, cords are absent or lost very early, juvenile stages are carinate, nodules are poorly developed or flutes are present instead, and often the early whorls are shaded brown or pink (Tucker & Tenorio, 2009). Vink included several of these species including *Gradiconus sennottorum*, *G. largillierti*, *G. floridanus*, *G. cingulatus*, and *G. garciai*.

12. *Gradiconus largillierti* (Kiener, 1845) (Fig. 23)

Range: Off Yucatan and off Atlantic coast of Florida and South Carolina.

Comments: As defined by Vink this species ranges from North Carolina around the peninsula of Florida and then along the Gulf Coast of the United States to Yucatan. This is a most unusual geographic distribution. However, Vink's Figs. 12a and 12b are essentially identical looking and look very much like the specimens I show in Fig. 23 from the scallop trawls of the eastern United States.

If *Gradiconus sennottorum* and *G. largillierti* are different species then they are sympatric in Yucatan. Adults of *G. largillierti* as shown in my Fig. 23 are less turnip shaped than are the type specimens of *G. sennottorum* (Fig. 22B). However, all *G. sennottorum* are not as turnip shaped as is the type specimen (Fig. 22A). This brings up another point, young specimens of *G. largillierti* are often much more turnip shaped than larger ones (Fig. 24C, for instance). To demonstrate this point, I present a plate (Fig. 24) figuring 12 specimens dredged from Florida and South Carolina showing the great variation in shape and coloration in specimens that I believe Vink would have identified as *G. largillierti* had they been available to him.

I think it is important to note that shell shape is variable in *Gradiconus largillierti* and *G. sennottorum* as well as among all the other southern *Gradiconus* recently described as new species. This means that shell coloration or ornamentation is the only shell trait left to use to separate taxa. Shells identified as *G. sennottorum* are often lightly colored but they occur along side *G. largillierti* that can be equal in shell shape but only have color patterns that are better developed. When large samples are available from trawls in the Yucatan area, I think that *G. largillierti* and *G. sennottorum* will prove to be conspecific.

Part VI

13. *Lamniconus clerii* (Reeve, 1843)

(Figs. 25, 26C)

Range: Along the Brazilian coast.

Comments: Coomans et al. (1985) and Walls (1979) recognized *Lamniconus clerii* and *L. lemniscatus* as separate species. Interestingly Rios (1994) considered *L. clerii*, *L. clenchi* (= *L. lemniscatus*), and *L. carcellesi* all synonyms of *L. clerii* but recognized *L. tostesi* as a separate species. The holotype of *L. clerii* (Fig. 26C) does agree with the *L. clerii* specimens that I illustrate (Fig. 25) in having angular shoulders and a concave spire profile. Coomans et al. (1985) and Vink (1986) noted the concave body whorl and concave spire as traits of *L. clerii* that are not present in *L. lemniscatus*.

The holotype of *Conus tostesi* differs from other *Lamniconus* species in having rather scalariform whorls (Fig. 26A). However, this specimen also has obvious nodules on the early spire whorls. The specimens of *L. clerii* that I illustrate may have nodules on the early whorls and scalariform spires (see Figs. 25C & D). These similarities caused me to synonymize *L. tostesi* with *L. clerii*.

14. *Lamniconus lemniscatus lemniscatus* (Reeve, 1849)

(Fig. 27)

Synonymous name from Vink
Conus sagittatus G. B. Sowerby II, 1865
Conus clenchi Martins, 1945a
Conus xanthocinctus Petuch, 1986 (Fig. 26D)

Addition suggested by Tucker
Conus tostesi Petuch, 1986a (Fig. 26A)

Range: Occurs along the coasts of Brazil, Uruguay and Argentina. [As far south as Puerto Deseado at 48ºS from Rios, 1975.]

Comments: Although the spire of this species is usually straight sided and not scalariform (Fig. 27), considerable variation in spire shape does occur in the nominate race. This makes separation of *Lamniconus lemniscatus carcellesi* from *L. l. lemniscatus* difficult by any means other than geographic distribution. The nominate race occurs along the coast of Brazil, whereas *L. l. carcellesi* occurs along the coasts of Uruguay and Argentina. Vink's inclusion of Uruguay and Argentina in the range of *L. l. lemniscatus* is in error. The problem is the organization in Vink's text. He seems to have included the range of *L. lemniscatus* as a whole for the range of the nominate race *L. l. lemniscatus*. He appears to have done the same with *Spuriconus spurius spurius*.

14A. *Lamniconus lemniscatus carcellesi* (Martins, 1945b)

(Fig. 28)

Synonymous names from Vink
Conus iheringi Frenguelli, 1946
Conus platensis Frenguelli, 1946

Range: Off the coast of Uruguay and Argentina to Puerto Deseado.

Comments: This subspecies is not well defined. Rios (1994) considered it a synonym of *L. lemniscatus.* Coomans et al. (1983) said that *Conus carcellesi* was a subspecies of *Lamniconus clerii* rather than a synonym of *L. clenchi* (= *L. lemniscatus, herein*) as suggested by Van Mol et al., 1968 and Rios (1975; 1994). Walls (1979) listed it as a synonym of *L. clerii*.

There are problems with the conclusions of Coomans et al. (1983). First, they only examined three specimens of *carcellesi* from the stated geographic range of the taxon. They concluded that *carcellesi* is biconic (but this is not correct, look at Fig. 28) with a subangulate and smooth shoulder, whereas clerii has a turbinate shell with an angulate and carinate shoulder. I examined 15 specimens of *carcellesi* all from Uruguay. They are quite variable (Fig. 28). Some look somewhat like *L. clerii* (see Figs. 28A & B). Others look more like *L. lemniscatus* (Fig. 28C & D). In particular, compare Fig. 27B (a *L. lemniscatus lemniscatus* from Brazil) and Fig. 28B (a *carcellesi* from Uruguay). I think that Vink was correct in considering *lemniscatus* and *carcellesi* conspecific. Their spire structure is more similar to each other than either is to *L. clerii*. The spire of *L. clerii* is just more scalariform than are the spires of *L. l. lemniscatus* or *L. l. carcellesi*.

The only morphological differences that I found in the samples that I examined are that the spire of *L. l. lemniscatus* (Fig. 27) is not as elevated as the spire of *L. l. carcellesi* (Fig. 28). Without belaboring the details, I found that these differences are statistically significant in the sample I have at hand. Consequently, I agree with Vink in recognizing *L. l. carcellesi* as a subspecies of *L. lemniscatus*. Both are poorly understood. A molecular study would be particularly helpful.

15. *Gradiconus cingulatus* (Lamarck, 1810) (Fig. 29)

Synonymous name from Vink
Conus castaneus Kiener, 1845

Range: off the coast of Colombia and western Venezuela

Comments: *Gradiconus cingulatus* is another of the puzzling southern Caribbean species of *Gradiconus*. Most collectors are familiar with the typical form of *G. cingulatus* (Figs. 29A & D). These shells have ridges and sulci all over the body whorl. The spire tops are convex to flat and the shoulder is angular to even carinate. Generally the spires are conical to slightly concave in profile. Nodules are absent on the early whorls. This is the concept that Vink presented. The problem is that there is much more variation in the shell ornamentation than Vink suggested. Some shells are smooth bodied such as the Yucatan specimen (Fig. 29B). This specimen is extralimital using the range parameters from Vink. However, it looks quite similar to the other Colombian *G. cingulatus* illustrated. Moreover, one of the Colombian shells (Fig. 29C) also has the body whorl only slightly ridged.

Gradiconus cingulatus as identified by Vink and illustrated by me actually look a great deal like specimens of *G. largillierti* (compare Figs. 29 and 23). If I have identified the Yucatan specimen (Fig. 29C) correctly, this would mean that *G. largillierti* and *G. sennottorum* are sympatric in Yucatan. The Floridian *G. largillierti* (Fig. 23) and the Colombian *G. cingulatus* (Fig. 29) could be conspecific. I am suggesting that there are two subspecies. The northern race is *Gradiconus cingulatus largillierti* and the southern race is *Gradiconus cingulatus cingulatus*. The turnip-shaped shells are part of the range of variation of both these species (look at Fig. 23). I am also suggesting that *Gradiconus sennottorum* is a synonym of *G. c. cingulatus* and that *G. philippii* (Kiener, 1845), a name available for the Floridian shells shown in Fig. 23, is a synonym of *G. c. largillierti*.

Part VII

Gradiconus floridanus (Gabb, 1869)

Comments: Vink divided this species into two subspecies, and these are discussed below. Remarkably nearly all of the type specimens of the species considered synonyms in this species still exist (Fig. 30). Petuch (1987) described two further subspecies of *G. floridanus,* namely *G. f., tranthami* (Fig. 30E) from the Florida Keys and *G. f. patglicksteinae* (Fig. 7C) from Palm Beach County, Florida. The latter is discussed above under *Dauciconus amphiurgus*. The other subspecies is a specimen of *G. f. burryae* based on the type locality in the northern Florida Keys..

I use the nomenclature employed by Vink. However, most now identify *Gradiconus floridanus* as *G. anabathrum*. When Coomans et al. (1980) studied the type of *anabathrum* they recognized it as a senior synonym of *G. floridanus*. They argued that the senior synonym should not be used to replace such a well-known name as *floridanus*. Vink (1987A) reviewed the debate on the revival of the older name, *anabathrum*, for the well-known name *G. floridanus*. He had earlier argued that *G. anabathrum* should be revived (Vink, 1985). When Vink wrote part VII he retained *G. floridanus* because he was operating under the premise that an appeal would be made to the ICZN by Walter Cernohorsky (1986) to suppress *anabathrum* in favor of *floridanus*. This appeal was never made and *anabathrum* has largely replaced *floridanus*. Consequently, Vink's *Gradiconus floridanus floridanus* is actually better called *G. anabathrum anabathrum*. His *G. f. burryae* should be called *G. anabathrum burryae*. In this review, I retain Vink's original taxonomy with the understanding that the species is now known as *G. anabathrum*.

16. *Gradiconus floridanus floridanus* (Gabb, 1869)

(Figs. 30 & 31)

Synonymous names from Vink
Conus anabathrum Crosse, 1865 (Fig. 30A)
Conus floridensis G. B. Sowerby II, 1870 (Fig. 30D)

Range: Along the west coast of Florida, south of Cedar Key. South and south-east coast of Florida.

Comments: Vink (1987A) presented a number of traits to distinguish *G. f. floridanus* from *G. f. burryae* (see below). As should be obvious from the variation shown for both subspecies (Figs. 31 and 32), none of these traits really help excepting one. Specimens of *G. f. burryae* do seem to have the anterior ends shaded darker brown than specimens of *G. f. floridanus* (for *G. f. floridanus* see Figs. 31A-D). Consistent with this the holotypes of *G. anabathrum* (Fig. 30A), *G. floridanus* Fig. 30B), and *G. floridensis* (Fig. 30D) all have white colored or light colored markings at the anterior ends. The holotype of *tranthami* (Fig. 30E) does not have a darkened anterior end, as it should be if it is a specimen of *G. f. burryae*. However, the specimen is very lightly colored and is from the northern Keys and may be from an intergrade population.

16A. *Gradiconus floridanus burryae* (Clench, 1942)

(Fig. 32)

Range: Lower Florida Keys and Biscayne Bay

Comments: Vink suggested that this subspecies differed from the nominate race in being reddish brown to dark brown as opposed to lighter shades of brown. The anterior end of the shell is usually brownish black in *G. f. burryae*, whereas it is white or only slightly brownish in *G. f. floridanus*. He also said that *G. f. burryae* is smaller and narrower with often a more convex body whorl. I have reproduced Vink's characters nearly verbatim. Unfortunately only the anterior end color seems to be useful in identifying these two subspecies (Fig. 31A-D vs 32A-D). A series of specimens from throughout the range would be needed to confirm the validity of these two subspecies and to completely outline the ranges of each. This subspecies as noted above is more correctly identified as *G. anabathrum burryae*.

17. *Gradiconus flavescens* (G. B. Sowerby II, 1834)

(Figs. 33-35)

Range: Southeast Florida and Bahamas

Addition suggested by Tucker
?*Gradiconus cerutti* Cargile, 1997* (Figs. 34A & B)

Comments: *Gradiconus flavescens* is tremendously variable (Fig. 33). The species can range from nearly all brown to white. Vink did not recognize subspecies but my impression is that the specimens from the Atlantic coast of Florida tend to be more strikingly colored (Figs. 33B-D) than are those from the Bahamas (Fig. 33A). The lectotype of *Gradiconus flavescens* (Fig. 33C) is a white specimen from the Bahamas. I know of no name available for the Florida populations unless *Gradiconus cerutti* is it. This species (Figs. 34A & B) seems to be a *Gradiconus flavescens*. However, the type locality of *G. cerutti* is in Nicaragua, which is distant from the Bahamas or Florida where typical *G. flavescens* are found.

One other issue is centered on certain large specimens of *Gradiconus flavescens* (Fig. 35). The holotype of *Conus caribbaeus* (Fig. 35C) is one of these large specimens of *Gradiconus flavescens*. Vink recognized this, but also correctly noted that not all specimens identified as *caribbaeus* were large specimens of *G. flavescens*. Those that he recognized as different species he identified as *Conus species* no. 1, which is discussed below.

18. *Spuriconus species* no. 1

(Fig. 36)

(later described as *Conus bahamensis* Vink & Röckel, 1995)

Synonymy from Vink
Conus caribbaeus Clench 1942, pl. 11, fig. 5 but not figure 4.

Range: Bahamas.

Comments: Vink thought the shells that he listed as *Conus species* 1 were probably a distinct species that did not have a name. In the Vink series, this issue was never revisited. However, Vink and Röckel (1995) described *Conus bahamensis* from the Bahamas for such specimens. Specimens conspecific with Vink and Röckel's type specimen are rarely encountered. Two specimens (Figs. 36C-E) from my collection are very similar and I think conspecific with Vink and Röckel's type specimen (Figs. 36A & B). These two are white (Fig. 34A) or very pale yellow (Figs 36B & C) specimens of *Spuriconus spurius spurius*. According to the ranges of various subspecies of *S. spurius*, the Bahamas would fall into the range of *S. s. spurius*. This is a color morph not a distinct species and it is likely not limited to any particular subspecies of *S. spurius*. However, the type locality for *S. bahamensis* is in the range of *S. s. spurius.*

Part VIII

Seminoleconus cedonulli (Linné, 1767)

(Fig. 37)

Comments: Vink divided this species into three subspecies all of which occur in the central Caribbean. This species was distinguished from *Seminoleconus mappa* by the spire morphology. The spire of *S. mappa* is usually higher and more stepped and often with a less concave spire than the spire of *S. cedonulli* according to Vink. *S. mappa* also has an internal constriction inside the aperture. This is absent in the aperture of *S. cedonulli*. In an earlier article (Vink, 1977), Vink considered the three subspecies of *S. cedonulli* to be distinct species. I agree with Vink's and with Vink & Cosel's (1985) recognition of three subspecies instead. However, if locality information is not used, it is difficult to separate these three forms. Vink & Cosel (1985, p. 558) provided a key and I reproduce the couplets for *S. cedonulli* here.

"Shell 40-60 mm high, broad, moderately heavy, mahogany brown to black, with irregular purplish white patches, zigzag markings or spiral bands, rarely uniform dark, light colored areas small in relation to whole shell surface. Subrecent specimens lighter colored...*C. cedonulli cedonulli*.

Shell 40-60 mm high, broad, light to moderately heavy, yellowish white or pinkish rosy, with mostly isolated orange, brown or dark brown patches, the lighter orange ones always with darker outline. Light colored areas large in relation to whole shell surface...*C. cedonulli insularis*.

Shell 40-60 mm high, broad, heavy to very heavy, bluish white with numerous small orange to brown patches, axial flames or zigzag markings, often coalescing spirally and arranged in 2 or 3 spiral bands. Patches usually not with darker outlines... *C. cedonulli dominicanus*."

Tucker & Tenorio (2009) used *Protoconus* da Motta (1991) for this genus and listed *Seminoleconus* Petuch (2003, type species *Conus violetae* Petuch, 1988) as a synonym. Dr. Philippe Bouchet kindly informed us that *Protoconus* da Motta is a junior homonym of *Protoconus* Yu, 1979 (a paleozoic *Monophacophoran*). Therefore, *Seminoleconus* is used in its place.

19. *Seminoleconus cedonulli cedonulli* (Linné, 1767)

(Figs. 37A & B)

Synonymous names from Vink
Conus cedonulli amiralis Hwass in Bruguière, 1792
Conus cedonulli martinicanus Hwass in Bruguière, 1792
Conus caledonicus Hwass in Bruguière, 1792
Conus nulli-secundus Nowell-Usticke, 1968
Conus holemani Nowell-Usticke, 1968

Range: Lesser Antilles from Grenada to St. Lucia and off Barbados. Typical *Conus cedonulli* are endemic to

west coast of St. Lucia, St. Vincent, and Bequia.

Comments: *Seminoleconus c. cedonulli* is exceptionally variable in coloration. However, Vink suggested that *S. c. insularis* differs from *S. c. cedonulli* in having the mahogany-brown or black background more or less broken into isolated brown to yellow-brown or black patches in two spiral rows on a lighter colored background. This difference in coloration may be a fairly reliable trait. I do not have many specimens in my collection but the ones Vink illustrated for the two subspecies agree with his comments.

19A. *Seminoleconus cedonulli insularis* (Gmelin, 1791)

Synonymous name from Vink
Conus cedonulli caracanus Hwass in Bruguière, 1792

Range: Known only from St. Lucia and from off Barbados.

Comments: Vink in the West Atlantic series gave no means to distinguish *Seminoleconus cedonulli insularis* from *S. c. dominicanus*. The brownish and white areas in *S. c. dominicanus* are not outlined by dark brown. They are outlined by darker color in both *S. c. cedonulli* and *S. c. insularis* (Vink and Cosel, 1985).

19B. *Seminoleconus cedonulli dominicanus* (Hwass in Bruguière, 1792)

(Fig. 37C)

Range: Only know from Grenada and the islands of the Grenadines with records from Cannouan, Mustique, Union Isle, Palm Island and Carriacou and the Tabgo Cays.

Comments: Vink and Cosel (1985) noted that there are no 'significant differences in shell shape' among these subspecies. Thus they can only be separated by differences in coloration.

Part IX

Seminoleconus mappa (Lightfoot, 1786)

Comments: Vink recognized three subspecies here. I have specimens of only one of the three subspecies but images of primary types should help in illustrating these three. In comparison to *Seminoleconus cedonulli*, *S. mappa* is the continental cognate of that central Caribbean species. Vink differentiated them structurally by maintaining that the internal constriction was present inside the aperture of *S. mappa* but absent in *S. cedonulli*. This trait seems to work best with adult shells only.

20. *Seminoleconus mappa mappa* (Lightfoot, 1786)

(Fig. 38A)

Synonymous names from Vink
Conus solidus Gmelin, 1791 (Fig. 38A)
Conus cedonulli mappa Hwass in Bruguière, 1792

Range: Typical *Seminoleconus mappa* is endemic only to Trinidad and Tobago according to Vink.

Comments: Vink distinguished the nominate race from *Seminoleconus mappa trinitarius* by variation in coloration. He said that *S. m. trinitarius* differs from *S. m. mappa* in having the maculations and patch [of color] not darker outlined and not uniformly colored but various shades of brown and yellow mixed together. *S. m. mappa* would then have the blotches outlined by darker colors and the maculations all the same color shade. These traits seem to work for the small sample that I examined and those illustrated by Vink. However, further study is warranted.

20A. *Seminoleconus mappa trinitarius* (Hwass in Bruguière, 1792) (Fig. 38B)

Synonymous name from Vink
Conus cedonulli surinamensis Hwass in Bruguière, 1792

Range: Occurring near islands on the continental shelf area of the eastern part of the coast of Venezuela

Comments: Vink in his West Atlantic series gave no guidance on how to separate *Seminoleconus mappa granarius* from the other subspecies of *S. mappa*. However, Vink and Cosel (1985) provided a key to all the species they considered. I reproduce the couplets for these three subspecies below with *S. m. granarius*.

20B. *Seminoleconus mappa granarius* (Kiener, 1845) (Fig. 38C-E & Fig. 39)

Synonymous names from Vink
Conus catenatus G. B. Sowerby III, 1879 (Fig. 38C)
Conus desmotus Tomlin, 1937 (Fig. 38C)
Conus sanctaemarthae Vink, 1977 (Fig. 38D)

Addition suggested by Tucker
Conus granarius panamicus Petuch, 1990 (Fig. 38E)

Range: On the continental area of the north coast of South America from Panama to western Venezuela.

Comments: Other than locality, Vink provided no guidance on how to separate these subspecies. I reproduce Vink & Cosel's (1985, p. 558) key couplets below:

"Shell milky white, with irregular light greenish yellow to dark brown patches and maculations, outlined with dark brown. White dots in spiral lines in dark areas outlined dark and interconnected by dark brown threads. Spire low to moderately high...*C. mappa mappa*.

Shell whitish, with light yellowish green to black maculations and patches often not uniformly colored and not consistently darker outlined. White dots in spiral lines very close-set or replaced by white streaks. Lighter brown or orange patches sometimes axially connected by darker brown markings. Aperture bluish white to pale violet. Internal restrictions variable from very strong to very weak. Spire low to moderately high, in deep water specimens very high...*C. mappa trinitarius.*

Shell whitish or purplish grey to bluish violet, with often only a few orange to dark brown patches or maculations, sometimes reduced to narrow spiral bands only. Surface more or less strongly granulated. Internal restriction always strong to very strong. Aperture white to pale violet or brownish. Spire moderately high to very high...*C. mappa granarius*."

This key echoes some of the themes that Vink in the Western Atlantic series emphasized. However, the variation in the expression of the internal constriction in the aperture is obvious. This variation means that one of the only structural variation between Seminoleconus cedonulli and *S. mappa* is of questionable use. It is also worrisome that in the key couplets, there are not objective traits (yes or no traits) that allow the subspecies to be identified. I think it is not unreasonable to recognize subspecies at this point. However, their collecting locality should be the first guide to which subspecies the collector has. This includes *S. cedonulli*, which I think is likely another set of populations conspecific with *S. mappa*. Obviously molecular study is needed to justify abandoning the classification of Vink & Cosel (1985) but I suspect it will have to be abandoned.

Some mention should be made of *Seminoleconus catenatus* (G. B. Sowerby III, 1879) (Fig. 38C). The G. B. Sowerby's described two *Conus catenatus*, one by G. B. Sowerby II in 1850, which is a Miocene fossil from Santo Domingo and the other by G. B. Sowerby III in 1879. This latter species was renamed *Conus desmotus*

by Tomlin in 1937. Vink considered *S. catenatus* (G. B. Sowerby III, 1879), and consequently *S. desmotus* (Tomlin, 1937) to be synonyms of *S. m. granarius.* Petuch (1981) illustrated specimens of *S. m. granarius* erroneously identified as *S. catenatus* (G. B. Sowerby II, 1850). Later, he showed one of these specimens in 1987 (Petuch's Pl. 20, fig. 8) identified as *Conus granarius*.

Part X

21. *Seminoleconus aurantius* (Hwass in Bruguière, 1792) (Fig. 40A, B, D)

Range: Endemic only to Curacao and Bonaire

Comments: This species and the next are quite similar. Vink and Cosel (1985) in their key had this to say:

"Shell 50-70 mm high, granulated, protoconch sharply raised as a small knob on the bluntly rounded first teleoconch whorls, base not unusually broad, shoulder knobs pronounced...*Conus aurantius.*

Shell 25-40 mm high, only weakly granulated, first teleoconch whorls less bluntly rounded, base broader more rounded, spire shorter, shoulder knobs smaller and less articulate....*C. pseudaurantius.*"

It appears that distribution is the simplest means to separate these two.

22. *Seminoleconus pseudaurantius* (Vink & Cosel, 1985) (Fig. 40C, 41D & E)

Range: Known only from Grenada and the islands of the Grenadines with records from Carriacou, Union Isle and Mustique

Comments: Vink said that this species is smaller with a more rounded base, shorter spire and less articulate shoulder knobs. A recently described species from a continental locality, *Seminoleconus duffyi* (Petuch, 1992a) may be *S. pseudaurantius*. If so, it would suggest that *S. pseudaurantius* has a wider distribution than Vink was aware of. The two type specimens (Fig. 40C and 40E) are remarkably similar.

23. *Seminoleconus curassaviensis* (Hwass in Bruguière, 1792)

(Fig. 41A-C)

Range: Endemic to Aruba

Comments: This species is more akin to *Seminoleconus mappa* than to any of the other *Seminoleconus*. Like *S. mappa*, *S. curassaviensis* has a constriction inside the aperture but it is weakly developed. The shell is, however, more convex sided than *S. mappa*. The nodules of *S. curassaviensis* also fade in the outer whorls, a trait not common to other *Seminoleconus* species related to *S. mappa*. The distinctly convex sides of the body whorl are also a feature of this species. In this it resembles *S. pseudaurantius*.

24. *Seminoleconus scopulorum* (Van Mol, Tursch & Kempf, 1971)

(Fig. 42C)

Range: Endemic to the banks off Estado Ceara, Brazil and islands of Rocas and Fernando de Noronha

Comments: Unlike the other *Seminoleconus*, *S. scopulorum* can be identified by its radular morphology (Fig. 124-13). The tooth of this species has an enlarged terminating cusp but the other serrations are fairly small (Van Mol et al., 1971, Fig. 3, and my Fig. 124-13). In all the other, *Seminoleconus* the radula has an enlarged terminating cusp and the penultimate serration is also enlarged (Figs. 124-9-11 & 13; see also Vink & Cosel, 1985, pl. 11 and Tucker & Tenorio, 2009, pl. IX). The shell of this species is small (10mm to 26.5 mm in the type series). The nodules also seem small compared to

other small *Seminoleconus*.

Summary: Recognition of all of these forms excepting *Seminoleconus scopulorum* is really locality dependent. As can be seen from the keys that I reproduce from Vink & Cosel (1985) there just are no objective traits that reliably separate each supposed species. It seems best to regard them as two species, one of which is polytypic. I recognize *S. aurantius* as defined by Vink as a valid species. Then, I think that *S. curassaviensis* is also a valid species but has one subspecies in Aruba (*S. c. curassaviensis*), another in Grenada and the Grenadines (*S. c. pseudaurantius*), and a third in Venezuela and Honduras (*S. c. duffyi*).

25. *Gladioconus patae* (Abbott, 1971)

(Fig. 43)

Synonymous names from Vink
Conus rudiae Magnotte, 1971 (Fig. 43F)

Range: only known from off southern Florida and the north coast of Jamaica

Comments: Vink noted the relatively restricted geographic range of this species. To his records I can confirm Redfern's (2001) report that the species occurs in the Bahamas. I have specimens in my collection collected at Elbow Cay in the Abaco Cays and one collected at Spanish Wells in the Bahamas. The species is fairly distinctive but like all cone shells it is variable. Juveniles are particularly odd-looking (Fig. 43B) with their elevated early whorls. These whorls wear away with growth resulting in the usual spire profile (Figs. 43A, C & D).

Part XI

26. *Conasprelloides cancellatus* (Hwass in Bruguière, 1792)

(Figs. 44 & 45)

Synonymous names from Vink
Conus austini Rehder & Abbott, 1951b (Fig. 44D)

Additions suggested by Tucker
Conus finkli Petuch, 1987 (Fig. 45C)
Conus brunneobandatus Petuch, 1992b (Fig. 45E)

Range: Widespread off the mainland of north, Central and South America from southern Florida (Dry Tortugas) and the Gulf of Mexico down to southern Brazil (Solidao, Rio Grande do Sul)

Comments: For many years this species was known as *Conasprelloides austini*. Vink did an excellent job of reviewing the nomenclatural history beginning with da Motta's (1980) recognition that Hwass' type specimen (Fig. 44C) is a West Atlantic one. As it now stands, the Indo-Pacific species is *Conasprella pagoda* (Kiener, 1845) and the West Atlantic species is *Conasprelloides cancellatus* (see Tucker & Tenorio, 2009, as well).

This species may be composed of two subspecies. The nominate race would be *Conasprelloides cancellatus cancellatus* (Figs. 44A & C). This one ranges from Florida and along the Gulf Coast of the United States. Shells belonging to this subspecies are usually uniformly white in color and particularly on the body whorl. Shell shape differences are often suggested but these have not been established with certainty. The other subspecies would be *C. c. finkli* (Fig. 45C). This subspecies ranges from Honduras to Brazil but primarily in continental waters (Figs. 45A-E). It can be recognized by brown coloration that often appears on the spire and body. However, many specimens are white with only the upper whorls of the spire shaded. These two are not well defined and their validity as subspecies is questionable.

One question that Vink did not clearly answer was how to distinguish *Dalliconus armiger* (see Fig. 48) from *Conasprelloides cancellatus*. The two are superfi-

cially similar. However, their radular morphology is quite different (Tucker & Tenorio, 2009). The tooth of *C. cancellatus* is serrate and has a terminating cusp. The tooth of *D. armiger* is not serrate but has a posterior blade and a shaft fold (Fig. 124-19; Tucker & Tenorio, 2009). Shells generally differ in the development of nodules on the shell whorls. The nodules of *C. cancellatus* fade by whorl 4 or so. In contrast, those of *D. armiger* are much more persistent often persisting for the full length of the spire. The whorl tops also differ. The cords on *D. armiger*'s whorl tops begin as a pair of cords in the center of the whorl tops. These are interconnected by well-developed axial riblets. Those of *C. cancellatus* appear as three to four cords evenly dispersed over the whorl tops that are interconnected only by tracings of the former position of the posterior notch.

27. *Conasprelloides stimpsoni* (Dall, 1902)

(Figs. 46 & 47).

Range: Off the Atlantic coast of Florida and the Gulf of Mexico, south to off Yucatan.

Comments: *Conasprelloides stimpsoni* is quite variable. They vary in color from specimens that are mostly white in color (Figs. 46B & C) to those that are distinctly orange colored (Fig. 46A). Most collectors expect that typical specimens will have sulci over the body (Fig. 46C, the holotype) and have axial ribs (Fig. 46B). However, many juvenile specimens from deeper water on the Gulf Coast of the United States have smooth shells with some orange coloration mostly restricted to areas posterior to midbody (Fig. 47A-F).

28. *Dalliconus armiger* (Crosse, 1858)

(Figs. 48 & 49)

Synonymous names from Vink
Conus crenulatus Kiener, 1845
Conus clarki Rehder & Abbott, 1951b (Fig. 49A)
Conus frisbeyae Clench & Pulley, 1952 (Fig. 49B)

Range: Found in the Gulf of Mexico from Florida north to Alabama, Louisiana and Texas, south to the Campeche Banks, Yucatan.

Comments: *Dalliconus armiger* is an uncommon species but mostly because it inhabits deep-water habitats. It is variable in coloration and shape. Some specimens are broad bodied (Fig. 48B & D) others are narrower bodied (Fig. 48A & C). Generally smaller shells are narrower bodied than larger ones. The synonyms above are all the turnip shaped sorts of shells (Figs. 49A & B).

29. *Dalliconus bajanensis* (Nowell-Usticke, 1968)

(Fig. 50)

Synonymous names from Vink
Conus pseudoaustini Usitcke, 1968 (Fig. 50C)
Conus guyanensis Van Mol, 1973 (Fig. 50B)

Range: Only known from records off Guyana and off Surinam on the north coast of South America

Comments: Vink separated *Dalliconus bajanensis* from *D. armiger* by the number of nodules along the shoulder. The first species was said to have from 20 to 22 nodules, whereas *D. armiger* was said to have 18 to 20 nodules. I counted nodes on four of six specimens that I had available (two had the nodules obsolete in the outer whorl). These four ranged from 17 to 21 nodules. Thus, *D. armiger* and *D. bajanensis* are more or less identical in shell traits. However, they may differ in radular morphology as pointed out by Vink. Certainly further study of the *D. bajanensis* radula is needed. It is possible that the radula drawn by Van Mol (1973) was not fully developed.

30. *Conasprelloides villepinii villepinii* (Fischer & Bernardi, 1857)

(Fig. 51)

Synonymous names from Vink
Conus capricorni Van Mol, Tursch & Kempf, 1967 (Fig. 52E)

Addition suggested by Tucker
Conus leekremeri Petuch, 1987* (Fig. 53B)

Range: Widespread from off Yucatan and southeast Florida along the eastern Caribbean down to Rio Grande do Sul, south Brazil

Comments: This has become a fairly well understood species. Vink noted the problem of the lost type and the actual identity of the species. The type figure of *Conasprelloides villepinii* does indeed resemble specimens of *Dauciconus sanderi* such as the one shown in Fig. 9B. The lost type of *C. villepinii* was said to be 32 mm in length. The figure in Fischer & Bernardi of the 32 mm long type specimen does resemble the 37 mm long specimen of *C. villepinii* shown in Fig. 52B. I think Vink was correct in not associating the Fischer & Bernardi figure with *D. sanderi*.

30A. *Conasprelloides villepinii fosteri* (Clench & Aguayo in Clench, 1942)

(Fig. 52)

Synonym:
Conus kevani Petuch, 1987* (Fig. 52C)

Addition suggested by Tucker
Conus venezuelanus Petuch, 1987* (Fig. 53A)

Range: North and south coasts of Cuba, Venezuela, Guajira Peninsula of Colombia

Comments: Vink stated that *Conasprelloides villepinii fosteri* differed from *C. v. villepinii* 'in having a much lower spire. The aperture flares out somewhat more near the base. (Vink, 1988B, p. 14).' I do not think that these traits work. Simple comparison of Fig. 52C, the holotype of *C. v. fosteri* with Figs. 51B and D, specimens from Florida and Yucatan, respectively indicates that spire height is not a useful characteristic. *Conasprelloides fosteri* should be considered a synonym of *C. villepinii*. *Conasprelloides kevani* (Fig. 52C), *C. leekremeri* (Fig. 53B) and *C. venezuelanus* (Fig. 53A) are all juvenile specimens of *C. villepinii*. Compare these holotypes to Figs. 53C-E.

31. *Gradiconus garciai* (da Motta, 1982)

(Fig. 54)

Range: Off Barra Patuca and Barra de Caratasca, Honduras, off Cabo Gracias a Dios in Nicaragua, also Portobelo, Panama.

Comments: This form is essentially a *Gradiconus largillierti* with a body ornamented by ridges and sulci. These two forms are also allopatric and at least some of the *G. garciai* (Fig. 54A) have the ridges less well developed. I think that they are two subspecies of a single polytypic species but that hypothesis needs testing by quantitative studies of specimens from throughout the range of Florida to Panama and Venezuela.

Gradiconus garciai is also quite similar to *G. cingulatus*. Vink had put forth three similar but allopatric species. There is *G. largillierti* (Fig. 23), which occurs from Yucatan to the Atlantic coast of the United States. There is *G. cingulatus* (Fig. 29) that occurs from Colombia to western Venezuela. Finally there is *G. garciai* (Fig. 54) that occurs from Honduras to Panama. When presented with three similar but allopatric forms, I think they should be considered a single polytypic species until objective means to distinguish them are found. I have left them as Vink defined them for the sake of

this paper.

Part XII

32. *Jaspidiconus mindanus* (Hwass in Bruguière, 1792)

Comments: It is a little difficult to understand Vink's concept of this species overall. He recognizes two subspecies. The nominate one, *Jaspidiconus mindanus mindanus* (Fig. 56), is a northern form that can occur in Bermuda, off the Atlantic coast of the United States from North Carolina to Florida. Vink also lists the Bahamas, the Virgin Islands, Martinique and Curacao. This subspecies often has a pinkish tinge to the color pattern and has a spire that is conical in shape not concave. The southern subspecies, *J. m. agassizii* (Fig. 57), tends to have more of a scalariform spire that is slightly concave in appearance. It also tends to have more browns in the color pattern. However, for both subspecies coloration is highly variable.

32. *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792)

(Fig. 56 and 58)

Synonymous names from Vink
Conus elventinus Duclos, 1833a
Conus cretaceus Kiener, 1845
Conus bermudensis Clench, 1942 (Fig. 55B)
Conus bermudensis lymani Clench, 1942 (Fig. 55C)
Conus verrucosus vanhyningi Rehder, 1944
Conus karinae Nowell-Usticke, 1968 (Fig. 55F)
Conus iansa Petuch, 1979

Range: Widespread throughout the Western Atlantic from Bermuda and off North Carolina to as far south as [the Bahamas and northern Caribbean].

Comments: This subspecies often has a pinkish tinge to the color pattern and has a spire that is conical in shape not concave. Although the subspecies are poorly delineated, they do seem to be reasonably easy to recognize.

I do not agree with Vink that *Jaspidiconus iansa* Petuch (Fig. 103C) is a synonym of *J. mindanus*. These two differ in shape. Specimens of *J. mindanus* have more of the shell length made up of the spire. In contrast, *J. iansa* has a longer body and a shorter spire. Most specimens of *J. iansa* are nodulose. In contrast, most non-pustulose specimens of *J. mindanus* are not nodulose. Moreover the nodules of *J. iansa* project more laterally than do those of *J. mindanus*.

There is an important error on page 34 of this part. The captions for Figure 3 were switched. The holotype of *Conus verrucosus vanhyningi* Rehder is actually the little knobby specimen on the right. The specimen of *C. mindanus agassizii* is on the left side of the illustration. This may have influenced subsequent authors in identifying the name *vanhyningi* with the conical smooth bodied pink shells from Florida (see *anaglypticus* below).

32A. *Jaspidiconus mindanus agassizii* (Dall, 1886)

(Fig. 55 & 57)

Range: A deep-water species occurring in the eastern Caribbean and off Brazil with records from off St. Croix, off Barbados and off Rio de Janeiro, Brazil

Comments: This southern subspecies tends to have more of a scalariform spire that is slightly concave in appearance. It also tends to have more browns in the color pattern. Vink also said that *Jaspidiconus mindanus agassizii* differs from *J. m. mindanus* in being less heavy, somewhat larger, and having more slender shell, spire producing an angle of 60 to 70 degrees (80 to 90 degrees in *J. m. mindanus*) and somewhat less concave whorls. Regardless there is considerable variation in shape and colors (Fig. 55).

33. *Jaspidiconus pusio* (Hwass in Bruguière, 1792)

(Figs, 59-61)

Synonymous names from Vink
Conus pusillus Lamarck, 1810 (Fig. 59C)
Conus minutus Reeve, 1844
Conus duvali Bernardi, 1862 (Fig. 59E)
Conus boubeeae G. B. Sowerby III, 1903 (Fig. 59D)

Range: Widespread in eastern Caribbean and along east coast of Brazil with records from Guadaloupe, Martinique, St. Vincent and states of Rio de Janeiro and Sao Paulo.

Comments: Vink identified *Jaspidiconus pusio* as 'purplish white, purple or pale tan background with reddish brown maculations and spiral rows of white and reddish brown.' I illustrate this sort of shell from Guadeloupe (Fig. 59A & B). The types of *J. pusillus*, *J. duvali*, and *J. boubeeae* are also such specimens (Fig. 59C-E).

Vink differentiated *J. pusio* from *J. mindanus*, which he said was larger than *J. pusio*, had a relatively lower spire than *J. pusio*, and had more concave whorl tops than *J. pusio*. He also maintained that *J. jaspideus* has carinated spire whorls but that *J. pusio* does not. Vink also recognized that *J. mindanus* and its relatives including *J. pusio* have two rows of spots on the whorl tops. One of these is along the suture and the other is along the shoulder angle. In *J. jaspideus*, only the row of spots along the shoulder angle is present. This trait is useful but not absolute. It can be said that *J. mindanus*, *J. pusio*, and *J. iansa* usually have two rows of spots, whereas *J. jaspideus*, as defined by me, usually has a single row. The species of *Perplexiconus* also have but a single row of spots.

This is not, however, the end of the story. *Jaspidiconus pusio* also occurs in Honduras (Fig. 60) and in Brazil (Fig. 61). Some of the Brazilian specimens (Fig. 61A & D) are typical *J. pusio* as defined by Vink and quite similar to the shells from Guadeloupe. Others are more divergent (Figs.61A, B, D, E; Fig. 59B, C). These shells have rounded shoulders. In contrast, the typical *J. pusio* have much more angular shoulders. They could be specimens of *J. damasoi* rather than *J. pusio* or even an as yet undescribed species.

34. *Jaspidiconus branhamae* (Clench, 1953)

(Fig. 62)

Range: Occurring in the northern and eastern Caribbean with records from the Bahamas, Jamaica and the Grenadine Islands (Mustique). Also reported from St. Croix and Antigua by Nowell-Usticke, 1968.

Comments: Many earlier authors placed *Jaspidiconus branhamae* as either a subspecies or form of *J. jaspideus*. Coomans et al. (1985) and Vink placed it closer to *J. mindanus*. Vink noted that the species as he defined it was sympatric with *J. mindanus* and did not intergrade with it. Consequently, Vink considered *J. branhamae* a full species. This argument is well reasoned but incorrect. The holotype of *J. branhamae* (Fig. 62C) is an unusually large specimen of *J. jaspideus* (shell length of 27.5 mm). A very similar specimen (Fig. 62A) from the Bahamas is also a large specimen of *J. jaspideus* (shell length of 24.8 mm). These large specimens change their shape from more conical juveniles. They become blockier because the body whorl broadens posterior to the anterior end of the shell. I selected a number of larger *J. jaspideus* that demonstrate this phenomenon for Fig. 62.

Part XIII

35. *Jaspidiconus anaglypticus* (Crosse, 1865)

(Figs. 63-65)

Addition suggested by Tucker
Conus verrucosus vanhyningi Rehder, 1944 (Figs. 63I & J, Fig.64B)

Range: Only known from the northern coast of Puerto Rico.

Comments: Vink (1984c) identified Crosse's species with a small red or pink cone shell from the Western Atlantic. He differentiated it from such species as *Artemidiconus selenae* and *Jaspidiconus jaspideus*. Unfortunately there was a printer's error in Part XII that may have seriously confused the issue (see above). In Vink's figure, the holotype of *Conus jaspideus vanhyningi* and a specimen of *J. mindanus agassizii* had their captions transposed. This may have led to misidentifications. I include Fig. 63 to help clarify these identities.

The pink colored *Jaspidiconus mindanus mindanus* from Pompano Beach (the type locality for *vanhyningi*) (Figs. 63A-G) are conical with only slightly convex sides. The whorl tops are usually concave in cross-section. Most specimens from the Atlantic coast of Florida also have the typical *J. mindanus* double row of spots on the whorl tops. One row is at the suture and the other at the shoulder angle. This double row is not present in every individual. The pink or red colored specimens of *J. vanhyningi* (Fig. 63H-J) have more convex sides, a flat whorl top and no spots on the shoulder or at the suture.

Specimens of *Jaspidiconus anaglypticus* are apparently not common. Those that I have received have been mixed with samples of *J. jaspideus* (Fig. 64). Florida specimens differ somewhat from the type (Fig. 65C). They seem to have larger more pronounced nodules than the type (Fig. 65A, B, D. E). However, they are similar to each other in other respects. These Floridian specimens that I identify as *J. anaglypticus* do not have spot rows, which are usually present in *J. jaspideus* and *J. mindanus*.

Vink in the previous part included *Conus verrucosus vanhyningi* as a synonym of *J. mindanus mindanus* (see species number 32 above). The holotype of Rehder's species (Fig. 63I & J; Fig. 64B) does not look like a *J. m. mindanus*. It differs from *J. m. mindanus* in the same ways that Vink pointed out for *J. anaglypticus.* It is a small, convex sided shell with flat whorl tops just like *J. anaglypticus* (Fig. 64D). Note also that the holotype of *vanhyningi* and the type of *anaglypticus* both have the interior of the aperture shaded yellow-orange. The specimen in Fig. 64C also has the interior reddish colored. I conclude that *Conus verrucosus vanhyningi* Rehder is a synonym of *Conus anaglypticus* Crosse.

36. *Artemidiconus selenae* (Van Moll, Tursch & Kempf, 1967)

(Fig. 66)

Synonymous name from Vink
Conus yemanjae Van Mol, Tursch & Kempf, 1967 (Fig. 66D)

Range: Restricted to the north and northeast coast of Brazil from off the state of Para to off the state of Sergipe

Comments: Vink (1984c) discussed this species in relation to *Jaspidiconus anaglypticus*. *Artemidiconus selenae* can be distinguished from all *Jaspidiconus* by the structure of the spire whorls. In the former there are two to three well-developed spiral cords throughout the length of the whorl tops. In contrast, cords are not present in any species of *Jaspidiconus*. The radulae of these two genera also differ (Tucker & Tenorio, 2009). The tooth of *Artemidiconus* is very simple (Fig. 124-24). This tooth is not divided into an anterior and posterior section and there is no shaft fold. The *Jaspidiconus* tooth has a posterior fold, a blunt shaft fold, and is differentiated into an anterior and posterior section (Figs. 124-21 to 23; Tucker & Tenorio, 2009).

37. *Gladioconus hieroglyphus* (Duclos, 1833b) (Fig. 67)

Synonymous name from Vink
Conus armillatus C. B. Adams, 1850 (Fig. 67D)

Range: Endemic to Aruba

Comments: This odd little species does appear to be endemic to Aruba as Vink thought. It looks something like *Artemidiconus selenae* in size and shape. However, *Gladioconus hieroglyphus* has pustulose ridges on the body not sulci. These two species are not related. They have different radulae (Tucker & Tenorio, 2009). The tooth of *G. hieroglyphus* has serrations and a terminating cusp (Fig. 124-5), whereas the tooth of *A. selenae* is a simple unstructured tube (Fig. 124-24).

38. *Purpuriconus explorator* (Vink, 1990a)

(Fig. 68A)

Range: Known from off the north coast of Jamaica with records from the type locality, off Bogue Islands and near Lucea.

Comments: Vink described this small *Purpuriconus* in Part XIII. It is among a large group of nominal taxa related to *P. cardinalis* and *P. magellanicus*. The spire whorls of *P. explorator* either do not have cords or have a single weak cord. This pattern is characteristic of *P. magellanicus*, a species Vink did not review. The broad squatly conical shell with dark brown coloration and convex sided spire identify this species.

Part XIV

39. *Perplexiconus puncticulatus*

(Hwass in Bruguière, 1792)

Comments: Vink recognized four subspecies. I have tried to match the illustrated specimens to the geographic locations specified by Vink. Of these four subspecies *Peplexiconus puncticulatus columba* has the widest recognition and is easiest to recognize. The other three are more similar to each other.

The genus *Perplexiconus* is related to *Jaspidiconus* (Tucker & Tenorio, 2009). Both genera have similar radular morphologies (Tucker & Tenorio, 2009). However, species of *Perplexiconus* have an anterior notch (Tucker, 1979). The structure is generated by a twist in the anterior end of the columella. This notch can be used to separate even juvenile *Perplexiconus* from *Jaspidiconus*.

39. *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792)

(Fig. 69)

Synonymous names from Vink
Conus mauritianus Hwass in Bruguière, 1792 (Fig. 69D)
Conus pygmaeus Reeve, 1844
Conus papillosus Kiener, 1845

Range: Widespread in the southern and eastern Caribbean and along the Caribbean coasts of Panama and Colombia.

Comments: Vink says that typical *Perplexiconus puncticulatus puncticulatus* is purplish white with spiral rows of purplish or brownish dots and purple or brownish axial flames (Fig. 69).

39A. *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792) (Figs. 70 & 71)

Synonymous name from Vink
Conus echinulatus Kiener, 1845

Range: Occurring on the islands off the coast of North America and in the eastern Caribbean, with most records from Aruba, Curaçao, Bonaire, Grenada, Marti-

nique, Guadeloupe, and Antigua

Comments: Vink stated that *Perplexiconus puncticulatus columba* differs from typical *P. p. puncticulatus* in being often proportionally wider at the shoulder and having more proportionally wider at the shoulder and having more pronounced widely spaced grooves anteriorly. Most specimens are completely white to blue-white (Tucker, 1977) (Fig. 70). Juveniles may have brown axial flames (Fig. 71)

39B. *Perplexiconus puncticulatus millepunctatus* (Röding, 1798)

(Fig. 72)

Synonymous name from Vink
Conus scaber Link, 1807

Range: restricted to the coast of eastern Venezuela and the continental islands of Trinidad and Tobago.

Comments: This subspecies differs from the nominate race in being somewhat larger and having more close-set spiral of small light brown dots and dashes. There are no conspicuous axial flames.

39C. *Perplexiconus puncticulatus cardonensis* (Vink, 1990b)

(Fig. 73)

Range: Probably restricted to the peninsula of Paraguaná, Venezuela, with records from Punta Cardòn, El Pico, Punta Macolla, and Adicora.

Comments: Vink described this subspecies in this part of the series. He said that it differs from typical *Perplexiconus p. puncticulatus* in being smaller with a lower straight-sided spire. The shoulder is not rounded but bluntly angled, and the spiral lines often have fewer dots than in typical *P. p. puncticulatus*. Conspicuous flames are not present.

Part XV

Introduction of Part XV

In this final published part of the series Vink introduced five taxa. All of these are related to each other. In earlier parts such taxa were classified a subspecies. In these five instances all of the taxa are more or less allopatric with each other. I list them as Vink did but consider them all to be subspecies of a single polytypic species, *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791).

40. *Jaspidiconus jaspideus* (Gmelin, 1791) (Fig. 74)

Synonymous names from Vink
Conus verrucosus Hwass in Bruguière, 1792
Conus corrugatus G. B. Sowerby II, 1870 (Fig. 74F)

Range: Occurring on the continental shelf area of the north coast of South America with records from Colombia (Guajira Peninsula), Venezuela, Trinidad, and Brazil (States of Amapà and Cearà).

Comments: Vink in this part designated a neotype (Fig. 74G). There is some debate on the validity of this action since Clench (1942) had previously designated a representative of the lectotype. Kohn & Vink (2006) proposed to preserve the name by selection of the neotype. This neotype was collected off Trinidad and consequently *Jaspidiconus jaspideus* is applicable to southern populations including those in Brazil. Specimens of this form tend to be sulcate to the shoulder with rows of pustules on the body. Their colors are brighter than those of the other forms.

41. *Jaspidiconus pealii* (Green, 1830) (Fig. 75)

Range: Found in colonies along the Florida Keys [and the Bahamas], but also on the west Coast of Florida.

Comments: This form is equivalent to *Conus jaspideus* from Florida and the Bahamas. It does not occur on the west coast of Florida. *Jaspidiconus stearnsii* replaces it there. This form, *J. jaspideus pealii,* tends to be more squatly shaped than the other forms that Vink recognized. The coloration tends to be browns and whites without the blue and pink shades of *J. jaspideus* (s.s.).

42. *Jaspidiconus stearnsii* (Conrad, 1869) (Fig. 76)

Synonymous name from Vink
Conus sticticus A. Adams, 1855

Range: Mainly found on the west coast of Florida but also at Key West

Comments: Vink included Key West in the range of this form, in error, I think. Key West is inhabited by *Jaspidiconus pealii* not *J. stearnsii*. Vink included Key West due to the type locality of *Conus sticticus*. *Conus sticticus* is not a synonym of *J. stearnsii* but instead is a junior synonym of *J. pealii*. Many *Jaspidiconus* south of Goodland, Florida have the look of *J. stearnsii*. These are likely intergrades. Vink's concern that *sticticus* could be revived to replace *stearnsii* is not warranted.

Jaspidiconus stearnsii is an elongated form. The regularly spaced interrupted spiral lines of dark dashes and opaque white dashes are characteristic. Unlike other taxa discussed in this part, these markings are thin and discrete even as they cross lighter colored areas.

43. *Jaspidiconus nodiferus* (Kiener, 1845) (Fig. 77)

Synonymous name from Vink

Conus pseudojaspideus Nowell-Usticke, 1968

Range: Occurring on the Greater Antilles (Cuba, Haiti, Dominican Republic, Puerto Rico, and in the eastern Caribbean (Mustique, Carriacou).

Comments: These shells are similar in many ways to *Jaspidiconus pealii*, which occupies areas to the north. Some of these shells have spires that are not scalariform (Fig. 77C & D). Such morphology is unusual in *Jaspidiconus*. This form and *J. pealii* generally do not have interrupted spiral lines.

44. *Jaspidiconus acutimarginatus* (G. B. Sowerby II, 1866) (Fig. 78)

Range: Probably restricted to the beaches of eastern Venezuela and nearby archipelago.

Comments: I do not have any specimens from eastern Venezuela but those from Honduras also likely belong to *Jaspidiconus acutimarginatus*. Morphologically this form is closest to *J. jaspideus.* Distinguishing the two is difficult if not impossible.

Summary of Part XV

As I noted above I believe that these five taxa are part of a polytypic species, *Jaspidiconus jaspideus*. I would simplify Vink's classification pending molecular study. I think there are three subspecies not five species. First, there is the southern form: *J. j. jaspideus* (Gmelin, 1791). *Jaspidiconus acutimarginatus* is a synonym of the nominate race. The subspecies ranges from Brazil along the South American coast to Central America and Honduras. It has interrupted spiral rows of bright white markings. Then there is the northern form, *J. j. pealii*. *Jaspidiconus nodiferus* is a synonym. The subspecies ranges from Florida and the Bahamas into the Caribbean. These shells tend not to have development of interrupted spiral lines or rows of bright white dashes. Rather they are squat shells. Finally, there is the Gulf coast subspecies, *J. j. stearnsii*. This subspecies is elongated and has interrupted spiral lines made up of thin brown and white dashes. This is the only form that commonly has two rows of spots on the spire whorls. Unlike most *Jaspidiconus jaspideus*, *J. j. stearnsii* occasionally has a row of spots along the suture.

Likely valid species not covered by Vink

Introduction

In this portion of the paper, I intend to continue with species that Vink did not include in his 15 parts.

Species

45. *Conasprelloides penchaszadehi* (Petuch, 1986a)

(Fig. 79C)

Range: Colombia

Comments: Tucker & Tenorio (2009) classified this poorly known species as a *Conasprelloides*. The description is so inadequate that even this identification to genus is uncertain. I have not examined the holotype except for photographs but the few clues given in the description suggested *Conasprelloides*. The periostracum is said to be thick and brown with spiral rows of tufts. Such a periostracum eliminates *Gradiconus*, which have smooth periostraca. The body ornamented with ridges certainly is consistent with *Conasprelloides* but does not eliminate *Gladioconus*. The protoconch appears to be paucispiral, which would eliminate *Gladioconus*.

Some collectors are identifying a *Gradiconus* as this species. This is incorrect. These shells are also being identified as *Conus commodus* A. Adams, 1855. Coomans et al. (1985) reproduced the type figure of *C. commodus* but considered it unidentifiable. It certainly is not the West Alantic shell currently being identified by collectors as *C. commodus*. The figure shows a shell that has nearly straight sides and whose sulci stop on the anterior third of the shell. These are not features of the West Atlantic species. The West Atlantic species is actually *Gradiconus tristensis* (see Fig. 95D, Figs. 95E-G).

46. *Dalliconus sauros* (Garcia, 2006) (Fig. 49C)

Range: Western Gulf of Mexico, from the mouth of the Mississippi River west to Alaminos Canyon, Texas and south to Bahía de Campeche, Mexico.

Comments: I added this newly described species. I think more work needs to be done to prove that this is not a synonym of *Dalliconus armiger*. However, Garcia (2006) showed that the new species is narrower bodied (shell width/shell length = about 0.37) than is *D. armiger* (shell width/shell length = over 0.40). Supposed differences in spire whorl top structure vary and do seem reliable to me. *Dalliconus sauros*, however, does seem to have much larger nodules than does *D. armiger*.

47. *Dalliconus mazei* (Deshayes, 1874)

(Fig. 80A)

Range: Caribbean

Comments: This species is one of the classic rarities of the Caribbean. The rarity no doubt reflects the deep water habitats that this species occupies. *Dalliconus lenhilli* is obviously closely related to *D. mazei*. However, the former species has almost no color pattern and enlarged nodules, whereas the nodules of *D. mazei* are petite and the spotted color pattern is characteristic.

48. *Dalliconus lenhilli* (Cargile, 1998b)

(Fig. 80B)

Range: deep water (400 m+) off the Turks & Caicos Islands

Comments: *Dalliconus lenhilli* is poorly known likely reflecting the depth of occurrence. It seems to be recognizable by spire structure (large nodules) and coloration (reduced or no coloration).

49. *Dalliconus mcgintyi* (Pilsbry, 1955) (Fig. 81)

Synonyms:
Conus roberti Richard, 2009

Range: Gulf of Mexico and Caribbean

Comments: The nomenclatural history of this species is not good. It has been associated with *Dalliconus mazei* (called a subspecies or form) or with *D. rainesae* (Filmer, 2001). Walls (1979) considered *D. mazei* (Fig. 80), *D. mcgintyi* (Fig. 81), and *D. rainesae* (Fig. 82) all synonyms. They certainly are all congeneric (Tucker & Tenorio, 2009). *Dalliconus mcgintyi* has a blotchy pattern not the spotted pattern of *D. mazei*. I have not seen specimens that look to be intergrades. The small cone, *D. rainesae* also has a spotted pattern but it has the anterior end shaded brown, a feature not common for the other species.

Recently, a Brazilian member of this complex was described, *Dalliconus roberti*. These shells are like *D. mcgintyi* in that the pattern is blotchy. At present, I see no means to distinguish these from *D. mcgintyi*.

Some authors emend the name *mcgintyi* to *macgintyi*. This is not a justifiable emendation and the name should be spelled *mcgintyi*.

50. *Dalliconus rainesae* (McGinty, 1953)

(Fig. 82)

Range: Florida and Bahamas to Mexico

Comments: Most specimens of this species have spiral rows of brown spots in the color pattern (Fig. 82A-D) (also see Richard, 2009). This is a small delicate species.

51. *Dalliconus pacei* Petuch, 1987

(Figs. 123B, C)

Synonym:
Conus (Asprella) kremerorum Petuch, 1988* (Fig. 123A)

Range: Bahamas to Mexico

Comments: This species resembles *Dalliconus sauros* in shell shape. However, the nodules are small and closely spaced unlike the large pronounced nodules in *D. sauros*.

52. *Dauciconus lightbourni* (Petuch, 1986b)

(Fig. 83)

Range: Known from Bermuda.

Comments: This Bermuda endemic is close to *Dauciconus amphiurgus* (Fig. 6). Tucker (2008) reviewed *D. amphiurgus* and *D. lightbourni*. The simplest way to distinguish the two is by the spire profile. It is concave in *D. amphiurgus* and more flat sided in *D. lightbourni*. This produces longer shells at any particular shell width in *D. lightbourni* as compared to *D. amphiurgus*.

53. *Dauciconus goajira* (Petuch, 1992b)

(Fig. 84)

Synonym:
Conus vikingorum Petuch, 1993a

(Fig. 84A)

Range: Colombia

Comments: At first glance this species appears to be a mostly white variant of *Dauciconus daucus*. Like that species, *D. goajira* has a concave depressed spire, which has well developed cords on the whorl tops. The protoconch is multispiral. These are traits of *Dauciconus*. The

primary difference between *D. goajira* and *D. daucus* is the more swollen shoulder of *D. goajira* along with the pale colors.

54. *Dauciconus eversoni* (Petuch, 1987)

(Fig. 79A)

Range: Honduras to Venezuela

Comments: The holotype of this species has the shell badly broken with the lip completely removed. This gives it the appearance of a long narrow bodied shell. However, this may be an illusion due to the shell breakage. It certainly is a *Dauciconus* and has the characteristic cords on the whorl tops (Fig. 79A center) and a multispiral protoconch. It is closest to *D. sanderi* and the spire coloration looks like *D. sanderi* and not *D. daucus*. Only more complete topotypic specimens will allow positive identification of this form.

55. *Gladioconus binghamae* (Petuch, 1987)

(Fig. 85)

Range: Florida and possibly Colombia

Comments: Petuch's *Gladioconus binghamae* is related to *G. patae* (see Fig. 43). Petuch differentiated *G. binghamae* from *G. patae* by noting the color pattern of *G. binghamae* and the lack of axial ribs in *G. binghamae*. Generally *G. patae* do have simpler color patterns but in cone shells these things vary. Moreover, Humpfrey (1975) noted that axial ribs were well developed in 70% of specimens from Jamaica. This means that 30% did not have them. I consider this taxon a provisionally valid species but in need of study of larger samples of *G. patae* and *G. binghamae* to establish objective means to differentiate them.

Petuch described *Gladioconus binghamae* from specimens collected in deep water off Broward County, Florida. I have a specimen from Colombia (Fig. 85B), that appears to be this species. *G. binghamae* may have a wider range than previously thought.

56. *Gladioconus granulatus* (Linné, 1758) (Fig. 86)

Synonyms:
Cucullus antillarum Röding, 1798
Conus granulatus espinosai Sarasua, 1977, subspecies
Conus laetus Gmelin, 1791
Conus roseus Fischer von Waldheim, 1807
Conus verulosus Hwass in Bruguière, 1792
Conus ignotus Cargile, 1998

Range: Florida and Caribbean

Comments: The Glory of the Atlantic cone is well known but some of the variations have been troublesome. This particularly involves specimens with reduced body ornamentation. The body can be ornamented by deep sulci (see Fig. 86C, the lectotype). Others have moderately developed ridges and sucli (Figs. 86A-B). Still, others are essentially smooth bodied. They do, however, retain the bright colors and usually have yellow colored early whorls. The first name given to these was *G. espinosai* Sarasua. *Gladioconus ignotus* is another example.

57. *Gladioconus glenni* (Petuch, 1993b)

(Fig. 87)

Range: Caribbean Panama

Comments: This small cylindrical species is distinctive with its orange coloration and ornamented body whorl. At present the range seem remarkably restricted.

58. *Gladioconus ritae* (Petuch. 1995)

(Fig. 88A)

Range: Honduras

Comments: This species is apparently quite rare. It is similar in color to *Gladioconus glenni* but differs in shell shape and ornamentation. *G. ritae* has a broadly rounded cylindrical shell shape and is not ornamented with minute ridges that reach the shoulder as is *G. glenni*.

59. *Gladioconus cuna* (Petuch, 1998a)

(Fig. 88B)

Range: Caribbean Panama

Comments: This species and *Gladioconus glenni* are sympatric. *Gladioconus cuna* looks like *G. glenni* except in coloration. The former species is purplish in shade compared to *G. glenni*'s orange coloration. I consider *G. cuna* only provisionally valid and it could well prove to be a color form of *G. glenni*.

Besides its similarity to *Gladioconus glenni*, *G. cuna* also resembles *G. mus* (Fig. 89). However, the latter species has much more pronounced shoulders and is broader bodied than is *G. cuna*.

60. *Gladioconus mus* (Hwass in Bruguière, 1792)

(Fig. 89)

Range: Florida and Gulf of Mexico to West Indies

Comments: The most amazing thing about this species is that despite its variability in color and shape (Fig. 89) there are no synonyms. With the nodules and ridges on the body whorl it is easy to identify.

61. *Gradiconus sunderlandi* (Petuch, 1987)

(Fig. 90)

Range: Honduras.

Comments: *Gradiconus sunderlandi* is an odd looking shell. It cannot be a *Dauciconus* because its whorl tops do not have cords beyond the first two or three whorls. It has the look of a *Spuriconus* but the spire is not correct. Tucker & Tenorio (2009) put it in *Gradiconus*, which is where I leave it. It is apparently seldom encountered despite occurring in shallow water. This is remarkable because it is a fairly large and attractive shell.

62. *Gradiconus bayeri* (Petuch, 1987)

(Fig. 91)

Range: Colombia to Panama

Comments: A small species somewhat resembling *Gradiconus anabathrum*. It is, however, a more slender species than *G. anabathrum*. It also resembles an odd species that Petuch named *Gradiconus parascalaris* (Fig. 102B). Both species have scalariform spires and obviously both are species of *Gradiconus*. However, the spire whorl tops of *G. bayeri* slope towards the suture with the next whorl at a smaller angle. In *G. parascalaris* the whorl top slope is nearly 90 degrees.

63. *Gradiconus portobeloensis* (Petuch, 1990)

(Fig. 92)

Synonym:
Conus paschalli Petuch, 1998b

Range: Nicaragua

Comments: Unlike *Gradiconus bayeri*, *G. portobeloensis* is a larger species. It is probably better known as *G. paschalli* but there is really no difference between the type specimens of *G. paschalli* (Fig. 92A) and that of *G. portobeloensis* (Fig. 92B). This species could also be confused with *Dauciconus sanderi* (see Figs. 11A & B). However, that species like all *Dauciconus* has cords on

the whorl tops and a multispiral protoconch. Cords are present only on the earliest spire whorls of *Gradiconus* and they have paucispiral protoconchs.

64. *Gradiconus ernesti* (Petuch, 1990)

(Figs. 93 & 94)

Synonyms:
Conus brunneofilaris Petuch, 1990* (Fig. 93A)
Conus rosemaryae Petuch, 1990* (Fig. 93C)

Range: Panama

65. *Gradiconus tristensis* (Petuch, 1987)

(Fig. 95)

Range: Venezuela

66. *Gradiconus gibsonsmithorum* (Petuch, 1986a)

(Fig. 98-100)

Synonyms:
Conus aureopunctatus Petuch, 1987 (Fig. 98A)
Conus paulae Petuch, 1988* (Fig. 98A)

Range: Venezuela and Colombia

Comments: *Gradiconus ernesti* (Fig. 93B, Figs. 96, 97), *G. tristensis* (Fig. 95D, Figs. 95E-G), and *G. gibsonsmithorum* (Figs. 95A-C, Fig. 98C, Figs. 99, 100) are almost certainly the same species and belong to a complex of *Gradiconus* species that include *G. largillierti* (Figs. 23, 24), *G. anabathrum (*Figs. 30-32), *G. sennottorum* (Fig. 22), *G. garciai* (Fig. 54), and *G. cingulatus* (Fig. 29). Of these *G. largillierti*, *G. sennottorum*, and *G. garciai* appear to be subspecies of a single polytypic species (see above). One species, *G. anabathrum* is sympatric with *G. largillierti* and is a valid species. The other small species resemble young *G. largillierti* (see Fig. 24) but are distributed in the southern Caribbean. Three species (*G. ernesti*, *G. tristensis*, and *G. gibsonsmithorum*) may be juveniles of an as yet undiscovered adult form.

I divided these into three species based only on distribution. One occurs in Panama and the other two in Venezuela and Colombia. They range in shape from conical to turnip shaped. Coloration varies from white with yellow or brown spots and blotches (typical of *gibsonsmithorum* and *tristensis*) to shells with brown bands and spiral lines (more typical of *ernesti*). A series of specimens all from Portobelo Bay, Panama are illustrated in Figs. 96 and 97. The most reasonable hypothesis is that despite the variation these are all specimens of a single species. These species are also closely related to *Gradiconus regularis* from the Eastern Pacific (Fig. 101). For instance compare the specimen in Fig. 96E to the *G. regularis* in Fig. 101. Generally, though specimens of *G. regularis* are larger than the West Atlantic shells and the spires are shorter in *G. regularis* than they are in the West Atlantic species.

67. *Gradiconus paraguana* (Petuch, 1987)

(Fig. 102A)

Range: Venezuela

Comments: *Gradiconus paraguana* is an odd looking species. It is closest to *G. cingulatus* but the spire of *G. paraguana* is conical not concave as it is in *G. cingulatus*. Moreover the shoulder does not seem to be carinate, whereas *G. cingulatus* has a carinate shoulder particularly in small specimens. The holotype of *G. paraguana* is afterall only 18 mm long.

68. *Gradiconus parascalaris* (Petuch, 1987)

(Fig. 102B)

Range: Venezuela

Comments: This interesting little shell is nearly identical to the Panamic species *Gradiconus scalarissimus* (Figs. 102C & D). It is not like any previously described West Atlantic species that I am familiar with. It is always possible that this shell came from a population that was introduced into the West Atlantic from the East Pacific (see *Kohniconus species*, below). However, without genetic studies this is useless speculation. Rather one has to conclude that *G. parascalaris* is the Atlantic cognate of *G. scalarissimus* (da Motta, 1988)

69. *Jaspidiconus iansa* (Petuch, 1979)

(Figs. 103 & 104)

Additions suggested by Tucker
Conus bodarti Coltro, 2004 (Fig. 104A)
Conus delucai Coltro, 2004 (Fig. 104B)
Conus schirrmeisteri Coltro, 2004 (Fig. 104C)

Range: Occurs off islands of the Brazilian coast.

Comments: This species is not the same as *Jaspidiconus mindanus*. Vink (1983) and I (Tucker, 1984) were both incorrect in synonymizing it with *J. mindanus*. The poor condition of the holotype made initial identification difficult. Once more specimens became available, the distinctiveness of the species became clear. The names that I list as synonyms (see Fig. 104) are not distinguishable from typical *J. iansa* (see Fig. 103). There is considerable variation in shell shape but this is not unusual in species of *Jaspidiconus*.

70. *Jaspidiconus damasoi* (Cossignani, 2007)

(Fig. 60C)

Range: Brazil to Honduras.

Comments: In coloration this species is extremely variable ranging from pink to black. Usually the shell has a pattern of blotches on a white background. The body is sulcate. The shoulders are rounded. The type locality is Ceará, Brazil, in 30-40 m.

The type specimens of this species and others that I have seen do not seem to have the row of spots along the suture (Fig. 60C). The Honduran (Fig. 60A, B, D, E) and Brazilian (Fig. 61 B & C) shells that may be this species do have both the suture and shoulder rows (see Fig. 60A, B, & D but no suture row for E).

71. *Jaspidiconus rachelae* (Petuch, 1988)

(Figs. 58E & 105)

Range: Venezuela to Brazil

Comments: This deep-water species is related to *J. mindanus*. It could be a variant of *J. mindanus* (Fig. 58 and 58E). Regardless it is a more slender graceful shell than is typical *J. m. mindanus* (Fig. 58A-D) or *J. m. agassizii* (Fig. 58F-I). Vink did not illustrate this variant, which I believe occurs throughout the southern Caribbean and Brazil.

72. *Kohniconus delessertii* (Récluz, 1843)

(Fig. 106)

Synonym:
Conus sozoni Bartsch, 1939

Range: Bermuda, South Carolina to Key West and the Gulf of Mexico

Comments: *Kohniconus delessertii* is a well-known species that is unlikely to be confused with any other West Atlantic species. Besides differences in radular morphology (Tucker & Tenorio, 2009; compare Figs. 124-17 & 18 to Figs. 124-1, 3, 14, & 15), *Kohniconus species* differ from *Gradiconus* in having the nodules on the early spire whorls better developed.

73. *Kohniconus centurio* (Born, 1778)

(Fig. 107)

Synonyms:
Conus centurio antillensis Sander, 1982b, variety, an unavailable form name
Conus bifasciatus Gmelin, 1791
Conus centurio caribaensis Nowell-Usticke, 1968, form, an unavailable form name
Conus centurio cruzensis Nowell-Usticke, 1968, form, an unavailable form name
Conus tribunus Gmelin, 1791
Conus woolseyi M. Smith, 1946

Range: Caribbean to Brazil

Comments: Like *Kohniconus delessertii*, *K. centurio* is also well known among collectors. Most of the synonyms are form names and of no consequence nomenclaturally. This species and *K. delessertii* are closely related. They also seem to be allopatric with each other. They could always be subspecies of a single polytypic species. However, at present no clear intergrade zone is known. The pattern of yellow bands and longitudinal markings are unique to *K. centurio* just as the pattern of spiral row of spots and yellow bands are unique to *K. delessertii*.

74. *Kohniconus species*

(Fig. 108A-C)

Range: Yucatan to Colombia

Comments: Similar to *Gradiconus parascalaris*, this species seems to have its closest relative (*Kohniconus arcuatus* Figs. 108D-F) in the East Pacific region. The West Atlantic species probably is not the same species as the East Pacific one. The former species has a longer spire and narrower body that does the very similar *K. arcuatus*. Without molecular study, there is no way to determine whether this is a cognate species or an introduced population. I know of no name based on these West Atlantic shells. The most similar looking species is *Jaspidiconus rachelae* (Fig. 105). However, that species has a paucispiral protoconch, whereas the *Kohniconus* has a multispiral one. The color patterns are also different. The *Kohniconus species* has scattered brown markings on white, whereas the *Jaspidiconus* has blotches and interrupted spiral lines over a tan to pinkish-white ground color. This species cannot be a *Conasprelloides villepinii* relative because it does not have cords on the whorl tops. *C. villepinii* has 2 to 4 cords that reach middle spire whorls or even persist.

75. *Purpuriconus cardinalis* (Hwass in Bruguière, 1792)

(Figs. 109 & 110)

Synonyms:
Conus dianthus G. B. Sowerby III, 1882 (Fig. 109B)
Conus exquisitus G. B. Sowerby III, 1887
Conus harasewychi Petuch, 1987 (Fig. 109F)
Conus (Purpuriconus) lucaya Petuch, 2000 (Fig. 109E)
Conus lubeckianus Bernardi, 1861 (Fig. 109D)
Conus maculiferus G. B. Sowerby II, 1833 (Fig. 109C)
Conus speciosissimus Reeve, 1848
Conus speciosus G. B. Sowerby II, 1857
Conus (Purpuriconus) rosalindensis Petuch, 1998a* (Fig. 109G)

Range: Florida, Gulf of Mexico, and Caribbean

Comments: For some reason red cones seem to make malacologists loose their minds. The motto seems to be describe them if you got them. I list a number of *Purpuriconus* species as valid below. However, I have little faith that all these are valid species. Instead they may be variants of just two species. These two are *P. cardinalis* and *P. magellanicus*. These two cones can come in essentially any color but red is common. They vary extensively in shell shape.

The *Purpuriconus cardinalis* group (*sphacelatus* (Figs. 112 & 113), *richardbinghami* (Fig. 117), *arangoi* (Fig. 118), *kulkulcan* (Fig. 119E), *velaensis* (Fig. 120C), and *hennequini* (Figs 68B-E)) are characterized by well developed nodes at least into the middle spire whorls or they can persist. Cords are absent beyond the earliest spire whorls. The spires are somewhat elevated. See the next species for the traits identifying the group.

The shells that I identify as *Purpuriconus cardinalis* are somewhat longer bodied. The body usually is convex near the shoulder but contracts towards the anterior end. Colors are usually shades of red but this may vary. *P. cardinalis* differs from *P. sphacelatus* and *P. kulkulcan* in spire structure. Both of the latter species have scalariform spires. *P. richardbinghami* usually has a flat spire and the white markings are bright opaque white compared to the more normal white of *P. cardinalis*. *P. velaensis* has a long narrow body not the more conical one of *P. cardinalis*. Finally, *P. hennequini* is pastel colored and has coloration reduced except for at the spire and midbody.

76. *Purpuriconus magellanicus* (Hwass in Bruguière, 1792)

(Fig. 111)

Synonyms:
Conus cidaris Kiener, 1845
Conus flammeacolor Petuch, 1992b* (Fig. 111E)
Conus ornatus G. B. Sowerby II, 1833

Range: Gulf of Mexico and Caribbean

Comments: The *Purpuriconus magellanicus* species group (*explorator* (Fig. 68A), *kalafuti* (Fig. 114), and *havanensis* (Figs. 115 & 116) contains shells that can be of any color. The shell shape is usually short conical to cylindrical. The spires are often low and depressed. Nodules may persist or they may fade out early. There usually is a single cord that dies out in middle spire whorls.

The shells I place in this species are short conical ones with a low conical spire (Fig. 111). Their coloration is variable. The other species in the *P. magellanicus* group have lower often depressed spires.

77. *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833)

(Figs. 112 & 113)

Synonyms:
Conus inconstans E A Smith 1877 (Fig. 112F)
Conus regius abbotti Clench, 1942, subspecies (Fig. 112B)
Conus theodorei Petuch, 2000 (Fig. 112E)
Conus (Purpuriconus) stanfieldi Petuch, 1998a (Fig. 112A)
Conus jucundus G. B. Sowerby III, 1887* (Fig. 112D)

Range: Bahamas to Cuba

Comments: This species is most similar to *Purpuriconus kulkulcan* (Fig. 119). Both have scalariform spires and slightly elongate conical shell shape. However, *P. kulkulcan* has a simpler color pattern and usually has little in the way of longitudinal elements. *P. sphacelatus* usually does have some sort of longitudinal markings.

In the past collectors have used *Purpuriconus jucundus* for this species. However, the types of *P. sphacelatus* (Fig. 112C) and that of *P. jucundus* (Fig. 112D) are quite similar. I do not think that two taxa can be maintained.

78. *Purpuriconus hennequini* (Petuch, 1993a)

(Fig. 68B & C)

Synonym
Conus (Purpuriconus) edwardpauli Petuch, 1998a (Fig. 68E)

Conus magnottei Petuch, 1987* (Fig. 68D)

Range: Caribbean, type locality is 2 m, near La Vauclin, Martinique

Comments: *Purpuriconus hennequini* is another *P. magellanicus* relative. The spire is concave and the nodules are reduced. Cords are not present on the whorl tops. The coloration is a very muted pinkish white with brown markings on the whorl tops and at midbody.

79. *Purpuriconus kalafuti* (da Motta, 1987)

(Fig. 114)

Range: Honduras to the central Caribbean

Comments: The depressed spire is characteristic of this species. It also has spire whorls that are distinctly concave in profile. Other *Purpuriconus* have flat or slightly convex spire whorls.

80. *Purpuriconus havanensis* (Aguayo & Farfante, 1947)

(Figs. 115 & 116)

Synonym:
Conus bessei Petuch, 1992b* (Fig. 115B)
Conus (Magelliconus) deynzerorum Petuch, 1995* (Fig. 115C)
Conus kirkandersi Petuch, 1987 (Fig. 115A)
Conus olgae Bacallado, Espinosa & Ortea, 2007 (Fig. 115D)
Conus sahlbergi da Motta & Harland, 1986*
Conus colombianus Petuch, 1987 (115G

Range: Mexico to Honduras

Comments: These little cone shells (usually less than 25 mm) have drawn a great deal of attention from malacologists. They actually are rather nondescript looking shells that often have a reduced color pattern. The color pattern may be all or nearly all white. Some specimens do have attractive color patterns. I have shown the types for most of the species that I list as synonyms. The spire whorl tops of *P. havanensis* are flat to slightly convex allowing them to be separated from *P. kalafuti*.

81. *Purpuriconus richardbinghami* (Petuch, 1993a)

(Fig. 117)

Synonyms:
Conus caysalensis L. Raybaudi and Prati, 1994

Range: Bahamas

Comments: The color pattern of this species is quite striking. Most specimens are extremely bright red in coloration. They then have remarkable bright opaque white markings on this striking red color. Some P. *cardinalis* have the same shades of red but not the white markings. Besides the coloration most *P. richardbinghamae* have depressed often nearly flat spires.

82. *Purpuriconus arangoi* (Sarasua, 1977)

(Fig. 118)

Synonyms:
Conus alainallaryi Bozzetti & Monnier, 2009? (Fig. 118B, C)
Conus hilli Petuch, 1990 (Fig. 118D)

Range: Cuba, Bahamas, and central Caribbean to Panama

Comments: *Purpuriconus arangoi* is very poorly known. It has seldom been illustrated. The best illustration I know of is the one in Abbott (1974). The specimen shown in Fig. 118A is similar to the one Abbott illustrated. Lozet & Pétron (1977) illustrated a shell (their Fig. 192a) that they identified as *Conus abbotti*. This is actually a specimen similar to Abbott's specimen

of *P. arangoi* and the one illustrated in my Fig. 118A. Such specimens do bring up an interesting observation. Large specimens of *P. sphacelatus* do become more *P. arangoi* like as they get big.

This species has an unusual body shape for a *Purpuriconus*. It is broad at the shoulders with a convex portion of the body whorl on the posterior half of the shell. It then tapers to a narrow anterior end. The shoulders are rounded. The two species that I consider synonyms have this shape but vary in coloration. There is a chance that this species is a *Dauciconus* species that is related to *D. amphiurgus*. However, the color pattern does not resemble most *Dauciconus*. If it is a *Dauciconus*, there will be well developed spiral cords on the whorl tops.

83. *Purpuriconus kulkulcan* (Petuch, 1980b)

(Fig. 119)

Synonyms
Conus (Purpuriconus) donnae Petuch, 1998a (Fig. 119F)
Conus (Magelliconus) zylmanae Petuch, 1998a* (Fig. 119G)

Range: Bahamas to Honduras

Comments: The spire of this species is scalariform, which is unusual for *Purpuriconus*. It is most similar to *P. sphacelatus* as both have scalariform spires. Usually color patterns of *P. kulkulcan* are simple compared to *P. sphacelatus*. These two species are likely sympatric in the Bahamas.

84. *Purpuriconus velaensis* (Petuch, 1993a)

(Fig. 120C)

Synonyms:
Conus (Magelliconus) jacarusoi Petuch, 1998a* (Fig. 120B)
Conus (Purpuriconus) ortneri Petuch, 1998a* (Fig. 120A)

Range: Bahamas to Honduras

Comments: These red cones all have low conical spires. The feature that may separate this species from other *Purpuriconus* species is the elongated body whorl.

85. *Purpuriconus pseudocardinalis* (Coltro, 2004)

(Fig. 79B)

Range: Abrolhos Archipelago, off Alcobaça, Bahia, Brazil

Comments: Were the holotype not from Brazil, I would consider it a simple synonym of *Purpuriconus cardinalis*. Like other *P. cardinalis* it has fairly pronounced nodules and the typical reddish orange coloration. However, the holotype of *P. pseudocardinalis* was collected in Brazilian waters, which is well south of the known range of *P. cardinalis*. Other than geographic considerations the Brazilian species is identical to *P. cardinalis* in conchological traits. Molecular study certainly would help place this form into context with other *Purpuriconus*.

86. *Seminoleconus harlandi* (Petuch, 1987)

(Fig. 121)

Range: Apparently endemic to Honduras.

Comments: Vink did not discuss this species. He likely knew of it. *Seminoleconus harlandi* is another continental form with a restricted range. Its coloration pattern resembles the sort found in *S. m. granarius*. This Honduran species may be a divergent subspecies of *S. mappa*. Tucker & Tenorio (2009) listed it as a valid species with some justification.For instance intergrade populations between *S. m. granarius* and *S. harlandi* are unknown. The shell is narrow and elongated. The spire is

not much elevated and the whorls are not scalariform. The nodules also fade in the early spire whorls. These are not traits common to *S. mappa* or *S. cedonulli*.

87. *Seminoleconus duffyi* (Petuch, 1992a)

(Fig. 40F)

Range: Honduras to Venezuela.

Addition suggested by Tucker
Conus julieandreae Cargile, 1995* (Fig. 42C)

Comments: This species is another like *Seminoleconus curassaviensis* and *S. pseudaurantius* that have rounded sides and rather short squat looking shells. I know of no good way to distinguish it from *S. curassaviensis* or *S. pseudaurantius* except for locality. I consider *duffyi* a subspecies of *S. curassaviensis*.

Seminoleconus julieandreae is based on small shells (see Figs. 42A-C). Specimens of *S. julieandreae* (Fig. 42A-C) are compared to juvenile *S. c. curassaviensis* in Fig. 42E. These specimens are not distinguishable from each other. The traits used to separate *S. julieandreae* from other *Seminoleconus* such as the scalariform spire, the ridges interconnecting the nodules are juvenile traits present in all of these taxa. As the snail grows the spire is eroded away leaving little trace of its earlier morphology. The taxa *S. c. duffyi* and *S. julieandreae* are synonyms.

88. *Spuriconus lindae* (Petuch, 1987)

(Fig. 122)

Range: Known from deep water (240 m) off the Bahamas.

Comments: This species is the only other extant member of *Spuriconus* besides *S. spurius*. Tucker & Tenorio (2009) classified this species as a *Spuriconus* because the spire has no nodules and no cords. These are traits of *Spuriconus*. Obviously a radular study would confirm placement here if the species had an elongated radular tooth similar to that of *S. spurius* (Fig. 124-26). Tucker (2009) reviewed *S. lindae* in detail.

Table 1. Conid Taxa covered by Vink

Taxon	Part citation
Part I	Vink, 1984A
1. *Conus daucus* Hwass in Bruguière, 1792	
2. *Conus attenuatus* Reeve, 1844	
3. *Conus flamingo* Petuch, 1980	
Part II	Vink, 1984B
4. *Conus amphiurgus* Dall, 1889	
5. *Conus mayaguensis* Nowell-Usticke, 1968	
6. *Conus ermineus* Born, 1778	
Part III	Vink, 1985A
7. *Conus sanderi* Wils & Moolenbeek, 1979	
Part IV	Vink, 1985B
8. *Conus archetypus archetypus* Crosse, 1865	
8A. *Conus archetypus beddomei* G. B. Sowerby III, 1901	
8B. *Conus archetypus brasiliensis* Clench, 1942	
9. *Conus regius* Gmelin, 1791	
Part V	Vink, 1985C
10. *Conus spurius* Gmelin, 1791	
10A. *Conus spurius aureofasciatus* Rehder & Abbott, 1951	
10B. *Conus spurius quadratus* (Röding, 1798)	
10C. *Conus spurius atlanticus* Clench, 1942	
10D. *Conus spurius lorenzianus* Dillwyn, 1817	
10E. *Conus spurius baylei* Jousseaume, 1872	
11. *Conus sennottorum* Rehder & Abbott, 1951	
12. *Conus largillierti* Kiener, 1845	
Part VI	Vink, 1986
13. *Conus clerii* Reeve, 1843	
14. *Conus lemniscatus lemniscatus* Reeve, 1849	
14A. *Conus lemniscatus carcellesi* Martins, 1945.	
15. *Conus cingulatus* Lamarck, 1810	
Part VII	Vink, 1987A
16. *Conus floridanus floridanus* Gabb, 1869	
16A. *Conus floridanus burryae* Clench, 1942	

Taxon	Part citation
17. *Conus flavescens* G. B. Sowerby II, 1834	
18. *Conus species* no. 1*	
Part VIII	Vink, 1987B
19. *Conus cedonulli cedonulli* Linné, 1767	
19A. *Conus cedonulli insularis* Gmelin, 1791	
19B. *Conus cedonulli dominicanus* Hwass in Bruguière, 1792	
Part IX	Vink, 1987C
20. *Conus mappa* Lightfoot, 1786	
20A. *Conus mappa trinitarius* Hwass in Bruguière, 1792	
20B. *Conus mappa granarius* Kiener, 1845	
Part X	Vink, 1988A
21. *Conus aurantius* Hwass in Bruguière, 1792	
22. *Conus pseudaurantius* Vink & Cosel, 1985	
23. *Conus curassaviensis* Hwass in Bruguière, 1792	
24. *Conus scopulorum* Van Mol, Tursch & Kempf, 1971	
25. *Conus patae* Abbott, 1971	
Part XI	Vink, 1988B
26. *Conus cancellatus* Hwass in Bruguière, 1792	
27. *Conus stimpsoni* Dall, 1902.	
28. *Conus armiger* Crosse, 1858	
29. *Conus bajanensis* Nowell-Usticke, 1968	
30. *Conus villepinii villepinii* Fischer & Bernardi, 1857	
30A. *Conus villepinii fosteri* Clench & Aguayo, 1942	
31. *Conus garciai* da Motta, 1982	
Part XII	Vink, 1988
32. *Conus mindanus* Hwass in Bruguière, 1792	
32A. *Conus mindanus agassizii* Dall, 1886	
33. *Conus pusio* Hwass in Bruguière, 1792	
34. *Conus branhamae* Clench, 1953	
Part XIII	Vink, 1990A
35. *Conus anaglypticus* Crosse, 1865	
36. *Conus selenae* Van Moll, Tursch & Kempf, 1967	
37. *Conus hieroglyphus* Duclos, 1833	
38. *Conus explorator* Vink, 1990 (new species).	

* Vink & Röckel (1995) later described this shell as *Conus bahamensis*.

Taxon	Part citation
Part XIV	Vink, 1990B
39. *Conus puncticulatus* Hwass in Bruguière, 1792	
39A. *Conus puncticulatus columba* Hwass in Bruguière, 1792	
39B. *Conus puncticulatus millepunctatus* (Röding, 1798)	
39C. *Conus puncticulatus cardonensis* Vink, 1990 (subspecies nov.)	
Part XV	Vink, 1990C
40 *Conus jaspideus* Gmelin, 1791	
41. *Conus pealii* Green, 1830	
42. *Conus stearnsii* Conrad, 1869	
43. *Conus nodiferus* Kiener, 1845	
44. *Conus acutimarginatus* G. B. Sowerby II, 1866	

Table 2. Checklist of West Atlantic cone shells listed alphabetically by genus.

Artemidiconus selenae (Van Moll, Tursch & Kempf, 1967) Fig. 66
Chelyconus ermineus (Born, 1778) Fig. 8
Conasprelloides cancellatus (Hwass in Bruguière, 1792) Figs. 44 & 45
Conasprelloides stimpsoni (Dall, 1902) Figs. 46 & 47
Conasprelloides villepinii villepinii (Fischer & Bernardi, 1857) Fig. 51, Figs. 53B-E
Conasprelloides villepinii fosteri (Clench & Aguayo in Clench, 1942) Fig. 52, Fig. 53A
**Conasprelloides penchaszadehi* (Petuch, 1986) Fig. 79C
Dalliconus armiger (Crosse, 1858) Fig. 48, Figs 49A & B
Dalliconus bajanensis (Nowell-Usticke, 1968) Fig. 50
Dalliconus lenhilli (Cargile, 1998) Fig. 80B
Dalliconus mazei (Deshayes, 1874) Fig. 80A
Dalliconus mcgintyi (Pilsbry, 1955) Fig. 81
Dalliconus pacei (Petuch, 1987) Fig. 123
Dalliconus rainesae (McGinty, 1953) Fig. 82
Dalliconus sauros (Garcia, 2006) Fig. 49C
Dauciconus amphiurgus (Dall, 1889) Figs. 5A & C, Figs. 6 & 7
Dauciconus attenuatus (Reeve, 1844) Figs. 3 & 4
Dauciconus daucus (Hwass in Bruguière, 1792) Figs. 1 & 2
**Dauciconus eversoni* (Petuch, 1987) Fig. 79A
Dauciconus goajira (Petuch, 1992) Fig. 84
Dauciconus lightbourni (Petuch, 1986) Fig. 83
Dauciconus sanderi (Wils & Moolenbeek, 1979) Figs. 9-11
Gladioconus binghamae (Petuch, 1987) Fig. 85
Gladioconus cuna (Petuch, 1998) Fig. 88B
Gladioconus glenni (Petuch, 1993) Fig. 87
Gladioconus granulatus (Linné, 1758) Fig. 86
Gladioconus hieroglyphus (Duclos, 1833) Fig. 67
Gladioconus mus (Hwass in Bruguière, 1792) Fig. 89
Gladioconus patae (Abbott, 1971) Fig. 43
Gladioconus ritae (Petuch. 1995) Fig. 88A
Gradiconus anabathrum anabathrum (Crosse, 1865) Figs. 30A, B, D, E, Fig. 31
Gradiconus anabathrum burryae (Clench, 1942) Fig. 30C, Fig. 32
Gradiconus bayeri (Petuch, 1988) Fig. 91
Gradiconus flamingo (Petuch, 1980) Figs. 5B & D
Gradiconus flavescens (G. B. Sowerby II, 1834) Figs. 33-35
Gradiconus cingulatus (Lamarck, 1810) Fig. 29
Gradiconus gibsonsmithorum (Petuch, 1986) Figs. 85A-C, Figs. 98-100
Gradiconus gibsonsmithorum ernesti (Petuch, 1990) Figs. 93, 94, & 96
Gradiconus gibsonsmithorum tristensis (Petuch, 1987) Figs. 85D-F
Gradiconus largillierti (Kiener, 1845) Figs. 23 & 24
Gradiconus largillierti garciai (da Motta, 1982) Fig. 54

Gradiconus largillierti sennottorum (Rehder & Abbott, 1951) Fig. 22
**Gradiconus paraguana* (Petuch, 1987) Fig. 102A
**Gradiconus parascalaris* (Petuch, 1987) Fig. 102B
Gradiconus portobeloensis (Petuch, 1990) Fig. 92
Gradiconus sunderlandi (Petuch, 1987) Fig. 90
Jaspidiconus anaglypticus (Crosse, 1865) Figs. 63I, J, Figs. 64 & 65
Jaspidiconus damasoi (Cossignani, 2007) Fig. 60C
Jaspidiconus iansa (Petuch, 1979) Figs. 103 & 104
Jaspidiconus jaspideus jaspideus (Gmelin, 1791) Fig. 74
    Form *acutimarginatus* G. B. Sowerby II, 1866 Fig. 78
Jaspidiconus jaspideus pealii (Green, 1830) Fig. 75
    Form *branhamae* Clench, 1953 Fig. 62
    Form *nodiferus* Kiener, 1845 Fig. 77
Jaspidiconus jaspideus stearnsii (Conrad, 1869) Fig. 76
Jaspidiconus mindanus mindanus (Hwass in Bruguière, 1792) Figs. 55B, C, & F, Fig. 56, Figs. 58A-D, Figs. 63A-H
Jaspidiconus mindanus agassizii (Dall, 1886) Figs. 55A, D, & E, Fig. 57, Figs. 58F-I
Jaspidiconus pusio (Hwass in Bruguière, 1792) Figs. 59, 60A, B, D, E, 61
Jaspidiconus rachelae (Petuch, 1988) Fig. 58E, Fig. 105
Kohniconus centurio (Born, 1778) Fig. 107
Kohniconus delessertii (Récluz, 1843) Fig. 106
Kohniconus species Fig. 108A-C
Lamniconus clerii (Reeve, 1843) Fig. 25, Fig. 26C
Lamniconus lemniscatus lemniscatus (Reeve, 1849) Figs. 26A, B, & D, Fig. 27
Lamniconus lemniscatus carcellesi (Martins, 1945) Fig. 28
Perplexiconus puncticulatus puncticulatus (Hwass in Bruguière, 1792) Fig. 69
Perplexiconus puncticulatus cardonensis (Vink, 1990) Fig. 73
Perplexiconus puncticulatus columba (Hwass in Bruguière, 1792) Figs. 70 & 71
Perplexiconus puncticulatus millepunctatus (Röding, 1798) Fig. 72
Purpuriconus arangoi (Sarasua, 1977) Fig. 118
Purpuriconus cardinalis (Hwass in Bruguière, 1792) Figs. 109 & 110
Purpuriconus explorator (Vink, 1990) Fig. 68A
Purpuriconus havanensis (Aguayo & Farfante, 1947) Figs. 115 &116
Purpuriconus hennequini (Petuch, 1993) Figs. 68B-E
Purpuriconus kalafuti (da Motta, 1987) Fig. 114
Purpuriconus kulkulcan (Petuch, 1980) Fig. 119
Purpuriconus magellanicus (Hwass, 1792) Fig. 111
**Purpuriconus pseudocardinalis* (Coltro, 2004) Fig. 79B
Purpuriconus richardbinghami (Petuch, 1993) Fig. 117
Purpuriconus sphacelatus (G. B. Sowerby II, 1833) Figs. 112 & 113
Purpuriconus velaensis (Petuch, 1993) Fig. 120
Purpuriconus ziczac ziczac (Mühlfeld, 1816) Fig. 13, Figs. 14A, B, & E
Purpuriconus ziczac archetypus (Crosse, 1865) Fig. 12, Figs. 14C, D, & F

Purpuriconus ziczac *mayaguensis* (Nowell-Usticke, 1968)
Seminoleconus aurantius (Hwass in Bruguière, 1792) Figs. 40A, B, & D
Seminoleconus cedonulli cedonulli (Linné, 1767) Figs. 37A & B
Seminoleconus cedonulli dominicanus (Hwass in Bruguière, 1792) Fig. 37C
Seminoleconus cedonulli insularis (Gmelin, 1791)
Seminoleconus curassaviensis curassaviensis (Hwass in Bruguière, 1792) Figs. 41A-C
Seminoleconus curassaviensis duffyi (Petuch, 1992) Figs. 42A-C
Seminoleconus curassaviensis pseudaurantius (Vink & Cosel, 1985) Fig. 40C, Figs. 41D & E
Seminoleconus harlandi (Petuch, 1987) Fig. 121
Seminoleconus mappa mappa (Lightfoot, 1786) Fig. 38A
Seminoleconus mappa granarius (Kiener, 1845) Figs. 38C-E, Fig. 39
Seminoleconus mappa trinitarius (Hwass in Bruguière, 1792) Fig. 38B
Seminoleconus scopulorum (Van Mol, Tursch & Kempf, 1971) Fig. 42D
Spuriconus lindae (Petuch, 1987) Fig. 122
Spuriconus spurius spurius (Gmelin, 1791) Figs. 16, 17, 19, & 36
Spuriconus spurius lorenzianus (Dillwyn, 1817) Figs. 18, 20, & 21
Stephanoconus regius (Gmelin, 1791) Fig. 15

Names listed with an "*" are of uncertain identity.

Fig. 1 ***daucus***

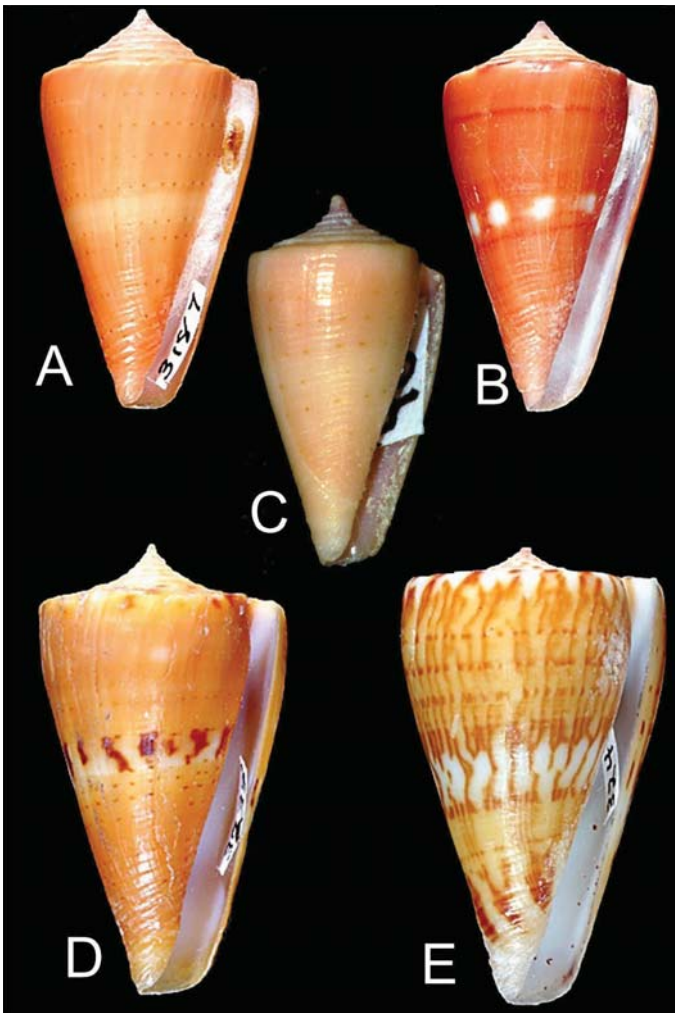

Fig. 2 ***daucus*** **types**

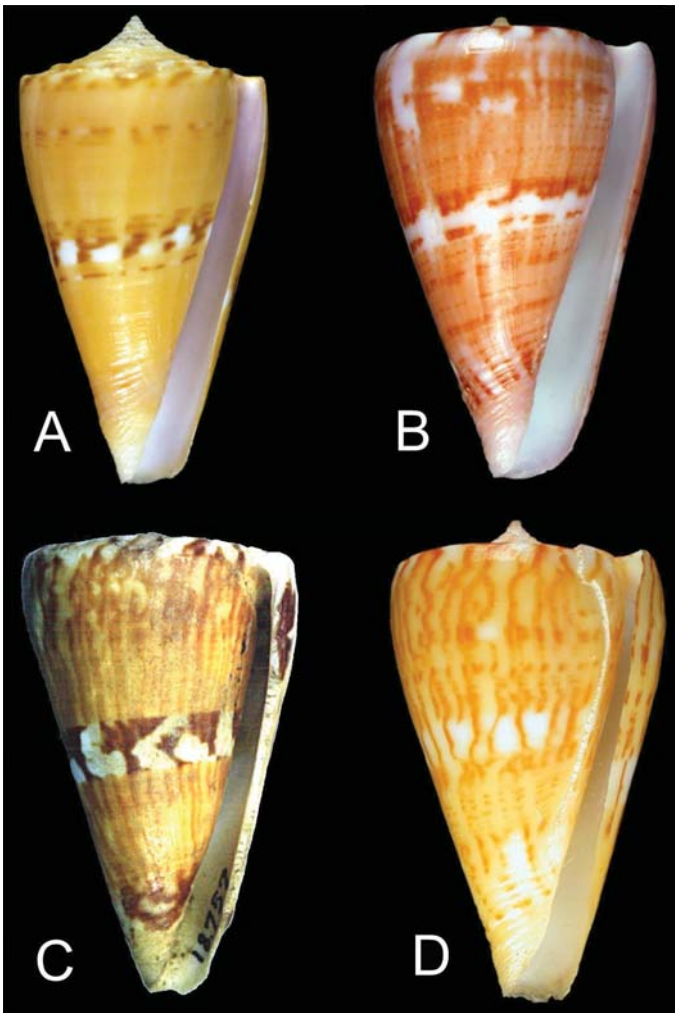

Fig. 3 ***attenuatus***

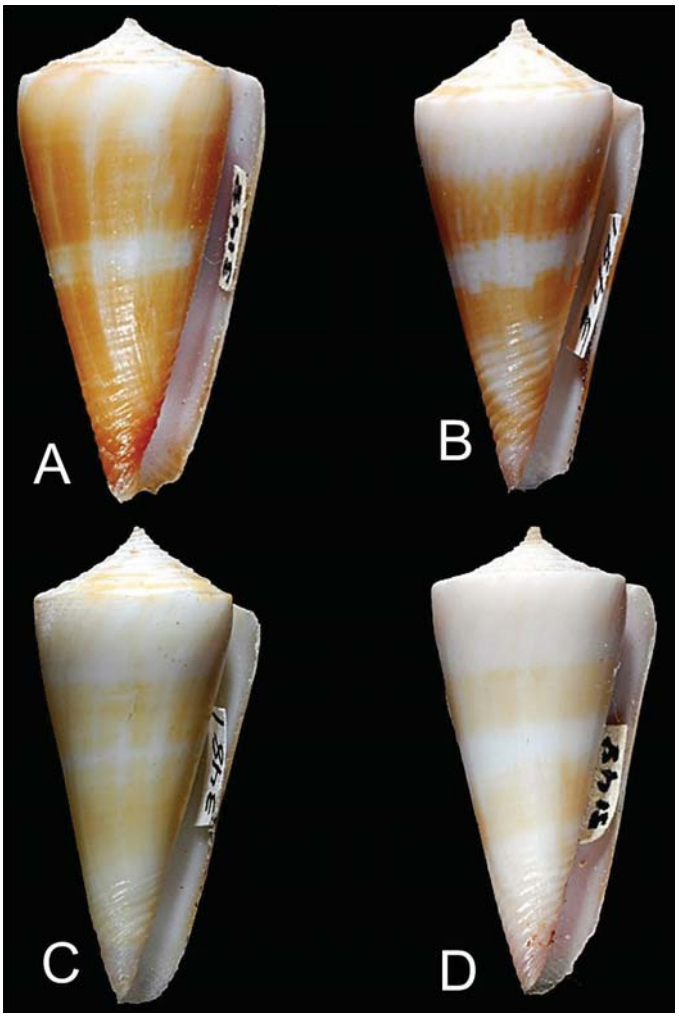

Fig. 4 ***attenuatus*** **types**

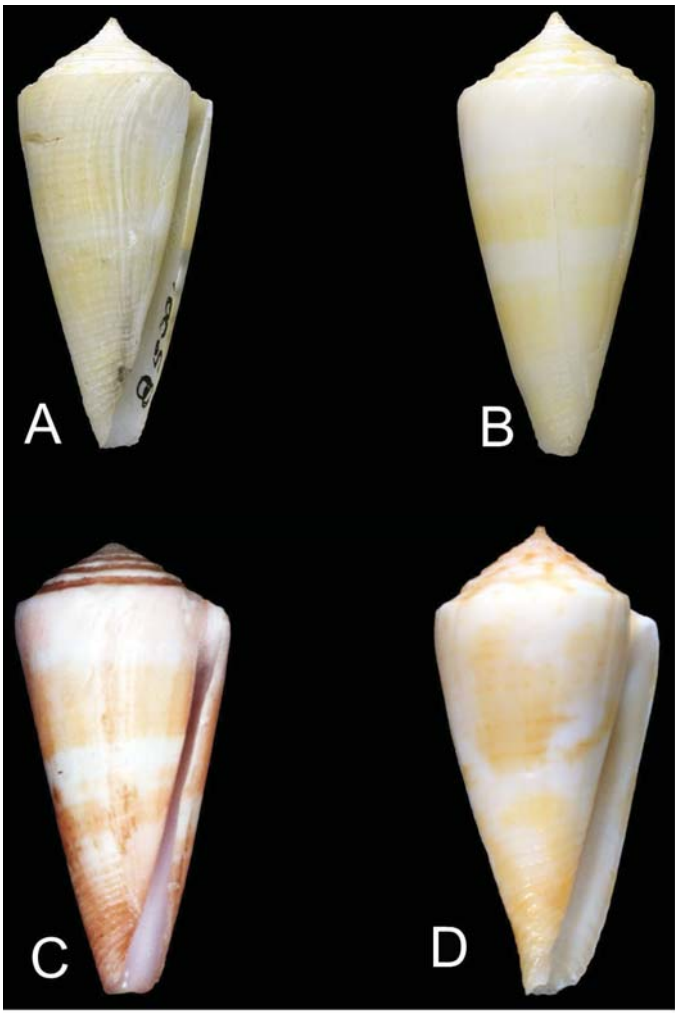

Fig. 5 ***flamingo / amphiurgus***

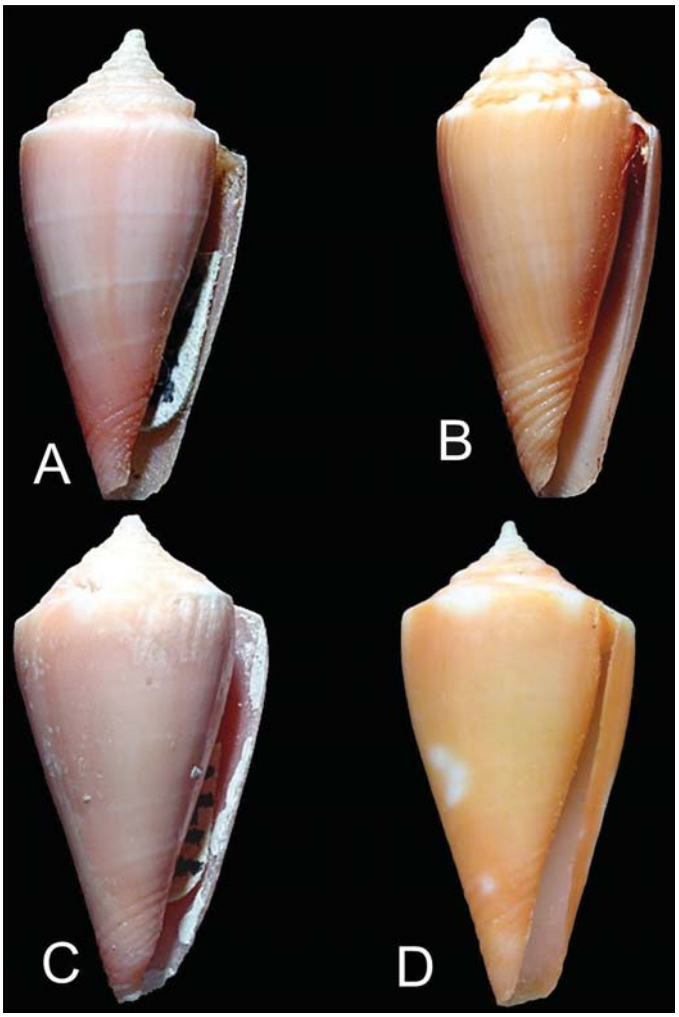

Fig. 6 ***amphiurgus***

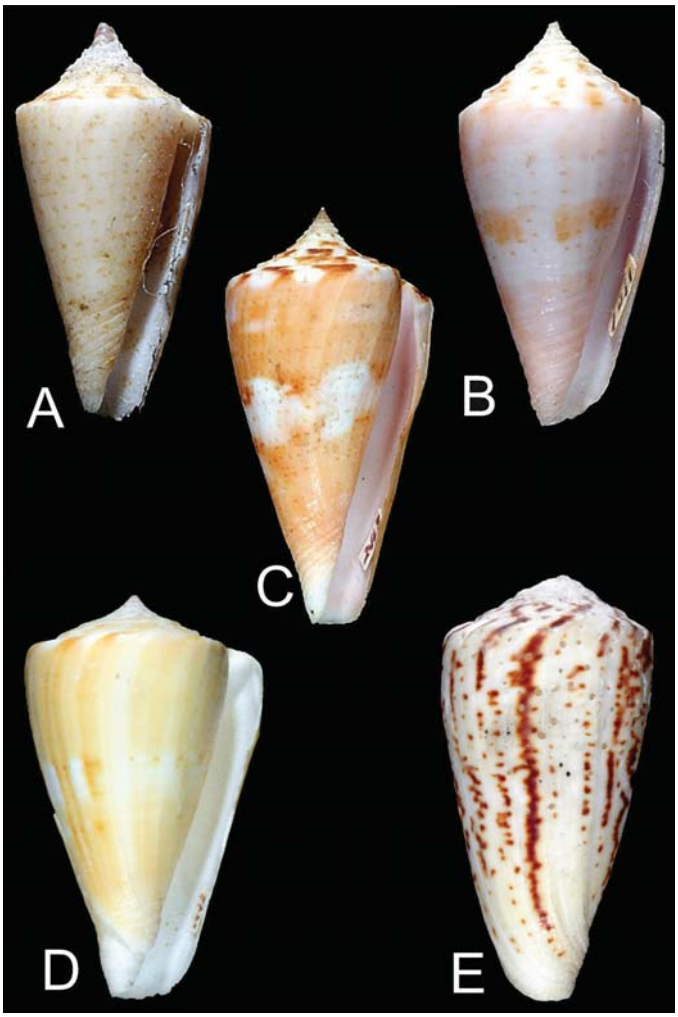

Fig. 7 ***amphiurgus*** **types**

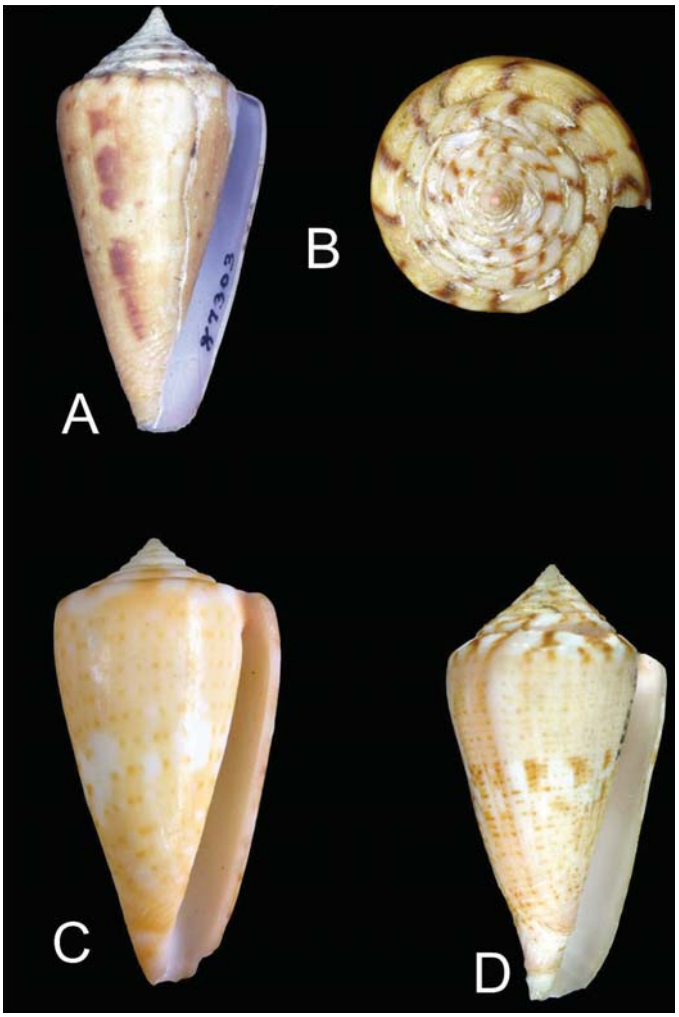

Fig. 8 ***ermineus***

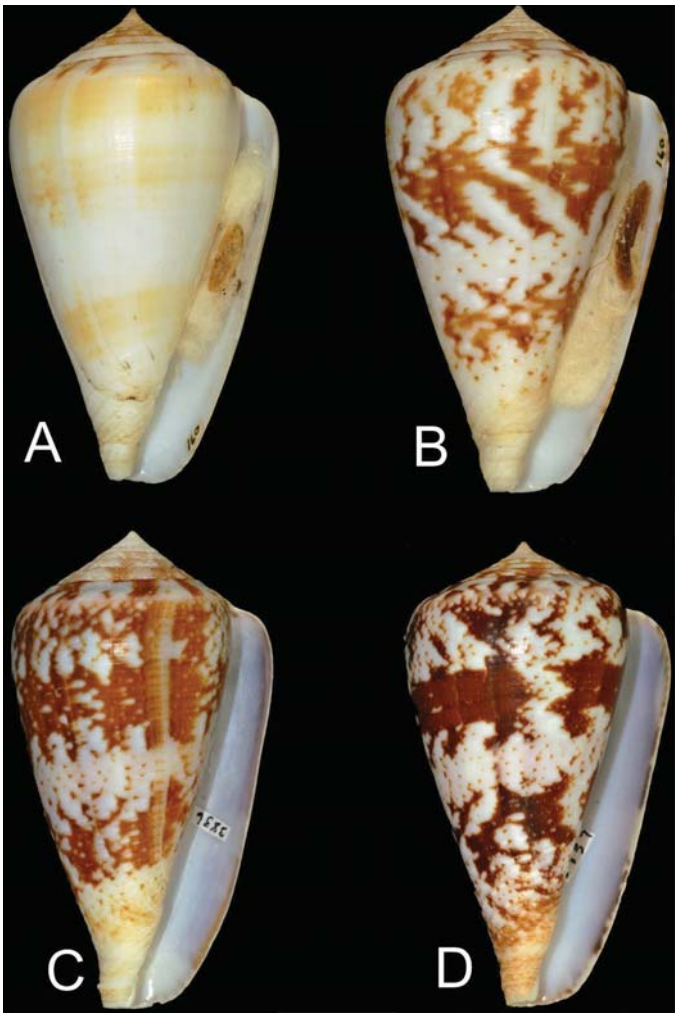

Fig. 9 ***sanderi*** **types**

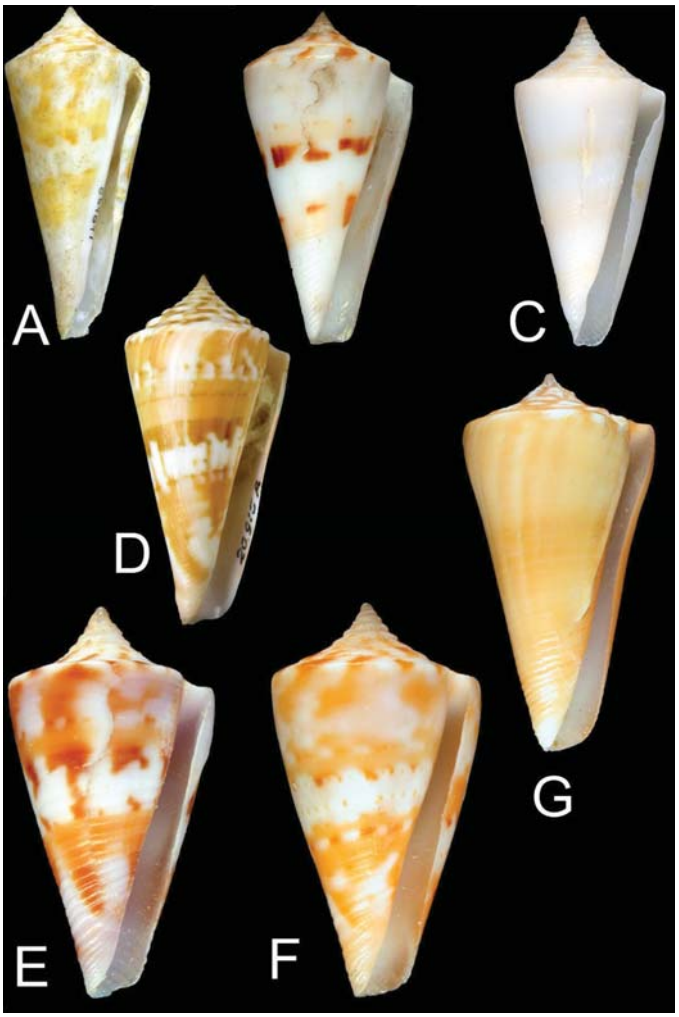

Fig. 10 ***sanderi sanderi***

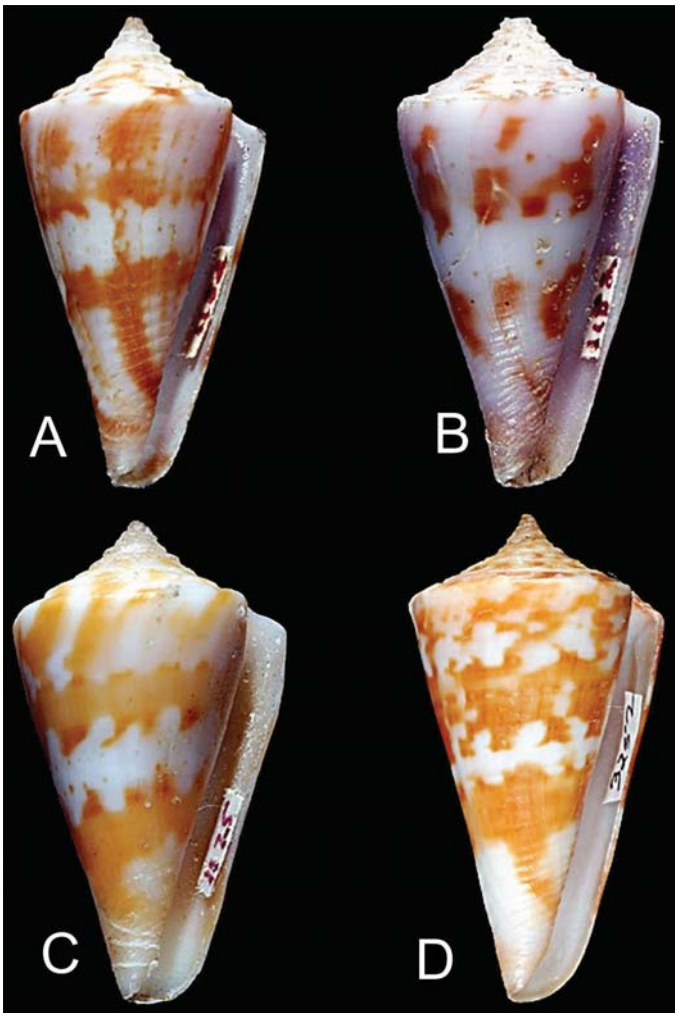

Fig. 11 ***sanderi carioca***

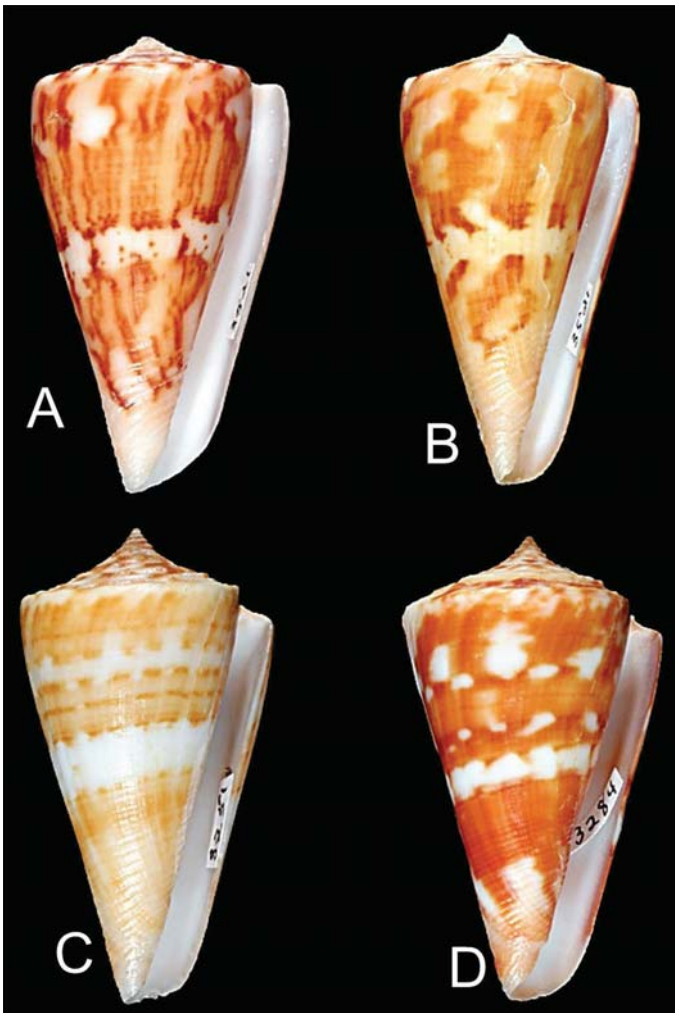

Fig. 12 ***archetypus archetypus***

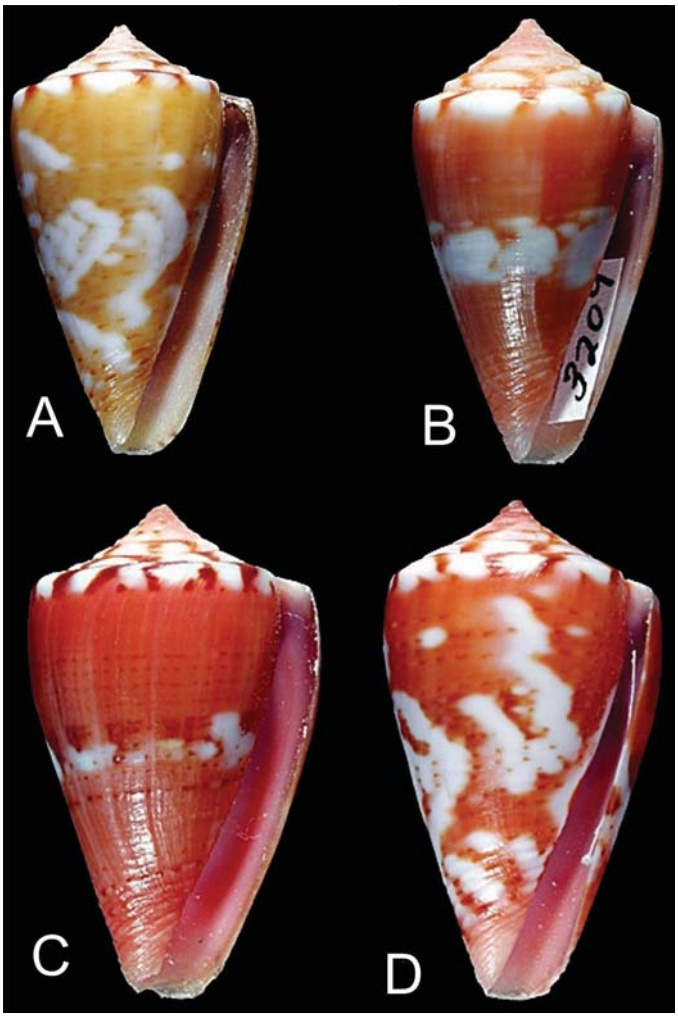

Fig. 13 ***archetypus beddomei***

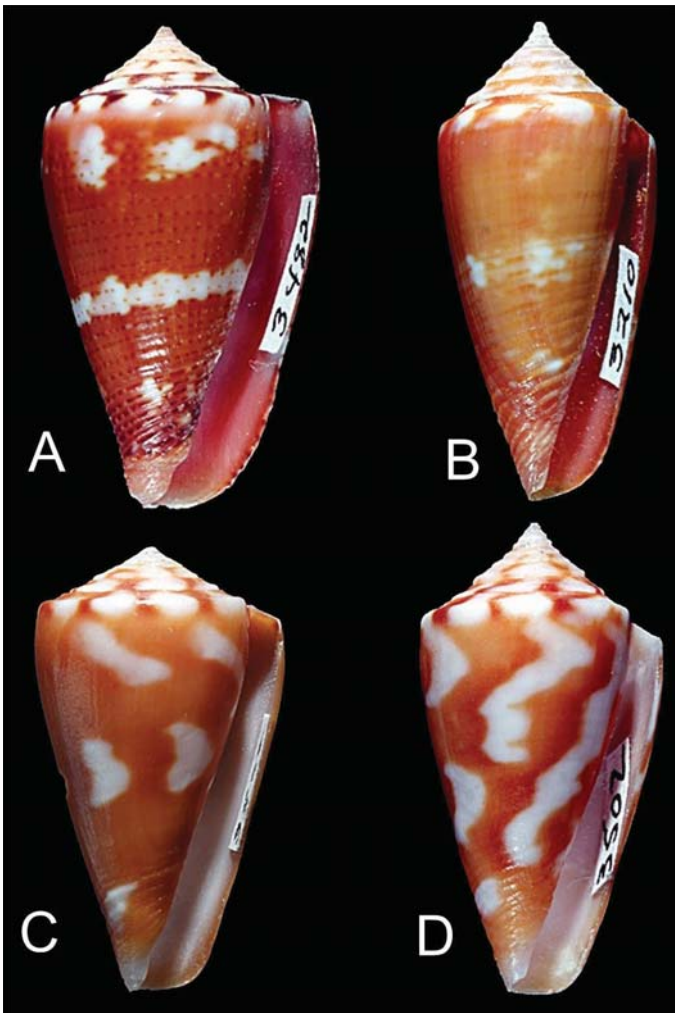

Fig. 14 ***ziczac*** **types**

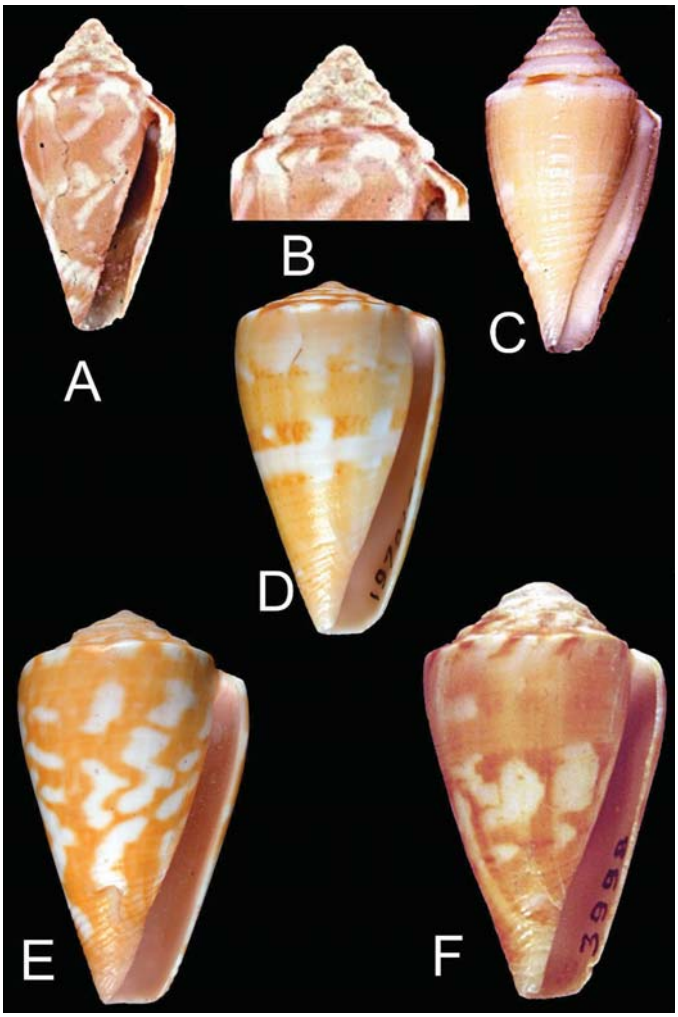

Fig. 15 ***regius***

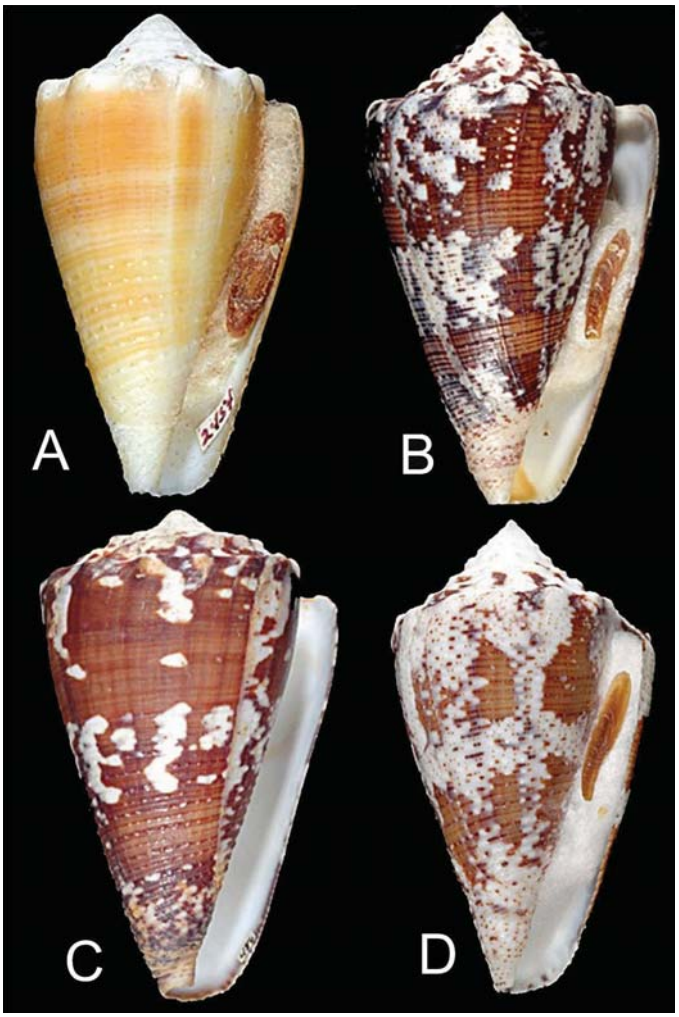

Fig. 16 ***spurius***

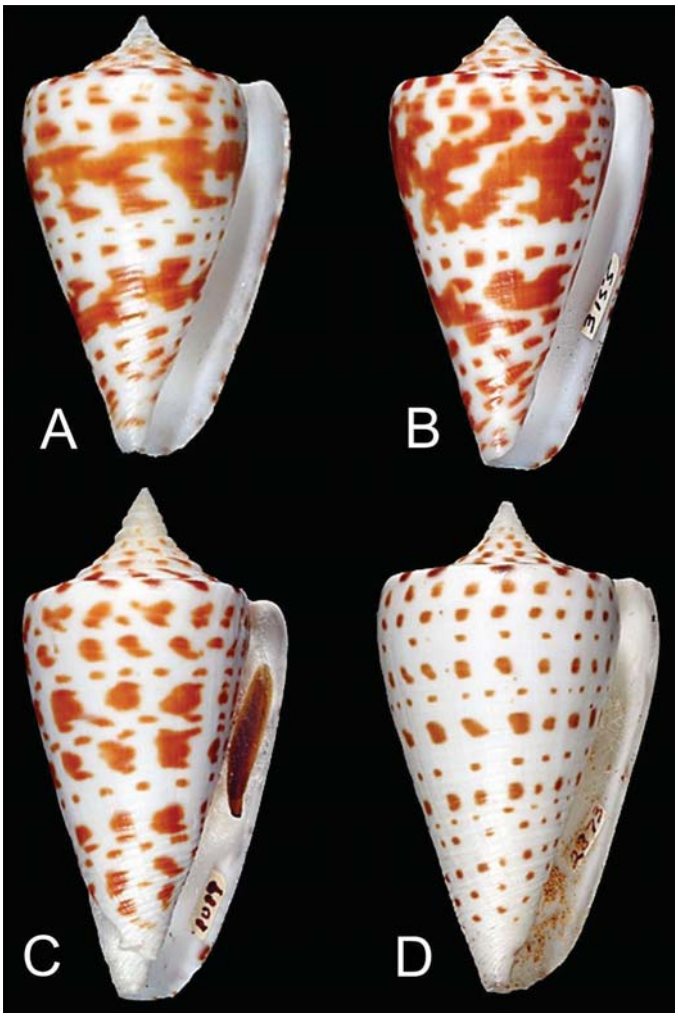

Fig. 17 ***spurius aureofasciatus***

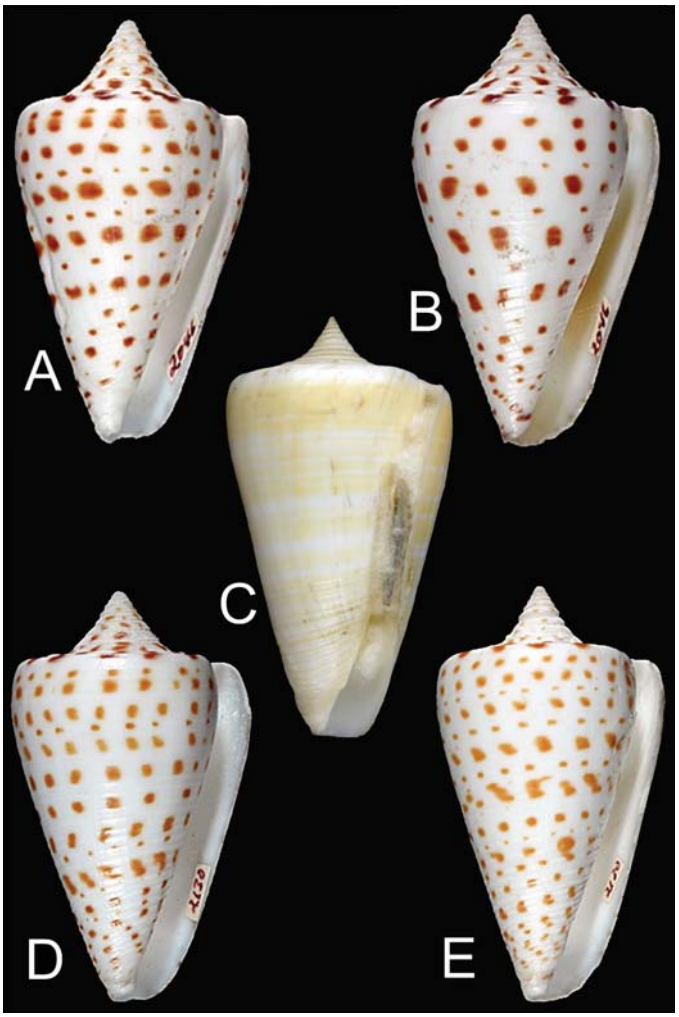

Fig. 18 ***spurius quadratus***

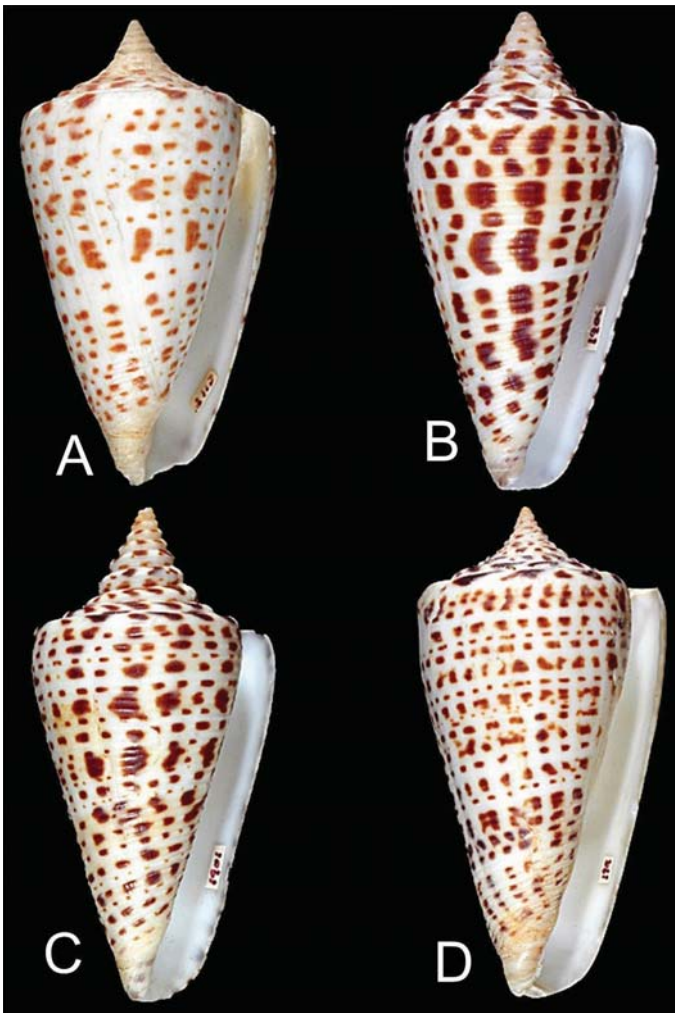

Fig. 19 ***spurius atlanticus***

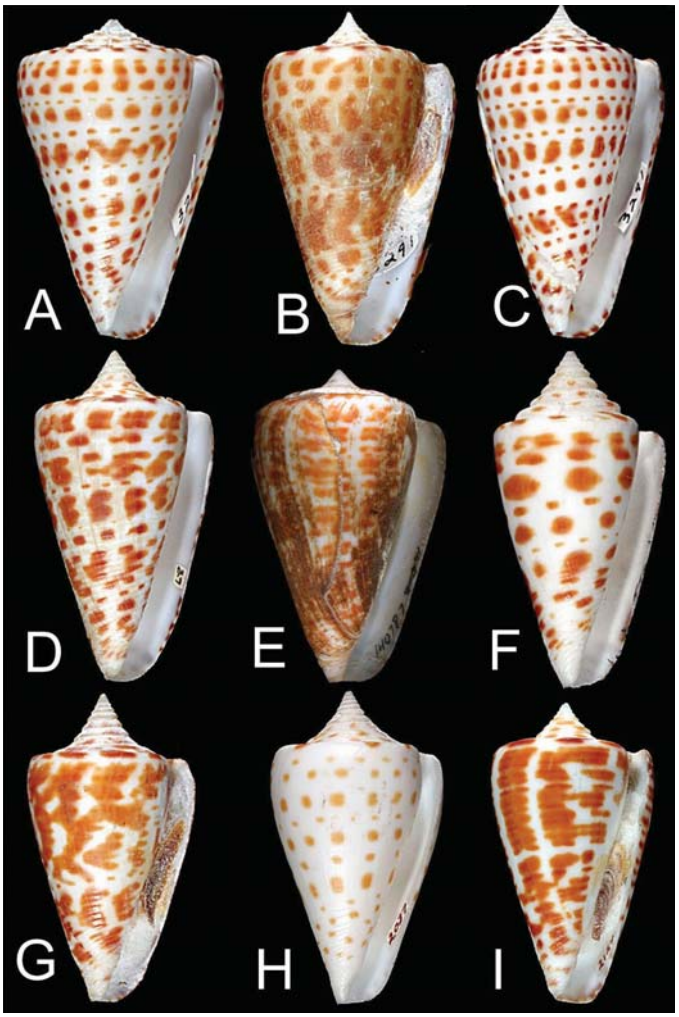

Fig. 20 ***spurius lorenzianus***

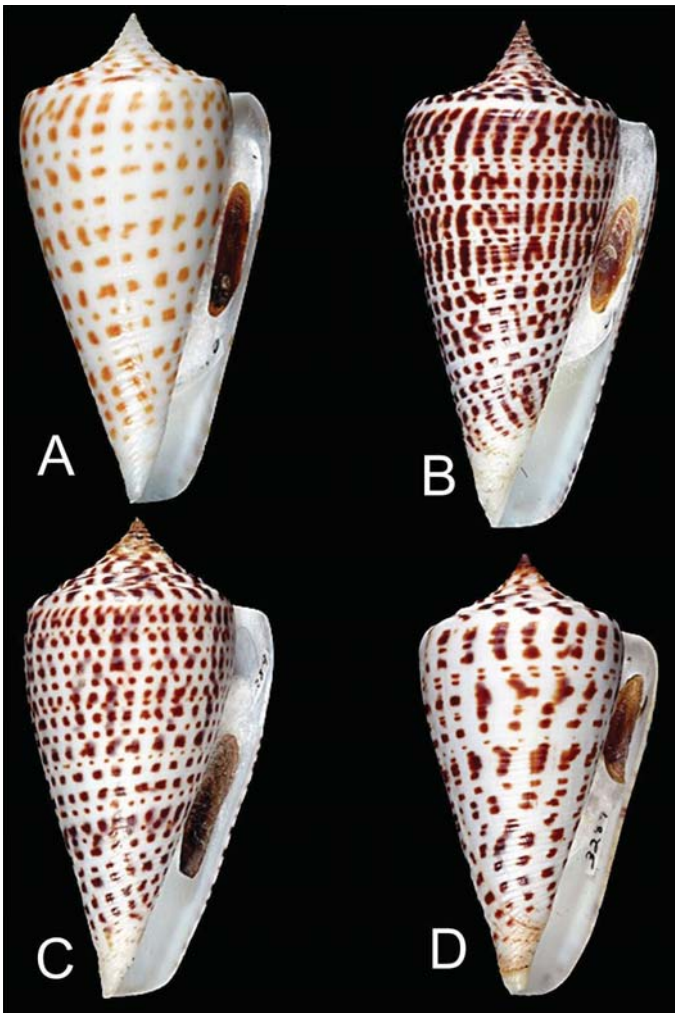

Fig. 21 ***spurius baylei***

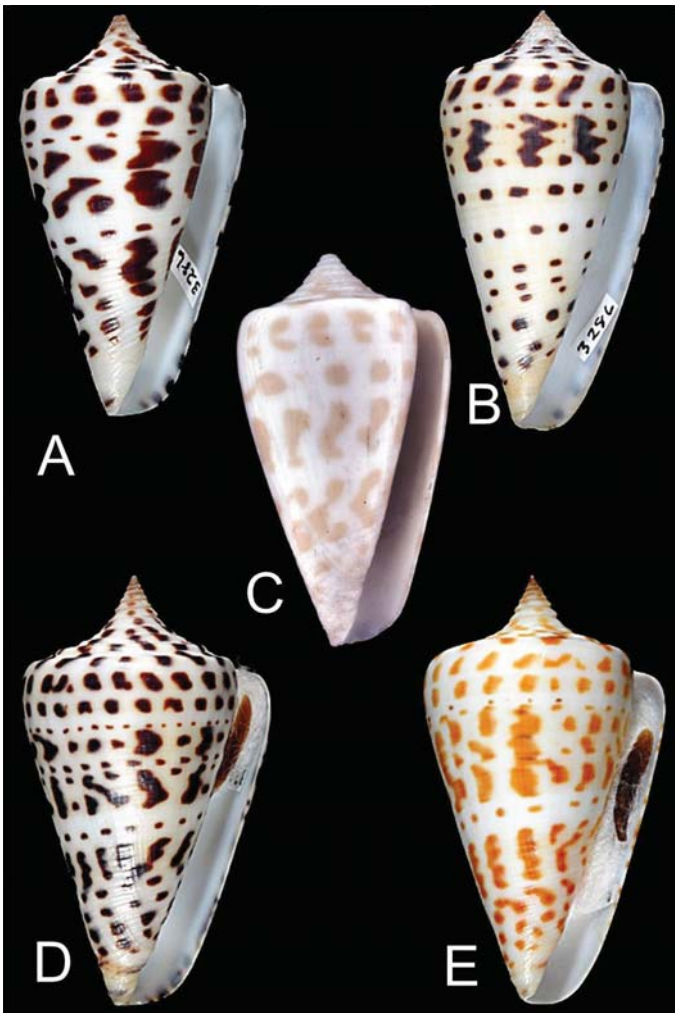

Fig. 22 ***sennottorum***

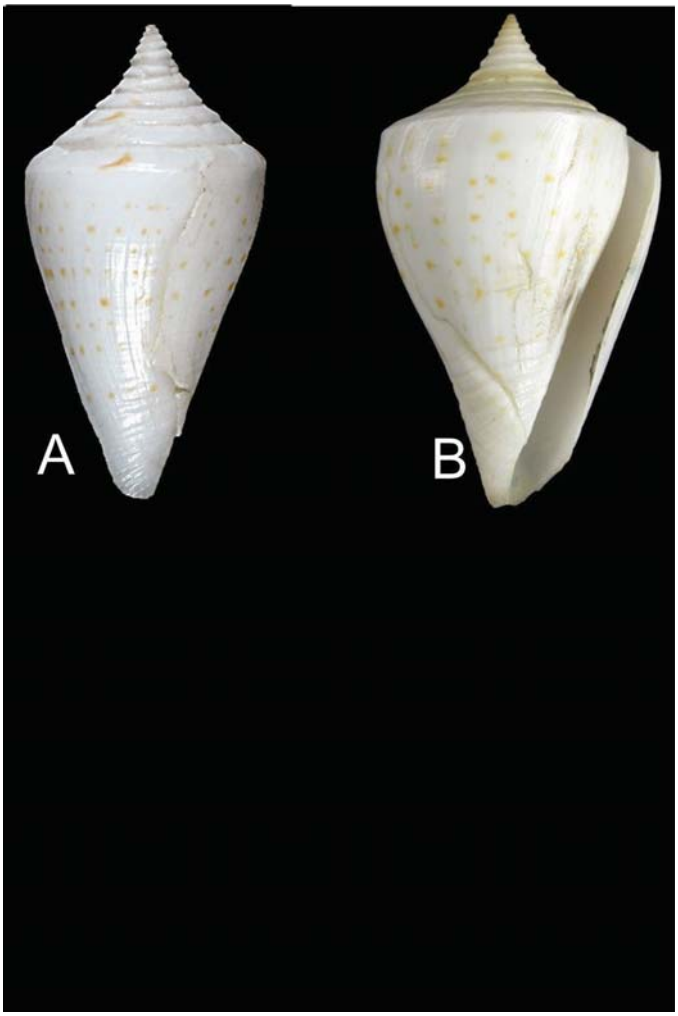

Fig. 23 ***largilliarti***

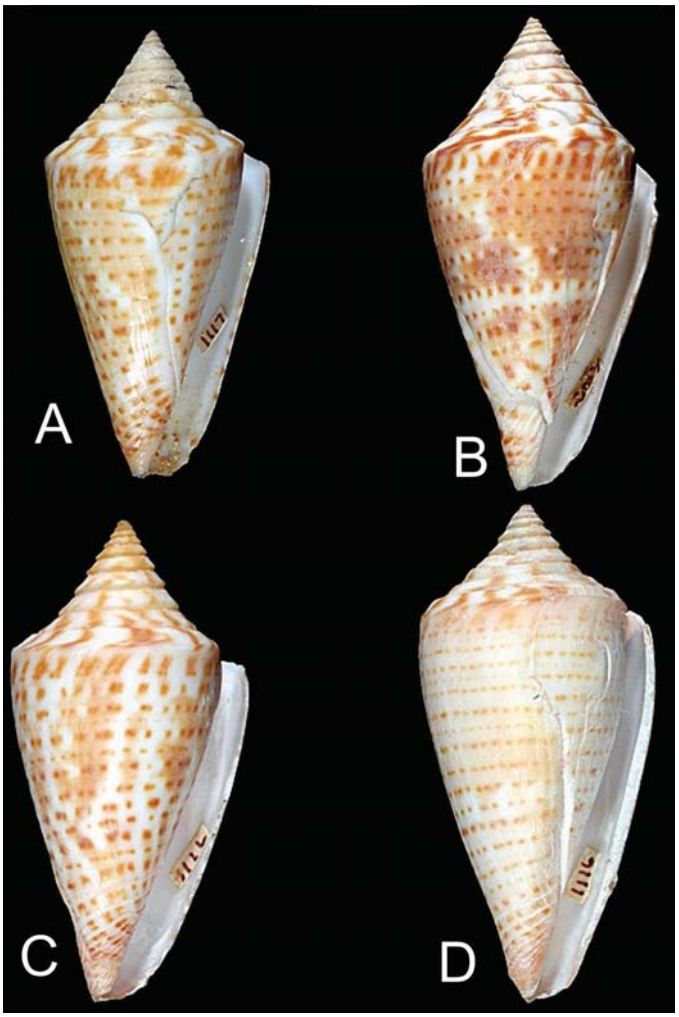

Fig. 24 ***philippii***

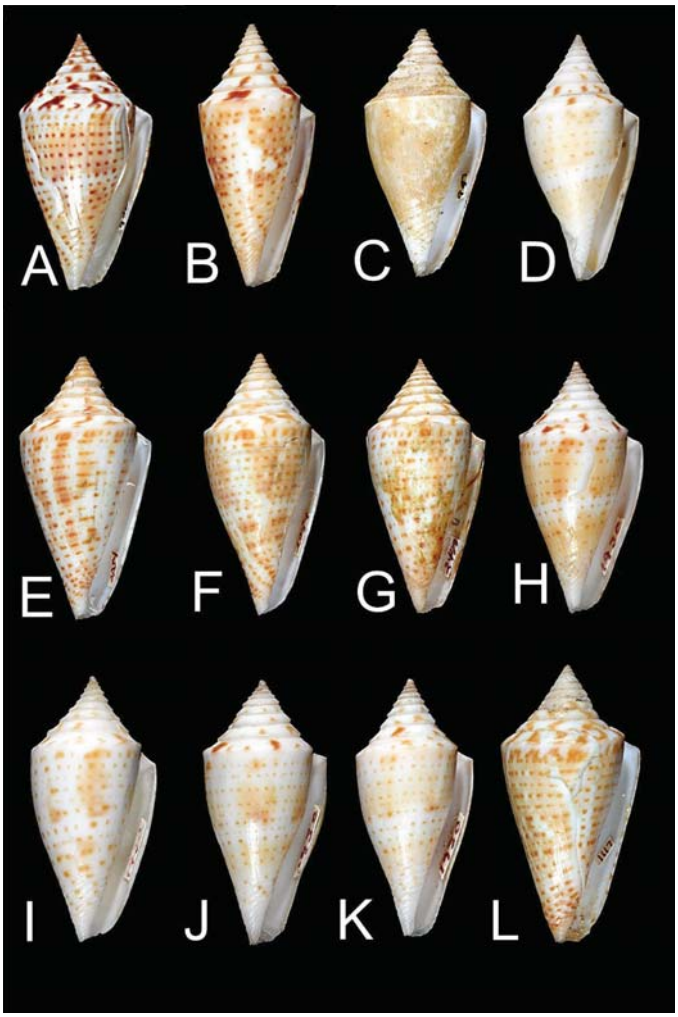

Fig. 25 ***clerii***

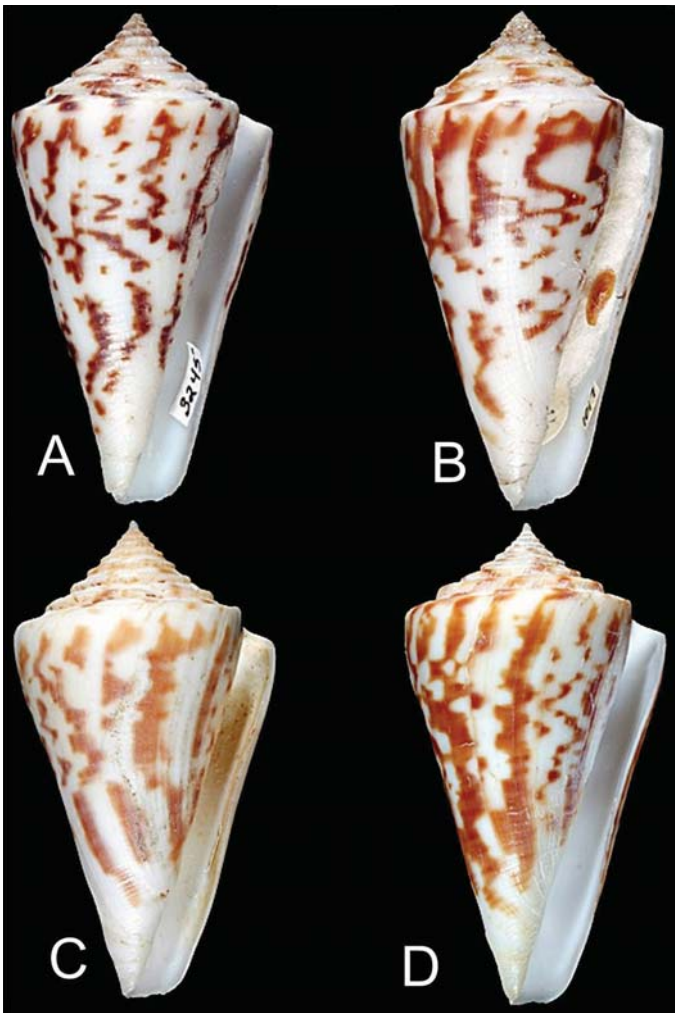

Fig. 26 ***lemniscatus*** **types**

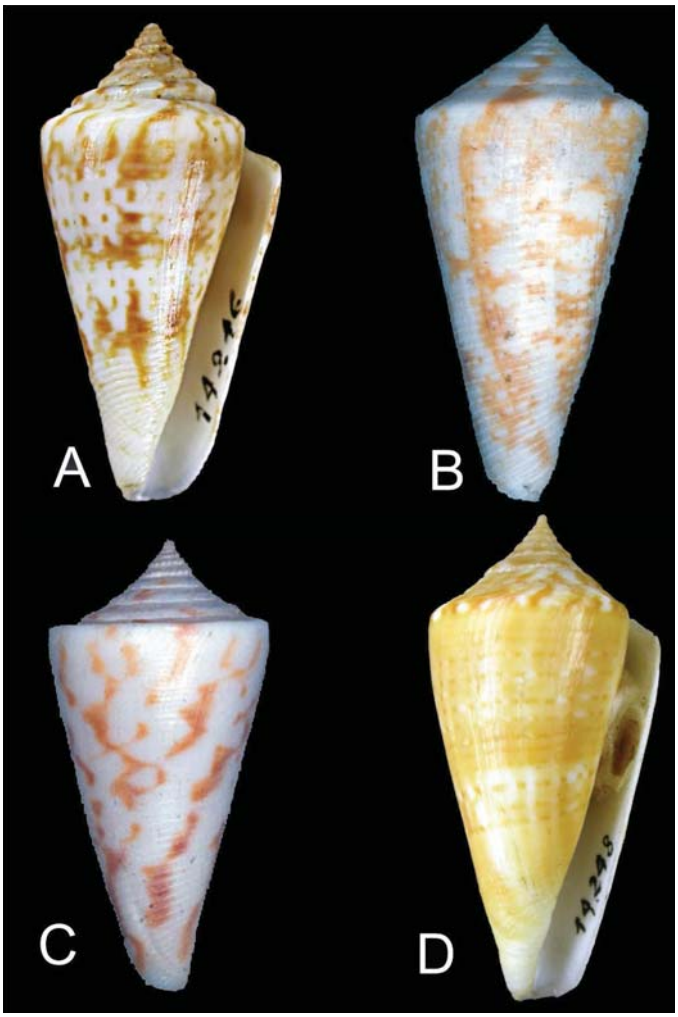

Fig. 27 ***lemniscatus lemniscatus***

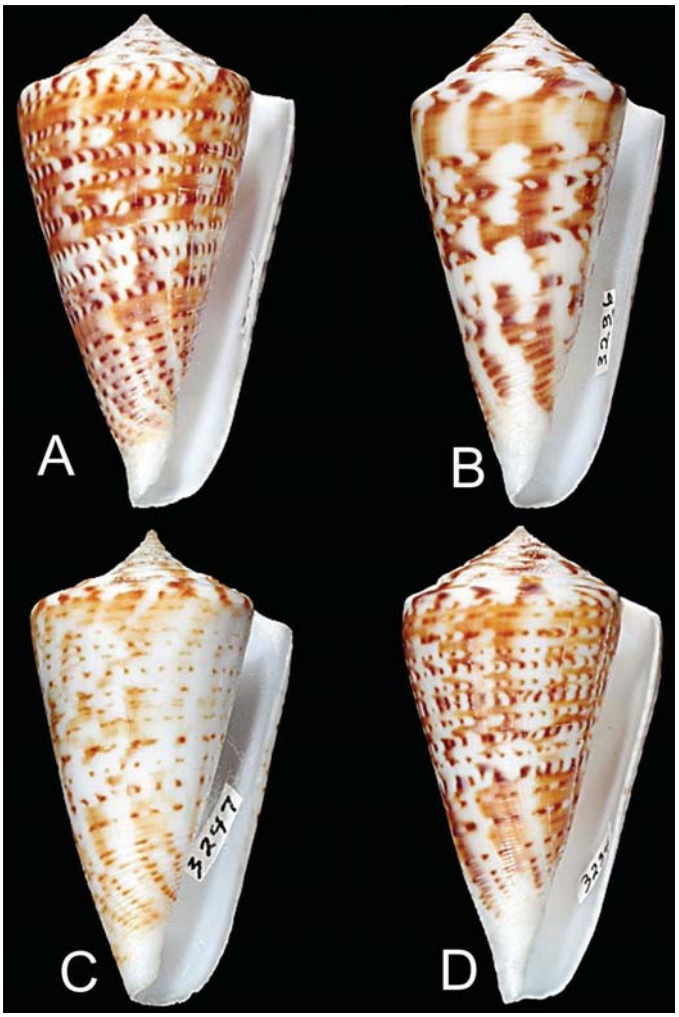

Fig. 28 ***lemniscatus carcellesi***

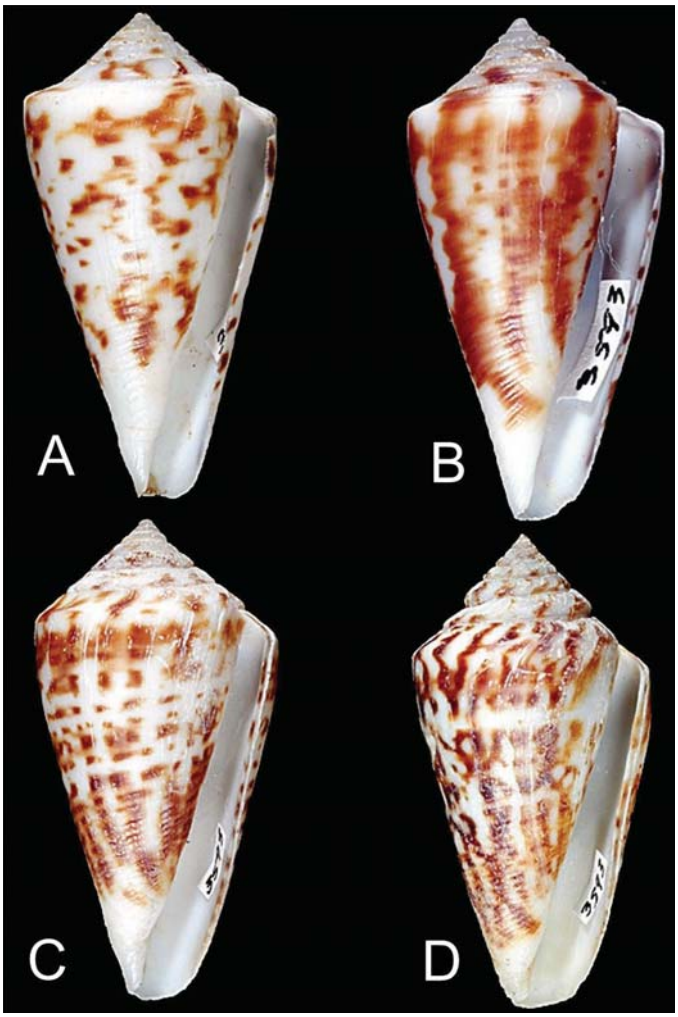

Fig. 29 *cingulatus*

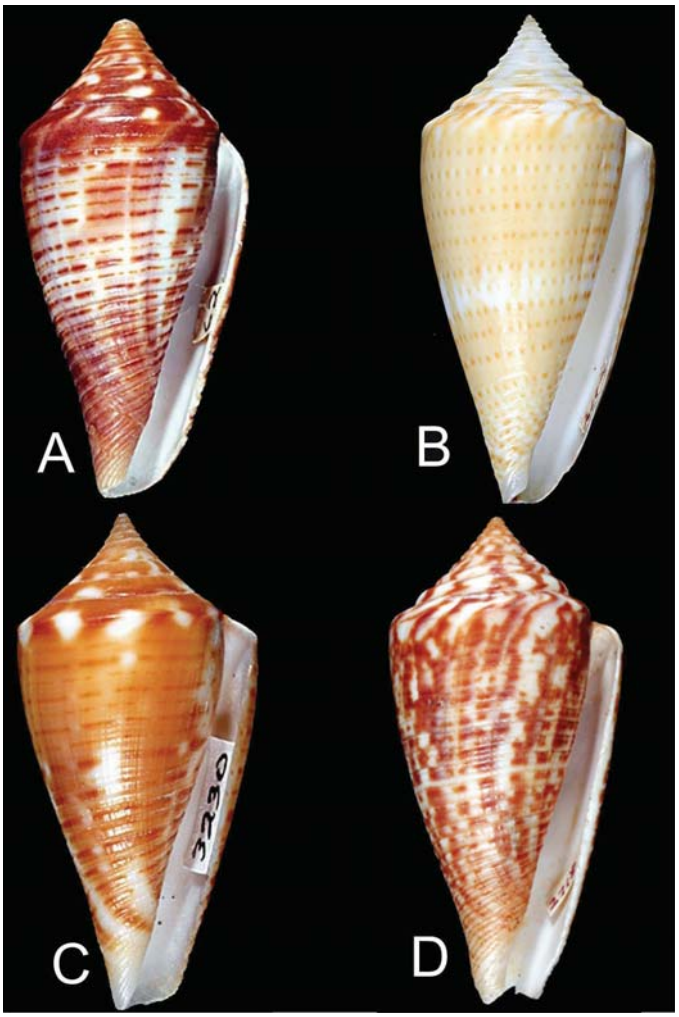

Fig. 30 *anabathrum* types

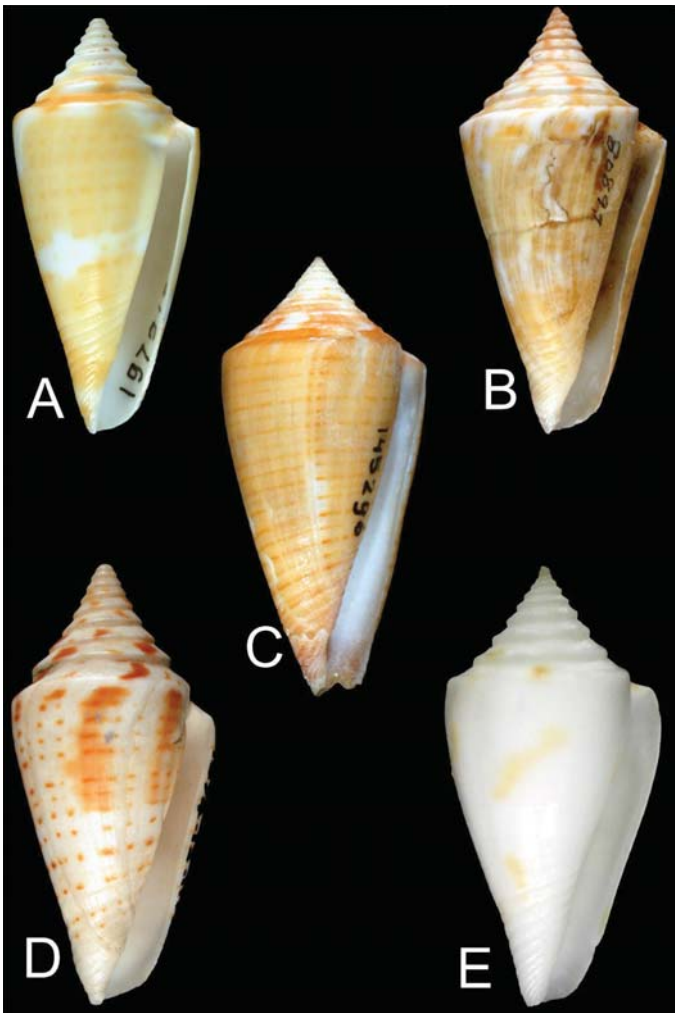

Fig. 31 ***floridanus floridanus***

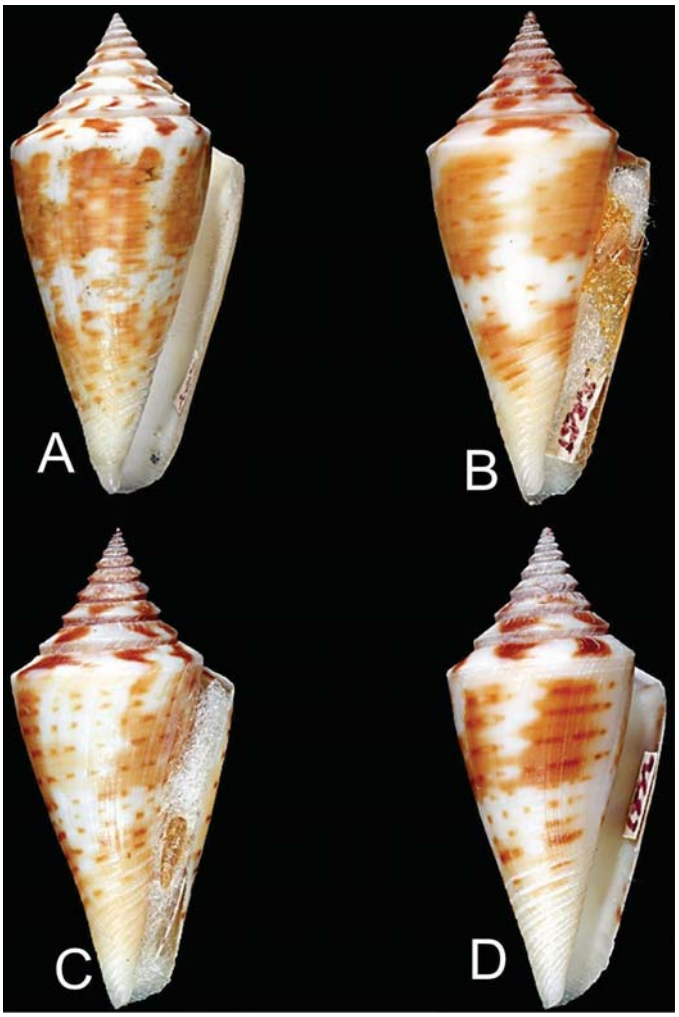

Fig. 32 ***floridanus burryae***

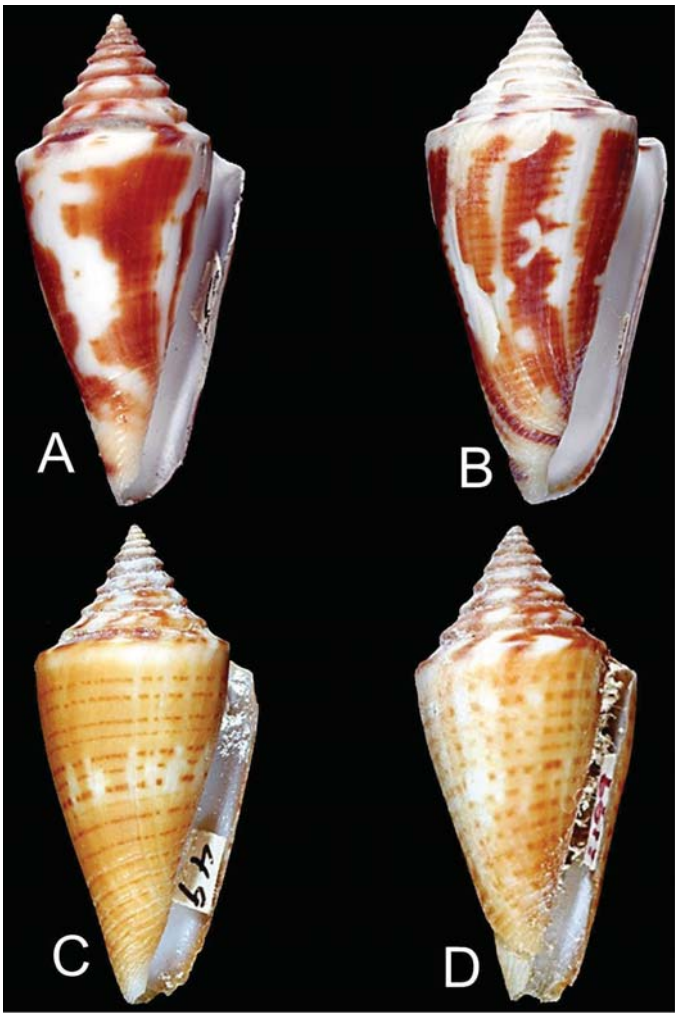

Fig. 33 ***flavescens***

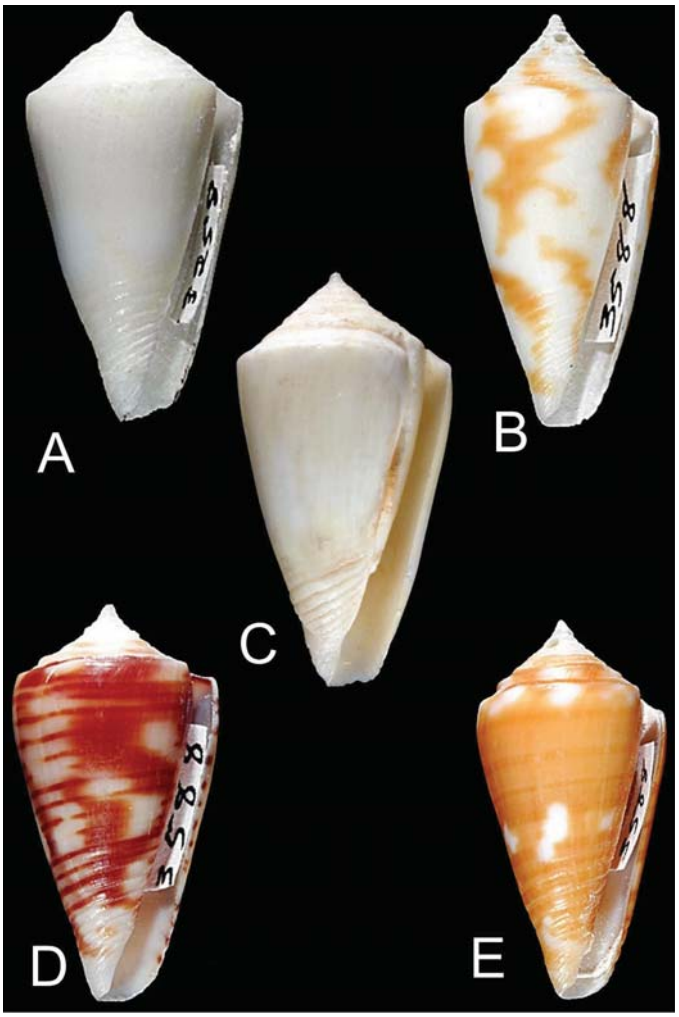

Fig. 34 ***flavescens cerrutti***

Fig. 35 ***flavescens***

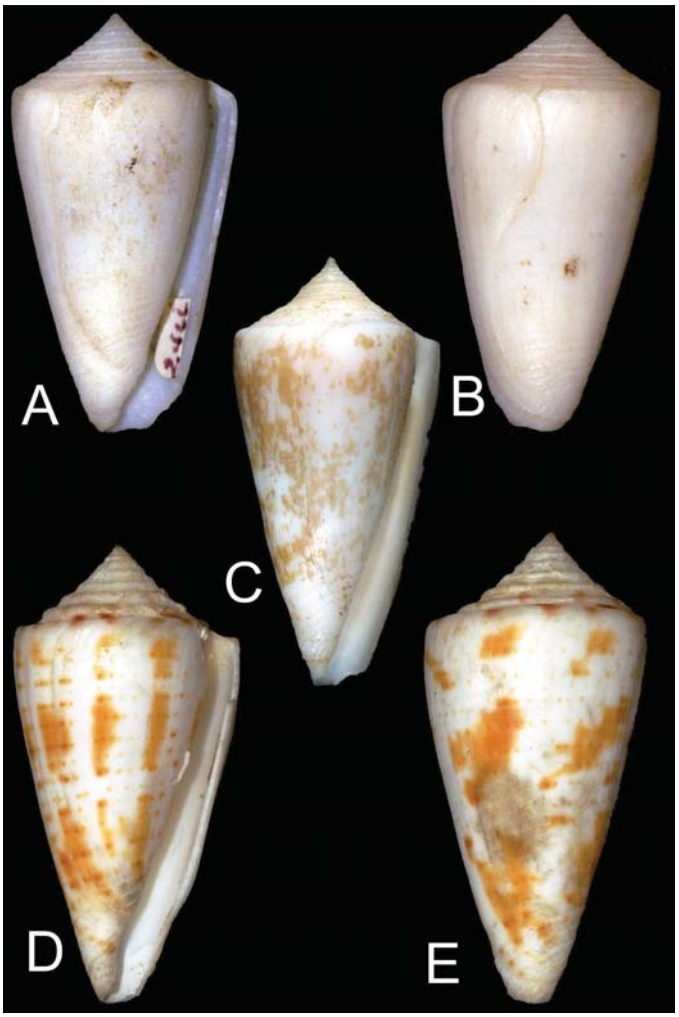

Fig. 36 ***species*** **one** ***bahamensis***

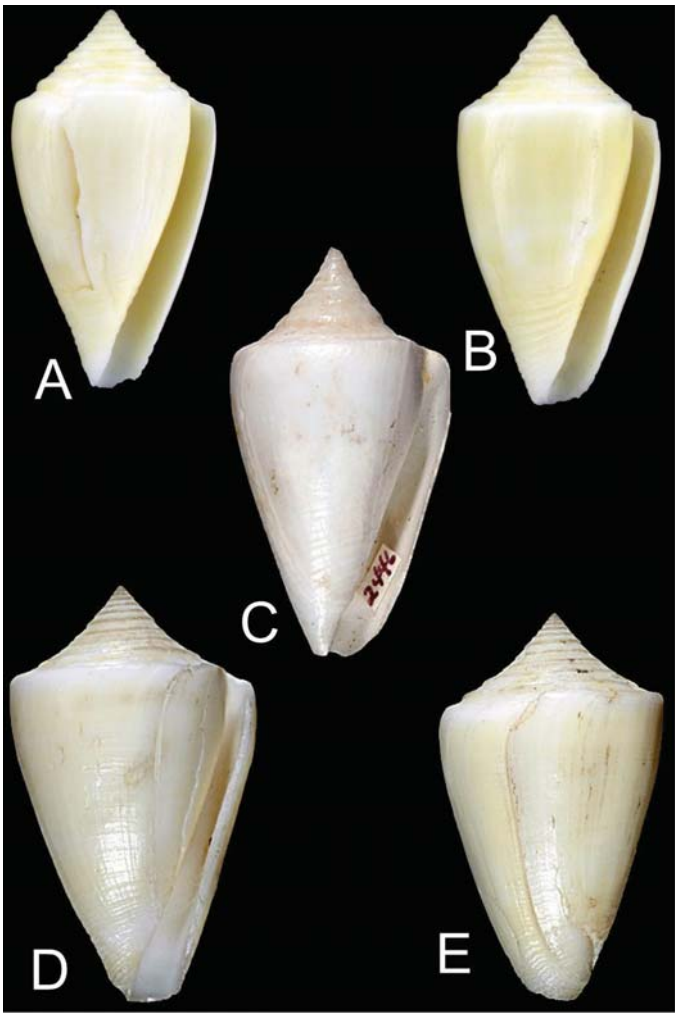

Fig. 37 *cedonulli* and *dominicanus*

Fig. 38 *mappa* types

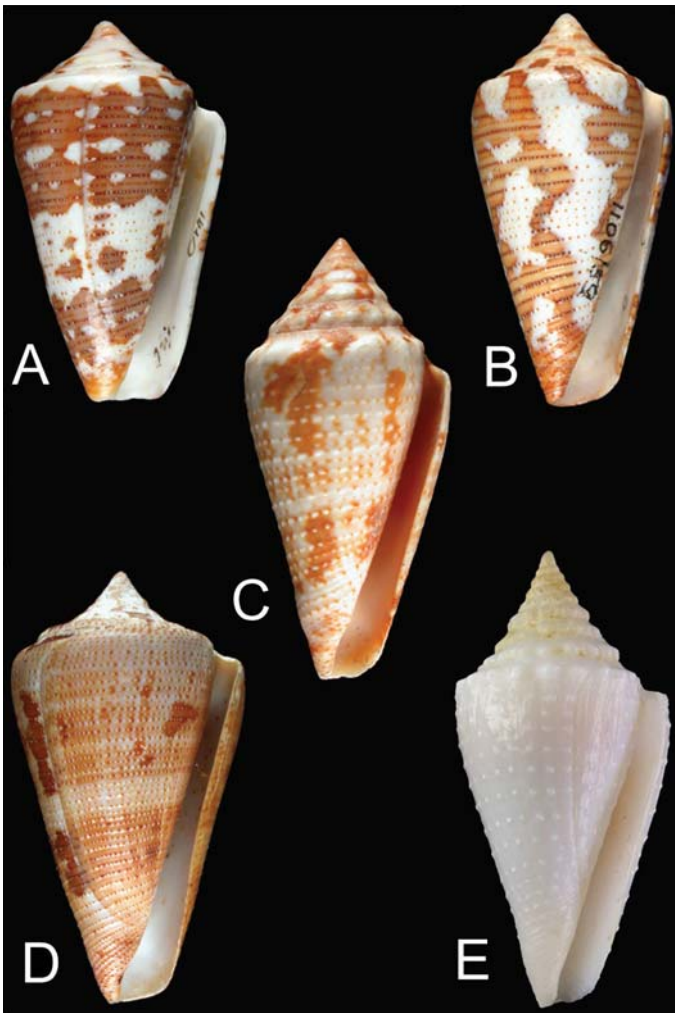

Fig. 39 ***mappa granarius***

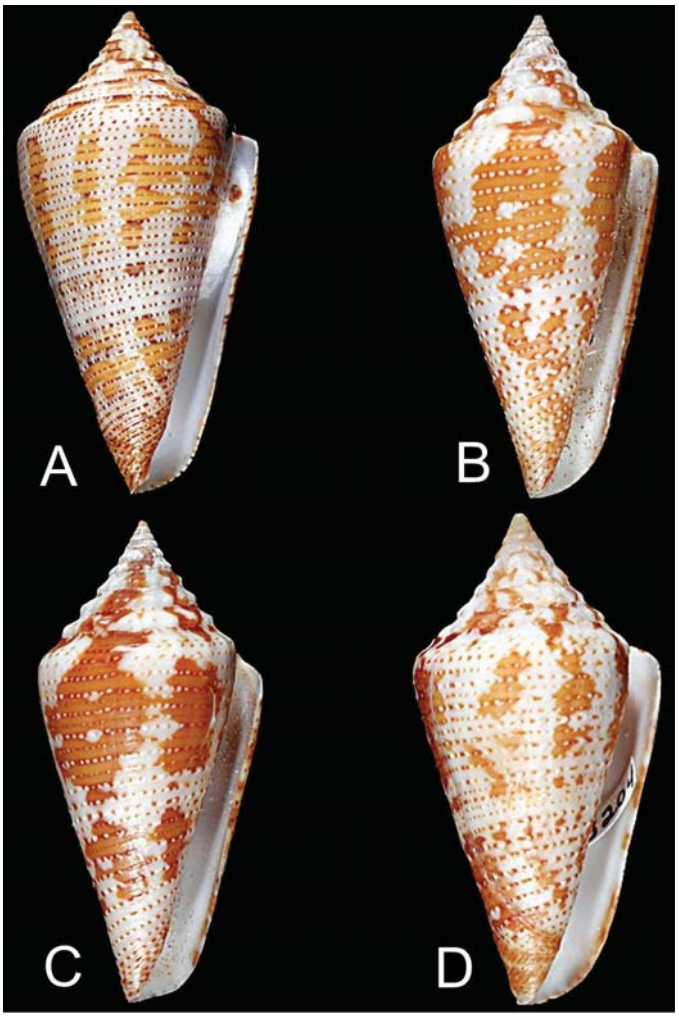

Fig. 40 ***aurantius*** **types**

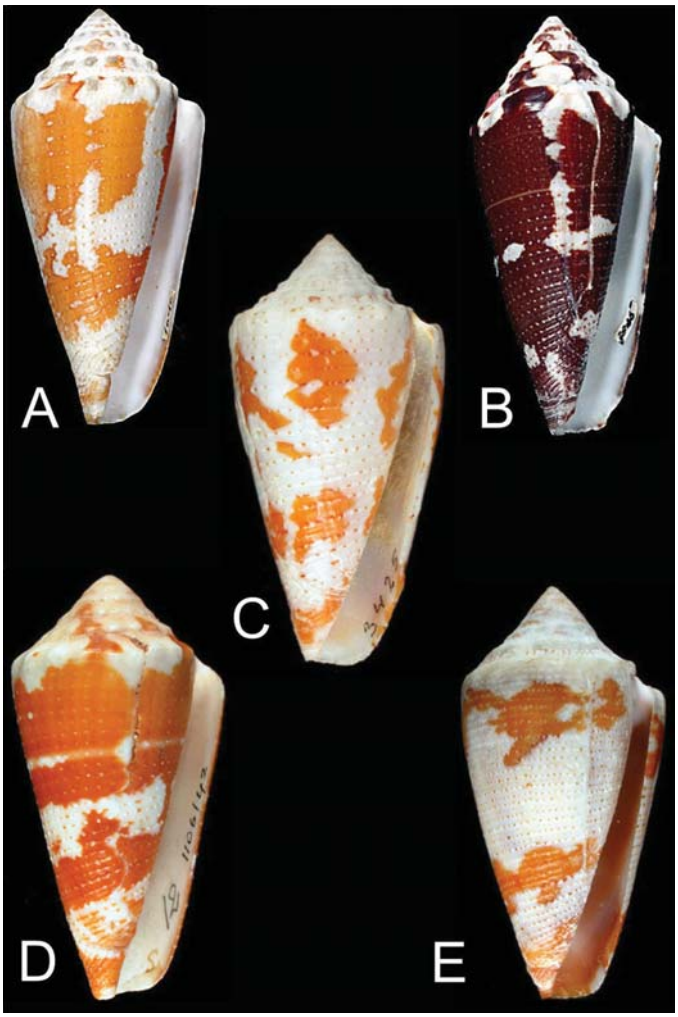

Fig. 41 ***aurantius***

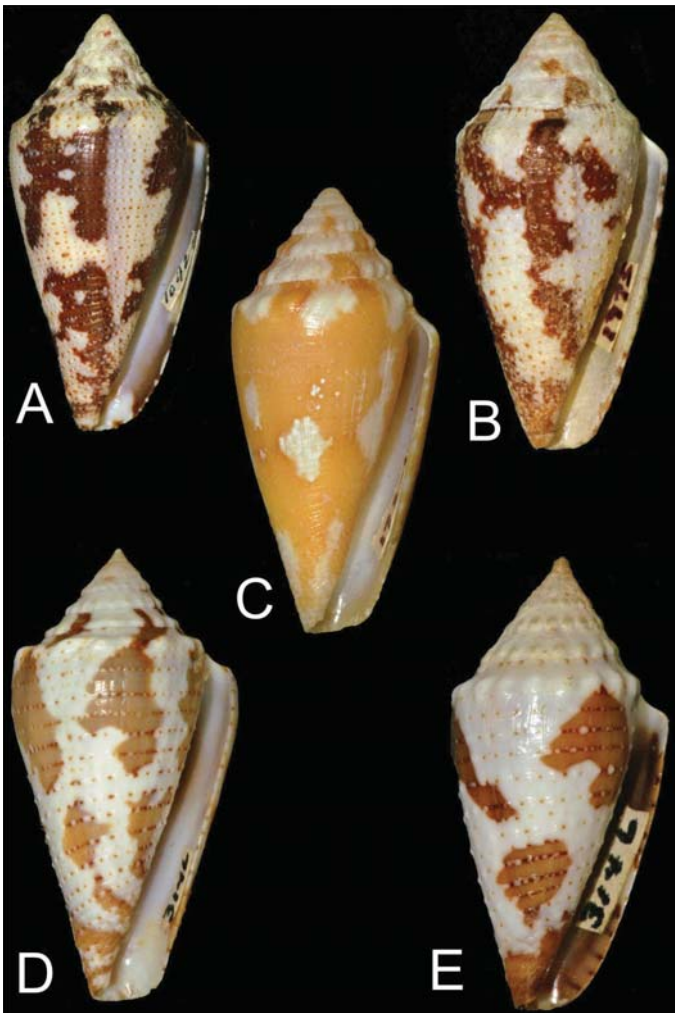

Fig. 42 ***scopulorum*** **and** ***pseudoaurantius***

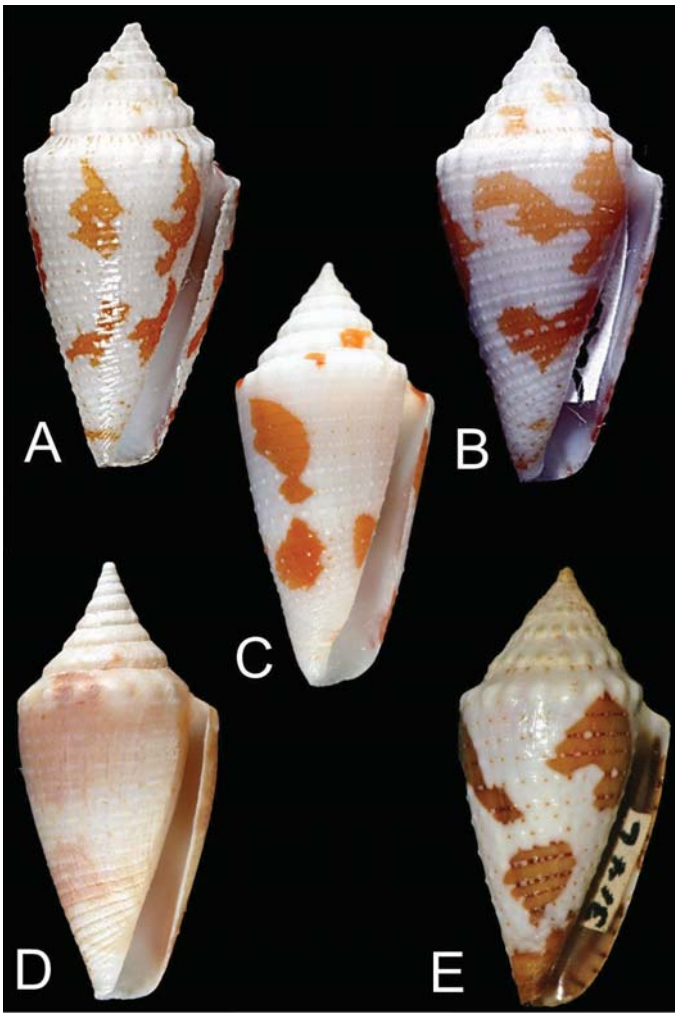

Fig. 43 ***patae***

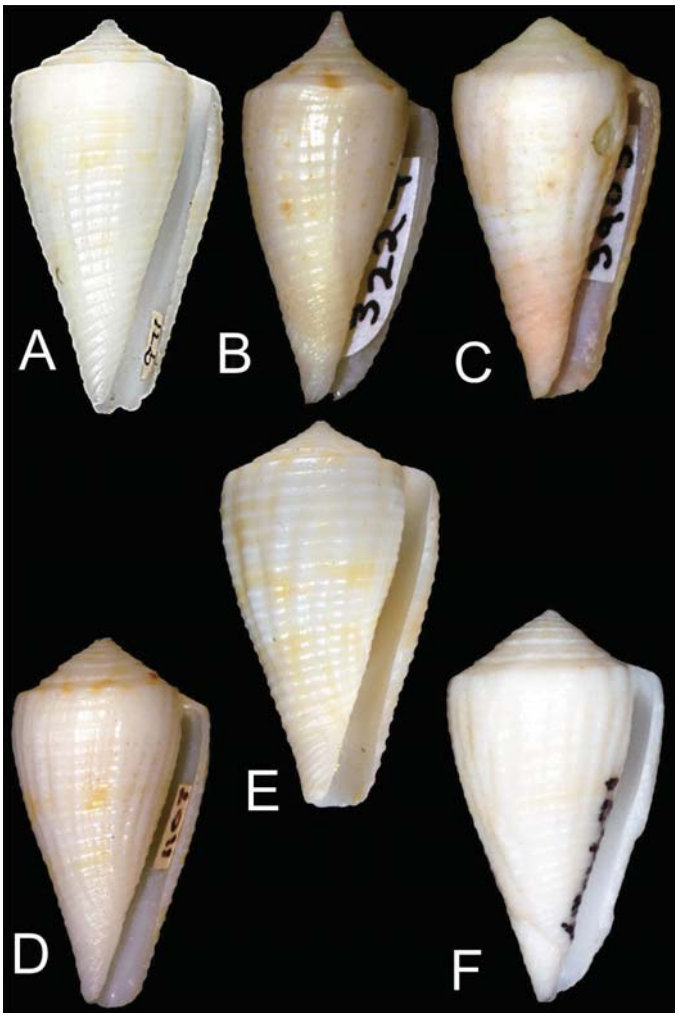

Fig. 44 ***cancellatus cancellatus***

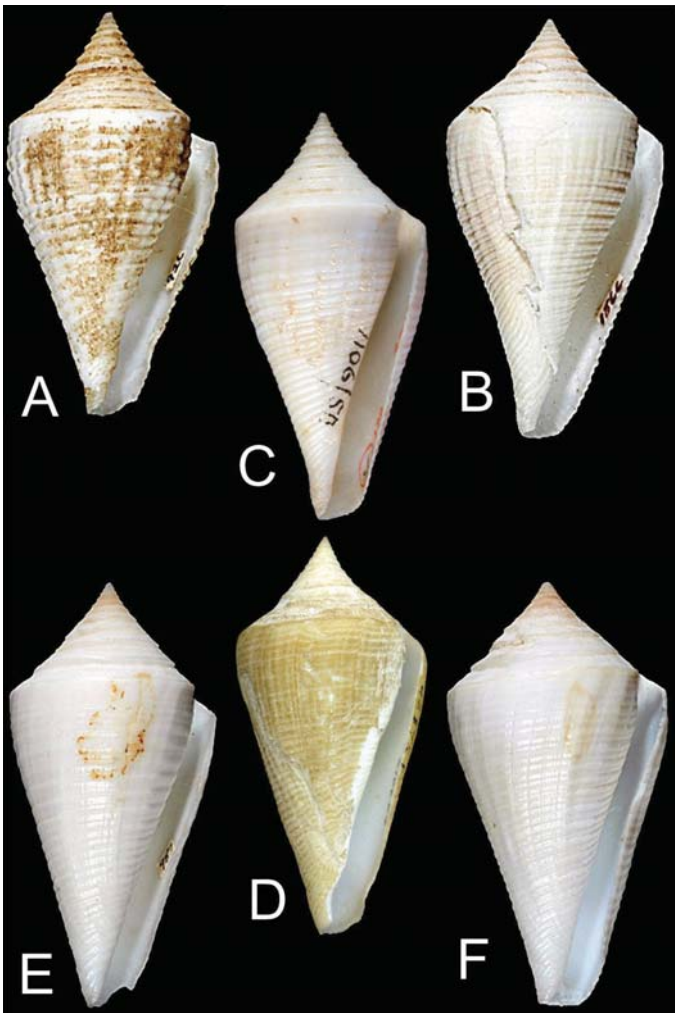

Fig. 45 ***cancellatus finkli/brunneobandatus***

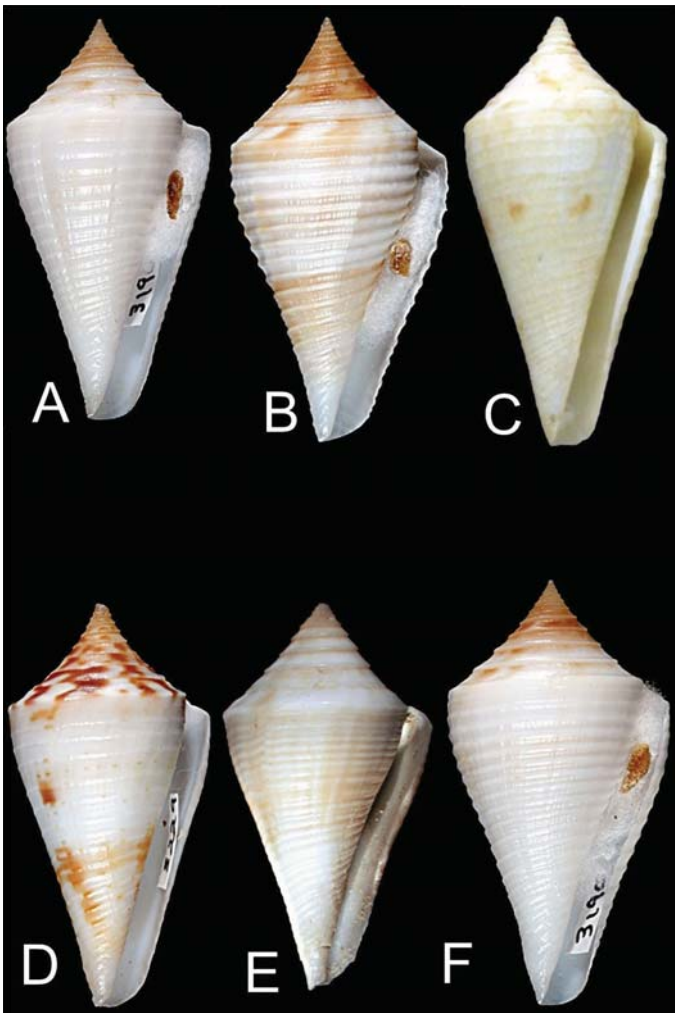

Fig. 46 ***stimpsoni***

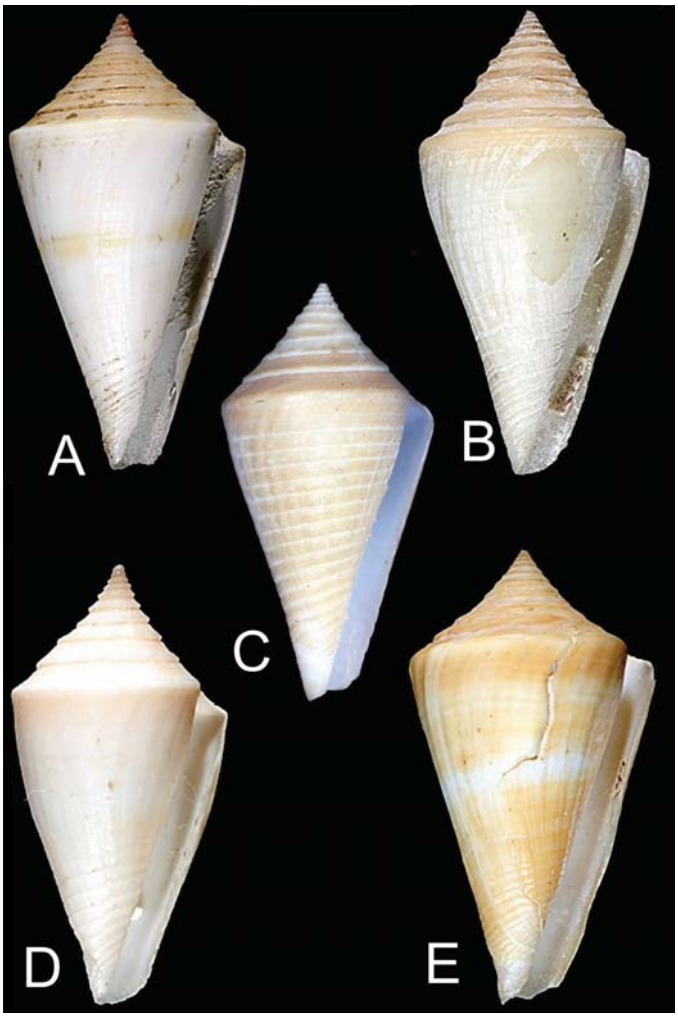

Fig. 47 ***stimpsoni***

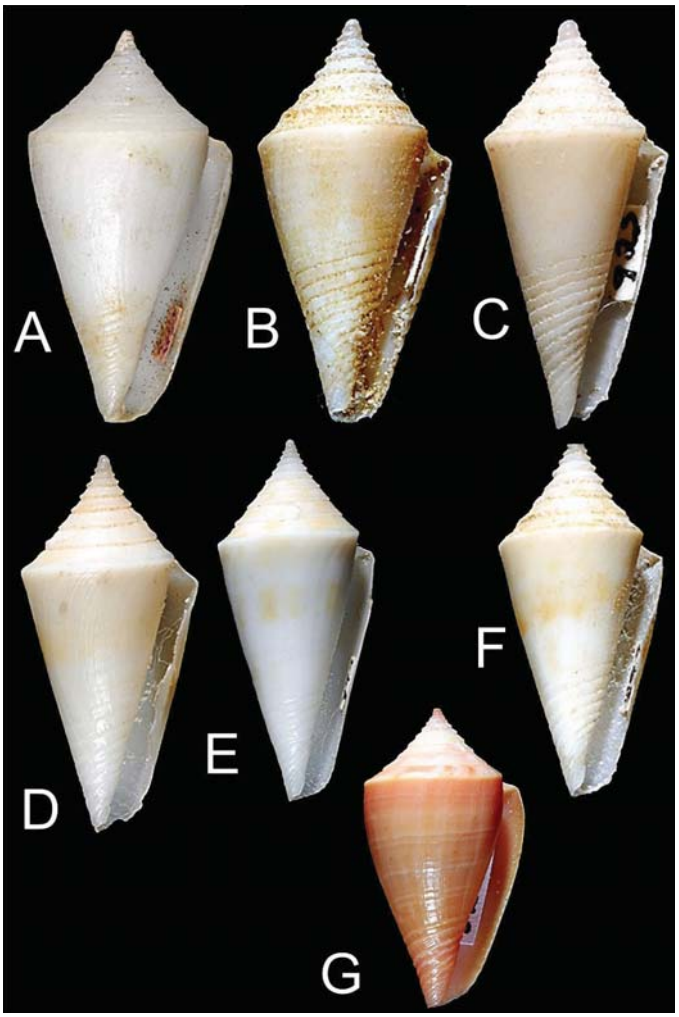

Fig. 48 ***armiger***

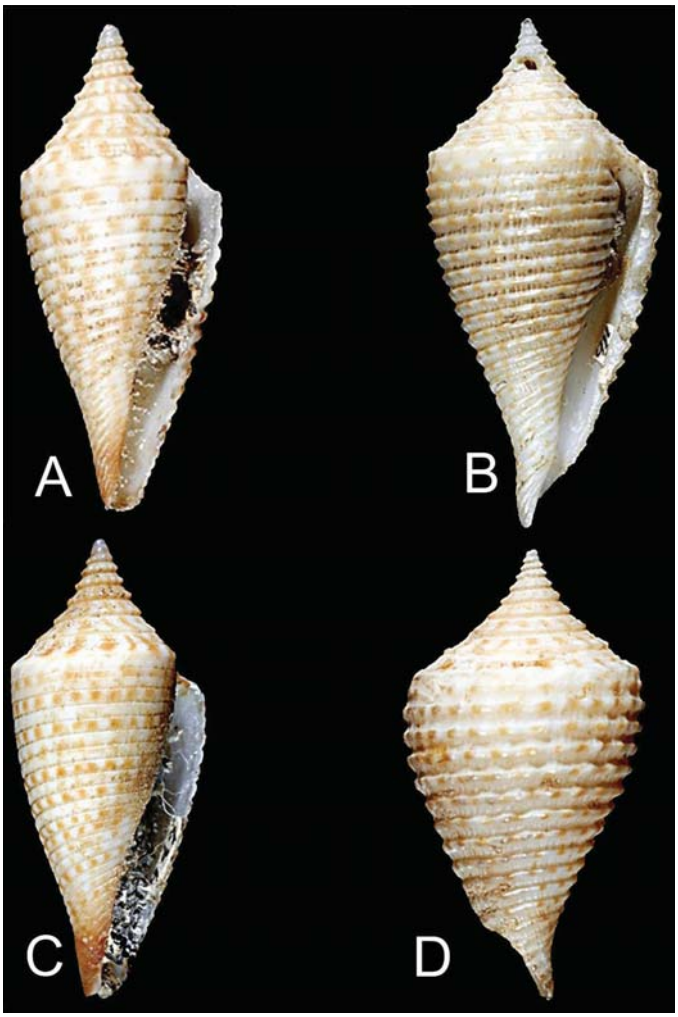

Fig. 49 ***armiger***

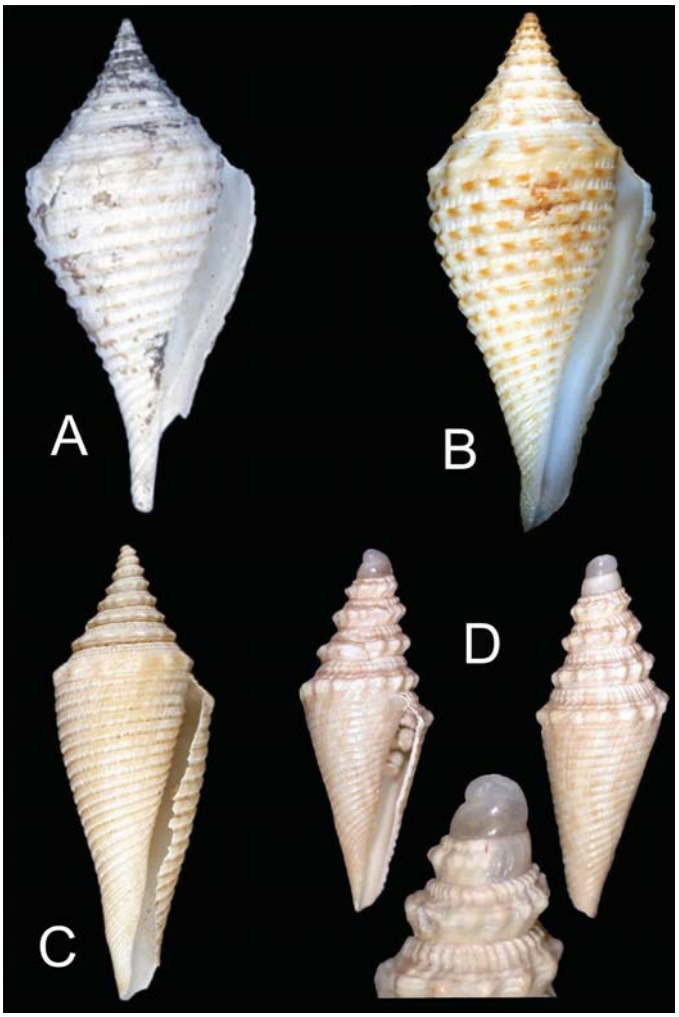

Fig. 50 ***guyanensis / bajanensis***

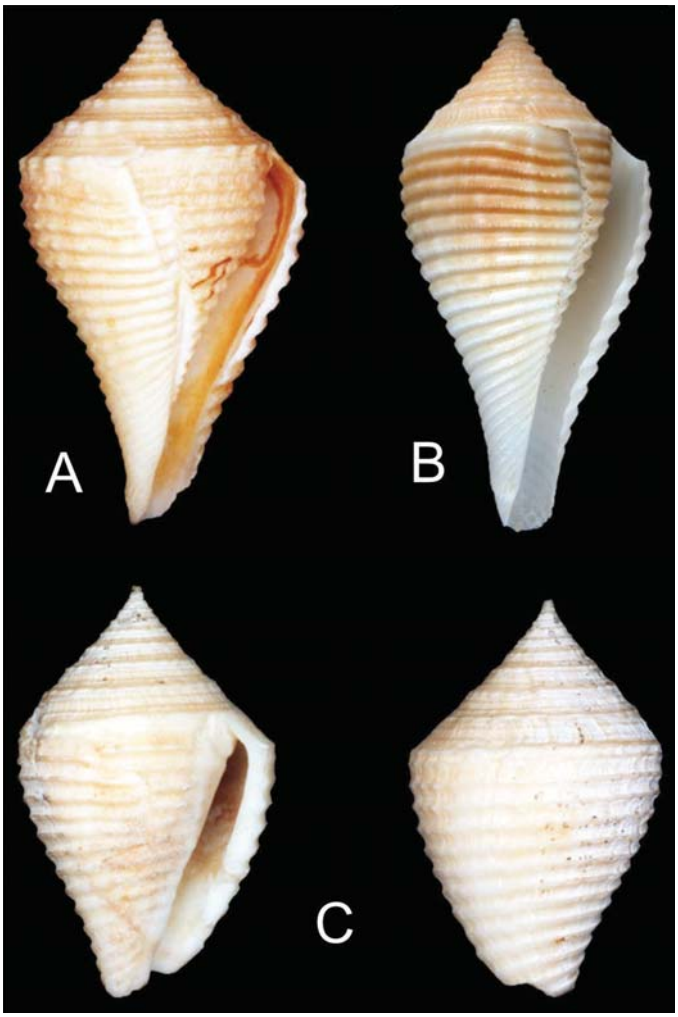

Fig. 51 ***villepinii villepinii***

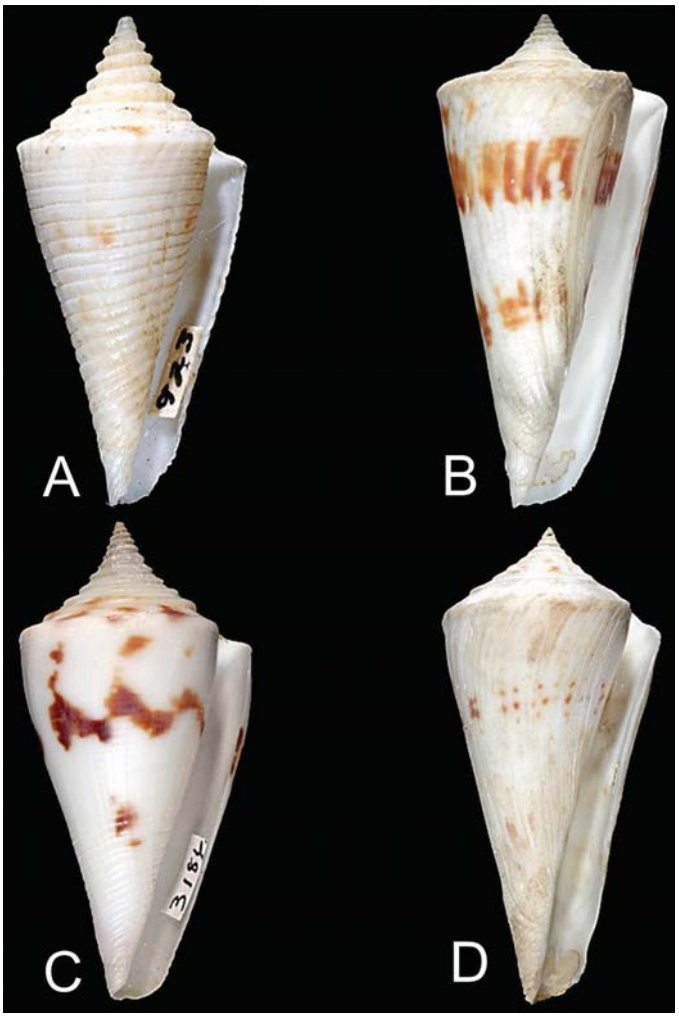

Fig. 52 ***villepinii fosteri / capricorni***

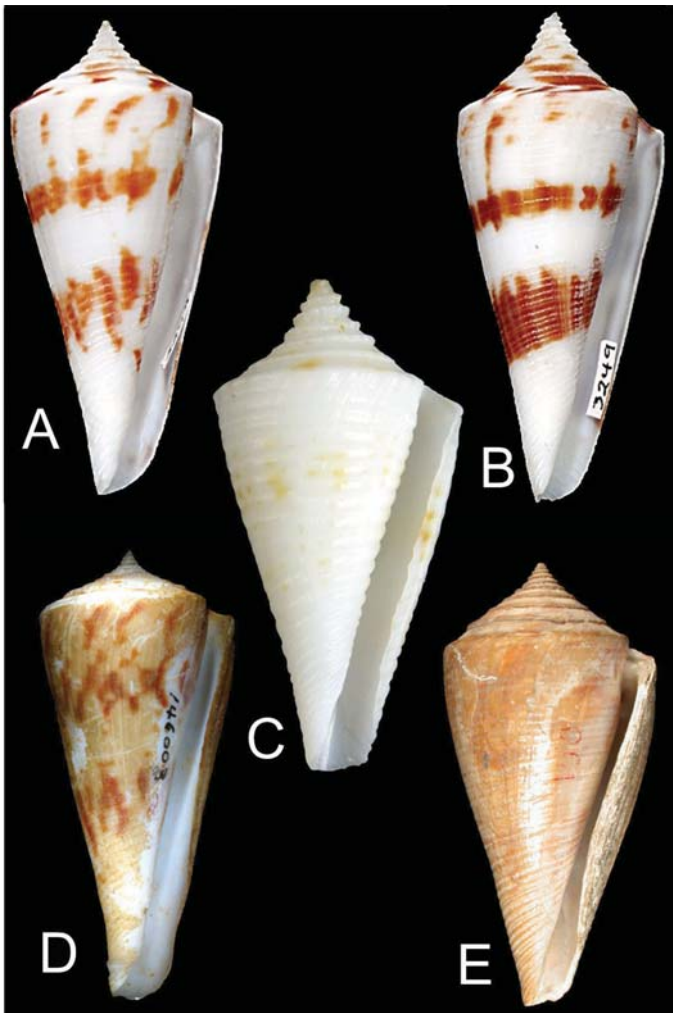

Fig. 53 ***villepinii***

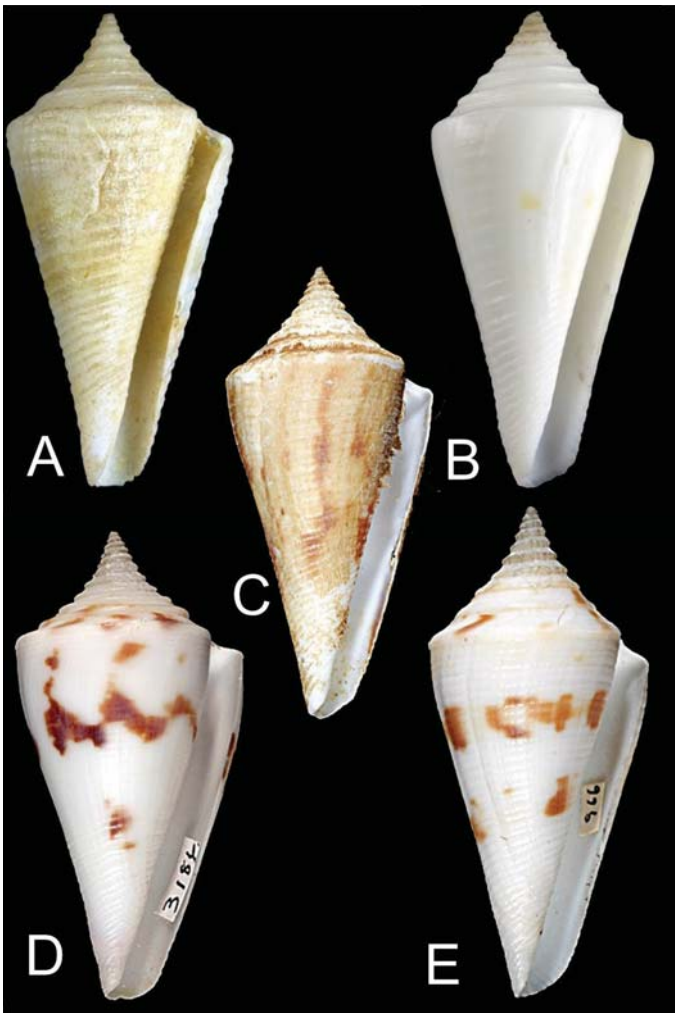

Fig. 54 ***garciai***

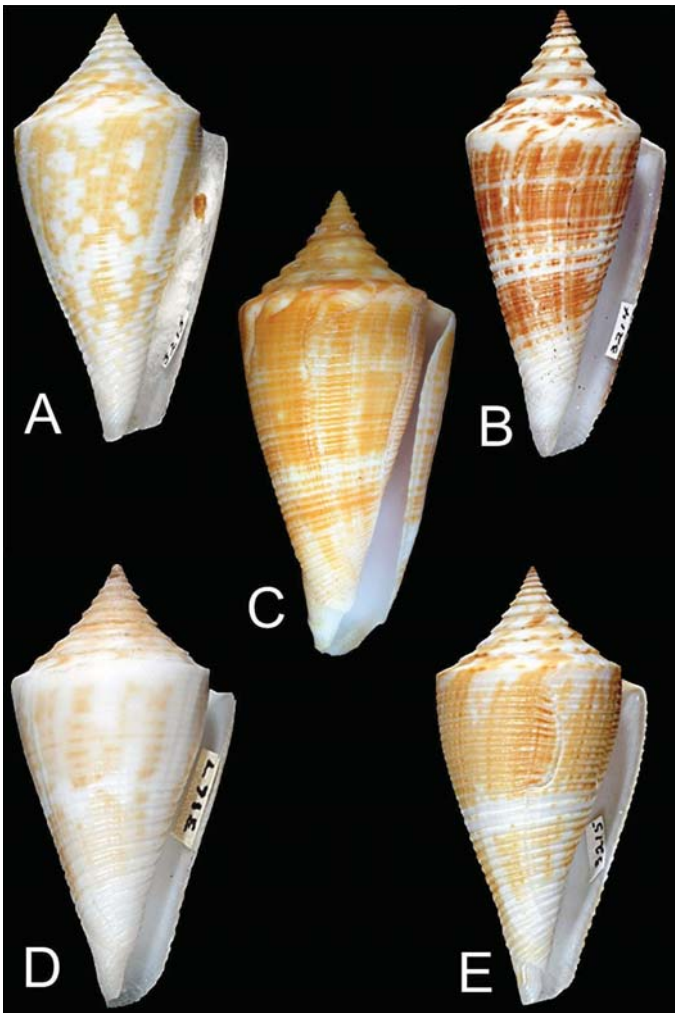

Fig. 55 ***mindanus***

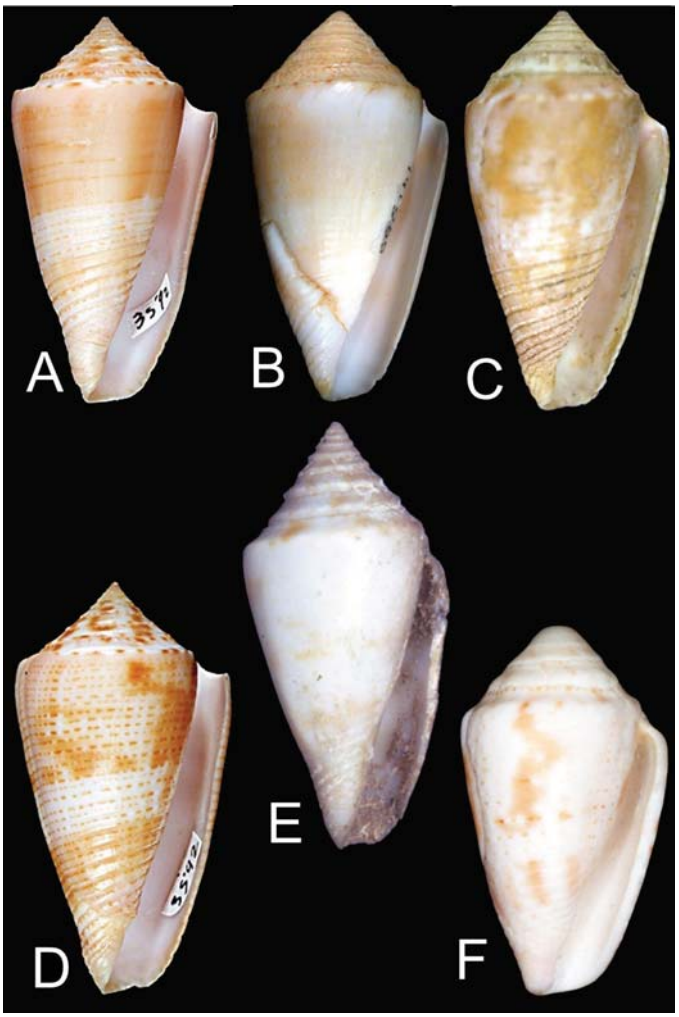

Fig. 56 ***mindanus mindanus***

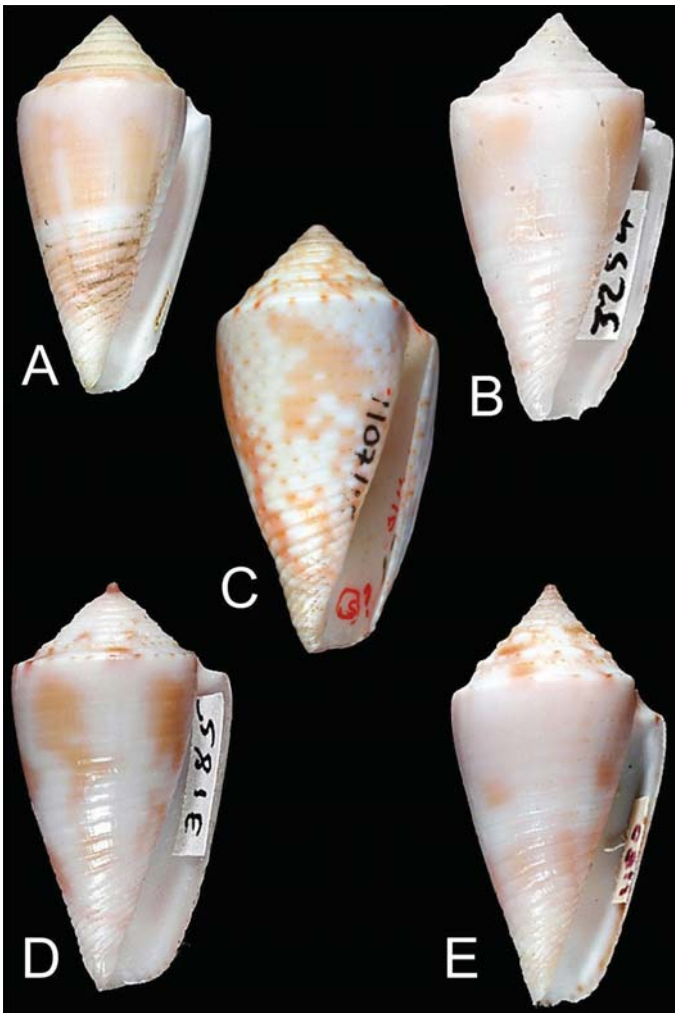

Fig. 57 ***mindanus agassizii***

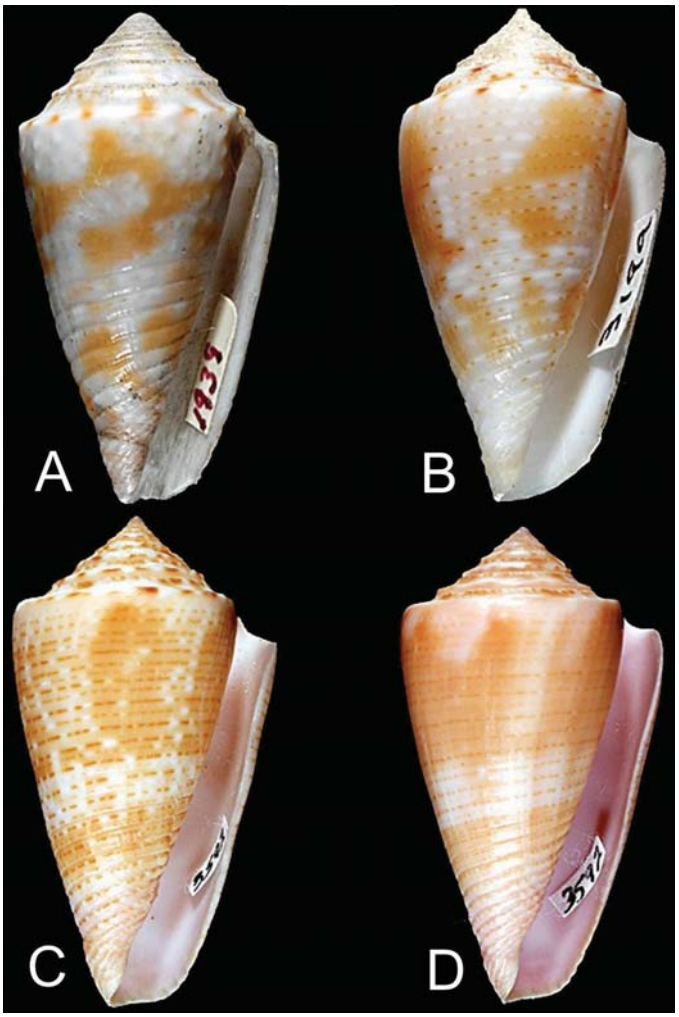

Fig. 58 ***mindanus***

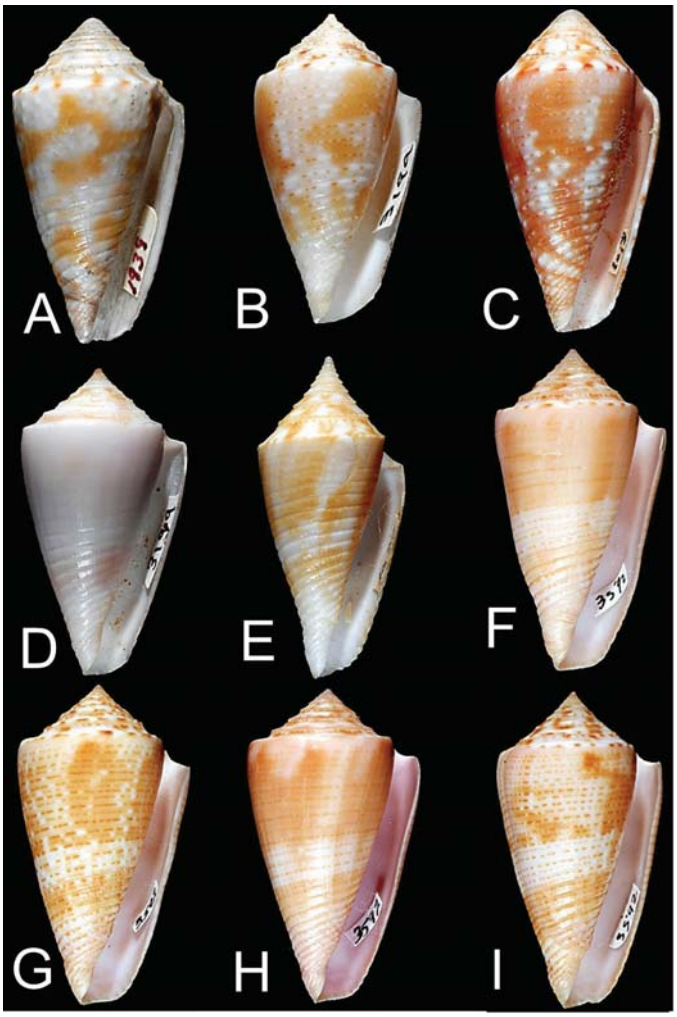

Fig. 59 ***pusio***

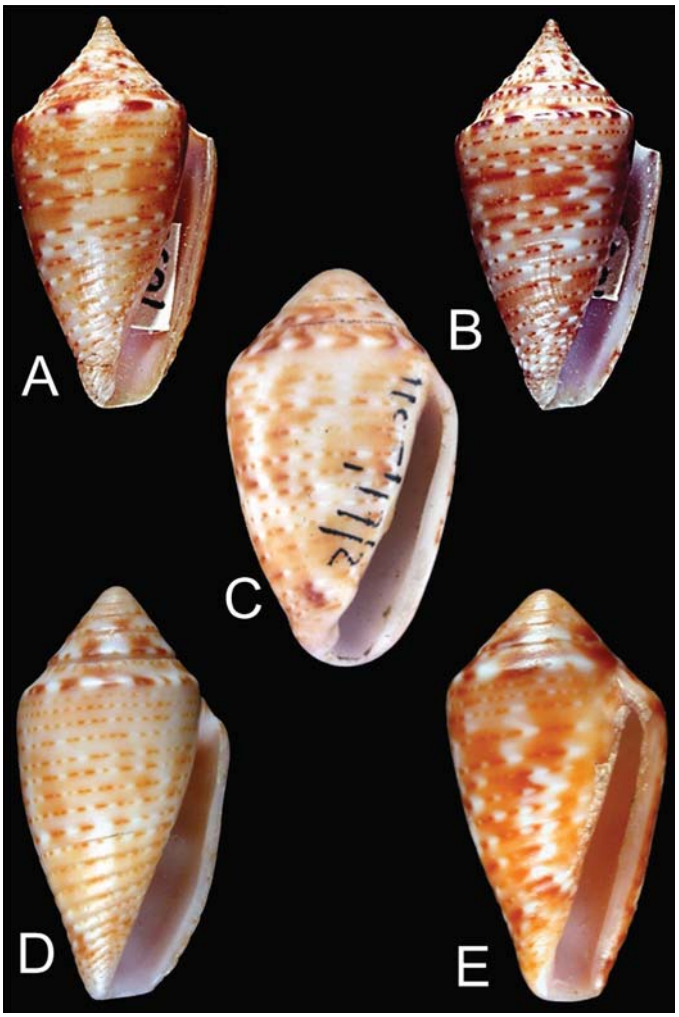

Fig. 60 ***pusio***

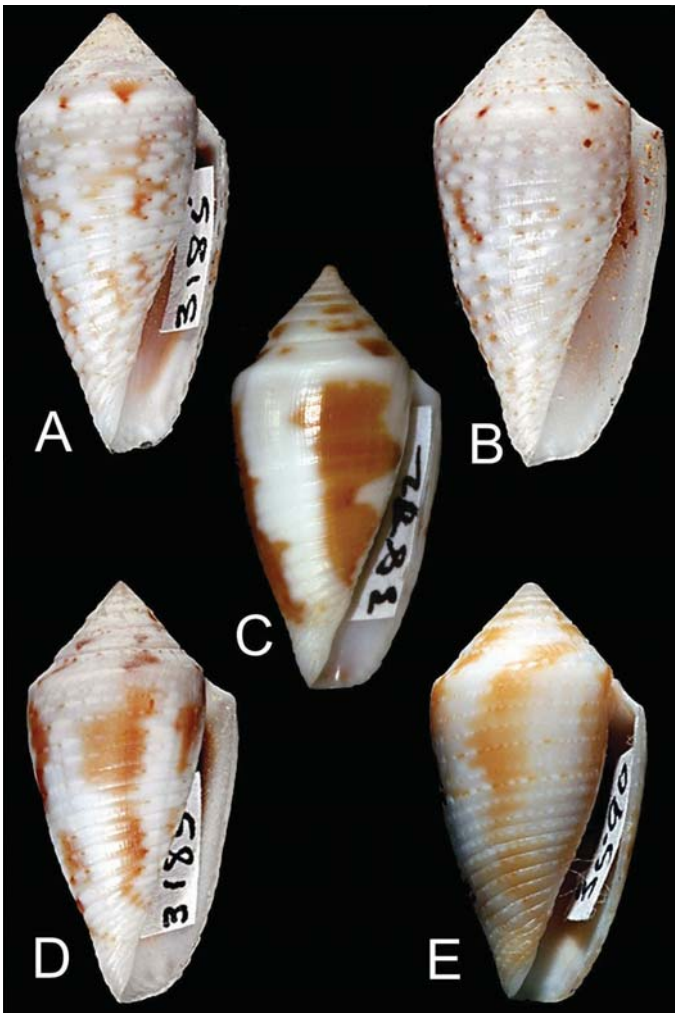

Fig. 61 ***pusio***

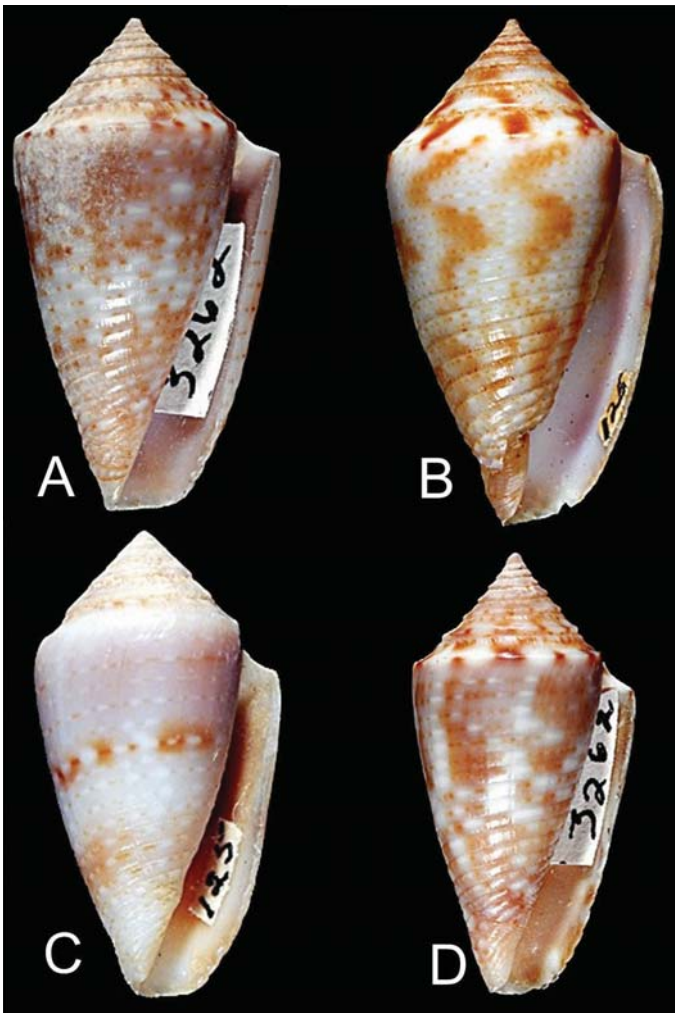

Fig. 62 ***branhamae***

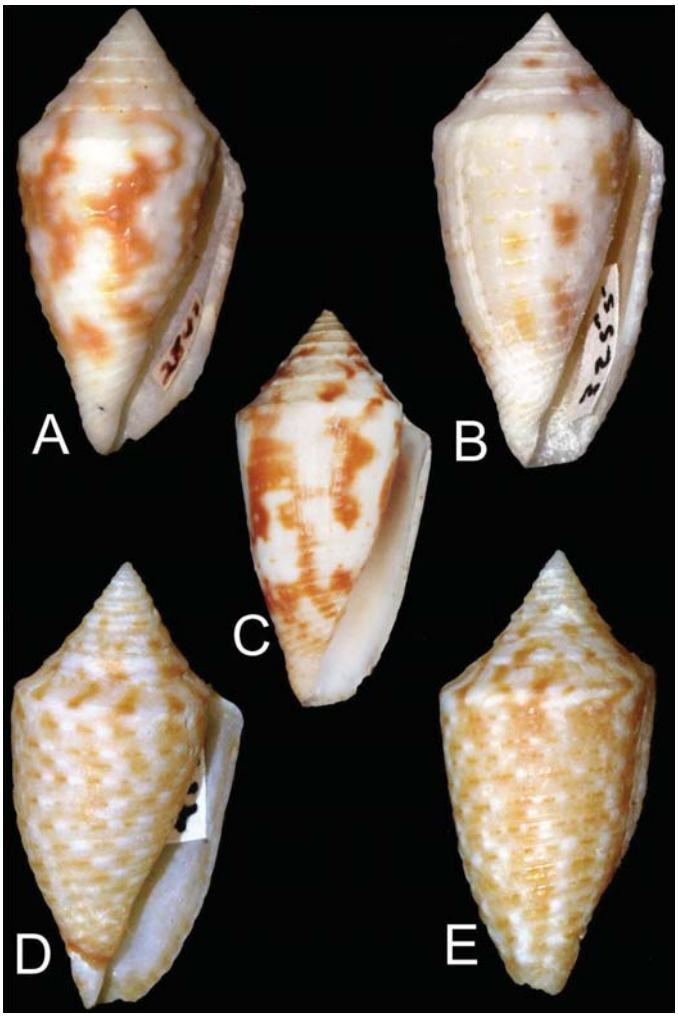

Fig. 63 ***vanhyningi / anaglypticus***

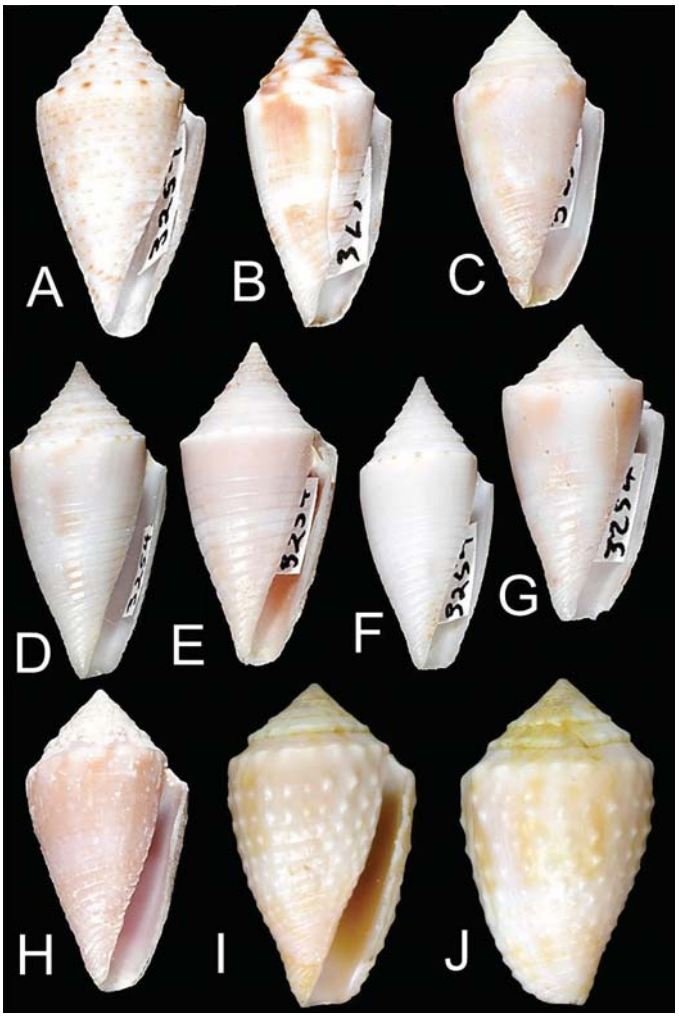

Fig. 64 ***vanhyningi / anaglypticus***

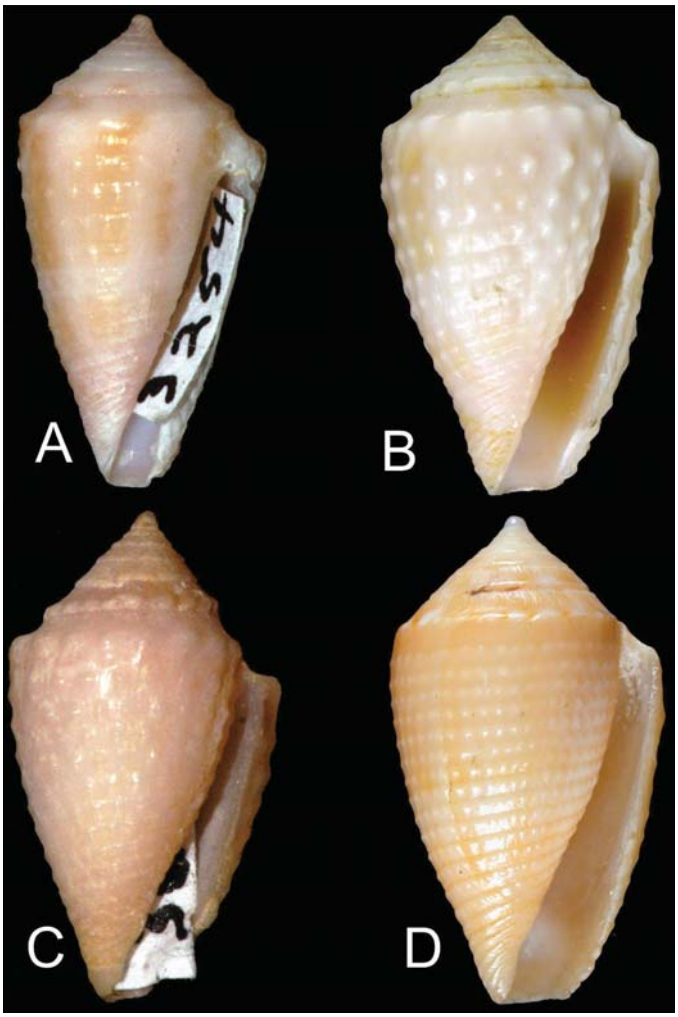

Fig. 65 ***anaglypticus***

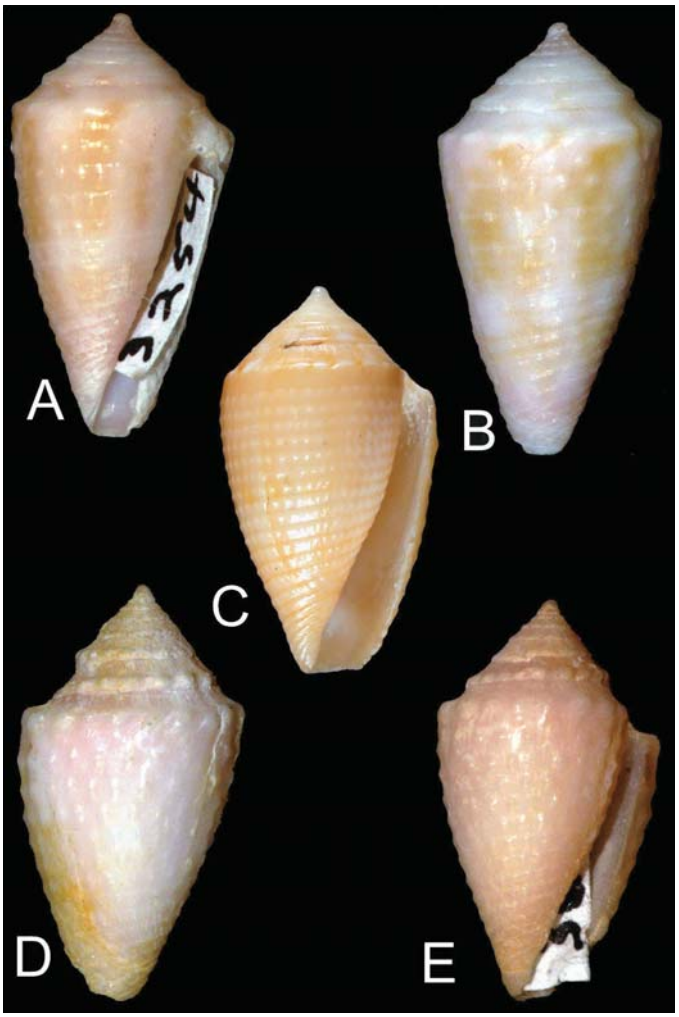

Fig. 66 ***selenae***

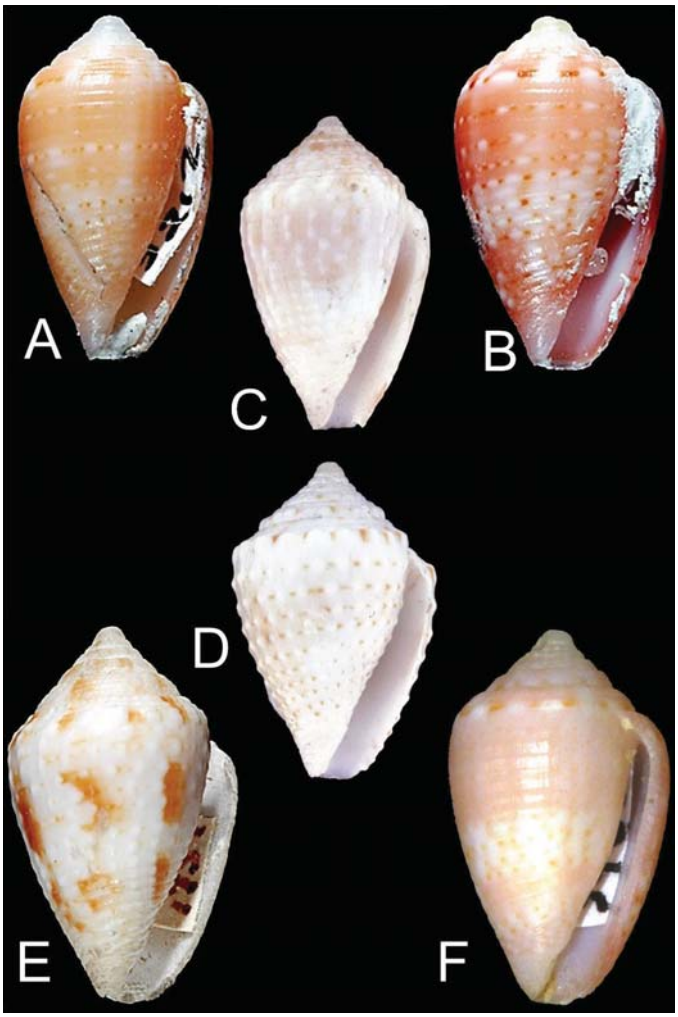

Fig. 67 ***hieroglyphus***

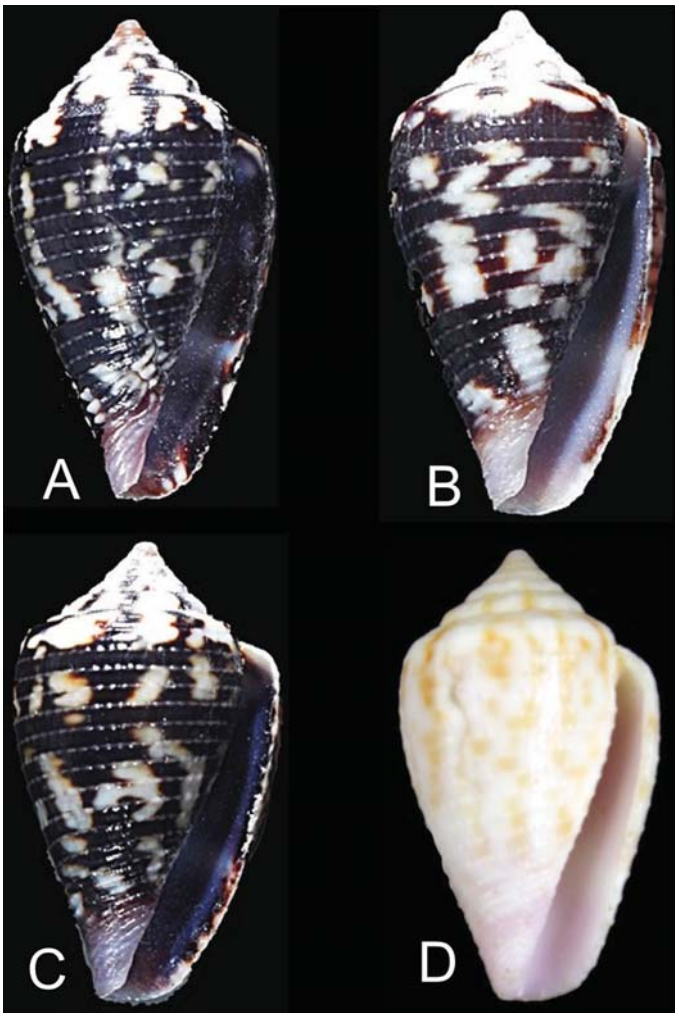

Fig. 68 ***explorator***

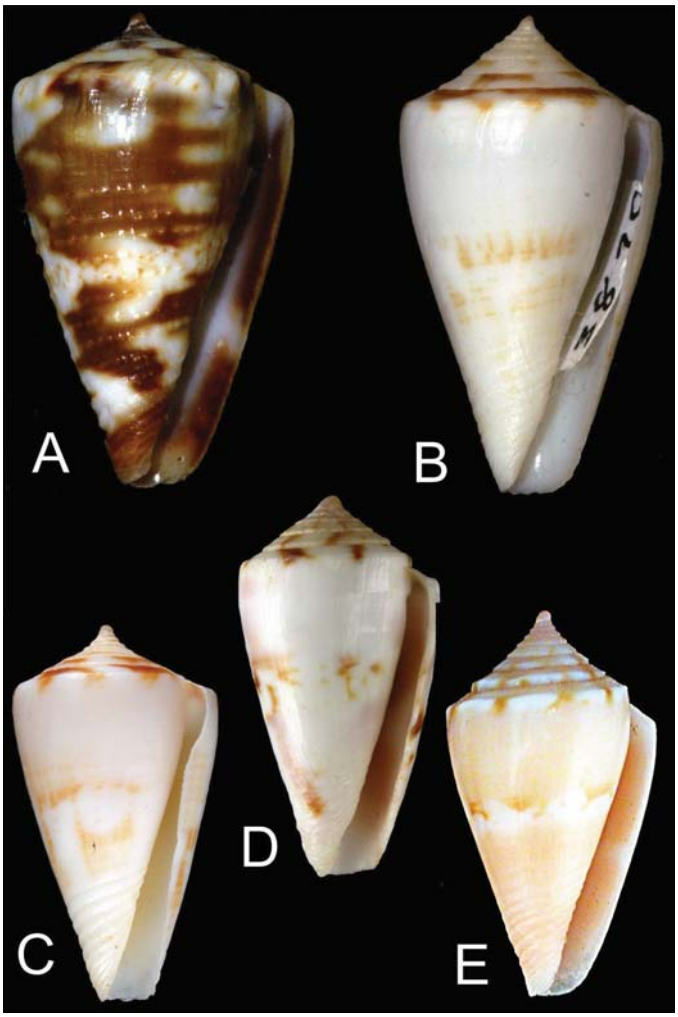

Fig. 69 ***puncticulatus puncticulatus***

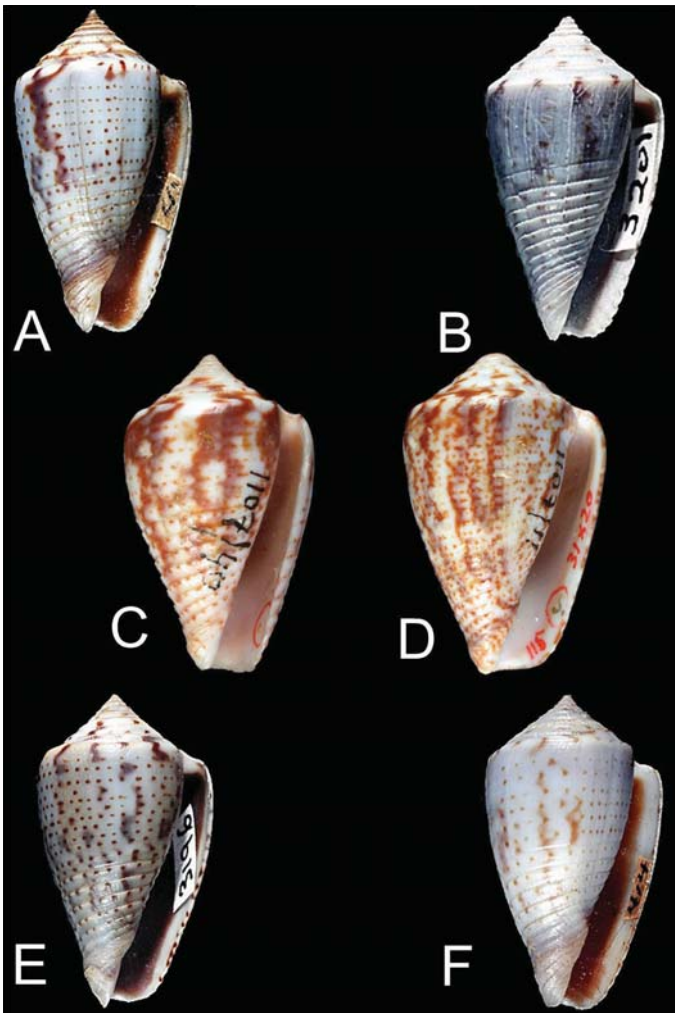

Fig. 70 ***puncticulatus columba***

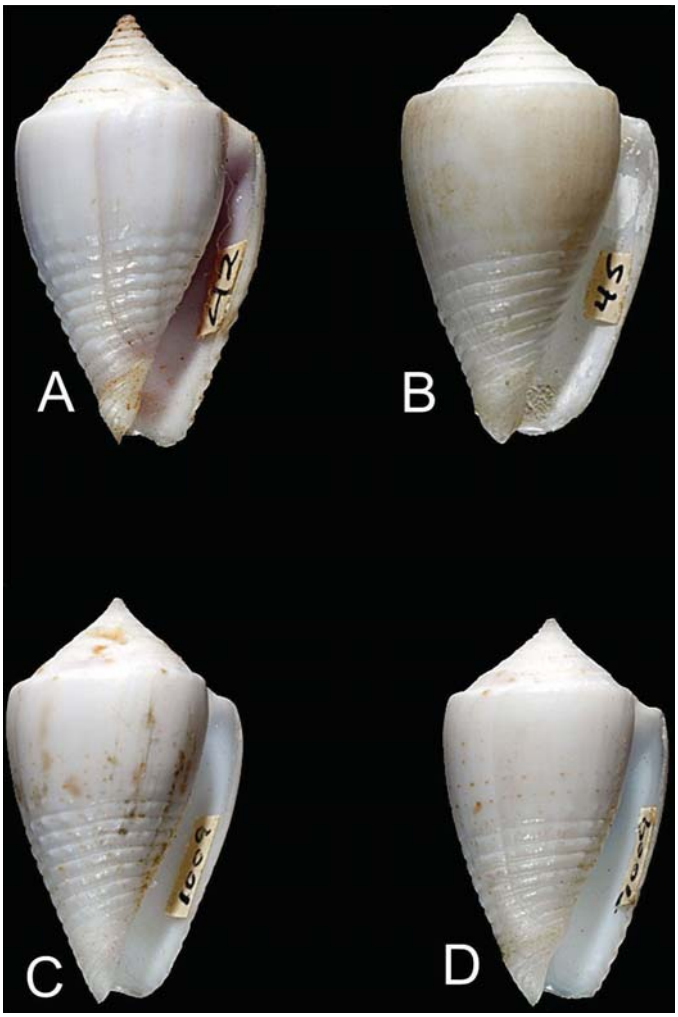

Fig. 71 ***puncticulatus columba***

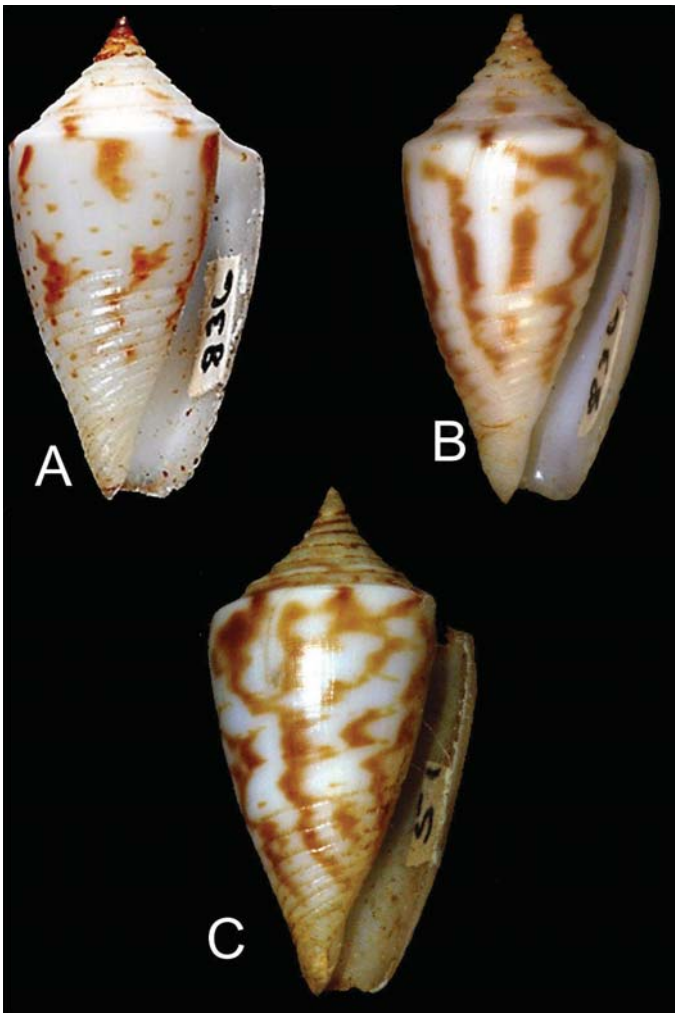

Fig. 72 ***puncticulatus millepunctatus***

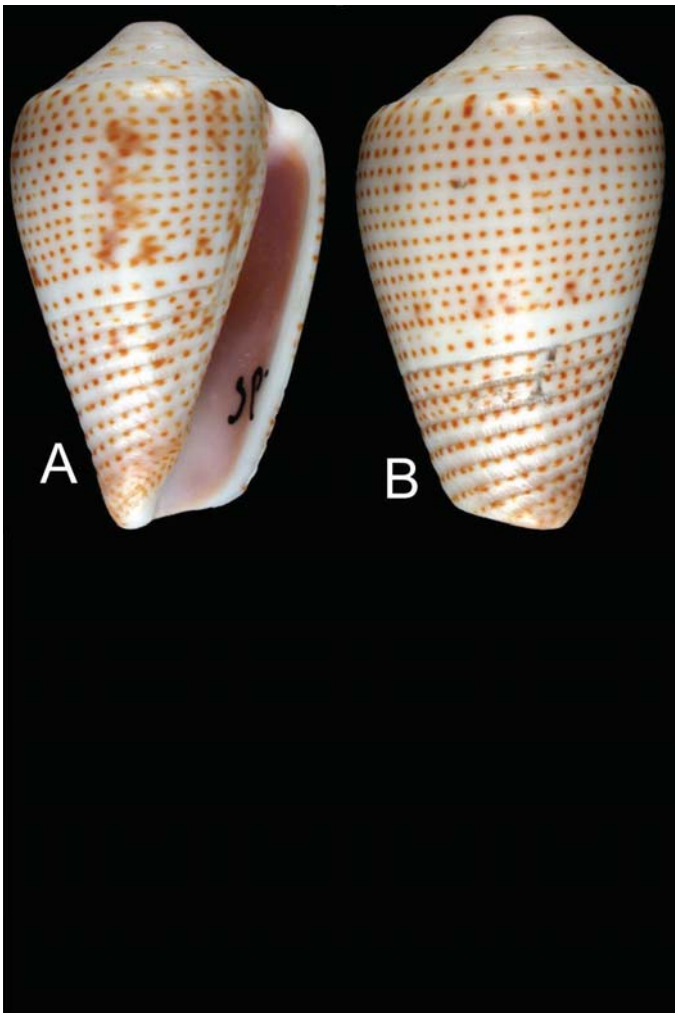

Fig. 73 ***puncticulatus cardonensis***

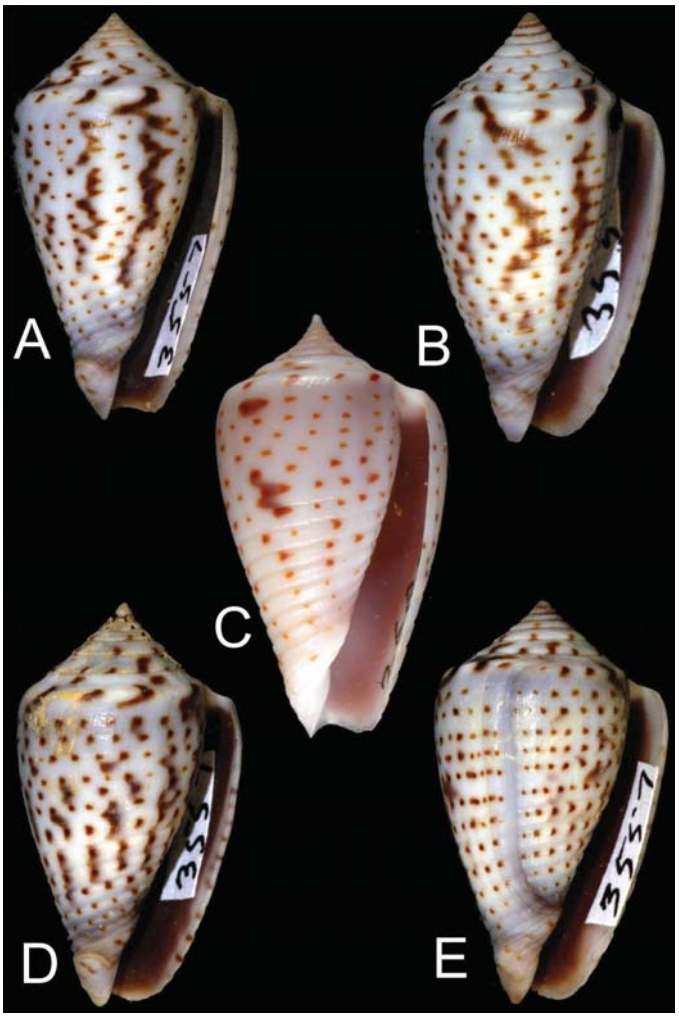

Fig. 74 ***jaspideus jaspideus***

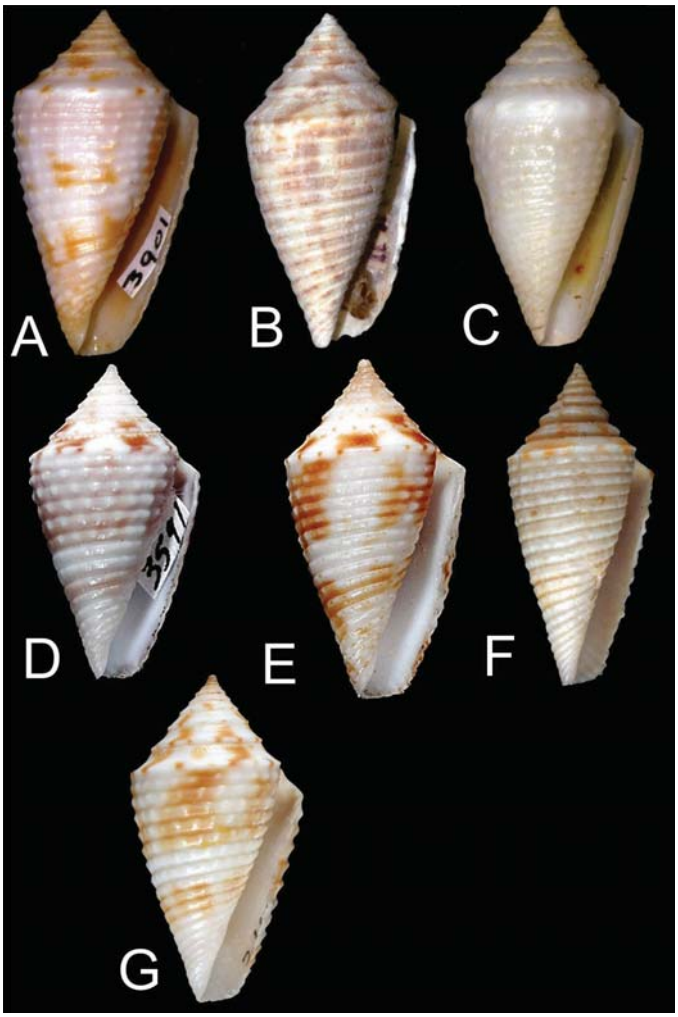

Fig. 75 ***jaspideus pealii***

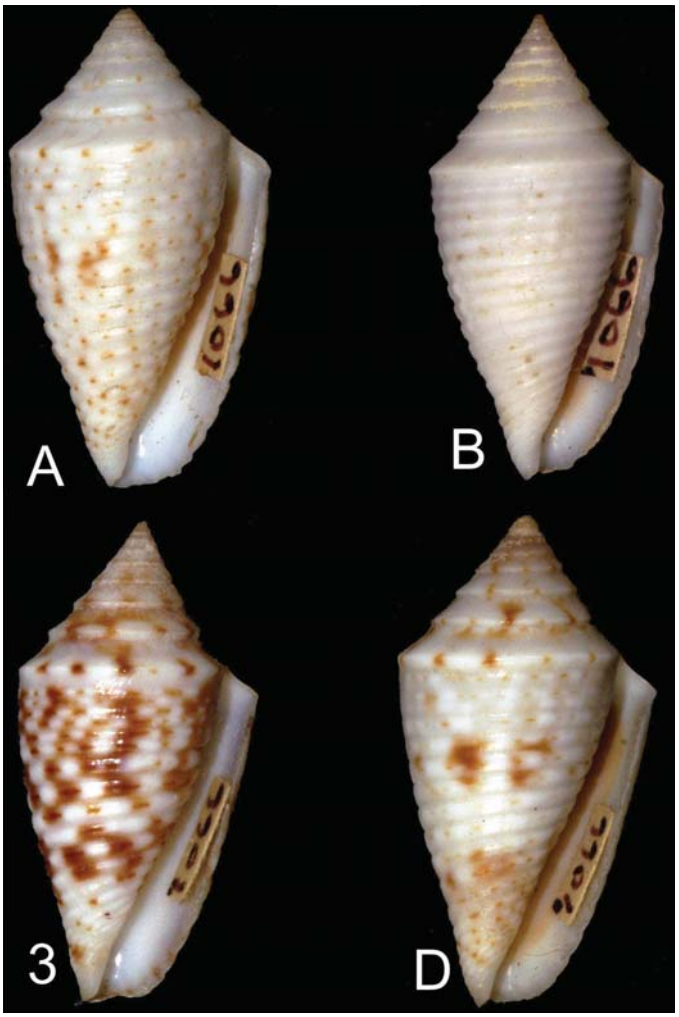

Fig. 76 ***jaspideus stearnsii***

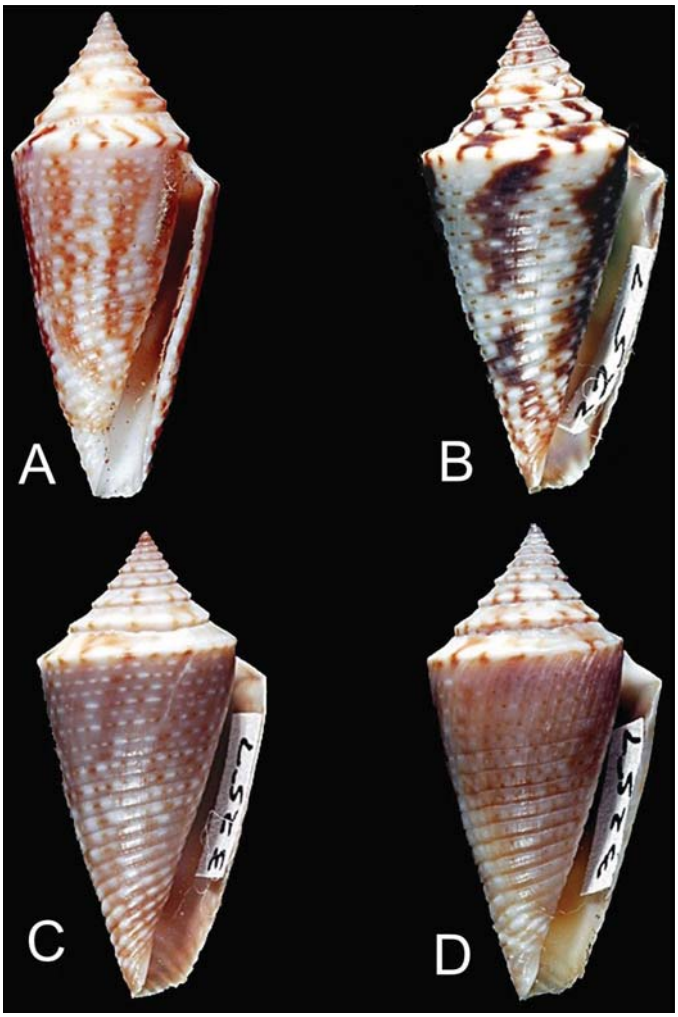

Fig. 77 ***jaspideus nodiferus***

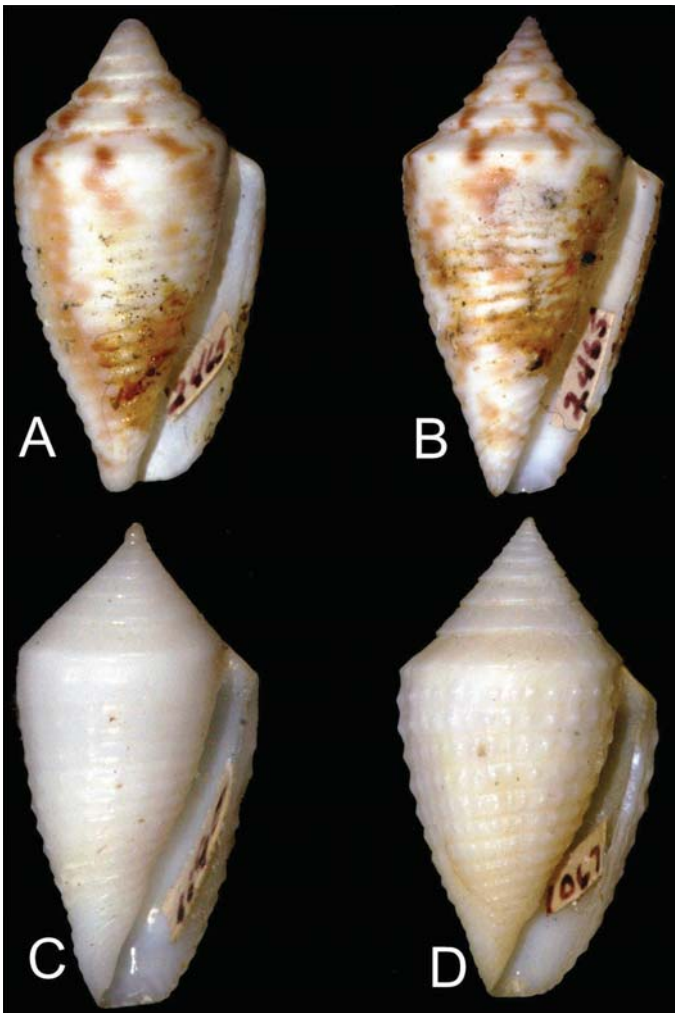

Fig. 78 ***jaspideus acutimarginatus***

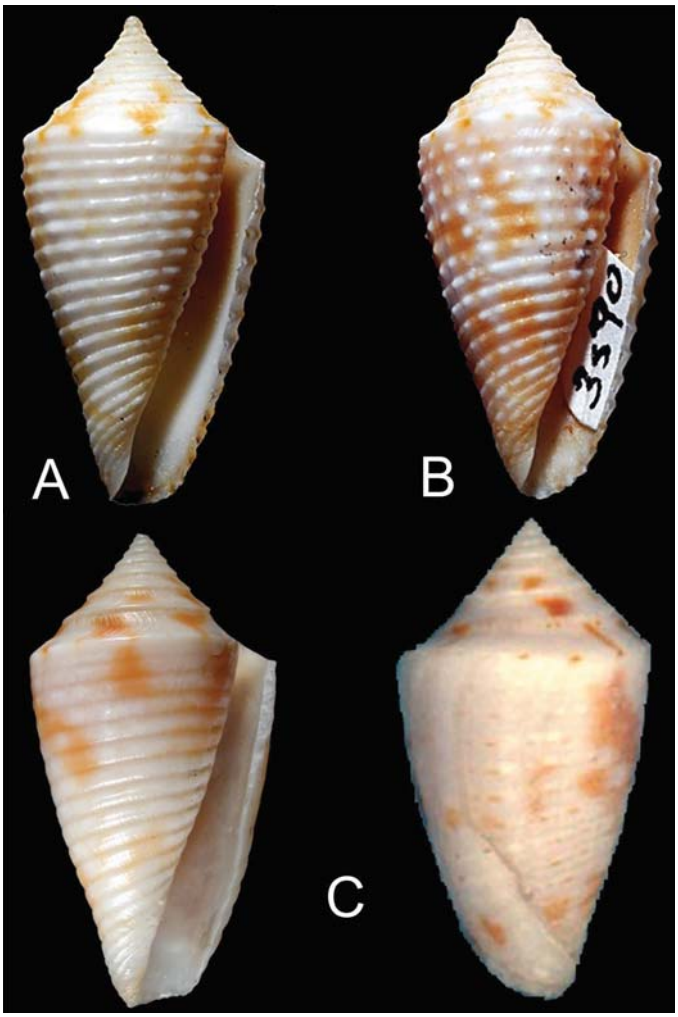

Fig. 79 ***psuedocardinalus***

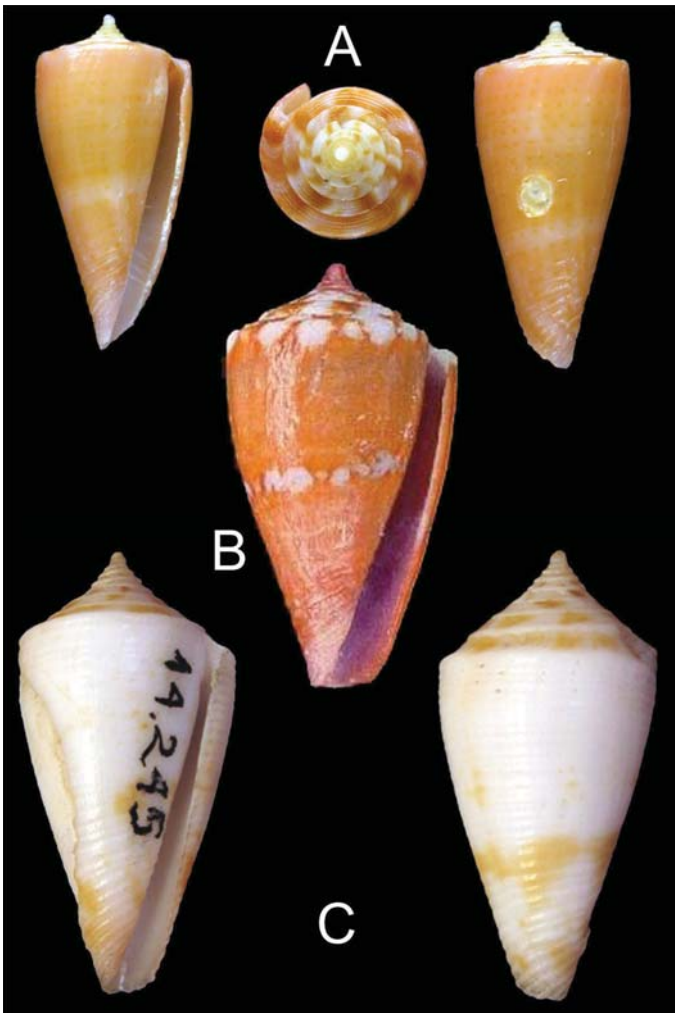

Fig. 80 ***mazei / lenhilli***

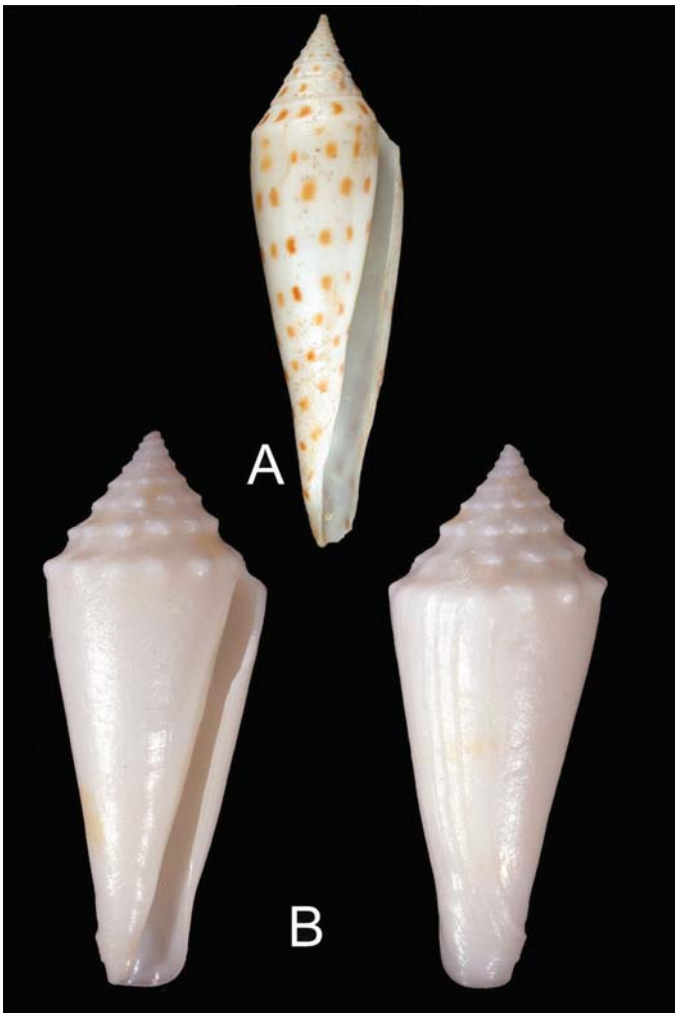

Fig. 81 ***mcginty***

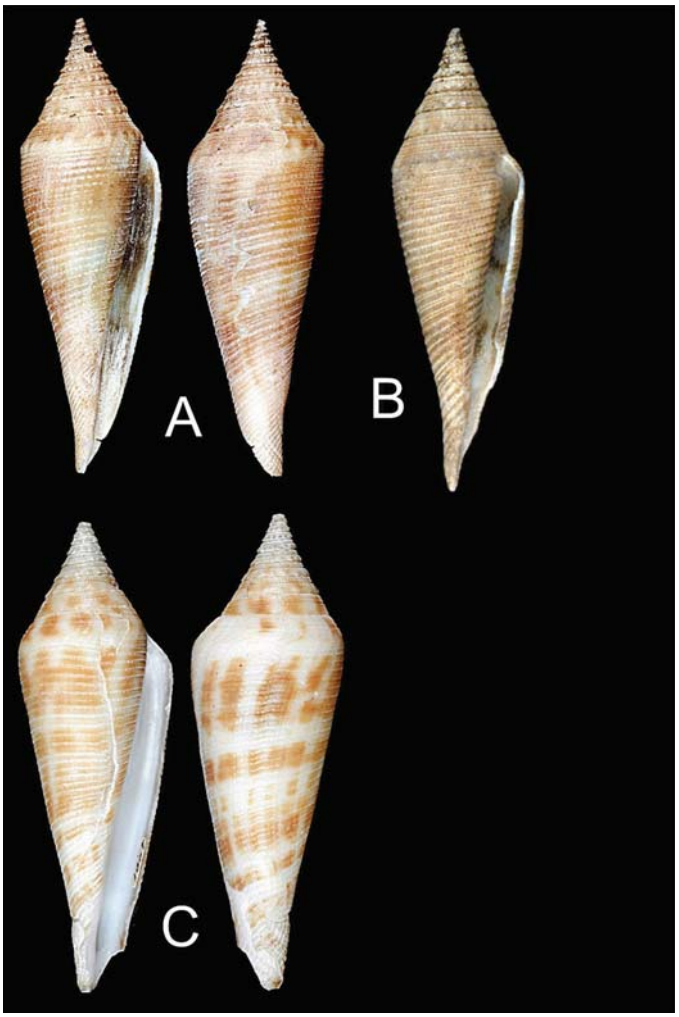

Fig. 82 ***rainesae***

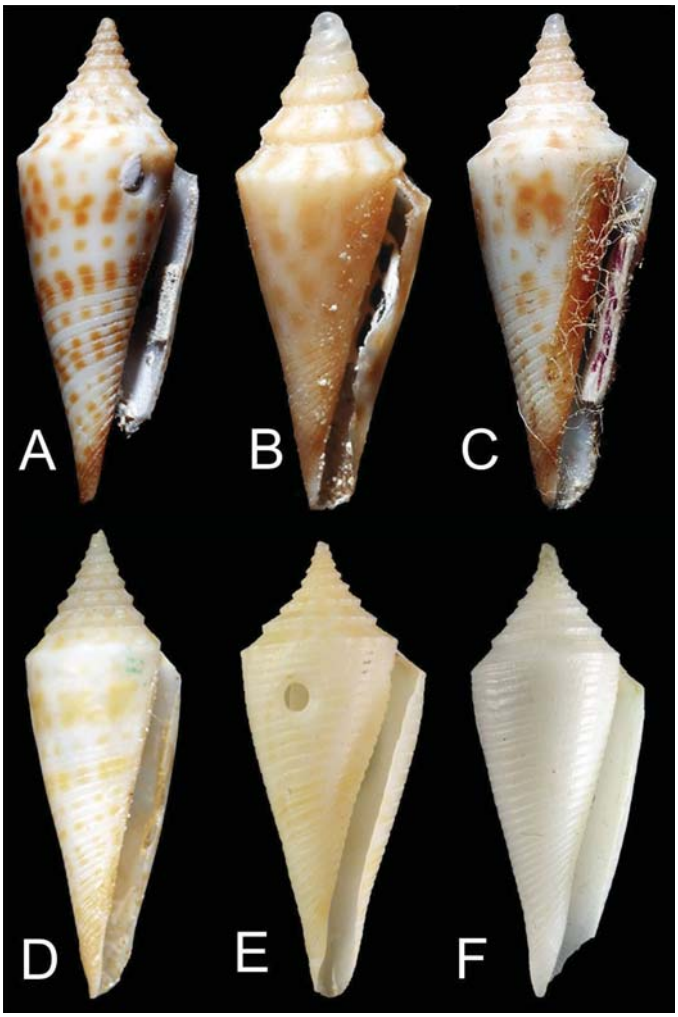

Fig. 83 ***lightbourni***

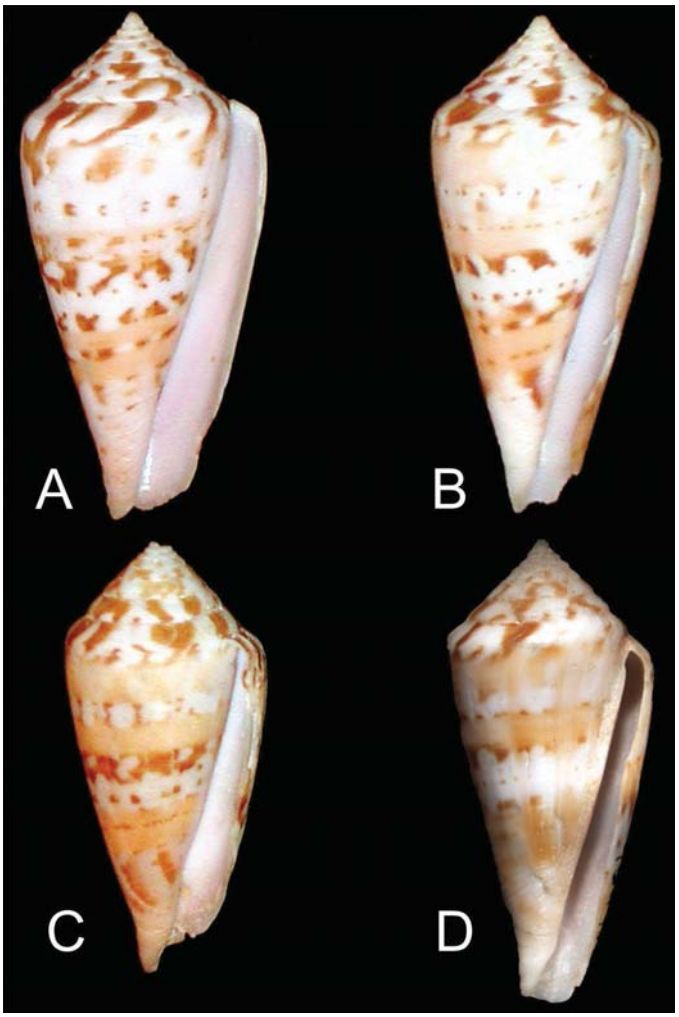

Fig. 84 ***goajira***

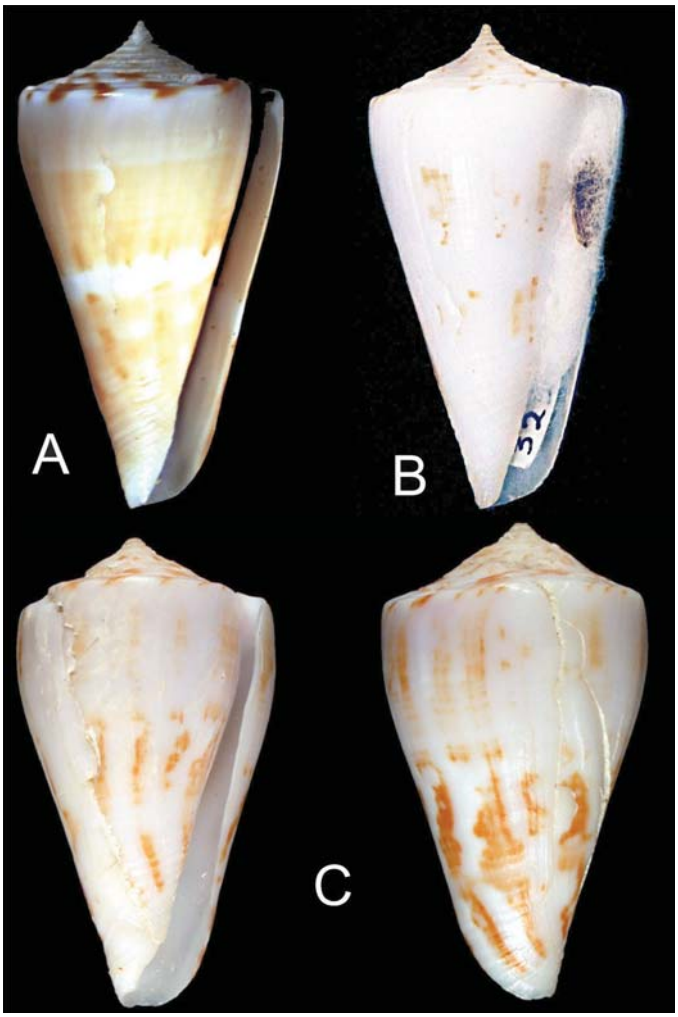

Fig. 85 ***binghamae***

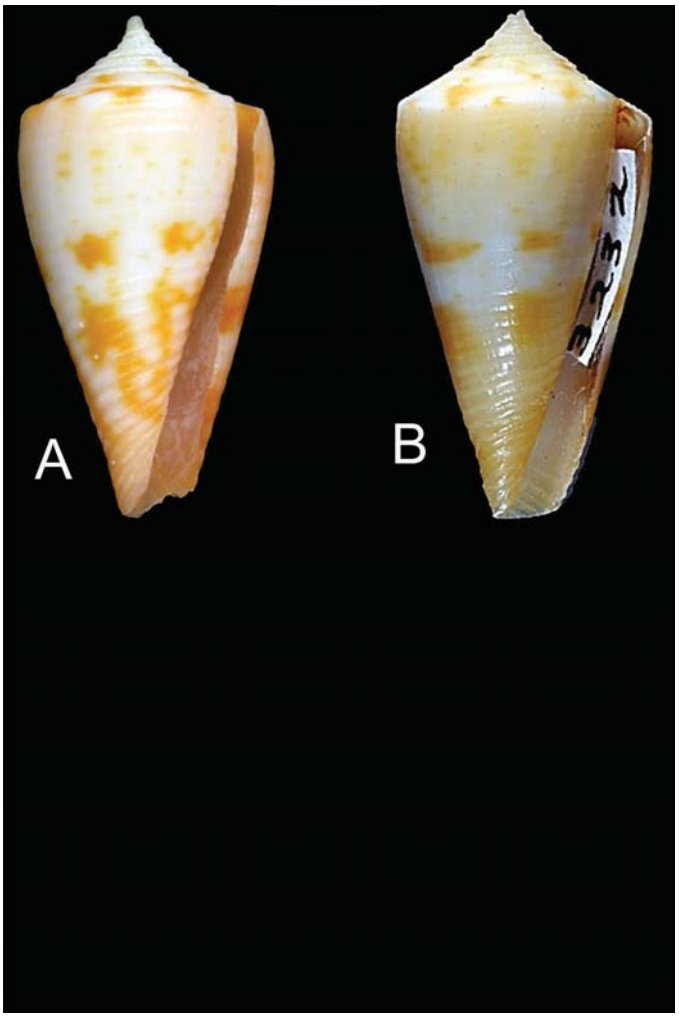

Fig. 86 ***granulatus***

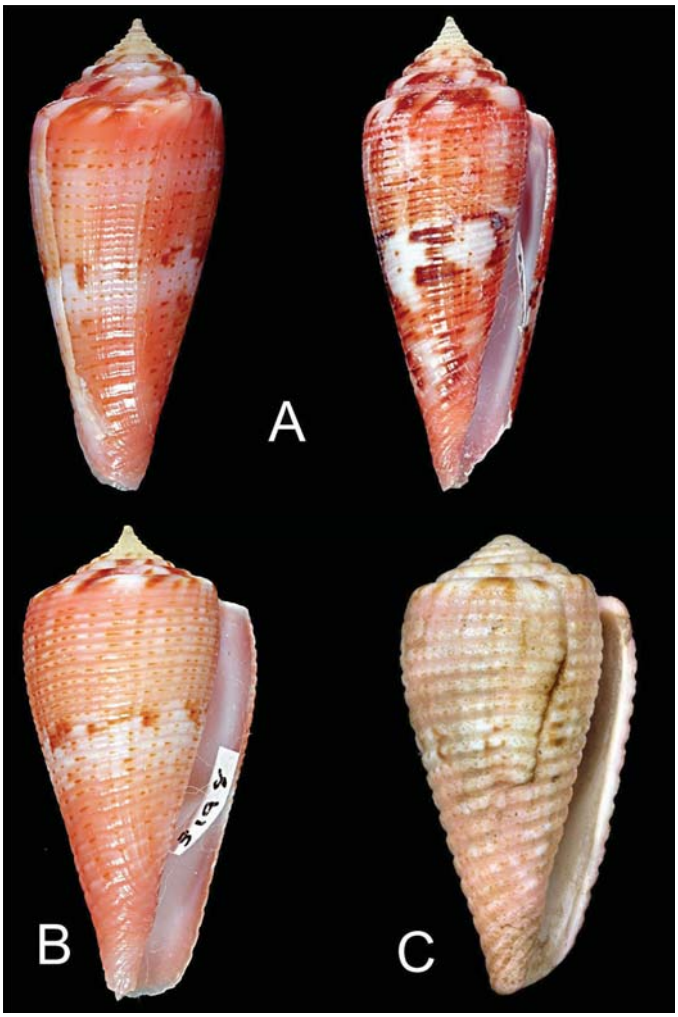

Fig. 87 ***glenni***

Fig. 88 ***ritae / cuna***

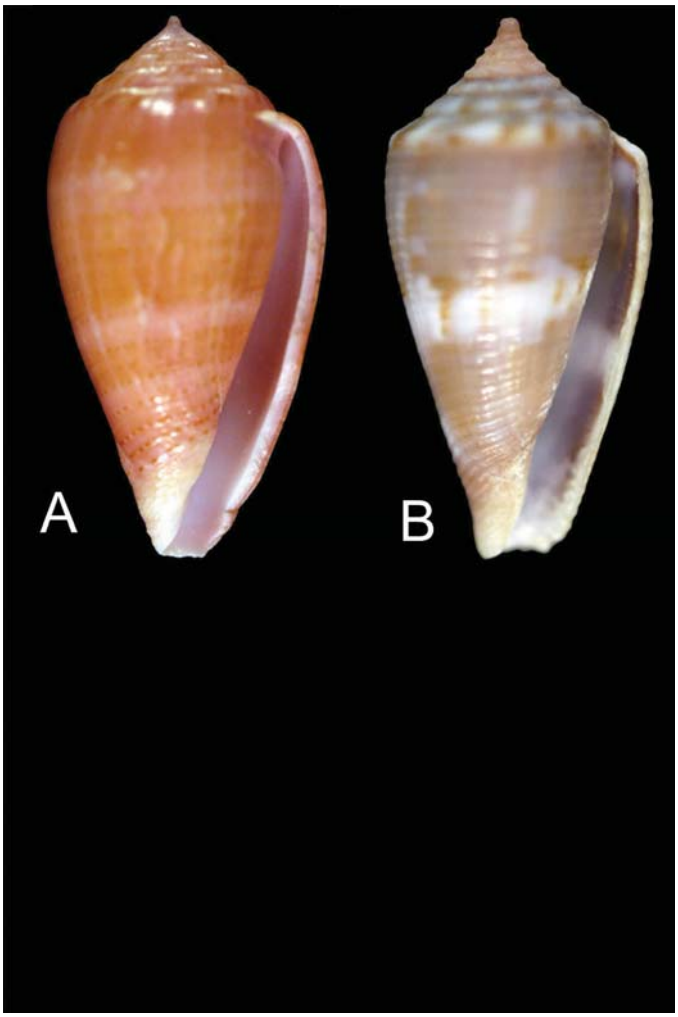

Fig. 89 ***mus***

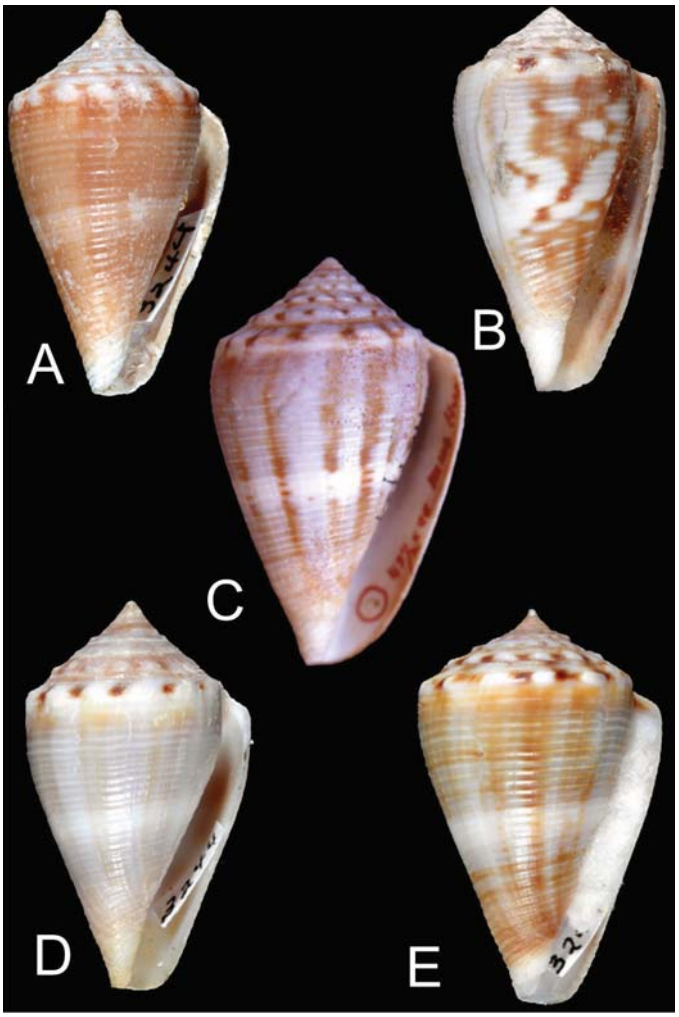

Fig. 90 ***sunderlandi***

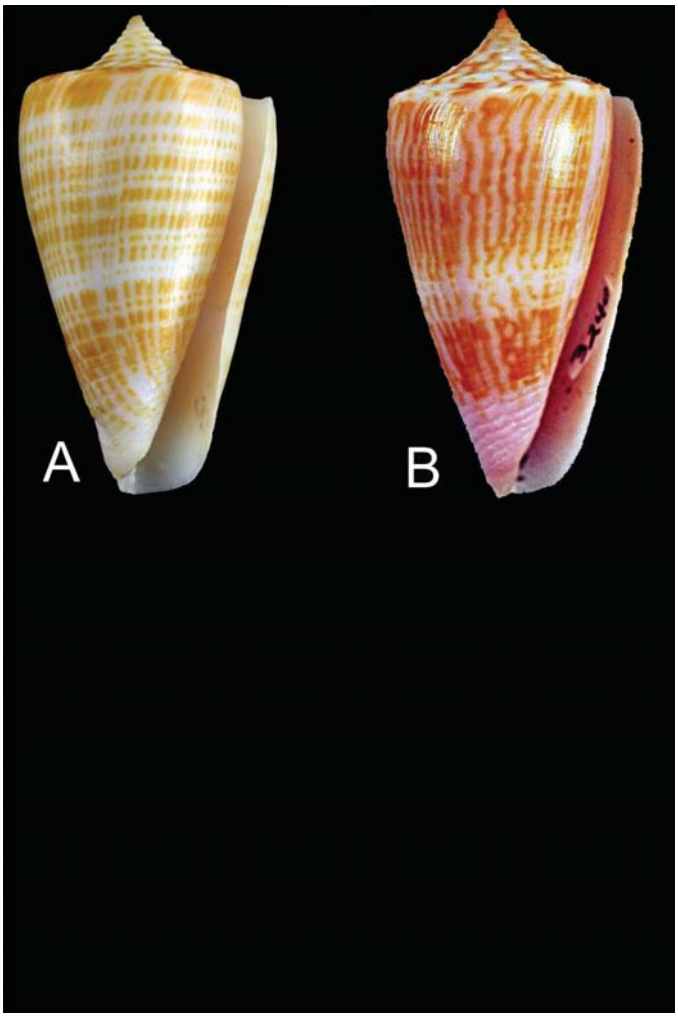

Fig. 91 ***bayeri***

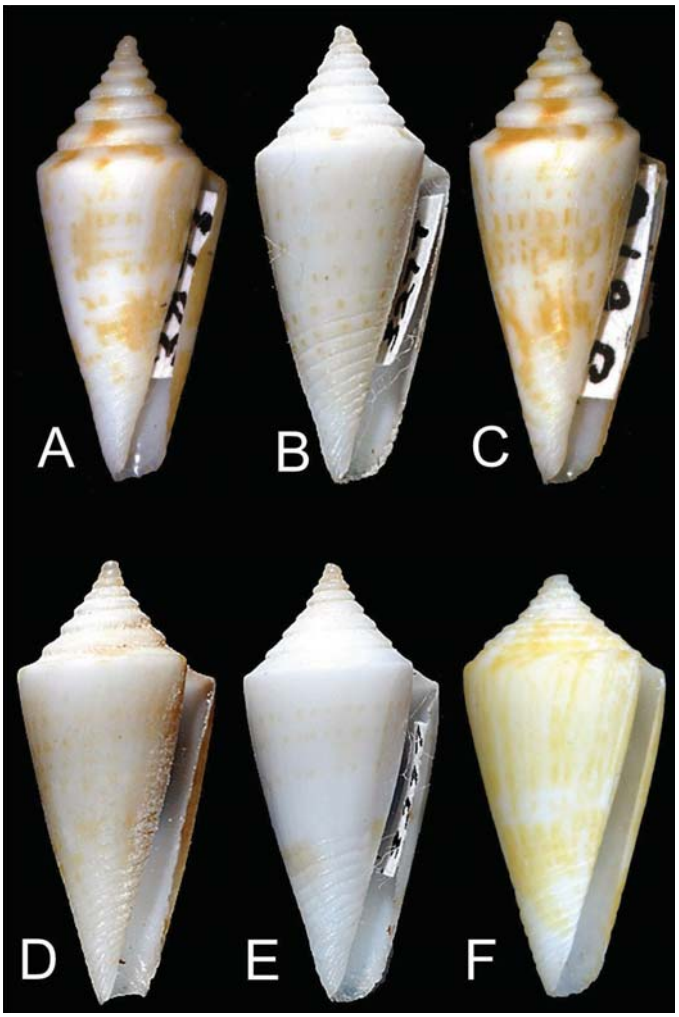

Fig. 92 ***paschalli***

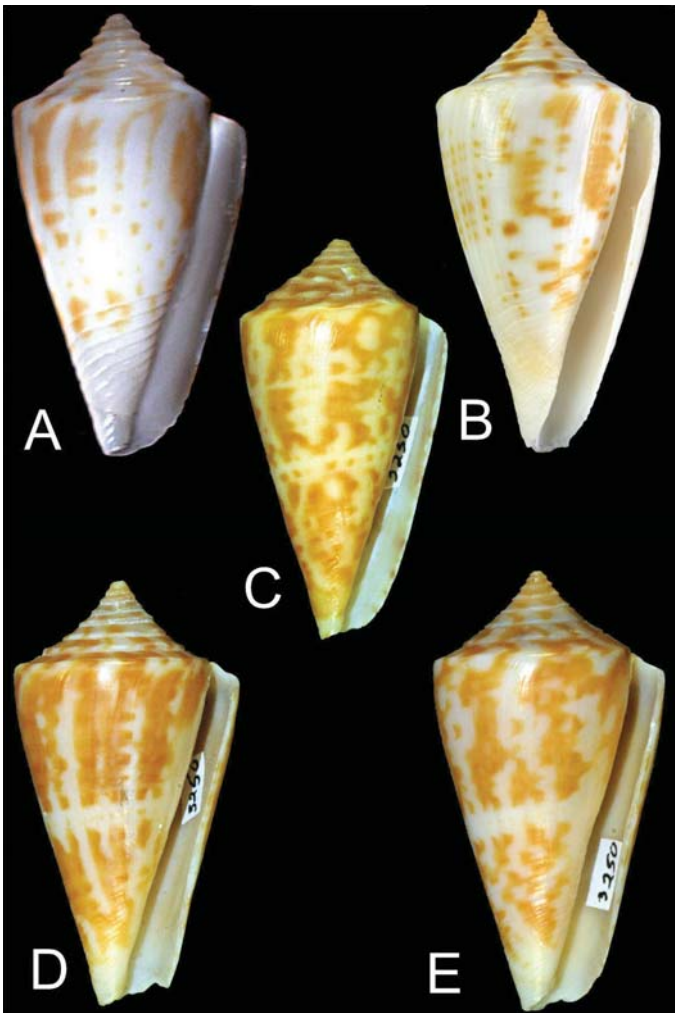

Fig. 93 Panama *gradiconus*

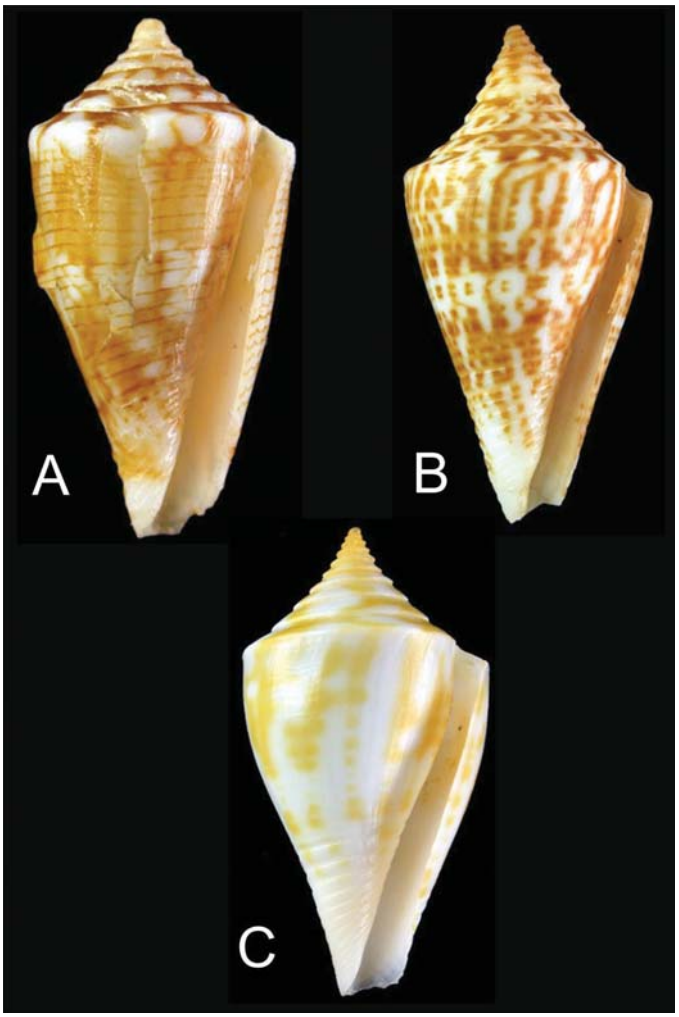

Fig. 94 *ernesti*

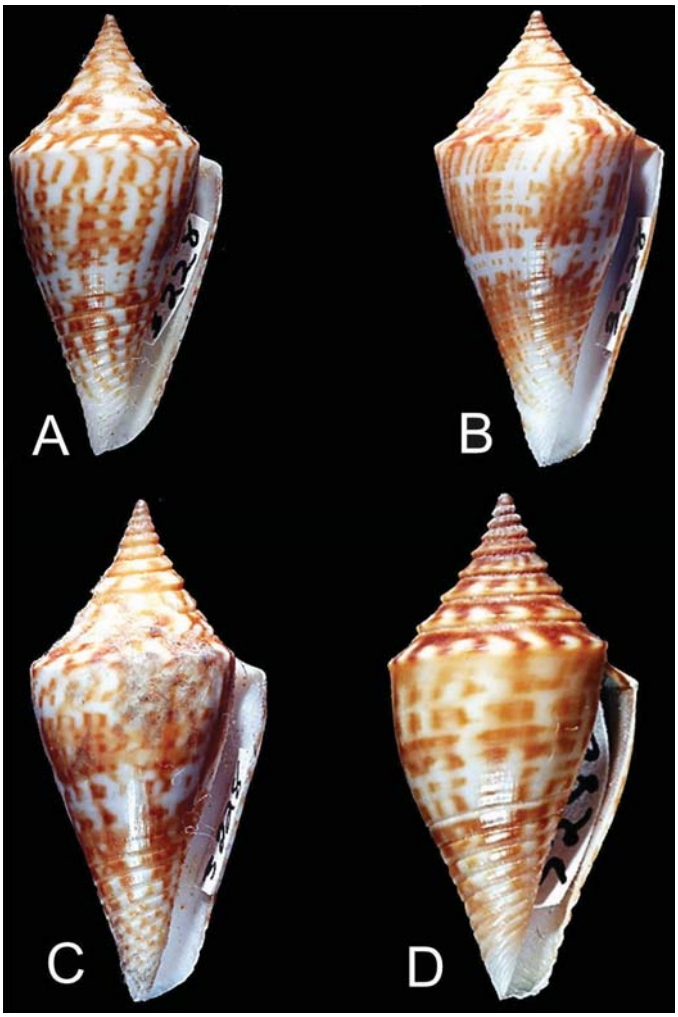

Fig. 95 ***gibsonsmithorum / tristensis***

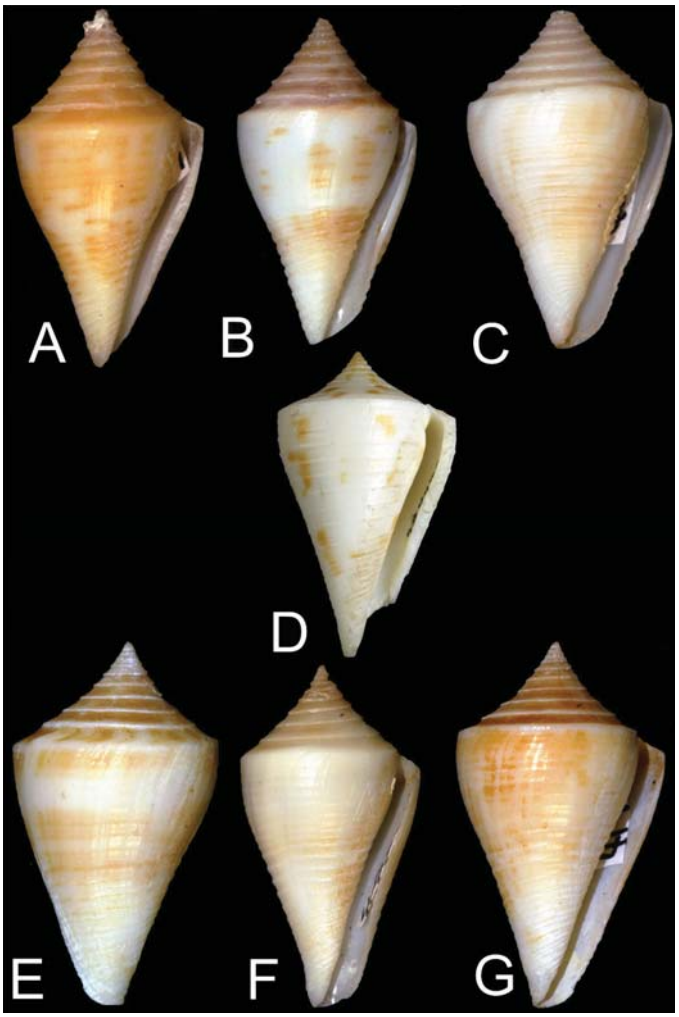

Fig. 96 ***gibsonsmithorum***

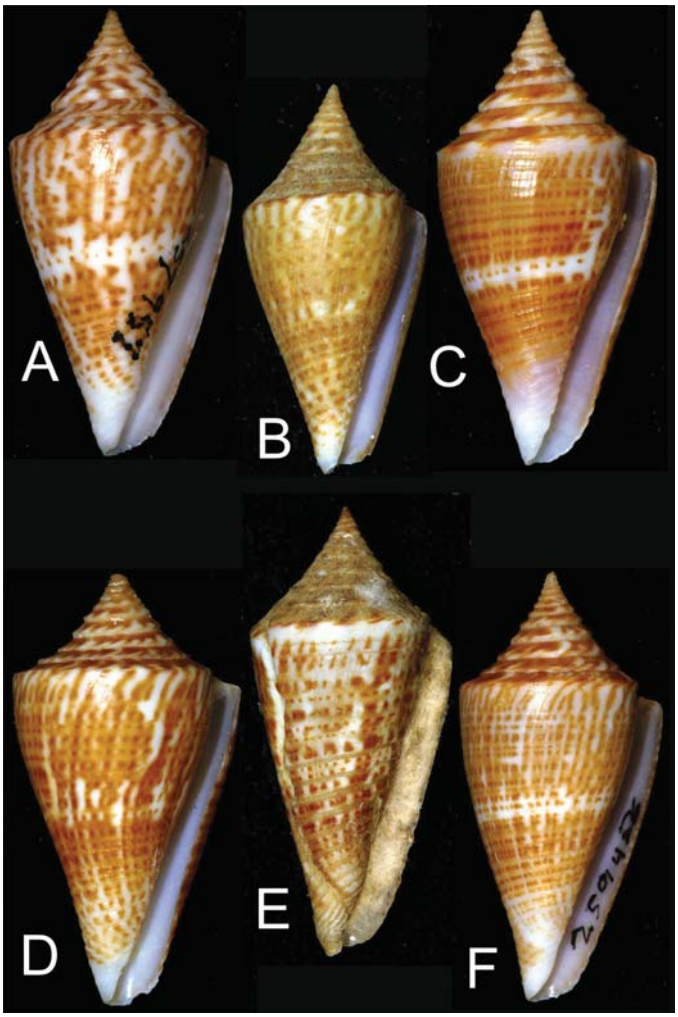

Fig. 97 ***gibsonsmithorum***

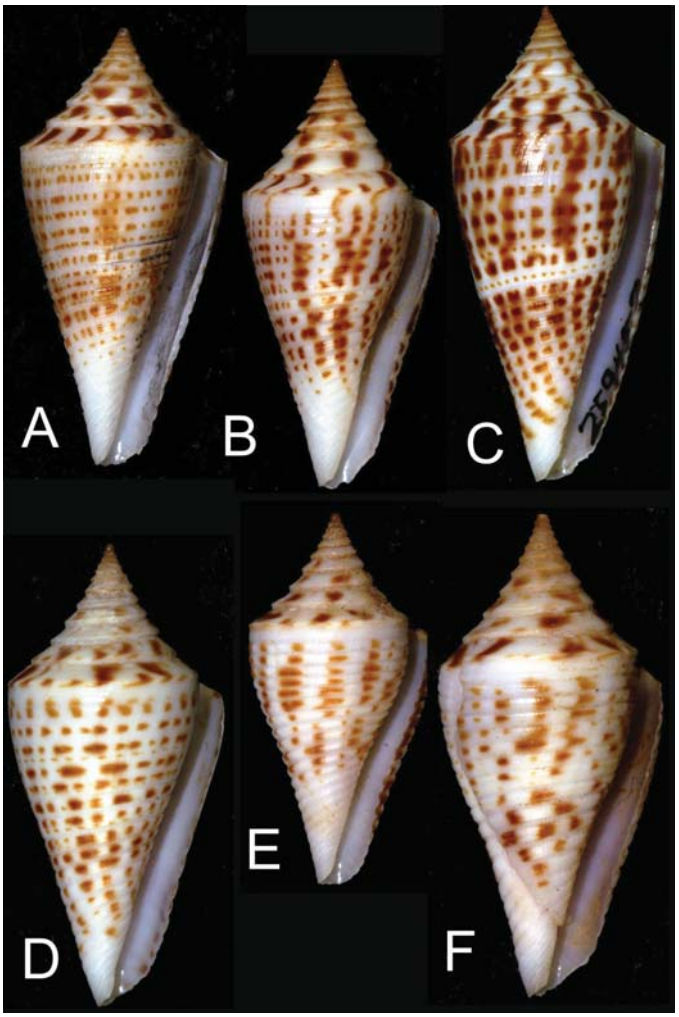

Fig. 98 ***gibsonsmithorum***

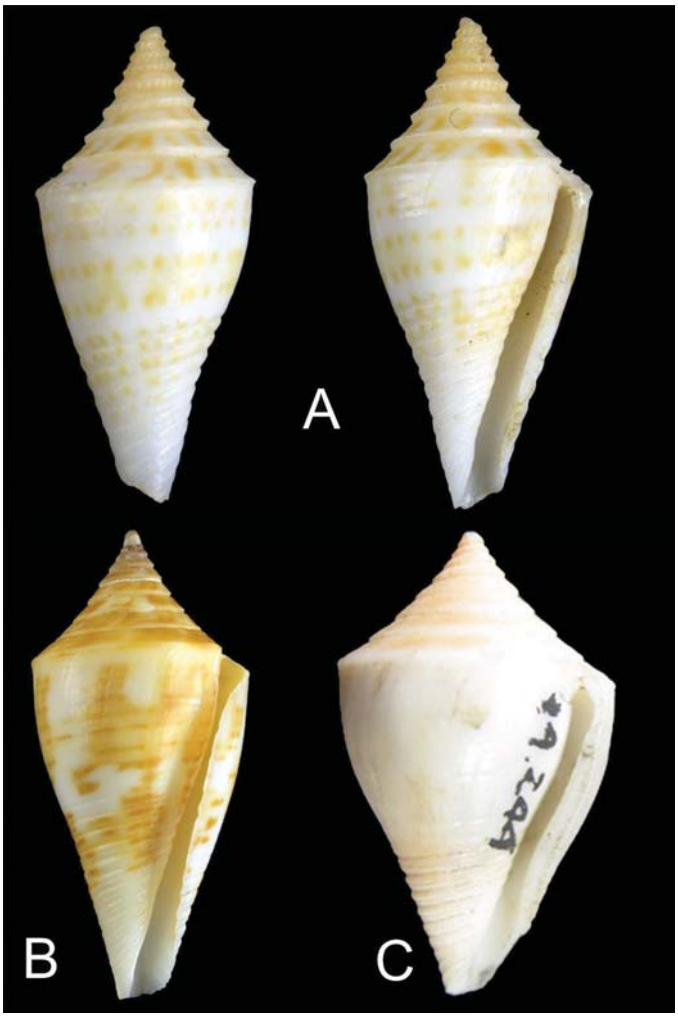

Fig. 99 ***gibsonsmithorum***

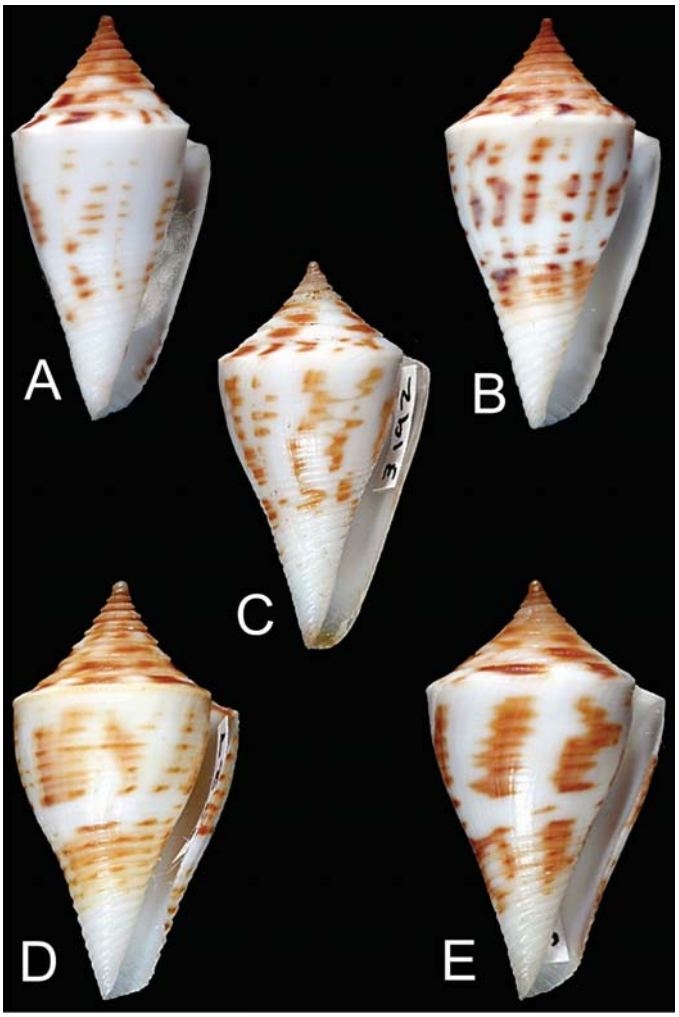

Fig. 100 ***gibsonsmithorum***

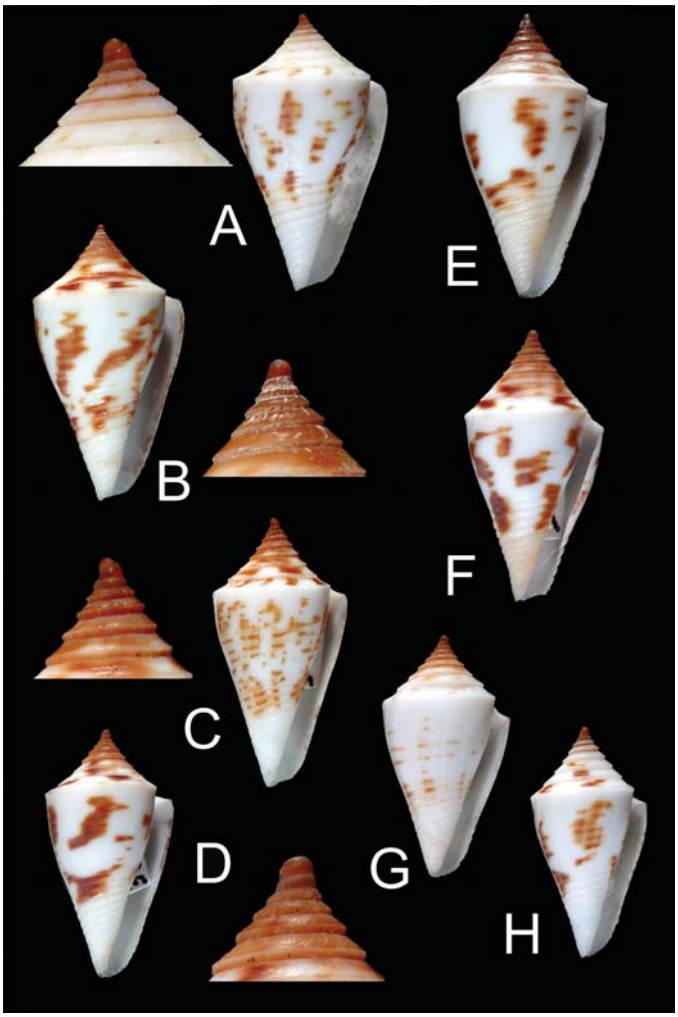

Fig. 101 ***regularis***

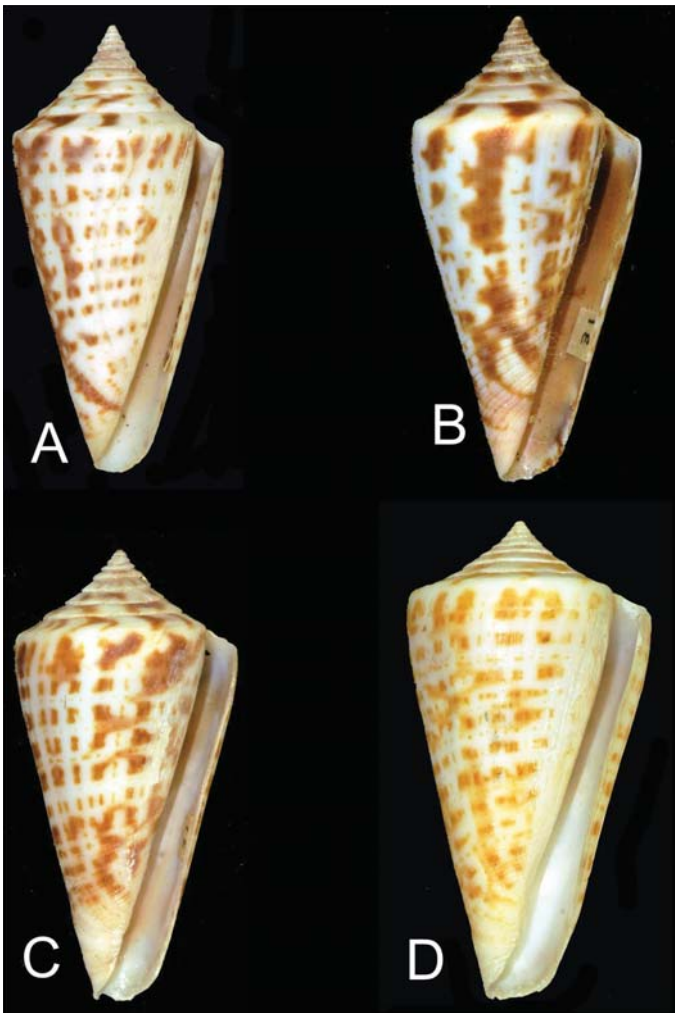

Fig. 102 ***parascalaris***

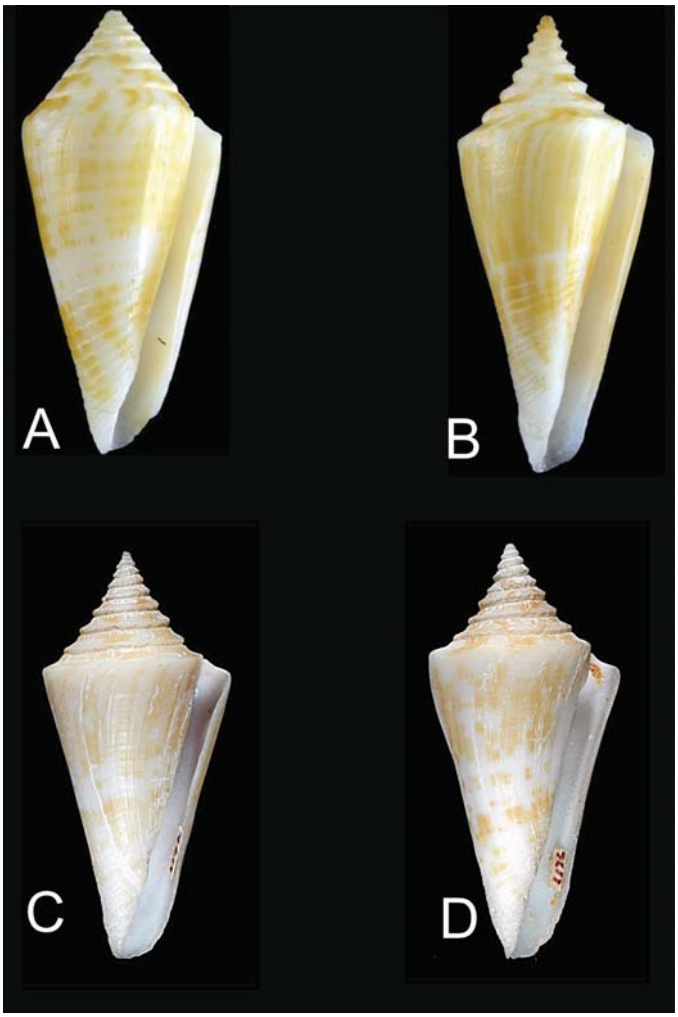

Fig. 103 ***iansa***

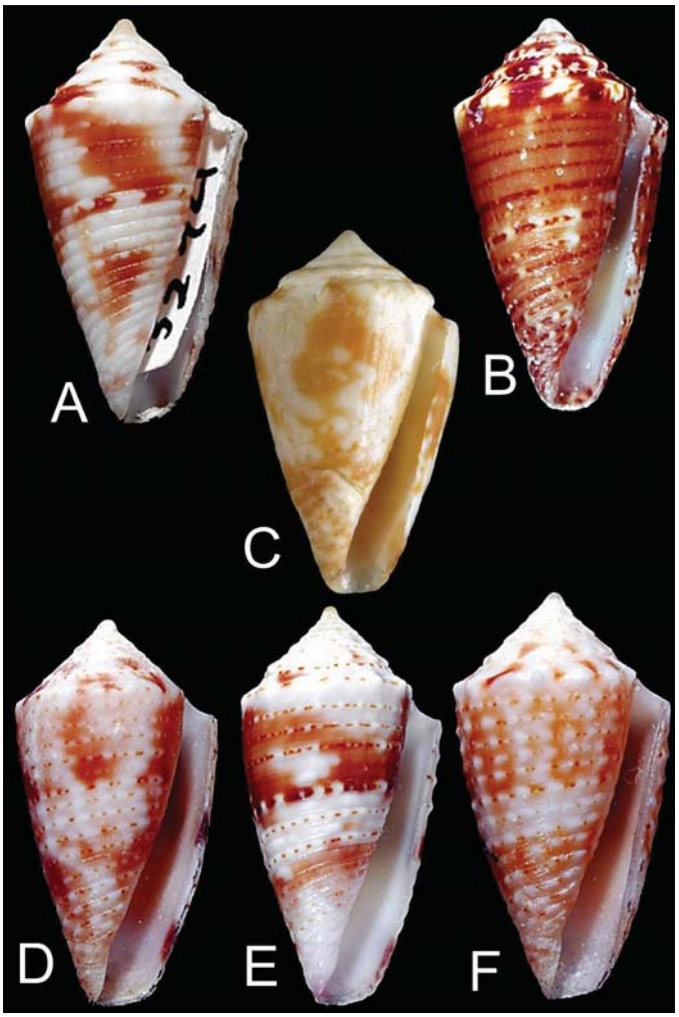

Fig. 104 ***iansa***

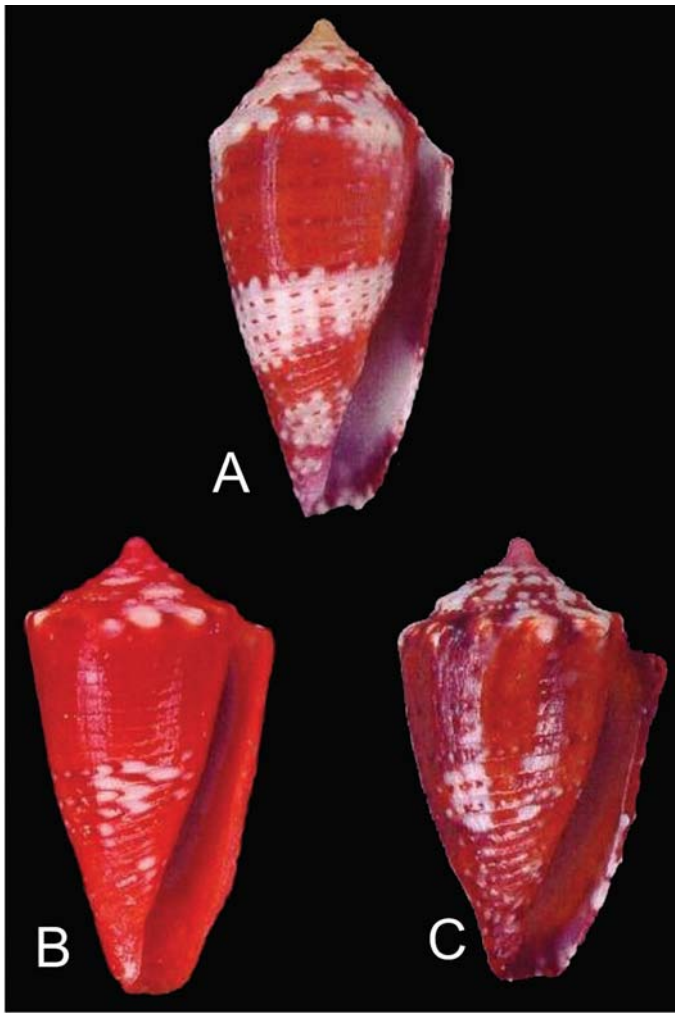

Fig. 105 ***rachelae***

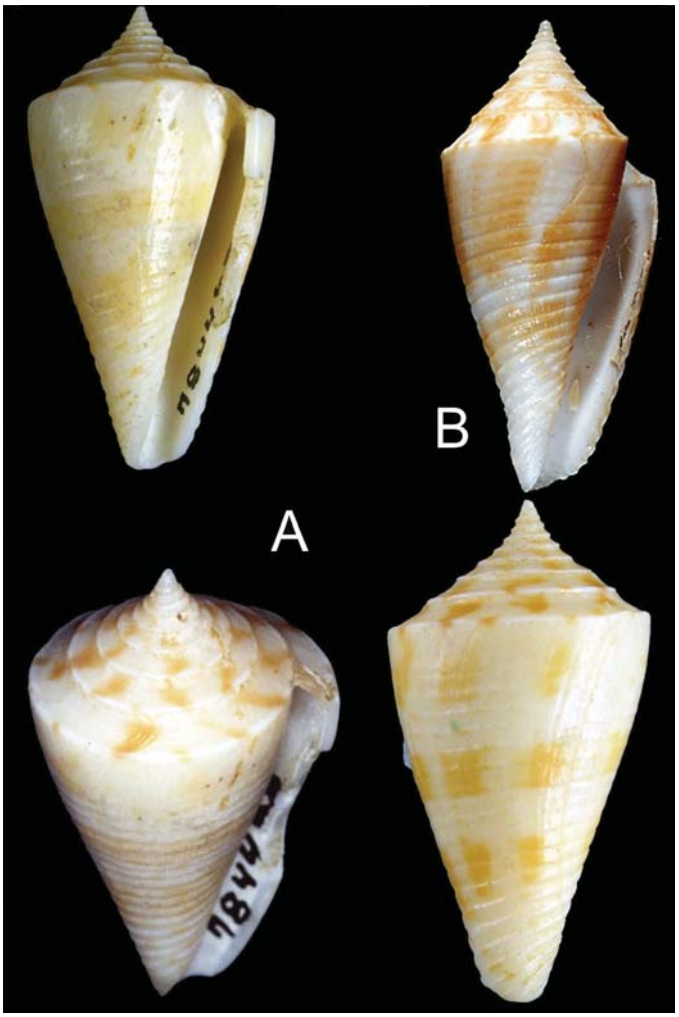

Fig. 106 ***delessertii***

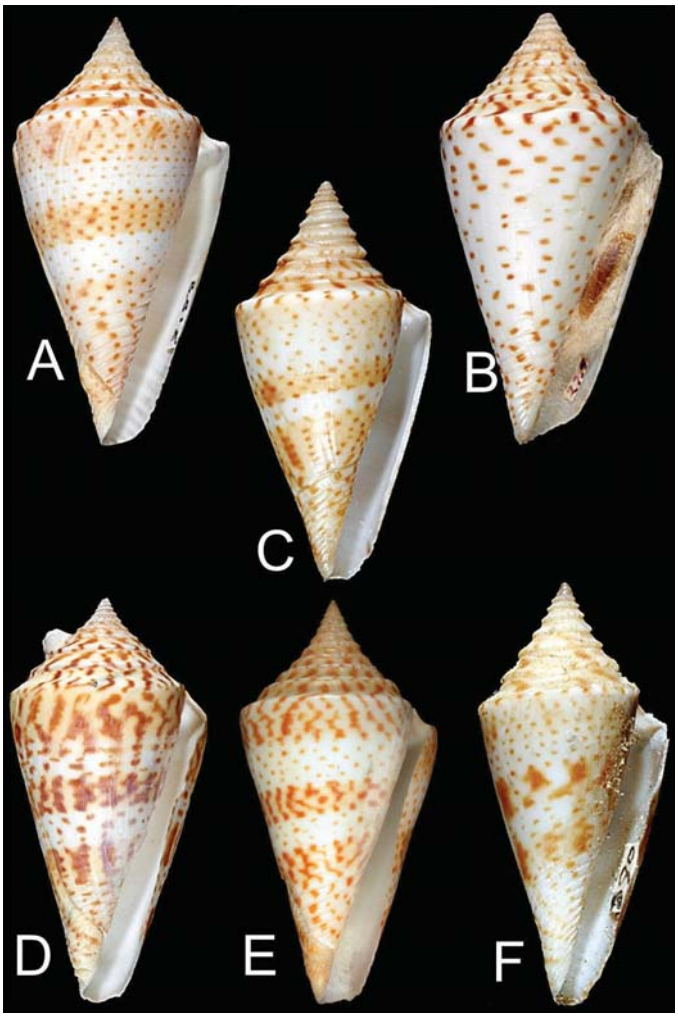

Fig. 107 ***centurio***

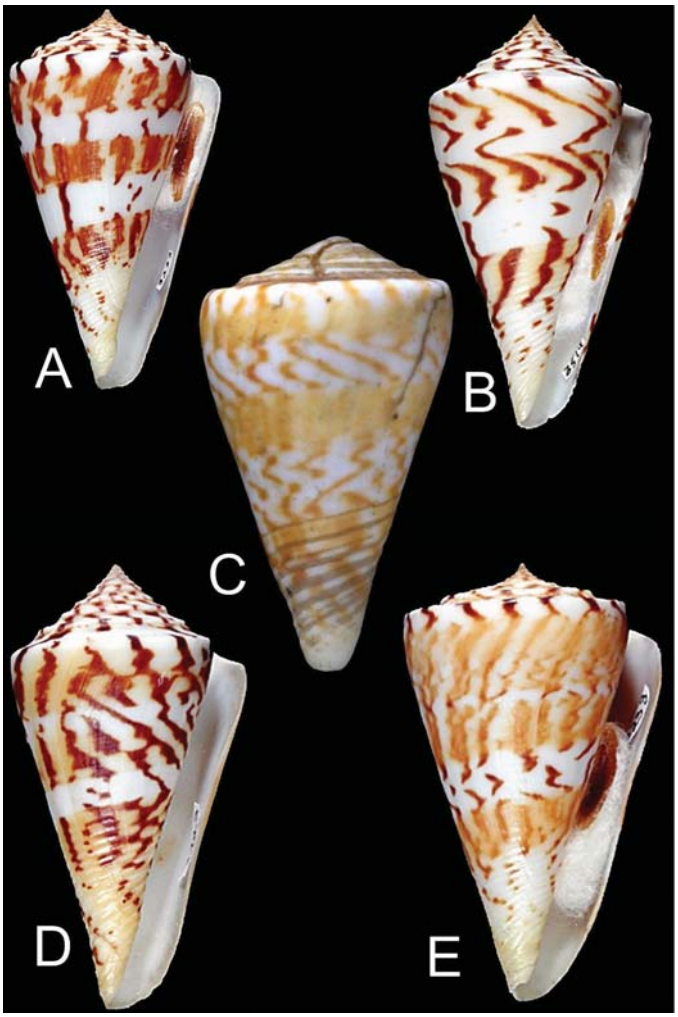

Fig. 108 ***borneensis***

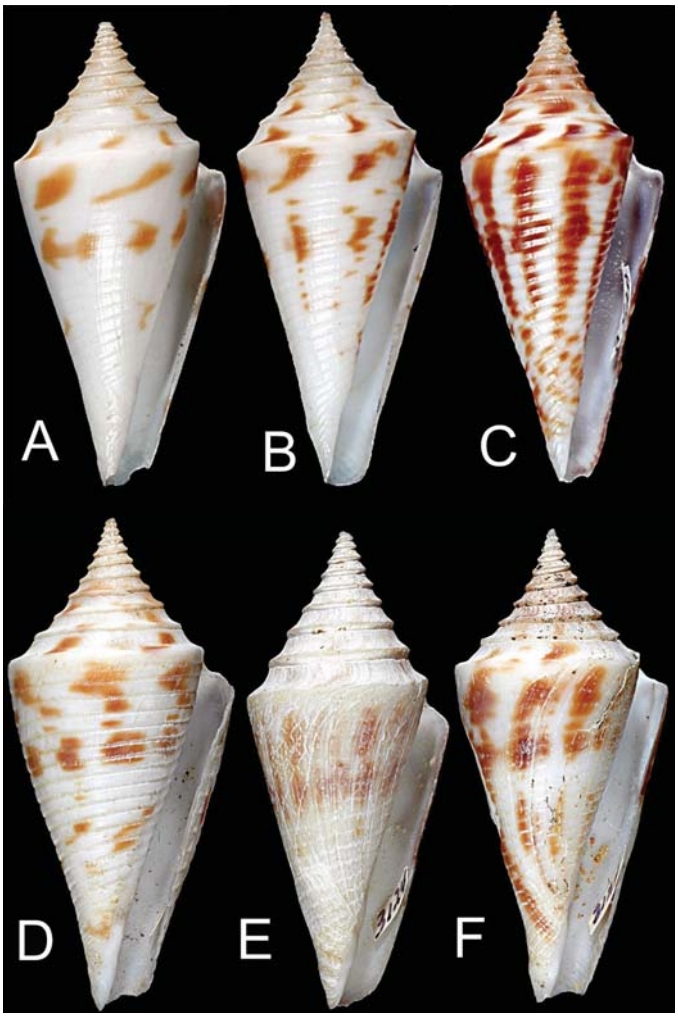

Fig. 109 ***cardinalis*** **types**

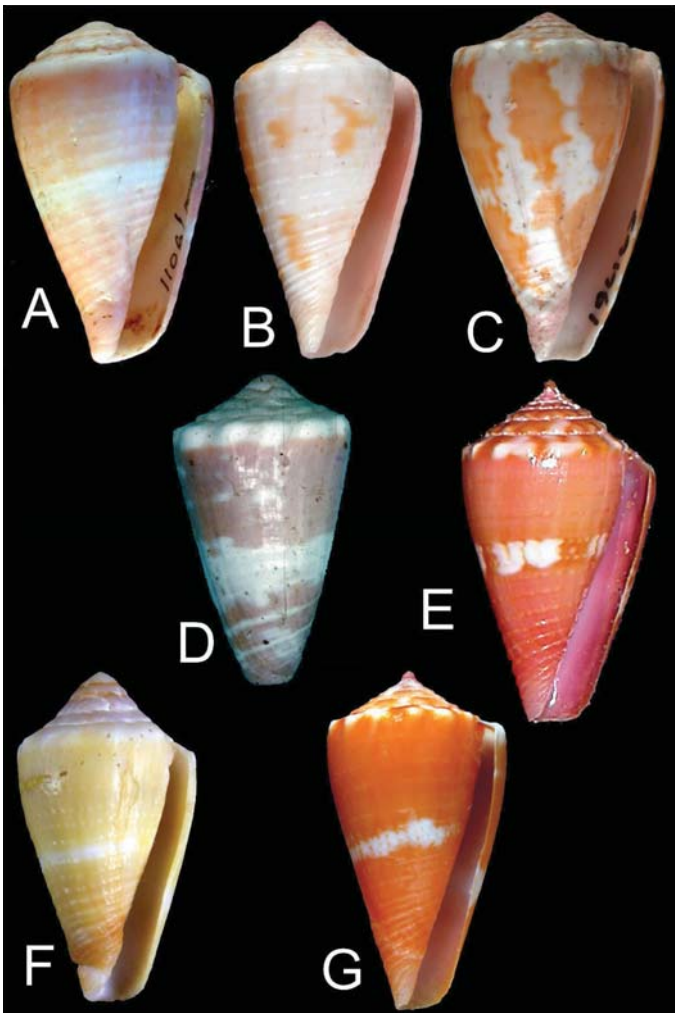

Fig. 110 ***cardinalis***

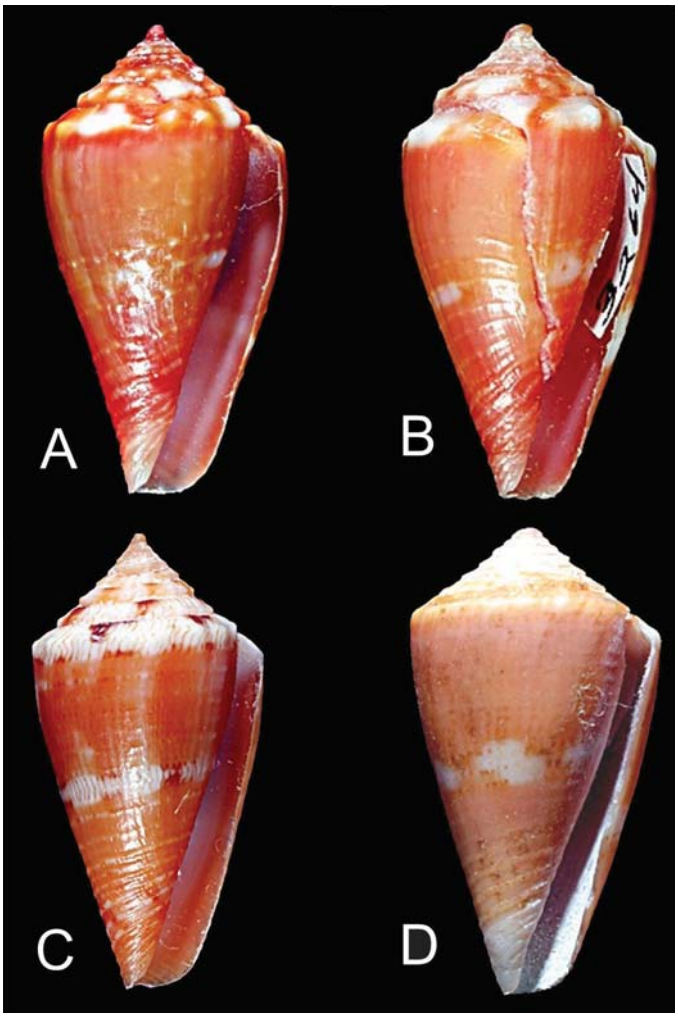

Fig. 111 ***magellanicus***

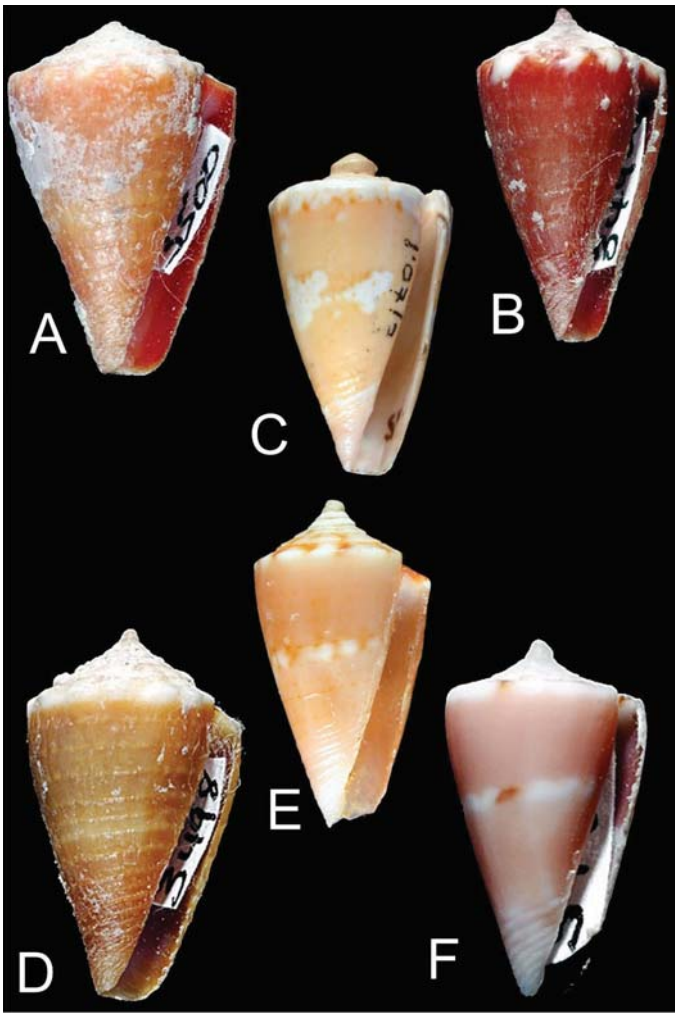

Fig. 112 ***sphacelatus*** **types**

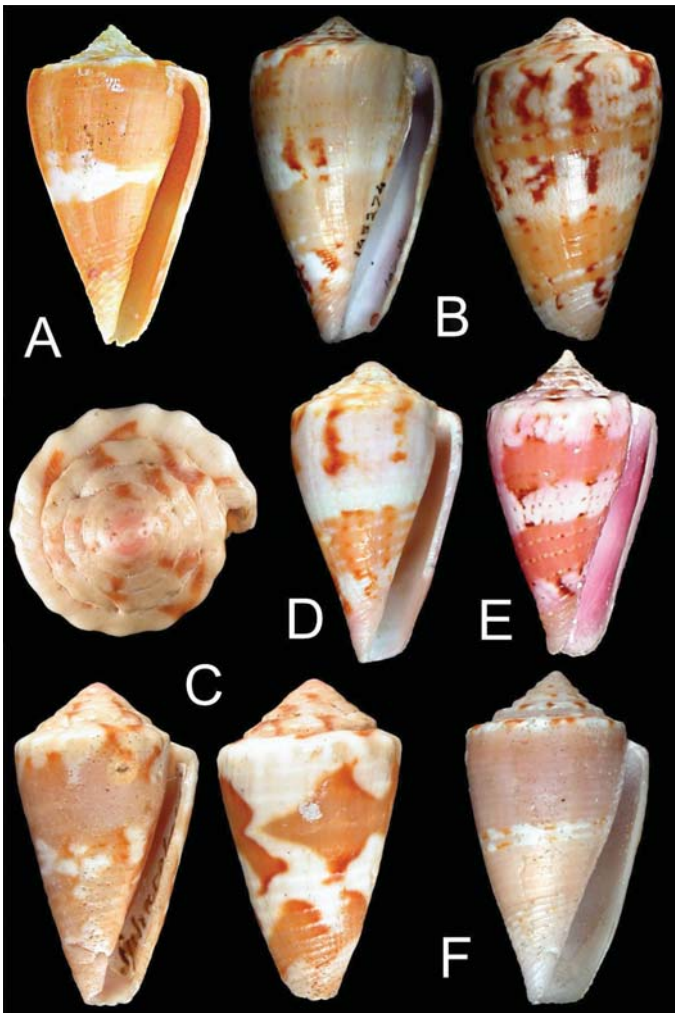

Fig. 113 ***sphacelatus***

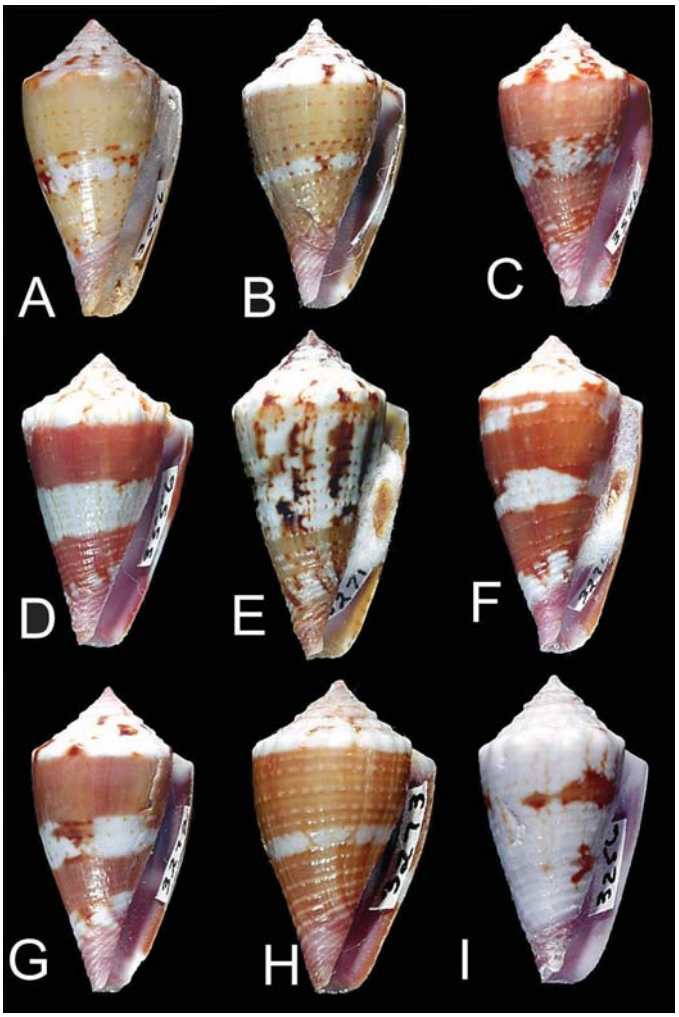

Fig. 114 ***kalafuti***

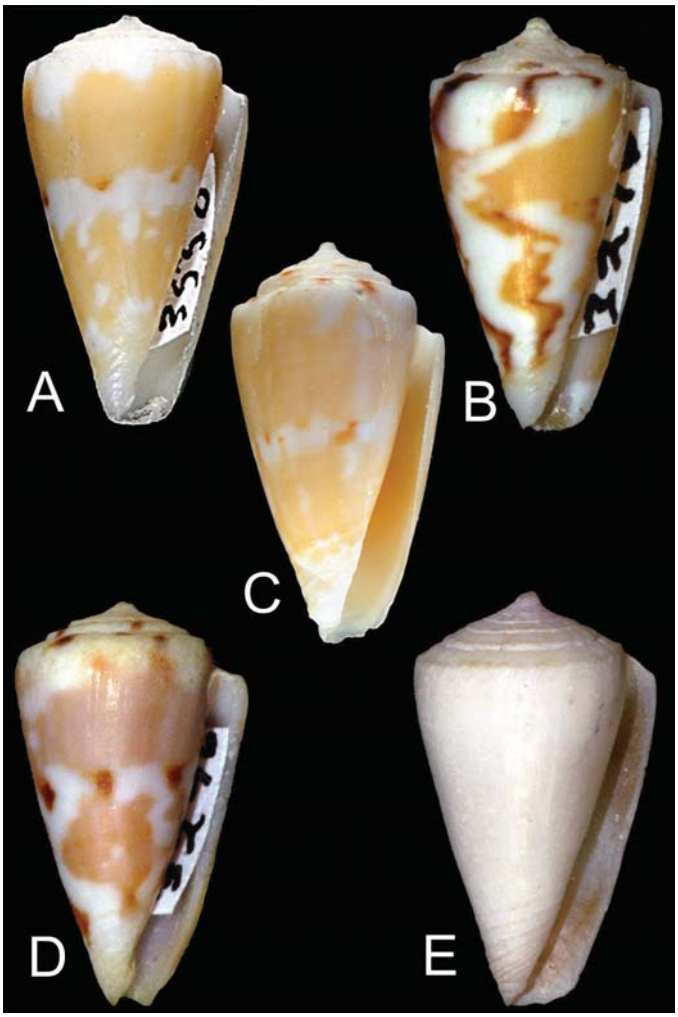

Fig. 115 ***havanensis***

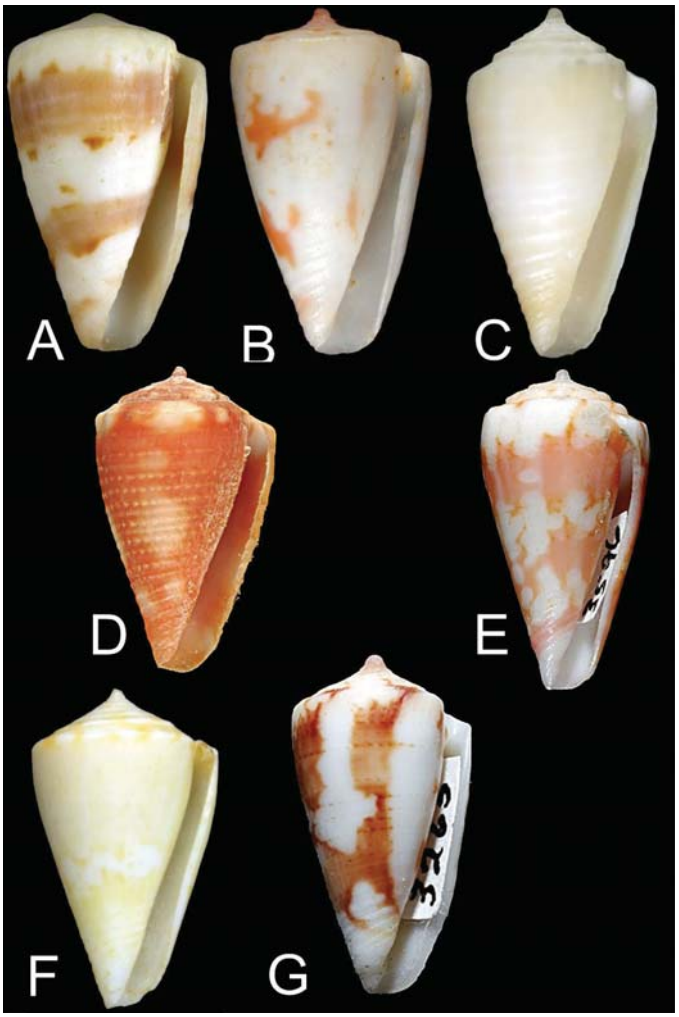

Fig. 116 ***havanensis***

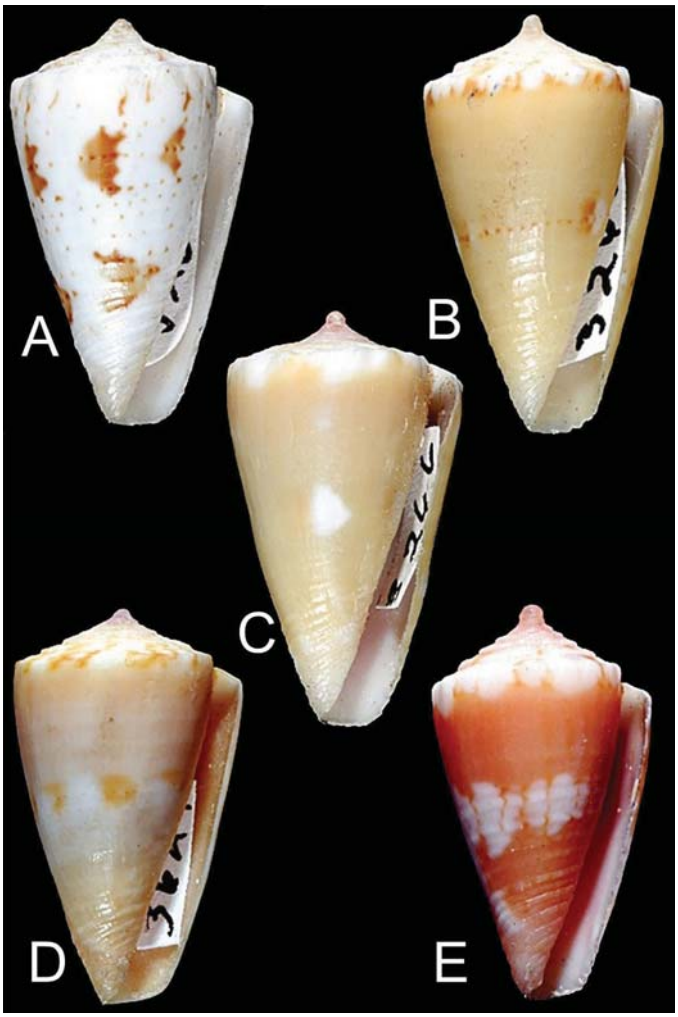

Fig. 117 ***richardbinghami***

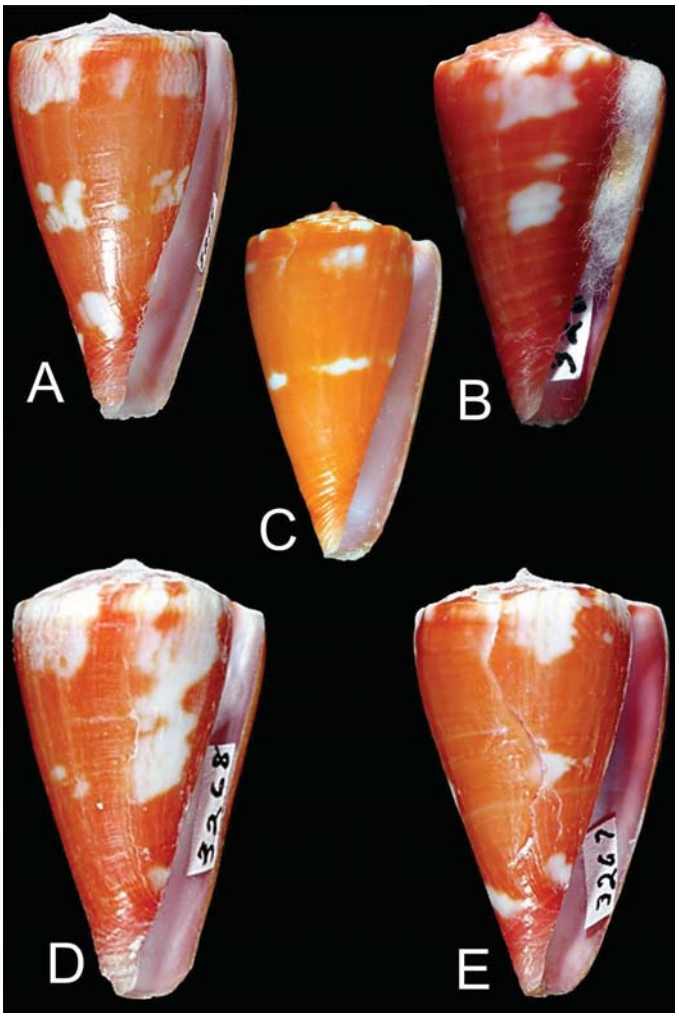

Fig. 118 ***arangoi / hilli***

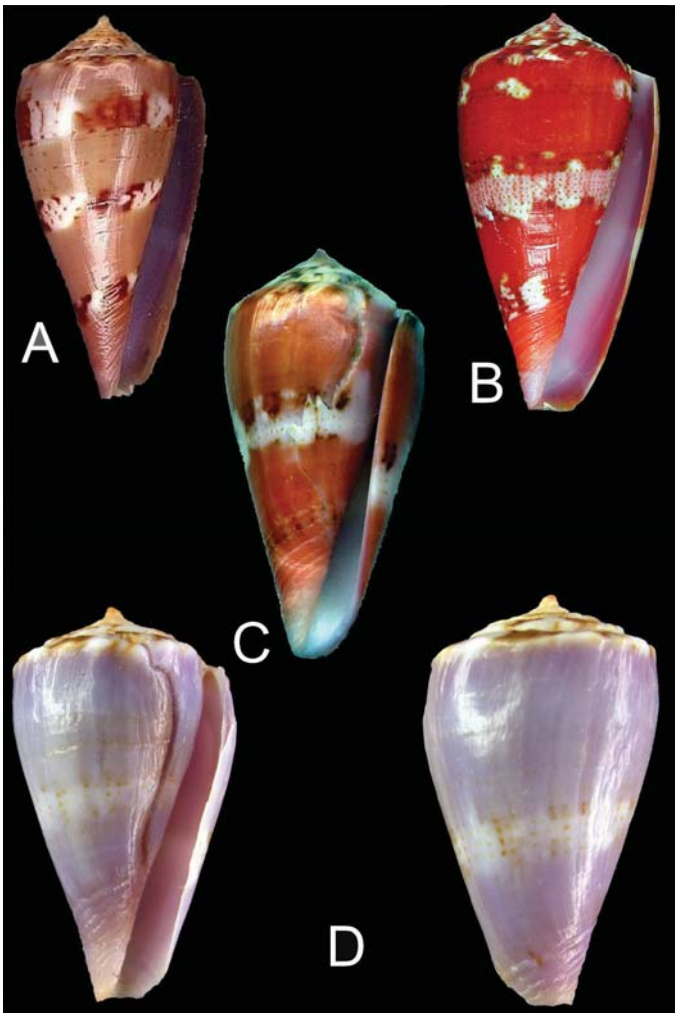

Fig. 119 ***kulkulcan***

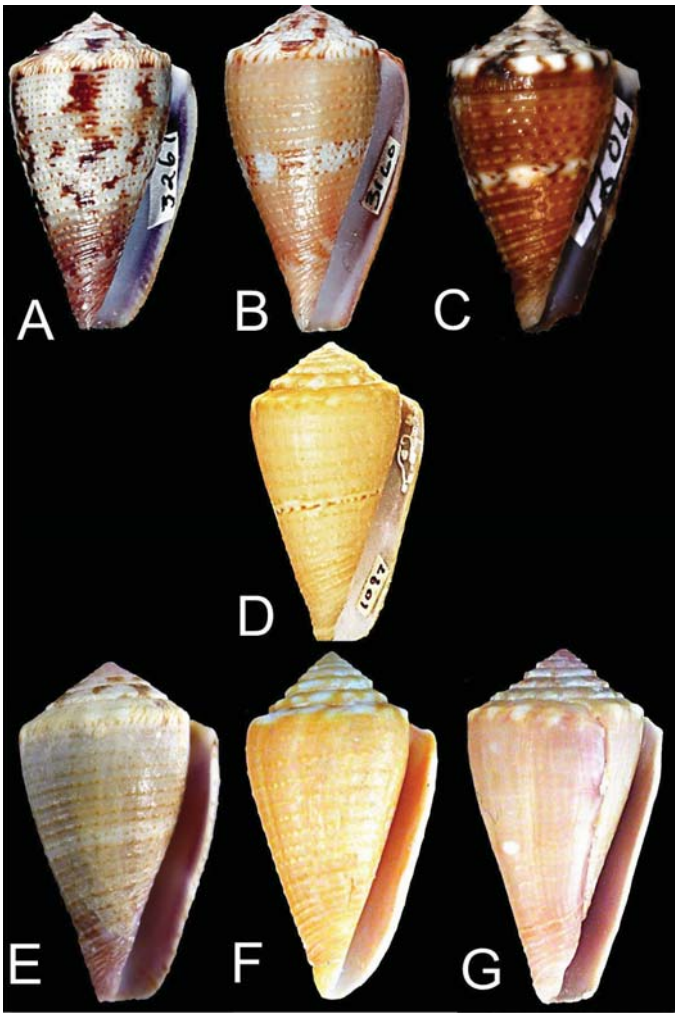

Fig. 120 ***velaensis***

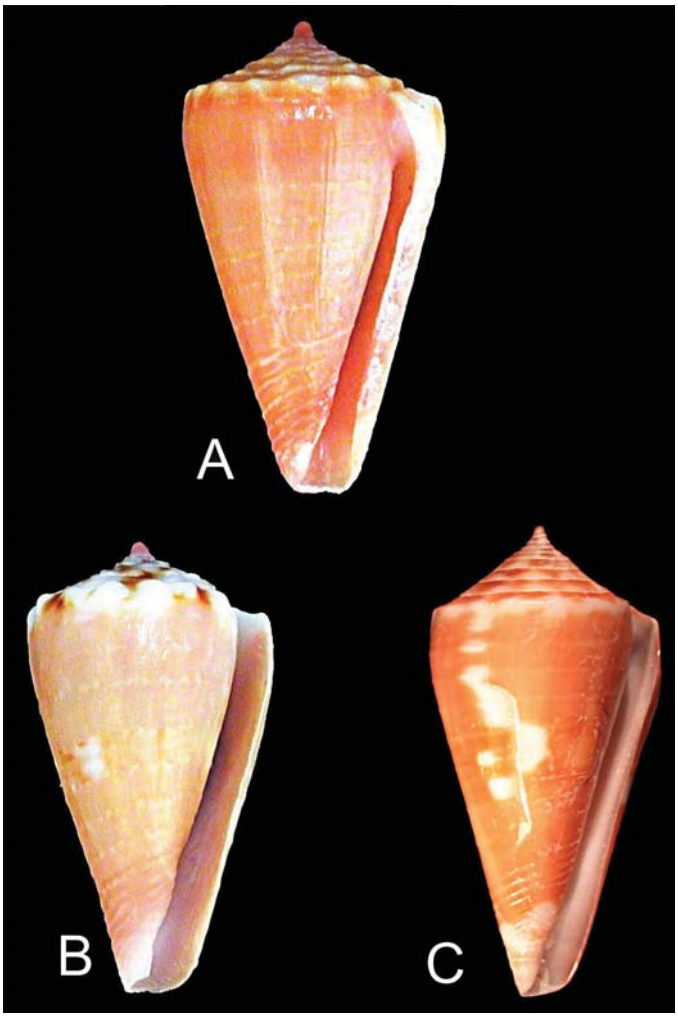

Fig. 121 ***mappa harlandi***

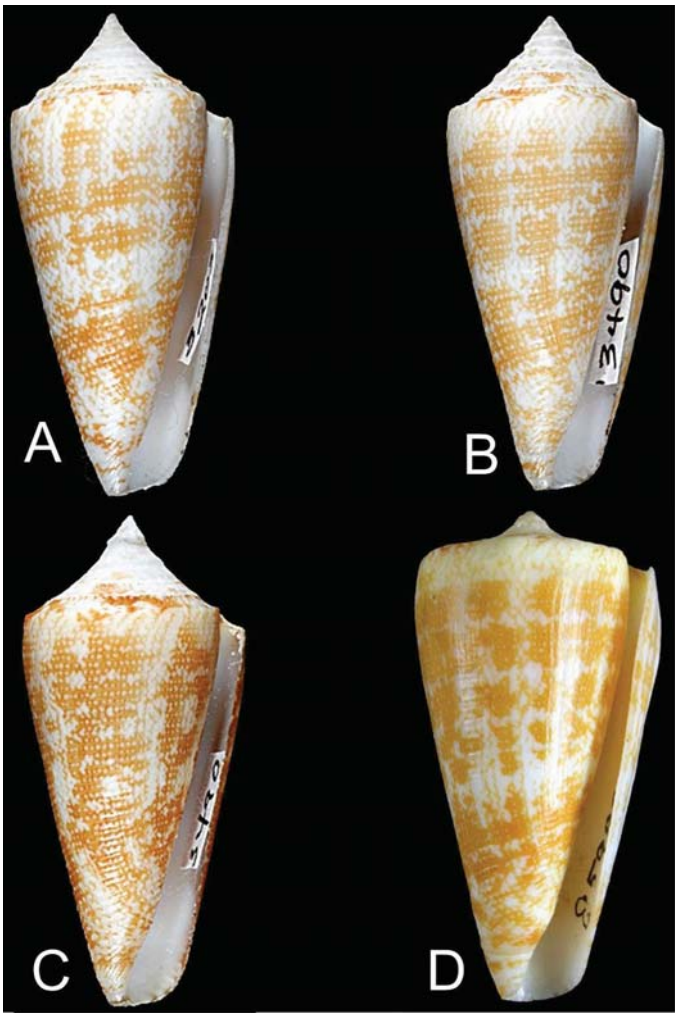

Fig. 122 ***lindae***

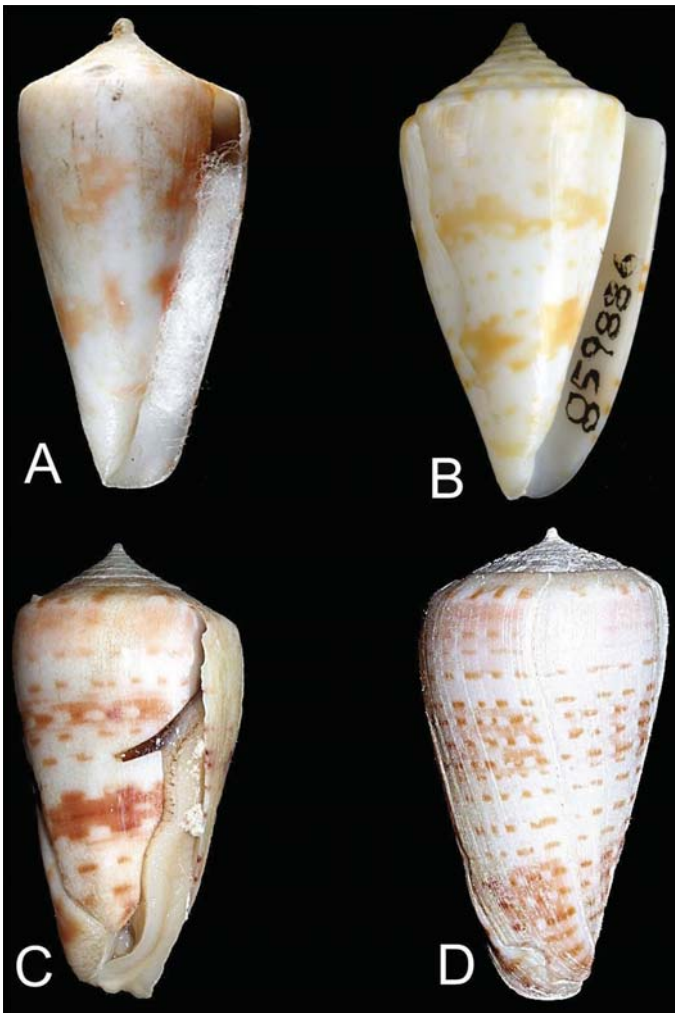

Fig. 123 ***pacei***

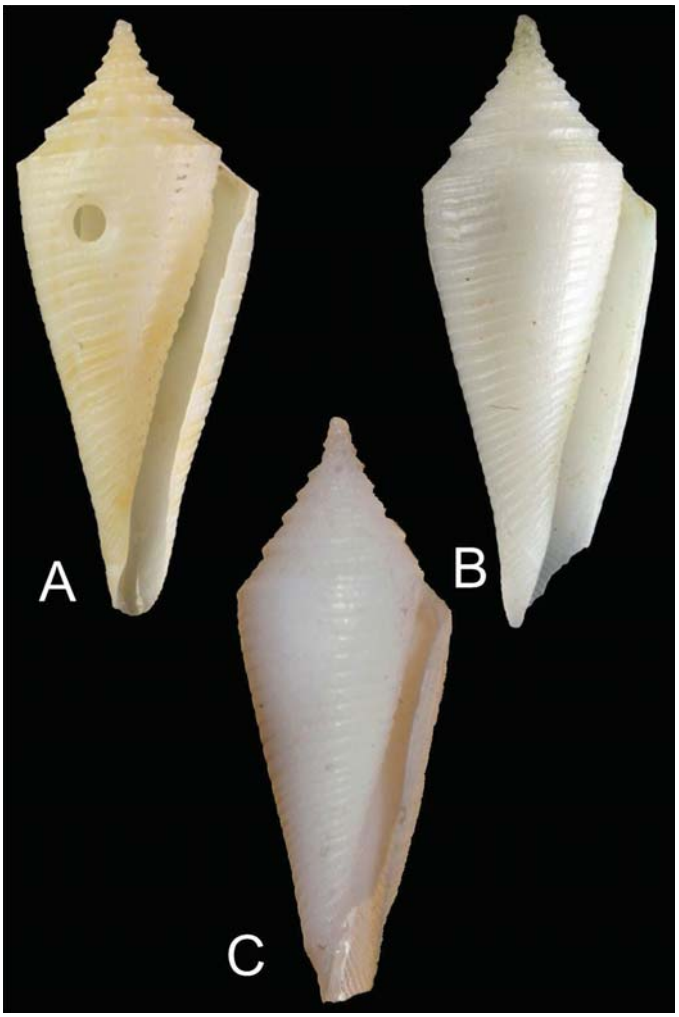

Fig. 124 radulae

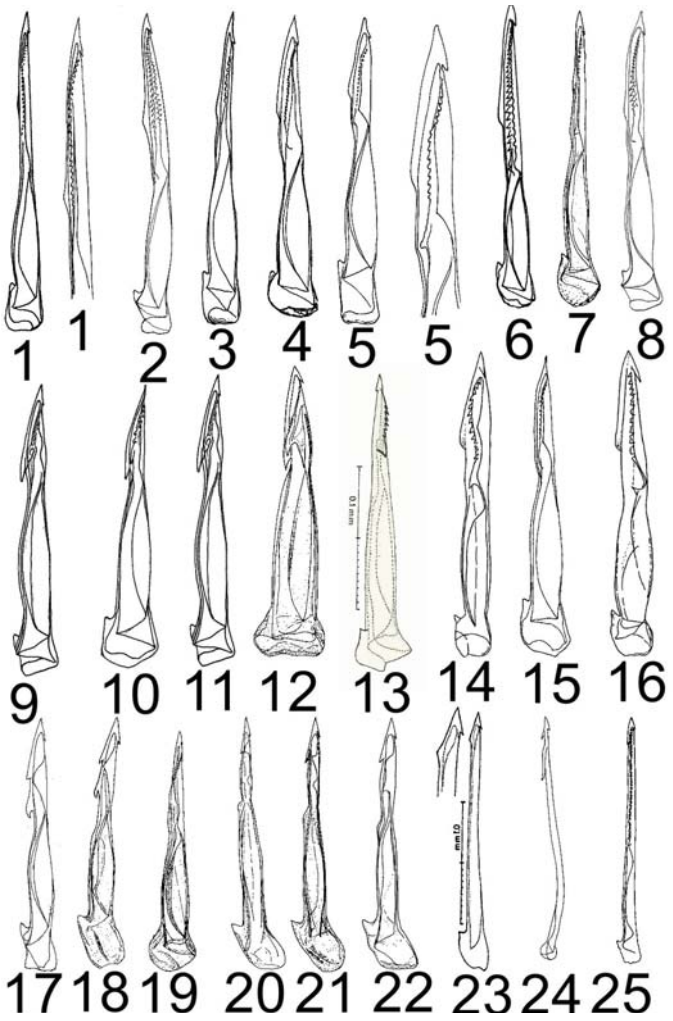

Plate Captions

Figure 1
Specimens of *Dauciconus daucus* (Hwass in Bruguière, 1792) from throughout the range of the species

A. JKT 3187 *Dauciconus daucus* (Hwass in Bruguière, 1792), 28.8 mm, Florida, in 60 feet, off Boca Raton, 2 miles NE Boca Inlet, on reef under dead coral rubble, Aug. 2002, T, Honker

B. JKT 3189 *Dauciconus daucus* (Hwass in Bruguière, 1792), 30.9 mm, Martinique, Ile Diamant, snorkel in 10-15 feet, under dead coral slabs, T. Honker, 1999

C. JKT 4022 *Dauciconus daucus* (Hwass in Bruguière, 1792), 13.2 mm, Florida, scuba under rock slab on reef off Ocean Ridge, 60 feet, May 2003

D. JKT 3238 *Dauciconus daucus* (Hwass in Bruguière, 1792), 32.5 mm, Brazil, Guarapari, Espirito Santo, in coral sand at 35 m, A. Bodart, July 2002

E. JKT 3241 *Dauciconus daucus* (Hwass in Bruguière, 1792), 29.6 mm, Martinique, night scuba in 25-40 m, sand and grass, off Anse d'Arlet, May 1991

Figure 2
Type specimens of nominal species thought to be junior synonyms of *Dauciconus daucus* (Hwass in Bruguière, 1792).

A. FLMNH 267860 *Dauciconus daucus* (Hwass in Bruguière, 1792), 35 mm, holotype of *Conus (Dauciconus) worki* Petuch, 1998, 35 m, off Vitoria, Espiritu Santo State, Brazil. Photo by Chris Meyer

B. MHNG 988.105 *Dauciconus daucus* (Hwass in Bruguière, 1792), 30.2 mm, holotype of *Conus (Dauciconus) boui* da Motta, 1998, Pte de la Baleine, west coast of Martinique. Photo by Alan J. Kohn

C. MHNG 16150 *Dauciconus daucus* (Hwass in Bruguière, 1792), 37 mm, holotype of *Conus norai* da Motta and G. Raybaudi Massilia, 1992, 10 m, Pte.de la Baleine, S. W. coast of Martinique. Photo by Alan J. Kohn

D. MORG 18.757 *Dauciconus daucus* (Hwass in Bruguière, 1792), 54 mm, holotype of *Conus riosi* Petuch, 1986, 50 m, off Salvador, Bahia State, Brazil. Photo by Paulo Màrcio Costa

Figure 3
Four specimens of *Dauciconus attenuatus* (Reeve, 1844) from Matinique

A. JKT 3148 *Dauciconus attenuatus* (Reeve, 1844), 21.8 mm, scuba, 1979, 25 m, off Martinique

B. JKT 3148 *Dauciconus attenuatus* (Reeve, 1844), 20.5 mm, scuba, 1979, 25 m, off Martinique

C. JKT 3481 *Dauciconus attenuatus* (Reeve, 1844), 23.7 mm, Martinique, Cap Salomon, southwest coast, night diving between 10-25 m, 1994

D. JKT 3148 *Dauciconus attenuatus* (Reeve, 1844), 21.4 mm, scuba, 1979, 25 m, off Martinique

Figure 4

Type specimens of nominal species thought to be junior synonyms of *Dauciconus attenuatus* (Reeve, 1844).

A. and B. USNM 859946 *Dauciconus attenuatus* (Reeve, 1844), 37 mm, holotype of *Conus honkeri* Petuch, 1988, trawled, 35 m, off Los Monges Islands, off mouth of Gulf of Venezuela. Photo by Alan J. Kohn

C. AMNH 195448 *Dauciconus attenuatus* (Reeve, 1844), 27 mm, lectotype of *Conus ustickei* Miller in Nowell-Usticke, 1959, Altona Bay, St. Croix. Photo by Alan J. Kohn

D. USNM 859812 *Dauciconus attenuatus* (Reeve, 1844), 27 mm, holotype of *Conus aureonimbosus* Petuch, 1987, 150 m, 50 km S of Apalachicola, Florida. Photo by Alan J. Kohn

Figure 5

Specimens of *Dauciconus amphiurgus* (Dall, 1889) and *Gradiconus flamingo* (Petuch, 1980) demonstrating the difficulty in separating juveniles of the former species from adults of the latter species

A. JKT 3147 *Dauciconus amphiurgus* (Dall, 1889), 13.4 mm, dredged in 200 feet off Hypoluxo, Florida, sand and rubble bottom

B. JKT 3242 *Gradiconus flamingo* (Petuch, 1980), 13.1 mm, Colombia, Cayos de San Andreas, snorkeling 5-10 feet under dead coral, 2001

C. JKT 3147 *Dauciconus amphiurgus* (Dall, 1889), 16.2 mm, dredged in 200 feet off Hypoluxo, Florida, sand and rubble bottom (*flamingo*)

D. USNM 780663 *Gradiconus flamingo* (Petuch, 1980), 19.4 mm, holotype, 45.7 m, off Dania, Broward County, Florida. Photo by Alan J. Kohn

Figure 6

Specimens of *Dauciconus amphiurgus* (Dall, 1889) from Florida similar to those illustrated by Vink

A. JKT 935 *Dauciconus amphiurgus* (Dall, 1889), 12.9 mm, dredged in 110 feet, west of Tarpon springs, Florida, Sept. 1966, sand bottom, J. Moore

B. JKT 1011 *Dauciconus amphiurgus* (Dall, 1889), 23.6 mm, dredged Egmont Key, Florida

C. JKT 2468 *Dauciconus amphiurgus* (Dall, 1889), 39.5 mm, in 200 feet, dredged off St. Augustine

D. JKT 1943 *Dauciconus amphiurgus* (Dall, 1889), 48.1 mm, Florida, Port Canaveral scallop dump

E. JKT 2143 *Dauciconus amphiurgus* (Dall, 1889), 48.4 mm, Florida, Port Canaveral scallop dump

Figure 7
Primary type of *Dauciconus amphiurgus* (Dall, 1889) and of nominal species thought to be synonyms of *Dauciconus amphiurgus* (Dall, 1889).

A & B. USNM 87303 *Dauciconus amphiurgus* (Dall, 1889), 40 mm, holotype, off Cape Catoche, Yucatan. Photo by Alan J. Kohn

C. USNM 859880 *Dauciconus amphiurgus* (Dall, 1889), 25 mm, holotype of *Conus floridanus patglicksteinae* Petuch, 1987, 400 feet, off Palm Beach Island, Palm Beach County, Florida. Photo by Alan J. Kohn

D. FLMNH UF 13382 *Dauciconus amphiurgus* (Dall, 1889), 54 mm, holotype of *Conus juliae* Clench, 1942, 15 fm, 9 miles off Fort Walton, Okaloosa County, Florida. Photo by Chris Meyer

Figure 8
Four specimens of *Chelyconus ermineus* (Born, 1778) similar to those illustrated by Vink

A. JKT 160 *Chelyconus ermineus* (Born, 1778), 50.4 mm, Tucker's Bay, Trinidad

B. JKT 160 *Chelyconus ermineus* (Born, 1778), 51.1 mm, Tucker's Bay, Trinidad

C. JKT 3836 *Chelyconus ermineus* (Born, 1778), 71.0 mm, Florida, in 110 feet of water off Boca Raton, under dead coral rubble on low reef, 2001

D. JKT 3837 *Chelyconus ermineus* (Born, 1778), 63.1 mm, Florida, taken in 12 fms off Boca Raton, under rock slab on reef, summer 2004

Figure 9
Primary type of *Dauciconus sanderi* (Wils and Moolenbeek, 1979) and of nominal species thought to be synonyms of *Dauciconus sanderi* (Wils and Moolenbeek, 1979)

A. USNM 859891 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 46 mm, holotype of *Conus perprotractus* Petuch, 1987, 35 m, Gulf of Venezuela, off Punto Fijo, Falcon, Venezuela. Photo by Alan J. Kohn

B. UZMC *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 34.5 mm, holotype of *Conus sorenseni* Sander, 1982, about 175 m, off St. James, Barbados. Photo by Alan J. Kohn

C. UZMC *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 23 mm, holotype of *Conus knudseni* Sander, 1982, about

175 m, off St. James, Barbados. Photo by Alan J. Kohn

D. MORG 20.915 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 52 mm, holotype of *Conus carioca* Petuch, 1986, 100 m, off Cabo Frio, Rio de Janira State, Brazil. Photo by Paulo Màrcio Costa & Renata Gomes

E. ZMUA *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 18.6 mm, holotype of *Conus hunti* Wils & Moolenbeek, 1979, 155-180 m, off St. James, Barbados. Photo by Alan J. Kohn

F. ZMUA 137055 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 21.1 mm, holotype, 155-180 m, off St. James, Barbados. Photo by Alan J. Kohn

G. CMNH 47359 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 36 mm, holotype of *Conus poulosi* Petuch, 1993, 35 m, off Cabo La Vela, Goajira Peninsula, Colombia. Photo by Alan J. Kohn

Figure 10

Specimens of *Dauciconus sanderi* (Wils and Moolenbeek, 1979) from Barbados and Brazil similar to those illustrated by Vink

A. JKT 1182 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 19.5 mm, off west Barbados, dredged in 85-90 fms, 29 June 1979, Kerstitch

B. JKT 1182 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 20.8 mm, off west Barbados, dredged in 85-90 fms, 29 June 1979, Kerstitch

C. JKT 1175 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 21.0 mm, off west Barbados, dredged in 85-90 fms, 29 June 1979, A. Kerstitch

D. JKT 3252 *Dauciconus sanderi* (Wils and Moolenbeek, 1979, 35.4 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, Oct. 1999

Figure 11

Specimens of *Dauciconus sanderi* (Wils and Moolenbeek, 1979) from Brazil that are often identified as *Conus carioca* Petuch, 1986 (see Fig. 9D)

A. JKT 3521 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 34.0 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, Oct. 1999

B. JKT 3521 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 43.9 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, Oct. 1999

C. JKT 3251 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 40.0 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, Oct. 1999

D. JKT 3284 *Dauciconus sanderi* (Wils and Moolenbeek, 1979), 42.4 mm, Brazil, in 35-40 m, off Vitoria, Espirito Santo, July 2002

Figure 12
Specimens fitting Vink's concept of *Conus archetypus archetypus* Crosse, 1865

A. JKT 3209 *Purpuriconus ziczac archetypus* (Crosse, 1865), 21.0 mm, Brazil, off Natal, diver in 20-25 m, under rock rubble, Dec. 2001

B. JKT 3209 *Purpuriconus ziczac archetypus* (Crosse, 1865), 20.7 mm, Brazil, off Natal, diver in 20-25 m, under rock rubble, Dec. 2001

C. JKT 3209 *Purpuriconus ziczac archetypus* (Crosse, 1865), 20.5 mm, Brazil, off Natal, diver in 20-25 m, under rock rubble, Dec. 2001

D. JKT 3209 *Purpuriconus ziczac archetypus* (Crosse, 1865), 21.3 mm, Brazil, off Natal, diver in 20-25 m, under rock rubble, Dec. 2001

Figure 13
Specimens fitting Vink's concept of *Conus archetypus beddomei* G. B. Sowerby III, 1901 but considered to be *Purpuriconus ziczac archetypus* (Crosse, 1865), herein

A. JKT 3482 *Purpuriconus ziczac archetypus* (Crosse, 1865), 25.5 mm, Brazil, 50 miles NW Conceição de Barra, N. Espirito Santo, under dead coral, in 20-25 m, 2000

B. JKT 3210 *Purpuriconus ziczac archetypus* (Crosse, 1865), 24.1 mm, Brazil, in sand on coral reef, in 2 m, off Alcobaca, south Bahia State

C. JKT 3502 *Purpuriconus ziczac archetypus* (Crosse, 1865), 23.0 mm, Grenadines, in 3-10 m, Mustique Island

D. JKT 3502 *Purpuriconus ziczac archetypus* (Crosse, 1865), 22.4 mm, Grenadines, in 3-10 m, Mustique Island

Figure 14
Primary type of *Purpuriconus ziczac* (Mühlfeld, 1816) and of nominal species thought to be synonyms of *Purpuriconus ziczac* (Mühlfeld, 1816)

A and B. NHMW 103377 *Purpuriconus ziczac* (Mühlfeld, 1816), 8.2 mm, holotype of *Conus ziczac* Mühlfeld, 1816, "Mediterranean Sea". Photo by Alan J. Kohn

C. USNM 859872 *Purpuriconus ziczac* (Mühlfeld, 1816), 12 mm, holotype of *Conus abrolhosensis* Petuch, 1987, 20 m, off Parcel das Paredes, Abrolhos Archipelago, Bahia State, Brazil. Photo by Alan J. Kohn

D. BMNH 1979.181 *Purpuriconus ziczac* (Mühlfeld, 1816), 24.9 mm, holotype of *Conus archetypus* Crosse, 1865, from an unknown locality. Photo by Alan J. Kohn

E. BMNH 1902.5.28.65 *Purpuriconus ziczac* (Mühlfeld, 1816), 27 mm, holotype of *Conus beddomei* G. B. Sowerby III, 1901, from the "West Indies". Photo by Alan J. Kohn

F. MCZ 146894 *Purpuriconus ziczac* (Mühlfeld, 1816), 21.9 mm, holotype of *Conus brasiliensis* Clench, 1942, from Victoria, Espirito Santo State, Brazil. Photo by Alan J. Kohn

Figure 15

Specimens of *Stephanoconus regius* (Gmelin, 1791) from various places in the range of the species similar to those illustrated by Vink

A. JKT 2454 *Stephanoconus regius* (Gmelin, 1791), 41.6 mm, Bahia Honda, Florida

B. JKT 1079 *Stephanoconus regius* (Gmelin, 1791), 56.0 mm, under dead coral slabs in 2-4 feet, Glover's Reef, Belize, May 1979, J. Cordy

C. JKT 485 *Stephanoconus regius* (Gmelin, 1791), 51.0 mm, in sandy pockets on reef, Fernando de Norvola Island, Brazil

D. JKT 1079 *Stephanoconus regius* (Gmelin, 1791), 46.1 mm, under dead coral slabs in 2-4 feet, Glover's Reef, Belize, May 1979, J. Cordy

Figure 16

Specimens fitting Vink's concept of *Spuriconus spurius spurius* (Gmelin, 1791)

A. JKT 3155 *Spuriconus spurius spurius* (Gmelin, 1791), 29.9 mm, in sand at low tide, Trellis, British Virgin Islands, March 1987

B. JKT 3155 *Spuriconus spurius spurius* (Gmelin, 1791), 37.1 mm, in sand at low tide, Trellis, British Virgin Islands, March 1987

C. JKT 1089 *Spuriconus spurius spurius* (Gmelin, 1791), 47.1 mm, Marathon Florida, May 1979, sand, grass, J. Cordy

D. JKT 2873 *Spuriconus spurius spurius* (Gmelin, 1791), 48.8 mm, Punta Arenas Vergues Isel, Puerto Rico, Dan Hughes, June 1965

Figure 17

Specimens fitting Vink's concept of *Spuriconus spurius aureofasciatus* (Rehder and Abbott, 1951) but considered to be *Spuriconus spurius spurius* (Gmelin, 1791) herein

A. JKT 2046 *Spuriconus spurius spurius* (Gmelin, 1791), 38.3 mm, dredged off Yucatan, Gulf of Mexico

B. JKT 2046 *Spuriconus spurius spurius* (Gmelin, 1791), 42.3 mm, dredged off Yucatan, Gulf of Mexico

C. USNM 597521 *Spuriconus spurius spurius* (Gmelin, 1791), 67.5 mm, holotype of *Conus aureofasciatus* Rehder & Abbott, 1951, 20 fms, off Dry Tortugas, Florida. Photo by Alan J. Kohn

D. JKT 2130 *Spuriconus spurius spurius* (Gmelin, 1791), 54.5 mm, Yucatan

E. JKT 2130 *Spuriconus spurius spurius* (Gmelin, 1791), 40.6 mm, Yucatan

Figure 18
Specimens fitting Vink's concept of *Spuriconus spurius* '*quadratus*' but considered to be *Spuriconus spurius lorenzianus* (Dillwyn, 1817) herein

A. JKT 2113 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 63.9 mm, trawled off Honduras

B. JKT 1901 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 43.6 mm, trawled in 100-300 feet, Honduras

C. JKT 1901 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 50.9 mm, trawled in 100-300 feet, Honduras

D. JKT 1901 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 70.9 mm, trawled in 100-300 feet, Honduras In part V Vink identified shells like these as *Spuriconus spurius quadratus* (Röding, 1798). However, in a footnote in Part XI, Vink noted that *quadratus* was actually an Indo-Pacific species. No name was available for the subspecies of *S. spurius* as defined by Vink. However, these are quite similar to *S. s. lorenzianus* and I list them as that subspecies.

Figure 19
Specimens fitting Vink's concept of *Spuriconus spurius atlanticus* (Clench, 1942) but considered to be *Spuriconus spurius spurius* (Gmelin, 1791) herein

A. JKT 3291 *Spuriconus spurius spurius* (Gmelin, 1791), 30.0 mm, Florida, off Deerfield Beach, in 70 feet, night scuba, inside reef in coral gravel, summer 1990

B. JKT 3291 *Spuriconus spurius spurius* (Gmelin, 1791), 39.7 mm, Florida, off Deerfield Beach, in 70 feet, night scuba, inside reef in coral gravel, summer 1990

C. JKT 3291 *Spuriconus spurius spurius* (Gmelin, 1791), 35.7 mm, Florida, off Deerfield Beach, in 70 feet, night scuba, inside reef in coral gravel, summer 1990

D. JKT 68 *Spuriconus spurius spurius* (Gmelin, 1791), 47.6 mm, Little Torch Key, gulf near highway, usually buried on weedy shoals, M. Teskey 1977

E. MCZH 140787 *Spuriconus spurius spurius* (Gmelin, 1791), 65 mm, holotype of *Conus atlanticus* Clench, 1942, Bonita Springs, Florida. Photo by Alan J. Kohn

F. JKT 586 *Spuriconus spurius spurius* (Gmelin, 1791), 29.4 mm, Big Pine Key, Florida, April 1977, J. Cordy

G. JKT 2488 *Spuriconus spurius spurius* (Gmelin, 1791), 34.5 mm, Key Largo, Florida

H. JKT 2037 *Spuriconus spurius spurius* (Gmelin, 1791), 38.5 mm, Florida, dredged off Dry Tortugas

I. JKT 2124 *Spuriconus spurius spurius* (Gmelin, 1791), 39.9 mm, Oct. 1967, Fort Myers Beach, Florida

Figure 20
Specimens fitting Vink's concept of *Spuriconus spurius lorenzianus* (Dillwyn, 1817)

A. JKT 3290 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 49.3 mm, Colombia, in 40-60 m, muddy sand, Gulf of Morrosquillo, March 2001

B. JKT 3290 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 51.5 mm, Colombia, in 40-60 m, muddy sand, Gulf of Morrosquillo, March 2001

C. JKT 3289 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 62.5 mm, Colombia, in 40-60 m, muddy sand, Gulf of Morrosquillo, March 1998

D. JKT 3289 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 56.8 mm, Colombia, in 40-60 m, muddy sand, Gulf of Morrosquillo, March 1998

Figure 21
Specimens fitting Vink's concept of *Spuriconus spurius baylei* (Jousseaume, 1872) but considered to be *Spuriconus spurius lorenzianus* (Dillwyn, 1817) herein

A. JKT 3286 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 41.7 mm, Colombia, in 60-70 m, Cabo de la Vela, trawled

B. JKT 3286 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 47.2 mm, Colombia, in 60-70 m, Cabo de la Vela, trawled

C. MNHN *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 31 mm, holotype of Conus baylei Jousseaume, 1872, locality not stated. Photo by Alan J. Kohn

D. JKT 3288 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 49.8 mm, Colombia, in 40-50 m, off Cabo de la Vela, Guajira Peninsula, Sumer 2001

E. JKT 3288 *Spuriconus spurius lorenzianus* (Dillwyn, 1817), 50.8 mm, Colombia, in 40-50 m, off Cabo de la Vela,

Guajira Peninsula, Sumer 2001

Figure 22
Specimens fitting Vink's concept of *Gradiconus sennottorum* (Rehder and Abbott, 1951)

A. JKT 1055 *Gradiconus sennottorum* (Rehder and Abbott, 1951), 37.6 mm, dredged, Gulf of Campeche, Yucatan

B. USNM 597519 *Gradiconus sennottorum* (Rehder and Abbott, 1951), 35 mm, holotype, 15-16 fm, 50 miles SW of Campeche, Yucatan, Mexico, 19°40'N, 91°20'W. Photo by Alan J. Kohn

Figure 23
Specimens similar to those that Vink identified as *Gradiconus largillierti* (Kiener, 1845)

A. JKT 1117 *Gradiconus largillierti* (Kiener, 1845), 46.7 mm, dredged in 125 to 150 feet, 70 miles southeast of Charleston, South Carolina

B. JKT 2054 *Gradiconus largillierti* (Kiener, 1845), 42.7 mm, Florida, off St. Augustine-Jacksonville, scallop boats

C. JKT 1116 *Gradiconus largillierti* (Kiener, 1845), 42.1 mm, May 1978, Georgia-South Carolina border by scallop fisherman, in 60-80 feet

D. JKT 1116 *Gradiconus largillierti* (Kiener, 1845), 47.2 mm, May 1978, Georgia-South Carolina border by scallop fisherman, in 60-80 feet

Figure 24
Variation in shell shape among juvenile and adult *Gradiconus largillierti* (Kiener, 1845)

A. JKT 900 *Gradiconus largillierti* (Kiener, 1845), 25.8 mm, dredged in 200 feet, west of Everglades City, Florida, August 1966, J. Moore

B. JKT 922 Gradiconus largillierti (Kiener, 1845), 29.1 mm, Florida, dredged in 190 feet, west of Everglades City, Florida, August 1966, J. Moore

C. JKT 947 *Gradiconus largillierti* (Kiener, 1845), 25.1 mm, dredged in 90-110 feet, south of Carabelle, Florida, july 1966, sand rubble, J. Moore

D. JKT 902 *Gradiconus largillierti* (Kiener, 1845), 27.3 mm, Florida, dredged in 120 feet, west of Dry Tortugas, June 1966, J. Moore

E. JKT 2054 *Gradiconus largillierti* (Kiener, 1845), 45.1 mm, Florida, off St. Augustine-Jacksonville, scallop boats

F. JKT 2054 *Gradiconus largillierti* (Kiener, 1845), 47.1 mm, Florida, off St. Augustine-Jacksonville, scallop baots

G. JKT 2489 *Gradiconus largillierti* (Kiener, 1845), 40.5 mm, dredged in 200 feet, off St. Augustine, Florida

H. JKT 1930 *Gradiconus largillierti* (Kiener, 1845), 27.1 mm, deep water off Vero Beach, Florida

I. JKT 1930 *Gradiconus largillierti* (Kiener, 1845), 26.0 mm, deep water off Vero Beach, Florida

J. JKT 1930 *Gradiconus largillierti* (Kiener, 1845), 23.6 mm, deep water off Vero Beach, Florida

K. JKT 1930 *Gradiconus largillierti* (Kiener, 1845), 24.5 mm, deep water off Vero Beach, Florida

L. JKT 1117 *Gradiconus largillierti* (Kiener, 1845), 46.7 mm, dredged in 125 to 150 feet, 70 miles southeast of Charleston, South Carolina

Figure 25
Specimens similar to those illustrated by Vink that he identified as *Lamniconus clerii* (Reeve, 1843)

A. JKT 1017 *Lamniconus clerii* (Reeve, 1843), 45.8 mm, trawled in 40 fms off Cabo Frio, Brazil

B. JKT 843 *Lamniconus clerii* (Reeve, 1843), 52.3 mm, Juatinga, Estado do Rio de Janiero, Brazil, in 50 m, sandy bottom, August 1972

C. JKT 3245 *Lamniconus clerii* (Reeve, 1843), 43.7 mm, Brazil, Santos Sao Paulo, shrimp trawlers, in 70-90 m, May 2001

D. JKT 1017 *Lamniconus clerii* (Reeve, 1843), 43.5 mm, trawled in 40 fms off Cabo Frio, Brazil

Figure 26
Primary types for two species of *Lamiconus* and some synonyms

A. MORG 14246 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 35 mm, holotype of *Conus tostesi* Petuch, 1986, 100 m, off Cabo Frio, Rio de Janira State, Brazil. Photo by Paulo Màrcio Costa

B. BMNH *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 36 mm, holotype, Rio de Janeiro, Brazil. Photo by Alan J. Kohn

C. BMNH 1983109 *Lamniconus clerii* (Reeve, 1843), 32 mm, holotype of *Conus clerii* Reeve, 1844, Cape St. Thomas, Brazil. Photo by Alan J. Kohn

D. MORG 14248 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 47 mm, holotype of *Conus xanthocinctus* Petuch, 1986, 100 m, off Cabo Frio, Rio de Janira State, Brazil. Photo by Paulo Màrcio Costa

Figure 27. Specimens similar to those illustrated by Vink that he identified as *Lamniconus lemniscatus lemniscatus* (Reeve, 1849)

A. JKT 3234 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 50.1 mm, Brazil, trawled in 35-40 m, southern Marataizes, Espirito Santo, Sept. 2001

B. JKT 3236 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 49.1 mm, Brazil, N. Niteroi, Rio de Janeiro, trawled in 90 m, June 2001

C. JKT 3247 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 37.3 mm, Brazil, south Marataizes, Espirito Santo, in 30-40 m, Sept. 2001

D. JKT 844 *Lamniconus lemniscatus lemniscatus* (Reeve, 1849), 45.9 mm, north coast of Estado do Rio de Janeiro, Brazil, in 50 m, sandy bottom, August 1972

Figure 28

Specimens similar to those illustrated by Vink that he identified as *Lamniconus lemniscatus carcellesi* (Martins, 1945)

A. JKT 3593 *Lamniconus lemniscatus carcellesi* (Martins, 1945), 36.3 mm, Uruguay, La Paloma, Rocha, in 70 m

B. JKT 3593 *Lamniconus lemniscatus carcellesi* (Martins, 1945), 28.0 mm, Uruguay, La Paloma, Rocha, in 70 m

C. JKT 3593 *Lamniconus lemniscatus carcellesi* (Martins, 1945), 42.3 mm, Uruguay, La Paloma, Rocha, in 70 m

D. JKT 3593 *Lamniconus lemniscatus carcellesi* (Martins, 1945), 48.0 mm, Uruguay, La Paloma, Rocha, in 70 m

Figure 29

Specimens similar to those illustrated by Vink that he identified as *Gradiconus cingulatus* (Lamarck, 1810)

A. JKT 62 *Gradiconus cingulatus* (Lamarck, 1810), 31.0 mm, on beach, Santa Marta, Colombia

B. JKT 2112 *Gradiconus cingulatus* (Lamarck, 1810), 38.5 mm, trawled in 300 feet, off Yucatan

C. JKT 3230 *Gradiconus cingulatus* (Lamarck, 1810), 29.8 mm, Colombia, off Boquillo Beach, Cartagna, grey sand after storm, March 1996

D. JKT 2718 *Gradiconus cingulatus* (Lamarck, 1810), 56.3 mm, shrimpers, in 125-150 feet, off Cartegena, Colombia

Figure 30

Primary type of *Gradiconus anabathrum* (Crosse, 1865) and types of nominal species thought to be synonyms of *Gradiconus anabathrum* (Crosse, 1865)

A. BMNH 1979182 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 28 mm, holotype of *Conus anabathrum* Crosse, 1865, Florida, locality designated by Coomans et al., 1980. Photo by Alan J. Kohn

B. ANSP 80897 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 48 mm, holotype of *Conus floridanus* Gabb, 1869, Tampa Bay, Florida. Photo by Alan J. Kohn

C. MCZH *Gradiconus anabathrum burryae* (Clench, 1942), 49 mm, holotype of *Conus burryae* Clench, 1942, off Lower Matecumbe Key, Lower Florida Keys. Photo by Alan J. Kohn

D. BMNH *Gradiconus anabathrum anabathrum* (Crosse, 1865), 42.5 mm, holotype of *Conus floridensis* G. B. Sowerby III, 1870, Florida. Photo by Alan J. Kohn

E. FLMNH UF 225163 *Gradiconus anabathrum burryae* (Clench, 1942), 21.5 mm, holotype of *Conus floridanus tranthami* Petuch, 1995, 3 m, Pickles Reef, off Plantation Key, northern Florida Keys. Photo by Chris Meyer

Figure 31

Specimens similar to those illustrated by Vink that he identified as *Gradiconus floridanus floridanus* (Gabb, 1869) but considered to be *Gradiconus anabathrum anabathrum* (Crosse, 1865) herein

A. JKT 2452 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 45.4 mm, Sanibel Island, Florida

B. JKT 1885 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 26.8 mm, on sand bars in bay between Sanibel and Pine Islands, 1-3 feet, summer 1973, K. Anders

C. JKT 1886 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 27.6 mm, dredged in shallow water, Sand Cay, Marco Island, Florida, L. Eastland, summer 1974

D. JKT 1886 *Gradiconus anabathrum anabathrum* (Crosse, 1865), 24.7 mm, dredged in shallow water, Sand Cay, Marco Island, Florida, L. Eastland, summer 1974

Figure 32

Specimens similar to those illustrated by Vink that he identified as *Gradiconus floridanus burryae* (Clench, 1942) but considered to be *Gradiconus anabathrum burryae* (Clench, 1942) herein

A. JKT 50 *Gradiconus anabathrum burryae* (Clench, 1942), 23.5 mm, Florida, Little Torch Key, near highway, M. Teskey 1977

B. JKT 860 *Gradiconus anabathrum burryae* (Clench, 1942), 42.2 mm, shallow water off Marathon, Vaca Key, Florida, J. Cordy

C. JKT 49 *Gradiconus anabathrum burryae* (Clench, 1942), 22.9 mm, Florida, Little Torch Key, near highway, M. Teskey 1977

D. JKT 1199 *Gradiconus anabathrum burryae* (Clench, 1942), 21.4 mm, Florida, Little Torch Key, 1977

Figure 33
Specimens similar to those illustrated by Vink that he identified as *Gradiconus flavescens* (G. B. Sowerby II, 1834)

A. JKT 3258 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 17.8 mm, Bahamas, night scuba in 30 feet, off South Cat Cay, Great Bahama, late 1980's

B. JKT 3588 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 21.2 mm, Florida, night scuba in 70 feet, off Deerfield Beach in coral gravel on inside of reef, summer 1991

C. BMNH *Gradiconus flavescens* (G. B. Sowerby II, 1834), 23.5 mm, lectotype, Bahamas. Photo by Alan J. Kohn

C. JKT 3588 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 18.4 mm, Florida, night scuba in 70 feet, off Deerfield Beach in coral gravel on inside of reef, summer 1991

D. JKT 3588 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 22.4 mm, Florida, night scuba in 70 feet, off Deerfield Beach in coral gravel on inside of reef, summer 1991

Figure 34
Primary type of *Conus cerutti* Cargile, 1997, considered a possible synonym of *Gradiconus flavescens* (G. B. Sowerby II, 1834) herein

A. SBMNH 143405 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 31.6 mm, holotype of *Conus ceruttii* Cargile, 1997, from Isla Grande de Mainz, Nicaragua, in 10-25 m. Photo by Patricia Sadeghian

.

B. SBMNH 143405 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 31.6 mm, holotype of *Conus ceruttii* Cargile, 1997, from Isla Grande de Mainz, Nicaragua, in 10-25 m. Photo by Patricia Sadeghian

Figure 35
Primary type of *Conus caribbaeus* Clench, 1942, considered a synonym of *Gradiconus flavescens* (G. B. Sowerby II, 1834) herein and some larger specimens of *Gradiconus flavescens* (G. B. Sowerby II, 1834)

A. JKT 2466 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 29.8 mm, Abaco, Bahamas

B. JKT 2466 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 29.8 mm, Abaco, Bahamas

C. MCZH 138333 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 31 mm, holotype of *Conus caribbaeus* Clench, 1942, off Palm Beach County, Florida. Photo by Alan J. Kohn

D. JKT 863 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 29.9 mm, shallow water off Marathon, Vaca Key, Florida,

J. Cordy

E. JKT 863 *Gradiconus flavescens* (G. B. Sowerby II, 1834), 29.9 mm, shallow water off Marathon, Vaca Key, Florida, J. Cordy

Figure 36

Vink left this species unidentified but it was later described as *Conus bahamensis* Vink & Röckel, 1995, considered a variant of *Spuriconus spurius* (Gmelin, 1791) herein

A. SMNS ZI-0008660 *Spuriconus spurius* (Gmelin, 1791), 31.1 mm, holotype of *Conus bahamensis* Vink & Röckel, 1995, 40 fms, off Cat Cay, Bahamas (photo by D. Röckel.). Photo by D. Röckel courtesy Hans-Jörg Niederhöfer

B. SMNS ZI-0050282 *Spuriconus spurius* (Gmelin, 1791), 28.5 mm, paratype of *Conus bahamensis* Vink & Röckel, 1995, 40 fms, off Cat Cay, Bahamas. Photo by D. Röckel courtesy Hans-Jörg Niederhöfer

C. JKT 2446 *Spuriconus spurius spurius* (Gmelin, 1791), 34.0 mm, Bahamas

D and E. JKT 48 *Spuriconus spurius spurius* (Gmelin, 1791), 34.8 mm, dredged off Cat Cay, Bahamas

Figure 37

Specimens similar to those illustrated by Vink that he identified as *Seminoleconus cedonulli* (Linné, 1767)

A. JKT 1879 *Seminoleconus cedonulli cedonulli* (Linné, 1767), 57.3 mm, St. Vincents Island, under rocks

B. JKT 1879 *Seminoleconus cedonulli cedonulli* (Linné, 1767), 32.6 mm, St. Vincents Island, under rocks

C. JKT 3146 *Seminoleconus cedonulli dominicanus* (Hwass in Bruguière, 1792), 18.5 mm, Carracou, Grenadines, in 15-25 feet under rocks, 1979

Figure 38

Primary types for a number of nominal species that Vink considered synonyms of *Seminoleconus mappa mappa* (Lightfoot, 1786)

A. UZMC *Seminoleconus mappa mappa* (Lightfoot, 1786), 51 mm, holotype of *Conus solidus* Gmelin, 1791, unknown locality. Photo by Alan J. Kohn

B. MHNG 1106/59 *Seminoleconus mappa trinitarius* (Hwass in Bruguière, 1792), 40.5 mm, lectotype, Islas Los Testigos, Venezuela, designated by Vink & Cosel, 1985. Photo by Alan J. Kohn

C. NMW *Seminoleconus mappa granarius* (Kiener, 1845), 31 mm, holotype of *Conus desmotus* Tomlin, 1937, which is a *nomen novum* for *Conus catenatus* G. B. Sowerby III, 1879, non *Conus catenatus* G. B. Sowerby II, 1850, type locality cited as Panama? Photo by Alan J. Kohn

D. RMHN 55130 *Seminoleconus mappa granarius* (Kiener, 1845), 53 mm, holotype of *Conus sanctaemarthae* Vink, 1977, 10 km north of Sancta Marta, Colombia. Photo by Alan J. Kohn

E. USNM 860543 *Seminoleconus mappa granarius* (Kiener, 1845), 24 mm, holotype of *Conus granarius panamicus* Petuch, 1990, Portobelo, Panama. Photo by Alan J. Kohn

Figure 39

Specimens similar to those Vink illustrated as *Seminoleconus mappa granarius* (Kiener, 1845)

A. JKT 3205 *Seminoleconus mappa granarius* (Kiener, 1845), 53.5 mm, Colombia, off Goajira Peninsula, Cabo de la Vela, in 20-40 fms, 2001

B. JKT 3204 *Seminoleconus mappa granarius* (Kiener, 1845), 37.2 mm, Colombia, off Goajira Peninsula, dredged in 50 fms, muddy sand, shrimpers, 1995

C. JKT 3204 *Seminoleconus mappa granarius* (Kiener, 1845), 37.3 mm, Colombia, off Goajira Peninsula, dredged in 50 fms, muddy sand, shrimpers, 1995

D. JKT 3204 *Seminoleconus mappa granarius* (Kiener, 1845), 35.3 mm, Colombia, off Goajira Peninsula, dredged in 50 fms, muddy sand, shrimpers, 1995

Figure 40

Two specimens of *Seminoleconus aurantius* (Hwass in Bruguière, 1792) and three primary types of nominal species of *Seminoleconus*

A. JKT 1040 *Seminoleconus aurantius* (Hwass in Bruguière, 1792), 50.2 mm, Bonaire, 10 feet on coral rubble

B. JKT 3025 *Seminoleconus aurantius* (Hwass in Bruguière, 1792), 1792, 60.9 mm, Aruba

C. MHNG 983/991 *Seminoleconus curassaviensis pseudaurantius* (Vink & Cosel, 1985), 34.5 mm, holotype, Union Island, Grenadines, 5 m, coral rubble and sand. Photo by Alan J. Kohn

D. MHNG 1106/42 *Seminoleconus aurantius* (Hwass in Bruguière, 1792), 49 mm, lectotype, Philippines (erroneous) Curaçao designated by Clench & Bullock, 1970. Photo by Alan J. Kohn

E. CMNH 47362 *Seminoleconus curassaviensis duffyi* (Petuch, 1992), 39 mm, holotype, under coral rubble slab, 2 m, on coral reef on western tip of Esparqui, los Roques Archipelago, Venezuela. Photo by Alan J. Kohn

Figure 41

Specimens of two subspecies of *Seminoleconus curassaviensis* (Hwass in Bruguière, 1792)

A. JKT 1042 *Seminoleconus curassaviensis curassaviensis* (Hwass in Bruguière, 1792), 38.1 mm, 15-20 feet in rubble, Palm Beach, Aruba

B. JKT 1975 *Seminoleconus curassaviensis curassaviensis* (Hwass in Bruguière, 1792), 23.3 mm, Aruba, 20 feet under rocks

C. JKT 1735 *Seminoleconus curassaviensis curassaviensis* (Hwass in Bruguière, 1792), 26.7 mm, Malmotte, Aruba, 3 June 1957

D. JKT 3146 *Seminoleconus curassaviensis pseudaurantius* (Vink & Cosel, 1985), 27.0 mm, Carracou, Grenadines, 15-25 feet under rocks, 1979

E. JKT 3146 *Seminoleconus curassaviensis pseudaurantius* (Vink & Cosel, 1985), 18.4 mm, Carracou, Grenadines, 15-25 feet under rocks, 1979

Figure 42. Juveniles of some *Seminoleconus* and primary types for *Conus julieandreae* Cargile, 1995 and *Conus scopulorum* Van Mol, Tursch & Kempf, 1971

A. JKT 3202 *Seminoleconus curassaviensis duffyi* (Petuch, 1992), 15.6 mm, Colombia, Cayo de San Andreas, scuba 20 m in coral sand, 2001

B. JKT 3202 *Seminoleconus curassaviensis duffyi* (Petuch, 1992), 16.5 mm, Colombia, Cayo de San Andreas, scuba 20 m in coral sand, 2001

C. SBMNH 142854 *Seminoleconus curassaviensis duffyi* (Petuch, 1992), 23.0 mm, holotype of *Conus julieandreae* Cargile, 1995, Cayos Caratasca, Honduras, 3-10 m, sand pockets among rocks and coral. Photo by Alan J. Kohn

D. RMNH *Seminoleconus scopulorum* (Van Mol, Tursch & Kempf, 1971), 21 mm, holotype, 90 m, Fernando de Noronha, Brazil. Photo by Alan J. Kohn

E. JKT 3146 *Seminoleconus curassaviensis pseudaurantius* (Vink & Cosel, 1985), 18.4 mm, Carracou, Grenadines, 15-25 feet under rocks, 1979

Fig 43

Specimens similar to those Vink illustrated that he identified as *Gladioconus patae* (Abbott, 1971) along with two primary types

A. JKT 971 *Gladioconus patae* (Abbott, 1971), 21.1 mm, Pompano Beach, Florida

B. JKT 3224 *Gladioconus patae* (Abbott, 1971), 15.9 mm, Bahamas, Elbow Cay, Abaco Cays, heavy coral, 3 m snorkeling, under dead coral rubble, July 1995

C. JKT 3905 *Gladioconus patae* (Abbott, 1971), 18.0 mm, 35 feet, diver, crabbed, on reef, Spanish Wells, Bahamas

D. JKT 1107 *Gladioconus patae* (Abbott, 1971), 22.2 mm, dredged in 100 feet, Pompano Beach, Florida, June 1970

E. DMNH 044097 *Gladioconus patae* (Abbott, 1971), 24.4 mm, holotype, 10 fathoms off Pompano Beach, Florida. Photo by Alan J. Kohn

F. AMNH 167026 *Gladioconus patae* (Abbott, 1971), 24 mm, holotype of *Conus rudiae* Magnotte, 1971, 13 fathoms off Pompano Beach, Florida. Photo by Alan J. Kohn

Figure 44

Specimens of *Conasprelloides cancellatus* (Hwass in Bruguière, 1792) similar to those that Vink illustrated with two primary types from the northern part of the range of the species

A. JKT 926 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 30.2 mm, dredged in 150 feet, west of Cedar Key, Florida, July 1966, J. Moore

B. JKT 1866 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 39.6 mm, trawled off Bluefields, Nicaragua

C. MHNG 1106/50 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 39 mm, holotype, Hawaii (erroneous). Photo by Alan J. Kohn

D. USNM 603017 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 55.5 mm, holotype of *Conus austini* Rehder & Abbott, 1951, 40-46 fm, southeast of Loggerhead Key, Dry Tortugas, Florida. Photo by Alan J. Kohn

E. JKT 1714 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 46.5 mm, Aransas Pass, Texas

F. JKT 987 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 49.6 mm, trawled off Amapa, extreme western Brazil near French Guiana

Figure 45

Specimens of *Conasprelloides cancellatus* (Hwass in Bruguière, 1792) from the southern portion of the range of the species and two primary types for synonymous taxa

A. JKT 3190 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 35.7 mm, Colombia, Puerto Estrella, Guajira Peninsula, trawled at 150 m in sand and gravel

B. JKT 3190 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 32.0 mm, Colombia, Puerto Estrella, Guajira Peninsula, trawled at 150 m in sand and gravel

C. USNM 859879 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 29 mm, holotype of *Conus finkli* Petuch, 1987, 35 m, Gulf of Venezuela, off Punto Fijo, Falcon, Venezuela. Photo by Alan J. Kohn

D. JKT 3190 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 33.5 mm, Colombia, Puerto Estrella, Guajira Peninsula, trawled at 150 m in sand and gravel

E. CMNH 47351 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 28 mm, holotype of *Conus brunneobandatus* Petuch, 1992, 25 m, off Tobejuba, Boca Araguao, Orinoco River delta, Venezuela. Photo by Alan J. Kohn

F. JKT 3190 *Conasprelloides cancellatus* (Hwass in Bruguière, 1792), 34.1 mm, Colombia, Puerto Estrella, Guajira Peninsula, trawled at 150 m in sand and gravel

Figure 46

Specimens of Conasprelloides stimpsoni (Dall, 1902) similar to those illustrated by Vink along with the primary type for Conasprelloides stimpsoni (Dall, 1902)

A. JKT 948 *Conasprelloides stimpsoni* (Dall, 1902), 36.2 mm, dredged in 90-110 feet, south of Carabelle, Florida, july 1966, sand rubble, J. Moore

B. JKT 2460 *Conasprelloides stimpsoni* (Dall, 1902), 36.9 mm, off Marathon Key, Florida

C. USNM 107371 *Conasprelloides stimpsoni* (Dall, 1902), 37 mm, holotype, off Key West, Florida. Photo by Alan J. Kohn

D. JKT 917 *Conasprelloides stimpsoni* (Dall, 1902), 22.0 mm, dredged in 150 feet, south of Carabelle, Florida, June 1965, J. Moore

E. JKT 47 *Conasprelloides stimpsoni* (Dall, 1902), 45.3 mm, Gulf of Mexico off Florida, Dredges

Figure 47

Variation in specimens identified as *Conasprelloides stimpsoni* (Dall, 1902) herein.

A. JKT 2460 *Conasprelloides stimpsoni* (Dall, 1902), 34.5 mm, off Marathon Key, Florida

B. JKT 928 *Conasprelloides stimpsoni* (Dall, 1902), 14.5 mm, dredged in 150 feet, west of Cedar Key, Florida, July 1966, J. Moore

C. JKT 925 *Conasprelloides stimpsoni* (Dall, 1902), 12.6 mm, dredged in 380 feet, northwest of Tortugas, Florida, August 1966, J. Moore

D. JKT 925 *Conasprelloides stimpsoni* (Dall, 1902), 18.3 mm, dredged in 380 feet, northwest of Tortugas, Florida, August 1966, J. Moore

E. JKT 897 *Conasprelloides stimpsoni* (Dall, 1902), 16.1 mm, dredged in 190 feet, Cape San Blas, Florida, on sand

rubble, Sept. 1965, J. Moore

F. JKT 897 *Conasprelloides stimpsoni* (Dall, 1902), 24.3 mm, dredged in 190 feet, Cape San Blas, Florida, on sand rubble, Sept. 1965, J. Moore

G. JKT 3226 *Conasprelloides stimpsoni* (Dall, 1902), 21.0 mm, Colombia, Cayos de San Andres, in 5-10 feet under dead coral rubble, in heavy coral

Figure 48
Specimens of *Dalliconus armiger* (Crosse, 1858) similar to those illustrated by Vink

A. JKT 929 *Dalliconus armiger* (Crosse, 1858), 16.9 mm, dredged in 150 feet, west of Cedar Key, Florida, July 1966, J. Moore

B. JKT 911 *Dalliconus armiger* (Crosse, 1858), 27.4 mm, dredged in 520 feet, west of Egmont Key, Florida, sand bottom, Sept. 1966, J. Moore

C. JKT 945 *Dalliconus armiger* (Crosse, 1858), 18.1 mm, dredged in 90-110 feet, south of Carabelle, Florida, july 1966, sand rubble, J. Moore

D. JKT 2689 *Dalliconus armiger* (Crosse, 1858), 25.9 mm, off Cedar Key, Florida

Figure 49
Primary types for two synonyms of *Dalliconus armiger* (Crosse, 1858) and for *Dalliconus sauros* (Garcia, 2006)

A. USNM 485740 *Dalliconus armiger* (Crosse, 1858), 36.0 mm, holotype of *Conus clarki* Rehder & Abbott, 1951, 29 fm, 50 miles SSW of Marsh Island, Iberia County, Louisiana, 28°27.0'N, 92°14.0'W. Photo by Alan J. Kohn

B. MCZH 187708 *Dalliconus armiger* (Crosse, 1858), 32.5 mm, holotype of *Conus frisbeyae* Clench and Pulley, 1952, 23 fm, Campeche Banks, Yucatan, Mexico. Photo by Alan J. Kohn

C. HMNS 20465 *Dalliconus sauros* (Garcia, 2006), 29.5 mm, holotype, 140 m, 43.5 miles SSE of Port Aransas, Texas, 27.3ºN, 96.6ºW. Photo by Alan J. Kohn

D. EFG 23654 *Dalliconus sauros* (Garcia, 2006), 5.6 mm, trawled in 100 m, in sandy mud, 28º05.965'N, 91º40.997W, Photo by E. Garcia.

Figure 50
Primary types for *Dalliconus bajanensis* (Nowell-Usticke, 1968) and two species that Vink considered synonyms

A. AMNH 194551 *Dalliconus bajanensis* (Nowell-Usticke, 1968), 31 mm, lectotype, south of Barbados. Photo by Alan J. Kohn

B. RMNH 106718 *Dalliconus bajanensis* (Nowell-Usticke, 1968), 28.4 mm, holotype of *Conus guyanensis* van Mol, 1973, 28.4 mm, Surinam, 7°08.2'N, 55°13.5'W. Photo by Alan J. Kohn

C. AMNH 195452 *Dalliconus bajanensis* (Nowell-Usticke, 1968), 28.8 mm, lectotype of *Conus pseudoaustini* Nowell-Usticke, 1968, S of Barbados. Photo by Alan J. Kohn

Figure 51

Specimens consistent with Vink's concept of *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857)

A. JKT 923 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 18.4 mm, Florida, dredged in 16-200 feet, southeast of Alligator Reef lighthouse, Florida Keys, Sept. 1964, J. Moore

B. JKT 3186 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 37.0 mm, Florida, Sombrero Light, Florida Keys, in 500 feet, dredged summer 2001

C. JKT 970 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 68.5 mm, Florida, dredged in 95 fms, southwest of Sand Key Light, sand, shell, rubble bottom, April 1970, D. and R. Black

D. JKT 968 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 76.5 mm, Campeche, Yucatan, dredged in 725 feet, Sept. 1977

Figure 52

Specimens consistent with Vink's concept of *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942) and three primary types

A. JKT 3249 *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 41.8 mm, Brazil, S. Cabo Frio, Rio de Janiero, shrimp nets, in 380-400 m, May 2001

B. JKT 3249 *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 44.6 mm, Brazil, S. Cabo Frio, Rio de Janiero, shrimp nets, in 380-400 m, May 2001

C. USNM 859884 *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 17 mm, holotype of *Conus kevani* Petuch, 1987, 35 m, mouth of the Gulf of Venezuela, near Monges Islands, Venezuela. Photo by Alan J. Kohn

D. MCZH 146003 *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 61.5 mm, holotype of *Conus fosteri* Clench and Aguayo in Clench, 1942, 260 fm, off Sagua la Grande, Santa Clara Province, Cuba, 23°10'N, 79°35'W. Photo by Alan J. Kohn

E. MNHN *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 49 mm, holotype of *Conus capricorni* Van Mol, Tursch & Kempf, 1967, 135-141 m, off Porto Alegre, Brazil. Photo by Alan J. Kohn

Figure 53

Comparison of two synonyms of *Conasprelloides villepinii* (Fischer and Bernardi, 1857) to juvenile *Conasprelloides villepinii* (Fischer and Bernardi, 1857) dredged in Florida

A. USNM 784469 *Conasprelloides villepinii fosteri* (Clench and Aguayo in Clench, 1942), 27 mm, holotype of *Conus venezuelanus* Petuch, 1987, 25 m, off Puerto Cabello, Golfo de Triste, Venezuela. Photo by Alan J. Kohn

B. USNM 859885 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 30 mm, holotype of *Conus leekremeri* Petuch, 1987, 240 m, off Grand Bahama Island, Bahamas. Photo by Alan J. Kohn

C. JKT 904 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 35.8 mm, dredged in 500-600 feet, lat 25.1 long. 84.2, Sept. 1965, J. Moore

D. JKT 3186 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 37.0 mm, Florida, Sombrero Light, Florida Keys, in 500 feet, dredged summer 2001

E. JKT 966 *Conasprelloides villepinii villepinii* (Fischer and Bernardi, 1857), 30.7 mm, Florida, dredged in 600-600 feet, southeast of Alligator Key light, Florida Keys, J. Moore, Sept. 1964

Figure 54

Specimens of *Gradiconus garciai* (da Motta, 1982) similar to those illustrated by Vink

A. JKT 3213 *Gradiconus garciai* (da Motta, 1982), 46.6 mm, Honduras, trawled in 20 fms, off Caratasca Keys, NE coast, muddy sand bottom, 1990

B. JKT 3214 *Gradiconus garciai* (da Motta, 1982), 50.9 mm, Honduras, trawled in 20 fms, off Caratasca Keys, NE coast, muddy sand bottom, 1996

C. MHNG 982.528 *Gradiconus garciai* (da Motta, 1982), 59 mm, holotype, 120-160 feet, off Punta Patuca east to Caratasca Key, Honduras. Photo by Alan J. Kohn

D. JKT 3167 *Gradiconus garciai* (da Motta, 1982), 27.3 mm, dredged in 80-90 feet, west of Santa Cruz, Venezuela, 1983

E. JKT 1848 *Gradiconus garciai* (da Motta, 1982), 59.4 mm, in 120 feet, mud bottom, off Punta Patuca, Honduras

Figure 55

Four primary types of species listed as synonyms of *Jaspidiconus mindanus* (Hwass in Bruguière, 1792) by Vink

A. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 37.0 mm, Brazil, Salvador de Bahia, local fishermen

B. MCZH 141965 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 43 mm, holotype of *Conus bermudensis* Clench, 1942, Dyer Island, Bermuda. Photo by Alan J. Kohn

C. FLMNH UF 13362 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 34 mm, holotype of *Conus bermudensis lymani* Clench, 1942, dredges off Neillies Point, south of Lake Worth, Florida. Photo by Chris Meyer

D. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 37.0 mm, Brazil, Salvador de Bahia, local fishermen

E. USNM 37472 *Jaspidiconus mindanus agassizii* (Dall, 1886), 24.4 mm, lectotype of *Conus agassizii* Dall, 1886, off St. Criox, Virgin Islands. Photo by Alan J. Kohn

F. AMNH 195442 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 33.5 mm, lectotype of *Conus karinae* Nowell-Usticke, 1968, north of Fredericksted, St. Croix.. Photo by Alan J. Kohn

Figure 56

Specimens of *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792) consistent with Vink's concept of the taxon along with the primary type

A. JKT 1021 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 41.2 mm, Grace Island, Bermuda

B. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 18.6 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

C. MHNG 1107/16 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 31.5 mm, lectotype, Philippines (erroneous), designated as 46 m, north of Nellies Point, South Lake Worth, Florida. Photo by Alan J. Kohn

D. JKT 3185 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 20.0 mm, Honduras, Utila, in 20 m on sand and grass near Sandy Cay, May 1996, night scuba

E. JKT 1180 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 21.0 mm, off west Barbados, dredged in 85-90 fms, 26 June 1979 Kerstitch

Figure 57

Specimens of *Jaspidiconus mindanus agassizii* (Dall, 1886) consistent with Vink's concept of the taxon

A. JKT 1938 *Jaspidiconus mindanus agassizii* (Dall, 1886), 29.0 mm, St. Croix

B. JKT 3199 *Jaspidiconus mindanus agassizii* (Dall, 1886), 22.9 mm, Martinique, Baie de Fort d'France, night scuba in 60 feet, sand near reef, summer 1980

C. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 39.1 mm, Brazil, Salvador de Bahia, local fishermen

D. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 36.4 mm, Brazil, Salvador de Bahia, local fishermen

Figure 58

Variation in the subspecies of *Jaspidiconus mindanus* (Hwass in Bruguière, 1792) and a specimen identified herein as *Jaspidiconus rachelae* (Petuch, 1988) but similar specimens are usually identified as a variant of *J. mindanus* (Hwass in Bruguière, 1792)

A. JKT 1938 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 29.0 mm, St. Croix

B. JKT 3199 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 22.9 mm, Martinique, Baie de Fort d'France, night scuba in 60 feet, sand near reef, summer 1980

C. JKT 1018 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 27.3 mm, channel, Port au Prince, Haiti

D. JKT 3199 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 22.0 mm, Martinique, Baie de Fort d'France, night scuba in 60 feet, sand near reef, summer 1980

E. JKT 1038 *Jaspidiconus rachelae* (Petuch, 1988), 25.9 mm, trawled in 50 m, off Espiritu Santo coast, Brazil, by fisherman 1976

F. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 37.0 mm, Brazil, Salvador de Bahia, local fishermen

G. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 39.1 mm, Brazil, Salvador de Bahia, local fishermen

H. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 36.4 mm, Brazil, Salvador de Bahia, local fishermen

I. JKT 3592 *Jaspidiconus mindanus agassizii* (Dall, 1886), 37.0 mm, Brazil, Salvador de Bahia, local fishermen

Figure 59

Two specimens (A & B) similar to Vink's illustrations of *Jaspidiconus pusio* (Hwass in Bruguière, 1792) and primary types for three taxa listed by Vink as synonyms of *J. pusio* (Hwass in Bruguière, 1792)

A. JKT 1030 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 18.5 mm, Guadeloupe, 50 feet on sand at night

B. JKT 1030 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 17.3 mm, Guadeloupe, 50 feet on sand at night

C. MHNG 1105/19 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 20 mm, holotype of *Conus pusillus* Lamarck, 1810, Guinea (erroneous). Photo by Alan J. Kohn

D. BMNH 1903.11.5.5 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 16 mm, holotype of *Conus boubeeae* G. B. Sowerby III, 1903, unknown locality. Photo by Alan J. Kohn

E. MNHN *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 13.6 mm, holotype of *Conus duvali* Bernardi, 1862, Guadeloupe. Photo by Alan J. Kohn

Figure 60

Specimens that may be *Jaspidiconus pusio* (Hwass in Bruguière, 1792) from Honduras along with a specimen of *J. damasoi* (Cossignani, 2007) for comparison

A. JKT 3185 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 19.5 mm, Honduras, Utila, 20 m on sand and grass near Sandy Cay, May 1996, night scuba

B. JKT 3185 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 19.9 mm, Honduras, Utila, 20 m on sand and grass near Sandy Cay, May 1996, night scuba

C. JKT 3872 *Jaspidiconus damasoi* (Cossignani, 2007), 15.9 mm, scuba 2 m, close to seagrasses, Roatan Island, Honduras

D. JKT 3185 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 20.3 mm, Honduras, Utila, 20 m on sand and grass near Sandy Cay, May 1996, night scuba

E. JKT 3590 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 15.0 mm, Honduras, night scuba 18 m, rubble, Isla de Roatan, Islas de la Bahia

Figure 61

Specimens that may be *Jaspidiconus pusio* (Hwass in Bruguière, 1792) from Brazil

A. JKT 3262 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 20.8 mm, Brazil, Guarapari, Espirito Santo State, in soft coral, 2 m, snorkeling, 1997

B. JKT 125 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 22.3 mm, on sand bottom in shallow water, about 10 feet, around Itajarica Island, Bahia, Brazil

C. JKT 125 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 16.2 mm, on sand bottom in shallow water, about 10 feet, around Itajarica Island, Bahia, Brazil

D. JKT 3262 *Jaspidiconus pusio* (Hwass in Bruguière, 1792), 19.4 mm, Brazil, Guarapari, Espirito Santo State, in soft coral, 2 m, snorkeling, 1997

Figure 62

Specimens consistent with Vink's illustrations of *Jaspidiconus branhamae* (Clench, 1953) along with the holotype for the taxon but herein considered specimens of *Jaspidiconus jaspideus pealii* (Green, 1830)

A. JKT 2847 *Jaspidiconus jaspideus pealii* (Green, 1830), 24.8 mm, Bahamas

B. JKT 3254 *Jaspidiconus jaspideus pealii* (Green, 1830), 23.5 mm, Florida, 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

C. AMNH 166926 *Jaspidiconus jaspideus pealii* (Green, 1830), 27.5 mm, holotype of *Conus branhamae* (Clench, 1953), Green Turtle Cay, Great Abaco, Bahamas. Photo by Alan J. Kohn

D. and E. JKT 4190 *Jaspidiconus jaspideus pealii* (Green, 1830), 19.5 mm, sand in 3-5 feet, snorkel, 1988, Marathon, Florida Keys

Figure 63
Specimens of *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792) often identified as '*vanhyningi*' compared to the holotype of *Conus verrucosus vanhyningi* Rehder, 1944

A. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 16.6 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

B. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 17.5 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

C. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 20.6 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

D. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 22.2 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

E. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 20.7 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

F. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 19.1 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

G. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 18.6 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

H. JKT 3254 *Jaspidiconus mindanus mindanus* (Hwass in Bruguière, 1792), 15.6 mm, Florida, in 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

I & J. USNM 537863 *Jaspidiconus anaglypticus* (Crosse, 1865), 17 mm, holotype of *Conus verrucosus vanhyningi* Rehder, 1944, off Pompano Beach, Florida. Photo by Alan J. Kohn

Figure 64

Two specimens thought to be *Jaspidiconus anaglypticus* (Crosse, 1865) compared to the lectotype of the species and to the holotype of *Conus verrucosus vanhyningi* Rehder, 1944

A. JKT 3254 *Jaspidiconus anaglypticus* (Crosse, 1865), 12.9 mm, Florida, 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

B. USNM 537863 *Jaspidiconus anaglypticus* (Crosse, 1865), 17 mm, holotype of *Conus verrucosus vanhyningi* Rehder, 1944, off Pompano Beach, Florida. Photo by Alan J. Kohn

C. JKT 3654 *Jaspidiconus anaglypticus* (Crosse, 1865), 13.3 mm, Florida, shallow water, 3 miles S of Hillsboro Light, Fort Lauderdale, 10 feet in rubble, Oct. 2000

D. BMNH 1979.18.3.1 *Jaspidiconus anaglypticus* (Crosse, 1865), lectotype, 17.3 mm, Antillies. Photo by Alan J. Kohn

Figure 65

Two views of the specimens thought to be *Jaspidiconus anaglypticus* (Crosse, 1865) compared to the lectotype of the species

A & B. JKT 3254 *Jaspidiconus anaglypticus* (Crosse, 1865), 12.9 mm, Florida, 10 fms, sand bottom near reef, Pompano Beach, night scuba, summer 1990

C. BMNH 1979.18.3.1 *Jaspidiconus anaglypticus* (Crosse, 1865), lectotype, 17.3 mm, Antillies. Photo by Alan J. Kohn

D & E. JKT 3654 *Jaspidiconus anaglypticus* (Crosse, 1865), 13.3 mm, Florida, shallow water, 3 miles S of Hillsboro Ligth, Fort Lauderdale, 10 feet in rubble, Oct. 2000,

Figure 66

Specimens similar to those that Vink identified as *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967) and primary types for the species and a synonym

A. JKT 3212 *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 10.5 mm, Brazil, off Natal, Rio Grande do Norte State, in coral sand at 20-30 m, A. Bodart, March 2000

B. JKT 3212 *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 10.0 mm, Brazil, off Natal, Rio Grande do Norte State, in coral sand at 20-30 m, A. Bodart, March 2000

C. MNHN *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 14 mm, holotype, Forteleza, Cearà, Brazil, ex pisce. Photo by Alan J. Kohn

D. MNHN *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 12 mm, holotype of *Conus yemanjae* Van Mol, Tursch & Kempf, 1967, Forteleza, Cearà, Brazil, ex pisce. Photo by Alan J. Kohn

E. JKT 1751 *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 14.5 mm, ex pices Fortaleza, Ceara, Brazil, (fish was *Amphichthys cryptodentus*)

F. JKT 3980 *Artemidiconus selenae* (Van Mol, Tursch & Kempf, 1967), 11.6 mm, Rio do Fogo, Rio Grande do Norte, Brazil

Figure 67

Specimens similar to those that Vink identified as *Gladioconus hieroglyphus* (Duclos, 1833) including the primary type for one of the synonyms

A. JKT 3813 *Gladioconus hieroglyphus* (Duclos, 1833), 15.3 mm, Malmok, Aruba, in coral sand under rocks on hard pan bottom, in 1-2 m, Sept. 2004. Diver

B. JKT 3813 *Gladioconus hieroglyphus* (Duclos, 1833), 15.4 mm, Malmok, Aruba, in coral sand under rocks on hard pan bottom, in 1-2 m, Sept. 2004. Diver

C. JKT 3813 *Gladioconus hieroglyphus* (Duclos, 1833), 15.4 mm, Malmok, Aruba, in coral sand under rocks on hard-pan bottom, in 1-2 m, Sept. 2004. Diver

D. USNM 107876 *Gladioconus hieroglyphus* (Duclos, 1833), 14 mm, lectotype of *Conus armillatus* C. B. Adams, 1850, Jamaica (probably erroneous). Photo by Alan J. Kohn

Figure 68

A specimen similar to those that Vink described as *Purpuriconus explorator* (Vink, 1990), and specimens identified as *Purpuriconus hennequini* (Petuch, 1992) with primary types for it and two synonyms

A. JKT 3871 *Purpuriconus explorator* (Vink, 1990), 17.1 mm, scuba 80 feet in reef, N. coast of Jamaica

B. JKT 3870 *Purpuriconus hennequini* (Petuch, 1992), 18.5 mm, diver, 2 m, sand and rubble, La Vauclin, Martinique

C. MNHN *Purpuriconus hennequini* (Petuch, 1992), 17.5 mm, holotype, 2 m, near La Vauclin, Martinique. Photo by Alan J. Kohn

D. USNM 859887 *Purpuriconus hennequini* (Petuch, 1992), 14 mm, holotype of *Conus magnottei* Petuch, 1987, 2 m, Roatan Island, Honduras. Photo by Alan J. Kohn

E. UF 267867 *Purpuriconus hennequini* (Petuch, 1992), 22 mm, holotype of *Conus (Purpuriconus) edwardpauli* Petuch, 1998, Moro Tupo Island, San Blas Islands, Panama. Photo by Chris Meyer

Figure 69

Specimens similar to Vink's concept of *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792) with the

primary type of it and of a species listed by Vink as a synonym

A. JKT 41 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 20.1 mm, in sand, Amuay Bay, Venezuela

B. JKT 3201 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 14.8 mm, Venezuela, Amuay Bay, shallow water, extreme low tide, on grey sand and grass, May 2000

C. MHNG 1107/40 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 27 mm, lectotype, Colón, Panama. Photo by Alan J. Kohn

D. MHNG 1107/11 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 31 mm, lectotype of *Conus mauritianus* Hwass in Bruguière, 1792, Africa (erroneous). Photo by Alan J. Kohn

E. JKT 3196 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 22.1 mm, Venezuela, Amuay Bay, shallow water, extreme low tide, on grey sand and grass, May 2000

F. JKT 414 *Perplexiconus puncticulatus puncticulatus* (Hwass in Bruguière, 1792), 19.6 mm, 17.2 mm, in sand, Amuay Bay, Venezuela

Figure 70

Specimens consistent with Vink's concept of *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792)

A. JKT 42 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 20.6 mm, Martinique

B. JKT 45 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 24.1 mm, Aruba, buried in sand, in 1 foot water, west coast of Aruba, April 1974, K. Anders

C. JKT 1009 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 21.8 mm, west coast of Aruba, Netherland Antilles, on sand beach in front of Basu Ratu Hotel

D. JKT 1009 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 19.2 mm, west coast of Aruba, Netherland Antilles, on sand beach in front of Basu Ratu Hotel

Figure 71

Some *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792) juveniles with their more pronounced development of color markings

A. JKT 826 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 12.6 mm, Oranjestad Harbor, Aruba, Paarden Bay in shallow mud, low tide

B. JKT 826 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 14.1 mm, Oranjestad Harbor, Aruba,

Paarden Bay in shallow mud, low tide

C. JKT 51 *Perplexiconus puncticulatus columba* (Hwass in Bruguière, 1792), 15.7 mm,

Figure 72

Primary type of *Perplexiconus puncticulatus millepunctatus* (Röding, 1798), which Vink recognized as a subspecies

A. & B. UZMC *Perplexiconus puncticulatus millepunctatus* (Röding, 1798), 24 mm, lectotype, Golfo de Cariaco, Venezuela. Photo by Alan J. Kohn

Figure 73

Specimens of *Perplexiconus puncticulatus cardonensis* (Vink, 1990) similar to those described by Vink with an image of the primary type

A. JKT 3557 *Perplexiconus puncticulatus cardonensis* (Vink, 1990), 20.4 mm, Colombia, scuba 4-5 m off La Vela, Guajira

B. JKT 3557 *Perplexiconus puncticulatus cardonensis* (Vink, 1990), 19.1 mm, Colombia, scuba 4-5 m off La Vela, Guajira

C. MHNG *Perplexiconus puncticulatus cardonensis* (Vink, 1990), 20.9 mm, holotype, 10 m, Punta Cardòn, Paraguaná Peninsula, Venezuela. Photo by Alan J. Kohn

D. JKT 3557 *Perplexiconus puncticulatus cardonensis* (Vink, 1990), 19.6 mm, Colombia, scuba 4-5 m off La Vela, Guajira

E. JKT 3557 *Perplexiconus puncticulatus cardonensis* (Vink, 1990), 17.8 mm, Colombia, scuba 4-5 m off La Vela, Guajira

Figure 74

Specimens consistent with Vink's concept of *Jaspidiconus jaspideus* (Gmelin, 1791) considered *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), herein

A. JKT 3901 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 21.1 mm, on sand, diver, 40 m, around rocks, Jan. 2005, South Bahia, Brazil

B. JKT 836 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 17.1 mm, Oranjestad Harbor, Aruba, Paarden Bay in shallow mud, low tide

C. JKT 3904 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 14.3 mm, on sand, diver, 40 m, around rocks, Jan. 2005, South Bahia, Brazil

D. JKT 3591 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 16.8 mm, Brazil, Espiritu Santo, local fishermen

E. JKT 3591 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 14.2 mm, Brazil, Espiritu Santo, local fishermen

F. BMNH 1879.2.26.3 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 19 mm, holotype of *Conus corrugatus* G. B. Sowerby II, 1870, unknown locality. Photo by Alan J. Kohn

G. MHNH *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 25 mm, neotype, off Monos Island, Trinidad. Photo by Claude Ratton, MHNH

Figure 75
Specimens consistent with Vink's concept of *Jaspidiconus pealii* (Green, 1830) considered *Jaspidiconus jaspideus pealii* (Green, 1830), herein

A. JKT 1066 *Jaspidiconus jaspideus pealii* (Green, 1830), 20.3 mm, Big Pine Key, Florida, Nov. 1973, at low tide

B. JKT 1066 *Jaspidiconus jaspideus pealii* (Green, 1830), 19.5 mm, Big Pine Key, Florida, Nov. 1973, at low tide

C. JKT 1066 *Jaspidiconus jaspideus pealii* (Green, 1830), 17.4 mm, Big Pine Key, Florida, Nov. 1973, at low tide

D. JKT 1066 *Jaspidiconus jaspideus pealii* (Green, 1830), 21.0 mm, Big Pine Key, Florida, Nov. 1973, at low tide

Figure 76
Specimens consistent with Vink's concept of *Jaspidiconus stearnsii* (Conrad, 1869) considered *Jaspidiconus jaspideus stearnsii* (Conrad, 1869), herein

A. JKT 1062 *Jaspidiconus jaspideus stearnsii* (Conrad, 1869), 19.5 mm, Citrus County, Crystal Beach, St. Joseph's Sound (Figured in Walls p. 384 bottom right)

B. JKT 3257 *Jaspidiconus jaspideus stearnsii* (Conrad, 1869), 19.6 mm, Florida, at low tide in sand and grass, Tampa Bay

C. JKT 3257 *Jaspidiconus jaspideus stearnsii* (Conrad, 1869), 20.6 mm, Florida, at low tide in sand and grass, Tampa Bay

D. JKT 3257 *Jaspidiconus jaspideus stearnsii* (Conrad, 1869), 20.0 mm, Florida, at low tide in sand and grass, Tampa Bay

Figure 77
Specimens consistent with Vink's concept of *Jaspidiconus nodiferus* (Kiener, 1845) considered a synonym of *Jaspidiconus jaspideus pealii* (Green, 1830), herein

A. JKT 2465 *Jaspidiconus jaspideus pealii* (Green, 1830), 21.3 mm, Havana, Cuba, 1967, Nelson

B. JKT 2465 *Jaspidiconus jaspideus pealii* (Green, 1830), 22.4 mm, Havana, Cuba, 1967, Nelson

C. JKT 1190 *Jaspidiconus jaspideus pealii* (Green, 1830), 11.7 mm, 25 feet in channel at Rum Point, Grand Cayman, August 1974

D. JKT 1061 *Jaspidiconus jaspideus pealii* (Green, 1830), 21.4 mm, St. Croix

Figure 78

Specimens consistent with Vink's concept of *Jaspidiconus acutimarginatus* (G. B. Sowerby II, 1866) considered as synonym of *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), herein

A. JKT 3590 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 15.7 mm, Honduras, night scuba 18 m, rubble, Isla de Roatan, Islas de la Bahia

B. JKT 3590 *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 16.9 mm, Honduras, night scuba 18 m, rubble, Isla de Roatan, Islas de la Bahia

C. BMNH *Jaspidiconus jaspideus jaspideus* (Gmelin, 1791), 20.5 mm, holotype of *Conus acutimarginatus* G. B. Sowerby II, 1866, Florida but then designated as Islas Chimanas, Estado Anzoategui, Venezuela. Photo by Alan J. Kohn

Figure 79

Three poorly known species not included in Vink's review; their primary types are illustrated

A. USNM 859878 *Dauciconus eversoni* (Petuch, 1987), 18 mm, holotype, 20 m, off south coast Utila Isle, Bay Islands. Photo by Alan J. Kohn

B. MZSP 39.917 *Purpuriconus pseudocardinalis* (Coltro, 2004), 15.7 mm, holotype, 125 km NE Abrolhos Archipelago, off Alcobaça, Bahia, Brazil (15º57'S, 38º01'W). Reproduced from Strombus 11.

C. MORG 14245 *Conasprelloides penchaszadehi* (Petuch, 1986), 18 mm, holotype, 35 m, off Cabo La Vela, Goajira Peninsula, Colombia. Photo by Paula Spotomo

Figure 80

Two rare species not discussed by Vink illustrated with their primary types

A. MNHN *Dalliconus mazei* (Deshayes, 1874), 59 mm, holotype, 90 m, Martinique. Photo by Alan J. Kohn

B. SBMNH 144485 *Dalliconus lenhilli* (Cargile, 1998), 39.8 mm, holotype, 440 m, Mouchior Bank, SE of Turks and Caicos Islands (20°48'N, 70°46'W). Photo by Patricia Sadeghian

Figure 81
Specimens *Dalliconus mcgintyi* (Pilsbry, 1955), including the holotype

A. JKT 2688 *Dalliconus mcgintyi* (Pilsbry, 1955), 53.0 mm, Havana Harbor, Cuba, 1965, Snyder

B. ANSP 193858 *Dalliconus mcgintyi* (Pilsbry, 1955), 41.6 mm, holotype, off Pensacola, Florida. Photo by Alan J. Kohn

C. JKT 1002 *Dalliconus mcgintyi* (Pilsbry, 1955), 52.2 mm, south of Pensacola, Florida, northwest side of Desoto Canyon, dredged in 725 feet

Figure 82
Specimens of *Dalliconus rainesae* (McGinty, 1953) including the type specimen

A. JKT 932 *Dalliconus rainesae* (McGinty, 1953), 19.0 mm, dredged in 510-520 feet, west of Egmont Key, Florida, J. Moore

B. JKT 915 *Dalliconus rainesae* (McGinty, 1953), 8.0 mm, dredged in 500-600 feet, NNW of Tortugas, Florida, J. Moore, Sept. 1965

C. JKT 2472 *Dalliconus rainesae* (McGinty, 1953), 15.5 mm, Egmont Key, Florida

D. FLMNH UF 244396 *Dalliconus rainesae* (McGinty, 1953), 24.7 mm, holotype, 33 fm, 150 miles NE Progreso, Yucatan, Mexico. Photo by Chris Meyer

Figure 83
Specimens of *Dauciconus lightbourni* Petuch, 1986

A. DMNH 134939 *Dauciconus lightbourni* (Petuch, 1986), 37.2 mm, paratype, 2.5 km south of Castle Island, Bermuda, caught in crab traps in 497 m, collected by Arthur T. Guest and John R. H. Lightbourn, 1973. Photo courtesy Tim Pearce

B. DMNH 134939 *Dauciconus lightbourni* (Petuch, 1986), 34.3 mm, paratype, 2.5 km south of Castle Island, Bermuda, caught in crab traps in 497 m, collected by Arthur T. Guest and John R. H. Lightbourn, 1973. Photo courtesy Tim Pearce

C. DMNH 134939 *Dauciconus lightbourni* (Petuch, 1986), 34.6 mm, paratype, 2.5 km south of Castle Island, Bermuda, caught in crab traps in 497 m, collected by Arthur T. Guest and John R. H. Lightbourn, 1973. Photo courtesy Tim Pearce

D. DMNH 134938 *Dauciconus lightbourni* (Petuch, 1986), 35 mm, holotype, 2.5 km south of Castle Island, Bermuda, caught in crab traps in 497 m, collected by Arthur T. Guest and John R. H. Lightbourn, 1973. Photo by

Elizabeth Shea

Figure 84

Specimens of *Dauciconus goajira* (Petuch, 1992) including the primary type and that of a synonym

A. CMNH 47374 *Dauciconus goajira* (Petuch, 1992), 37 mm, holotype of *Conus vikingorum* (Petuch, 1993), 35 m, off Puerto Colombia, mouth of Magdalena River, Atlantico State, Colombia. Photo by Alan J. Kohn

B. JKT 3239. *Dauciconus goajira* (Petuch, 1992), 30.5 mm, trawled 20-40 fms, Guajira Peninsula, summer, 1998

C. CMNH 47372 *Dauciconus goajira* (Petuch, 1992), 35 mm, holotype, 35 m, off Cabo la Vela, Goajira Peninsula, Colombia. Photo by Alan J. Kohn

Figure 85

Specimens of *Gladioconus binghamae* (Petuch, 1987), a relative of *G. patae*, including the primary type

A. USNM 859876 *Gladioconus binghamae* (Petuch, 1987), 18 mm, holotype, 200 feet, off Dania, Broward County, Florida. Photo by Alan J. Kohn

B. JKT 3232 *Gladioconus binghamae* (Petuch, 1987), 16.9 mm, Colombia, Cayos de San Andres, snorkeling 5-10 feet, under dead coral rubble in heavy coral, 2001

Figure 86

Specimens including the primary type of the glory of the Atlantic cone, *Gladioconus granulatus* (Linné, 1758)

A. JKT 3198 *Gladioconus granulatus* (Linné, 1758), 32.8 mm, Florida, Pompano Beach, deep in coral rubble, scuba in 10 fms, summer 1986

B. JKT 3198 *Gladioconus granulatus* (Linné, 1758), 34.5 mm, Florida, Pompano Beach, deep in coral rubble, scuba in 10 fms, summer 1986

C. LSL 261 *Gladioconus granulatus* (Linné, 1758), 41 mm, lectotype, Jamaica. Photo by Linnean Society of London

Figure 87

A topotypic specimen of *Gladioconus glenni* (Petuch, 1993) and the primary type of the species

A. JKT 3595 *Gladioconus glenni* (Petuch, 1993), 17.5 mm, Honduras, Moro Topo, San Blas Island

B. CMNH 47377 *Gladioconus glenni* (Petuch, 1993), 18.5 mm, holotype, from east of Moro Tupo, San Blas Islands, Panama, in 1 m, under coral rubble on reef. Photo by Alan J. Kohn

Figure 88
Primary types of two uncommon and little known species of *Gladioconus*

A. FlMNH 225164 *Gladioconus ritae* (Petuch, 1995), 27.5 mm, holotype of, from Gorda Bank, off Honduras, in 10-20 m, in coral rubble. Photo by Chris Meyer

B. FlMNH 267865 *Gladioconus cuna* (Petuch, 1998), 20 mm, holotype, from Moro Tupo Island, San Blas Islands, Panama. Photo by Chris Meyer

Figure 89
Specimens of *Gladioconus mus* (Hwass in Bruguière, 1792) and the primary type

A. JKT 3244 *Gladioconus mus* (Hwass in Bruguière, 1792), 26.4 mm, in 10 fms, scuba, Pompano Beach, under rock rubble on reef top, summer, 1988

B. JKT 64 *Gladioconus mus* (Hwass in Bruguière, 1792), 33.5 mm, Florida, Looe Key, reef 4 miles from shore, under and around slab rock, in 2 feet, M. Teskey, 1977

C. MHNG 1107/21 *Gladioconus mus* (Hwass in Bruguière, 1792), 43.5 mm, lectotype, Guadeloupe. Photo by Alan J. Kohn

D. JKT 3244 *Gladioconus mus* (Hwass in Bruguière, 1792), 26.5 mm, in 10 fms, scuba, Pompano Beach, under rock rubble on reef top, summer, 1988

E. JKT 3244 *Gladioconus mus* (Hwass in Bruguière, 1792), 30.0 mm, in 10 fms, scuba, Pompano Beach, under rock rubble on reef top, summer, 1988

Figure 90
A specimen of *Gradiconus sunderlandi* (Petuch, 1987) and the holotype

A. USNM 859892 *Gradiconus sunderlandi* (Petuch, 1987), 33 mm, holotype, 60 feet, off Utila Island, Bay Islands, Honduras. Photo by Alan J. Kohn

B. JKT 3240. *Gradiconus sunderlandi* (Petuch, 1987), 34.2 mm, Honduras, night scuba, 20 m, in sand and grass, Utila, May 1996

Figure 91
Specimens of *Gradiconus bayeri* (Petuch, 1988) including the holotype

A. JKT 3873 *Gradiconus bayeri* (Petuch, 1988), 15.7 mm, night scuba, 60 feet, sand, grass, Hollandes, San Blas Island, East Panama

B. 3. JKT 3277 *Gradiconus bayeri* (Petuch, 1988), 16.1 mm, Panama, night scuba in 60 feet, sand and grass, Hollandes Cay, San Blas Islands

C. JKT 3873 *Gradiconus bayeri* (Petuch, 1988), 14.0 mm, night scuba, 60 feet, sand, grass, Hollandes, San Blas Island, East Panama

D. JKT 3194 *Gradiconus bayeri* (Petuch, 1988), 15.3 mm, Panama, night scuba in 60 feet, sand and grass, Hollandis Cay, San Blas Islands

E. JKT 3277 *Gradiconus bayeri* (Petuch, 1988), 16.9 mm, Panama, night scuba in 60 feet, sand and grass, Hollandes Cay, San Blas Islands

F. USNM 859875 *Gradiconus bayeri* (Petuch, 1988), 16 mm, holotype, 35 m, Golfo de Morrosquillo, Colombia. Photo by Alan J. Kohn

Figure 92

Specimens of *Gradiconus portobeloensis* (Petuch, 1990) including the primary type and the type for a synonymous species

A. CMNH 47371 *Gradiconus portobeloensis* (Petuch, 1990), 26 mm, holotype of *Conus paschalli* Petuch, 1998, south side of Bragman's Bluff, 2.5 km N of Puerto Cabezas, Miskito Coast, Nicaragua. Photo by Alan J. Kohn

B. USNM 860546 *Gradiconus portobeloensis* (Petuch, 1990), 31 mm, holoype of *Conus portobeloensis* Petuch, 1990. Photo by Alan J. Kohn

C. JKT 3250 *Gradiconus portobeloensis* (Petuch, 1990), 39.6 mm, Honduras, off Roatan Island, ex-Louis Kotoro, 1983

D. JKT 3250 *Gradiconus portobeloensis* (Petuch, 1990), 41.0 mm, Honduras, off Roatan Island, ex-Louis Kotoro, 1983

E. JKT 3250 *Gradiconus portobeloensis* (Petuch, 1990), 37.7 mm, Honduras, off Roatan Island, ex-Louis Kotoro, 1983

Figure 93

The holotype of *Gradiconus ernesti* (Petuch, 1990) and of two synonymous species all from Portobelo, Panama

A. USNM 860541 *Gradiconus ernesti* (Petuch, 1990), 14 mm, holotype of *Conus brunneofilaris* Petuch, 1990, off Portobelo, Panama. Photo by Alan J. Kohn

B. USNM 860542 *Gradiconus ernesti* (Petuch, 1990), 29 mm, holotype, off Portobelo, Panama. Photo by Alan J. Kohn

C. USNM 860548 *Gradiconus ernesti* (Petuch, 1990), 25 mm, holotype of *Conus rosemaryae* Petuch, 1990, Portobelo, Panama. Photo by Alan J. Kohn

Figure 94
Three topotypic specimens of *Gradiconus ernesti* (Petuch, 1990) and one from Venezuela

A. JKT 3228 *Gradiconus ernesti* (Petuch, 1990), 25.0 mm, Panama, dredged in 120 feet off Portobelo, on muddy sand bottom, 1996 (*ernesti*)

B. JKT 3228 *Gradiconus ernesti* (Petuch, 1990), 24.1 mm, Panama, dredged in 120 feet off Portobelo, on muddy sand bottom, 1996 (*ernesti*)

C. JKT 3228 *Gradiconus ernesti* (Petuch, 1990), 24.4 mm, Panama, dredged in 120 feet off Portobelo, on muddy sand bottom, 1996 (*ernesti*)

D. JKT 3280 *Gradiconus ernesti* (Petuch, 1990), 16.8 mm, Venezuela, in 20 m, off Puerto Cabello, muddy sand, March 2000

Figure 95
Comparison of specimens of Colombian *Gradiconus gibsonsmithorum* (Petuch, 1986) and Venezuelan *Gradiconus tristensis* (Petuch, 1987), two similar species

A. JKT 4017 *Gradiconus gibsonsmithorum* (Petuch, 1986), 23.0 mm, trawled by shrimpers in 30-40 fathoms off Guajira Peninsula, muddy sand bottom, 1988

B. JKT 4017 *Gradiconus gibsonsmithorum* (Petuch, 1986), 20.7 mm, trawled by shrimpers in 30-40 fathoms off Guajira Peninsula, muddy sand bottom, 1988

C. JKT 4017 *Gradiconus gibsonsmithorum* (Petuch, 1986), 22.2 mm, trawled by shrimpers in 30-40 fathoms off Guajira Peninsula, muddy sand bottom, 1988

D. USNM 784470 *Gradiconus tristensis* (Petuch, 1987), 35.2 mm, holotype, 35 m, off Tucacas, Carabobo State, Golfo de Triste, Venezuela. Photo by Alan J. Kohn

E and F. JKT 4193 *Gradiconus tristensis* (Petuch, 1987), 23.6 mm, dredged 27-40 m, in sand, off Punta Fijo, Venezuela, ex Al Fox, 1984

G. JKT 4193 *Gradiconus tristensis* (Petuch, 1987), 23.1 mm, dredged 27-40 m, in sand, off Punta Fijo, Venezuela, ex Al Fox, 1984

Figure 96
Six topotypic and darker brown colored specimens of *Gradiconus ernesti* (Petuch, 1990) from the American Museum of Natural History collections, which closely resemble the holotype in coloration

A. AMNH 237957 *Gradiconus ernesti* (Petuch, 1990), 26.4 mm, dredged 180 feet, Portobelo Bay, Panama, James

Ernest

B. AMNH 239346 *Gradiconus ernesti* (Petuch, 1990), 25.0 mm, Portobelo Bay, Panama

C. AMNH 222788 *Gradiconus ernesti* (Petuch, 1990), 22.7 mm, Portobelo Bay, Panama

D. AMNH 273768 *Gradiconus ernesti* (Petuch, 1990), 26.4 mm, Portobelo Bay, Panama

E. AMNH 222788 *Gradiconus ernesti* (Petuch, 1990), 40.8 mm, Portobelo Bay, Panama

F. AMNH 259456 *Gradiconus ernesti* (Petuch, 1990), 26.9, Portobelo Bay, Panama

Figure 97

Six topotypic but lighter brown colored specimens of *Gradiconus ernesti* (Petuch, 1990) from the American Museum of Natural History collections; these more closely resemble Colombian *Gradiconus gibsonsmithorum* (Petuch, 1986)

A. AMNH 259458 *Gradiconus ernesti* (Petuch, 1990), 28.4 mm, Portobelo Bay, Panama

B. AMNH 264811 *Gradiconus ernesti* (Petuch, 1990), 29.2 mm, Portobelo Bay, Panama

C. AMNH 259457 *Gradiconus ernesti* (Petuch, 1990), 32.5 mm, Portobelo Bay, Panama

D. AMNH 310126 *Gradiconus ernesti* (Petuch, 1990), 31.9 mm, dredged in 200 feet, muddy sand bottom, Portobelo Bay, Panama

E. AMNH 245410 *Gradiconus ernesti* (Petuch, 1990), 23.0 mm, Portobelo Bay, Panama

F. AMNH 245410 *Gradiconus ernesti* (Petuch, 1990), 26.0 mm, Portobelo Bay, Panama

Figure 98

Primary type of *Gradiconus gibsonsmithorum* (Petuch, 1986) from Venezuela (C) and types (A & B) of two other synonymous species also from Venezuela

A. USNM 859874 *Gradiconus gibsonsmithorum* (Petuch, 1986), 17 mm, holotype of *Conus aureopunctatus* Petuch, 1987, 35 m, Gulf of Venezuela, off Punto Fijo, Falcon, Venezuela. Photo by Alan J. Kohn

B. USNM 859948 *Gradiconus gibsonsmithorum* (Petuch, 1986), 27 mm, holotype of *Conus paulae* Petuch, 1988, 35 m, off Los Monges Islands, off mouth of the Gulf of Venezuela, Venezuela. Photo by Alan J. Kohn

C. MORG 14.244 *Gradiconus gibsonsmithorum* (Petuch, 1986), 20 mm, holotype, 35 m, off north coast of Paraguaná, Falcón State, Venezuela. Photo by Paula Spotomo

Figure 99
A number of specimens from Colombia identified as *Gradiconus gibsonsmithorum* (Petuch, 1986)

A. JKT 3192 *Gradiconus gibsonsmithorum* (Petuch, 1986), 20.9 mm, Colombia, Cabo la Vela, Guijira Peninsula, shrimp trawlers

B. JKT 3192 *Gradiconus gibsonsmithorum* (Petuch, 1986), 25.4 mm, Colombia, Cabo la Vela, Guijira Peninsula, shrimp trawlers

C. JKT 3192 *Gradiconus gibsonsmithorum* (Petuch, 1986), 25.4 mm, Colombia, Cabo la Vela, Guijira Peninsula, shrimp trawlers

D. JKT 3227 *Gradiconus gibsonsmithorum* (Petuch, 1986), 21.8 mm, Colombia, off Goajira Peninsula, in 30-40 fms, trawled by shrimp trawlers, muddy sand bottom, 1996

E. JKT 3225 *Gradiconus gibsonsmithorum* (Petuch, 1986), 23.0 mm, Colombia, off Goajira Peninsula, in 30-40 fms, trawled by shrimp trawlers, muddy sand bottom, 1996

Figure 100
Specimens from Venezuela identified as *Gradiconus gibsonsmithorum* (Petuch, 1986); note that these do not differ appreciably from those from Colombia (Fig. 99) or from light colored specimens of *Gradiconus ernesti* (Petuch, 1990) from Panama (Fig. 97)

A. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 22.6 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

B. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 27.2 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

C. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 22.7 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

D. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 19.5 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

E. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 16.6 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

F. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 18.4 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

G. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 20.2 mm, trawled by shrimpers, off Punta Fijo, Gulf of

Venezuela, in 20 fathoms, 2004

H. JKT 3782 *Gradiconus gibsonsmithorum* (Petuch, 1986), 20.5 mm, trawled by shrimpers, off Punta Fijo, Gulf of Venezuela, in 20 fathoms, 2004

Figure 101
Specimens of *Gradiconus regularis* (G. B. Sowerby II, 1833) from the East Pacific

A. JKT 2777 *Gradiconus regularis* (G. B. Sowerby II, 1833), 41.2 mm, San Carlos Bay, Guaymas Sound, Mexico.

B. JKT 31 *Gradiconus regularis* (G. B. Sowerby II, 1833), 34.4 mm, Cholla Bay, Sonora, Mexico, on mud flat at low tide.

C. JKT 31 *Gradiconus regularis* (G. B. Sowerby II, 1833), 41.9 mm, Cholla Bay, Sonora, Mexico, on mud flat at low tide.

D. JKT 31 *Gradiconus regularis* (G. B. Sowerby II, 1833), 45.2 mm, Cholla Bay, Sonora, Mexico, on mud flat at low tide.

Figure 102
Types (A & B) of two poorly known species from Venezuela; specimens of the East Pacific *Gradiconus scalarissimus* (da Motta, 1988) (C & D) are shown for comparison to *Gradiconus parascalaris* (Petuch, 1987)

A. USNM 859889 *Gradiconus paraguana* (Petuch, 1987), 18 mm, holotype, 35 m, Los Taques, Paraguana Peninsula, Falcon, Venezuela. Photo by Alan J. Kohn

B. USNM 859890 *Gradiconus parascalaris* (Petuch, 1987), 23 mm, holotype, 35 m, Gulf of Venezuela, off Punto Fijo, Falcon, Venezuela. Photo by Alan J. Kohn

C. JKT 1176 *Gradiconus scalarissimus* (da Motta, 1988), 32.9 mm, Isla San Pedro Martin, Sonora, Mexico, Diving 85 feet in rubble 10 June 1979 Kerstitch

D. JKT 1176 *Gradiconus scalarissimus* (da Motta, 1988), 37.3 mm, Isla San Pedro Martin, Sonora, Mexico, Diving 85 feet in rubble 10 June 1979 Kerstitch

Figure 103
Specimens of *Jaspidiconus iansa* (Petuch, 1979) including the holotype (C)

A. JKT 3274 *Jaspidiconus iansa* (Petuch, 1979), 13.0 mm, 25 km off Alcobaco, S. Bahia, on seamount in 1-2 m in sand, A. Bodart, Feb. 2002

B. JKT 3812 *Jaspidiconus iansa* (Petuch, 1979), 10.6 mm, Sulfur Bank, southern Bahia State, Brazil, on coral sand at

20-25 m by diver, AQ. Bodart, Jan 2005

C. USNM 780661 *Jaspidiconus iansa* (Petuch, 1979), 12 mm, holotype, 25 m, Santa Barbara Island, Abrolhos Archipelago, Bahia State, Brazil, 17°57'S, 38°41'W. Photo by Alan J. Kohn

D. JKT 3274 *Jaspidiconus iansa* (Petuch, 1979), 16.4mm, 25 km off Alcobaco, S. Bahia, on seamount in 1-2 m in sand, A. Bodart, Feb. 2002

E. JKT 3767 *Jaspidiconus iansa* (Petuch, 1979), 16.8 mm, 130 km NE off Abrolhos Archipelago, southern Bahia State, Brazil, taken on coral sand at 13-20 m, A. Bodart, Jan 2005

F. JKT 3274 *Jaspidiconus iansa* (Petuch, 1979), 16.4mm, 25 km off Alcobaco, S. Bahia, on seamount in 1-2 m in sand, A. Bodart, Feb. 2002

Figure 104

Three synonyms of *Jaspidiconus iansa* (Petuch, 1979); illustrations are taken from Coltro, 2004

A. MZSP 39.904 *Jaspidiconus iansa* (Petuch, 1979), 16.6 mm, holotype of *Conus bodarti* Coltro, 2004, 125 km NE Abrolhos Archipelago, off Alcobaca, Bahia, Brazil (15°50'S, 37°57'W).

B. MZSP 39.910 *Jaspidiconus iansa* (Petuch, 1979), 13 mm, holotype of *Conus delucai* Coltro, 2004, 75 km E Abrolhos Archipelago, off Alcobaça, Bahia, Brazil (15°57'S, 38°01'W)

C. MZSP 39.906 *Jaspidiconus iansa* (Petuch, 1979), 9.9 mm, holotype of *Conus schirrmeisteri* Coltro, 2004, Sulfur Bank, 125 km NE Abrolhos Archipelago, off Alcobaça, Bahia, Brazil (15°50'S, 37°57'W)

Figure 105

The holotype of *Jaspidiconus rachelae* (Petuch, 1988) and a specimen from Brazil

A. USNM 784468 *Jaspidiconus rachelae* (Petuch, 1988), 24 mm, holotype, 35 m, Golfo de Triste, Venezuela. Photo by Alan J. Kohn

B. JKT 1038 *Jaspidiconus rachelae* (Petuch, 1988), 25.9 mm, trawled in 50 m, off Espiritu Santo coast, Brazil, by fisherman 1976

Figure 106

Specimens of *Kohniconus delessertii* (Récluz, 1843) including the holotype (E)

A. JKT 3188 *Kohniconus delessertii* (Récluz, 1843), 39.0 mm, 2 miles N of Hillsboro Light, Pompano Beach, night scuba in 70 feet, summer 1990, T. Honker

B. JKT 2719 *Kohniconus delessertii* (Récluz, 1843), 48.8 mm, in 50-150 feet, Oct. 1983, scallop dump, off Cape Ca-

naveral, Brevard County, Florida

C. JKT 3188 *Kohniconus delessertii* (Récluz, 1843), 28.0 mm, 2 miles N of Hillsboro Light, Pompano Beach, night scuba in 70 feet, summer 1990, T. Honker

D. JKT 2712 *Kohniconus delessertii* (Récluz, 1843), 59.6 mm, lines 44001-44004, in 210 feet, Aug. 1983, off Cape Canaveral, Brevard County, Florida

E. MHNG 1106/66 *Kohniconus delessertii* (Récluz, 1843), 61.5 mm, holotype, Socotora, Red Sea (erroneous), off Cape Canaveral, Florida, designated by Coomans et al., 1985. Photo by Alan J. Kohn

F. JKT 880 *Kohniconus delessertii* (Récluz, 1843), 21.1 mm, dredged in 190 feet west of Panama City, Florida, July 1966, J. Moore, in mixed debris

Figure 107

Specimens of *Kohniconus centurio* (Born, 1778) including the holotype (C)

A. JKT 3233 *Kohniconus centurio* (Born, 1778), 57.4 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, August 1998

B. JKT 3519 Kohniconus centurio (Born, 1778), 50.7 mm, Colombia, Cabo de la Vela, in 50 m, fishing trawlers, off sandy mud bottom

C. NHMW 14152 *Kohniconus centurio* (Born, 1778), 35.5 mm, holotype, Puerto Plata, Santo Domingo. Photo by Anita Eschner

D. JKT 3223 *Kohniconus centurio* (Born, 1778), 55.7 mm, Colombia, off Goajira Peninsula, in 50 fms, muddy sand bottom, shrimp boats, October 1990

E. JKT 3233 *Kohniconus centurio* (Born, 1778), 45.7 mm, Brazil, off Vitoria, Espirito Santo State, in 35-40 m, trawled, August 1998

Figure 108

An apparently undescribed species of *Kohniconus* (A-C) similar to *Kohniconus arcuatus* (Broderip and G. B. Sowerby I, 1829), an East Pacific species (D-F)

A. JKT 969 *Kohniconus species*, 38.1 mm, Campeche, Yucatan, dredged in 725 feet, Sept. 1977

B. JKT 3520 *Kohniconus species*, 36.3 mm, Colombia, Golfo de Morrosquillo, southern Cartagena, trawled in 200-300 m, November 2002

C. JKT 3520 *Kohniconus species*, 37.1 mm, Colombia, Golfo de Morrosquillo, southern Cartagena, trawled in 200-300

m, November 2002

D. JKT 1962 *Kohniconus arcuatus* (Broderip and G. B. Sowerby I, 1829), 48.6 mm, Panama, dredged Gulf of Panama

E. JKT 3124 *Kohniconus arcuatus* (Broderip and G. B. Sowerby I, 1829), 42.8 mm, Mexico, Guaymas

F. JKT 3124 *Kohniconus arcuatus* (Broderip and G. B. Sowerby I, 1829), 39.6 mm, Mexico, Guaymas

Figure 109

Primary types for species synonymous with *Purpuriconus cardinalis* (Hwass in Bruguière, 1792)

A. MHNG 1106/52 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 27 mm, a specimen from the Hwass collection. Photo by Alan J. Kohn

B. NMW 1955.158.37 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 28 mm, holotype of *Conus dianthus* G. B. Sowerby III, 1882, type locality unknown. Photo by Alan J. Kohn

C. BMNH 196163 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 24 mm, representative of the lectotype of *Conus maculiferus* G. B. Sowerby II, 1833, Red Sea (erroneous). Photo by Alan J. Kohn

D. MNHN *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 20.5 mm, holotype of *Conus lubeckianus* Bernardi, 1861, Guadeloupe.. Photo by Alan J. Kohn

E. FlMNH 287926 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 20 mm, holotype of Conus (Purpuriconus) lucaya Petuch, 2000, off west end of Grand Bahama Island, Bahamas. Photo by Chris Meyer

F. USNM 859882 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 26 mm, holotype of Conus harasewychi Petuch, 1987, Little Sale Cay, Bahamas (originally reported as 30 m, N of Palm Beach Inlet, Palm Beach, Florida). Photo by Alan J. Kohn

G. UF 267869 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 19 mm, holotype of *Conus (Purpuriconus) rosalindensis* Petuch, 1998, south side of Rosalind Bank, Honduras. Photo by Chris Meyer

Figure 110

Specimens of *Purpuriconus cardinalis* (Hwass in Bruguière, 1792)

A. JKT 3264 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 18.8 mm, Bahamas, in 50-65 feet, 10-15 miles N of west end, Grand Bahama, Sept. 1996, edge of Little Bahama Bank, night scuba

B. JKT 3264 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 18.5 mm, Bahamas, in 50-65 feet, 10-15 miles N of west end, Grand Bahama, Sept. 1996, edge of Little Bahama Bank, night scuba

C. JKT 3263 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 20.3 mm, Colombia, in 30 m, off Isla de San Andreas, dead coral in white sand, 2001

D. JKT 3263 *Purpuriconus cardinalis* (Hwass in Bruguière, 1792), 18.9 mm, Colombia, in 30 m, off Isla de San Andreas, dead coral in white sand, 2001

Figure 111

Specimens *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), the lectotype (C), and the holotype of a synonymous species (E)

A. JKT 3500 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 14.5 mm, Turks and Caicos Islands, night scuba in 60 feet in heavy coral, near drop off, west side of Northwest Point, Providenciales, Tom Honker, July, 2002

B. JKT 3499 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 15.4 mm, Turks and Caicos Islands, night scuba in 60 feet in heavy coral, near drop off, west side of Northwest Point, Providenciales, Tom Honker, July, 2002

C. MHNG 1107/7 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 36 mm, lectotype, Strait of Magellan (erroneous). Photo by Alan J. Kohn

D. JKT 3498 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 16.2 mm, Turks and Caicos Islands, night scuba in 60 feet in heavy coral, near drop off, west side of Northwest Point, Providenciales, Tom Honker, July, 2002

E. CMNH 47383 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 10.5 mm, holotype of Conus flammeacolor Petuch, 1992, 20 m, S of Cayos Vivorillo, Honduras. Photo by Alan J. Kohn

F. JKT 3181 *Purpuriconus magellanicus* (Hwass in Bruguière, 1792), 10.3 mm, Honduras, Roatan Island, in 10 m on coral, 1998

Figure 112

Primary types of *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833) and of five synonymous species

A. UF 267870 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 33 mm, holotype of *Conus (Purpuriconus) stanfieldi* Petuch, 1998, Northern Great Bahama Bank, off Paradise Island, N. of New Providence Island, Bahamas. Photo by Chris Meyer

B. MCZH 145274 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 42 mm, holotype of *Conus regius abbotti* Clench, 1942, subspecies, Arthurstown, Cat Island, Bahamas . Photo by Alan J. Kohn

C. NMW 1955.158.45 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 19 mm, lectotype, type locality was not stated. Photo by Alan J. Kohn

D. NMW 1955. 158.47 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 34 mm, holotype of *Conus jucundus* G. B.

Sowerby III, 1887, type locality is unknown.. Photo by Alan J. Kohn

E. UF 287927 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 23 mm, holotype of *Conus theodorei* Petuch, 2000, off E. Samphire Cay, N.E. Great Bahama Bank, Bahamas. Photo by Chris Meyer

F. BMNH *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 22 mm, lectotype of *Conus inconstans* E. A. Smith, 1877, type locality is unknown. Photo by Alan J. Kohn

Figure 113
Specimens of *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833) from the Bahamas demonstrating their variability in form and coloration

A. JKT 3256 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 29.0 mm, Bahamas, Abaco Cays, under dead coral rubble, in 5-10 feet snorkeling, summer, 1989

B JKT 3273 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 16.7 mm, Bahamas, in 5-10 feet under coral rubble, Abaco Cays, July 1989

C. JKT 3256 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 25.6 mm, Bahamas, Abaco Cays, under dead coral rubble, in 5-10 feet snorkeling, summer, 1989

D. JKT 3256 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 21.2 mm, Bahamas, Abaco Cays, under dead coral rubble, in 5-10 feet snorkeling, summer, 1989

E. JKT 3271 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 28.4 mm, Bahamas, in 2-3 m, underside of coarl rocks, Winding Bay, Eleuthera

F. JKT 3270 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 31.6 mm, Bahamas, in 5-10 feet, snorkel off Abaco Cays, under dead coral rubble, summer 1989

G. JKT 3272 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 21.2 mm, Bahamas, in 5-10 feet under coral rubble, Abaco Cays, July 1989

H. JKT 3273 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 15.7 mm, Bahamas, in 5-10 feet under coral rubble, Abaco Cays, July 1989

I. JKT 3256 *Purpuriconus sphacelatus* (G. B. Sowerby II, 1833), 21.2 mm, Bahamas, Abaco Cays, under dead coral rubble, in 5-10 feet snorkeling, summer, 1989

Figure 114
Specimens of *Purpuriconus kalafuti* (da Motta, 1987) including the holotype (C)

A. JKT 3558 *Purpuriconus kalafuti* (da Motta, 1987), 13.1 mm, scuba 5-15 m, on coral reef, Roatan Island, east Honduras

B. JKT 3265 *Purpuriconus kalafuti* (da Motta, 1987), 13.7 mm, Cayos de San Andres, snorkeling 5-10 feet under dead coral rubble in heavy coral, 2001

C. MHNG 987.111 *Purpuriconus kalafuti* (da Motta, 1987), 15 mm, holotype, N.W. Roatan Island, Honduras, Caribbean Sea, 16.18°N, 86.35°W. Photo by Alan J. Kohn

D. JKT 3276 *Purpuriconus kalafuti* (da Motta, 1987), 12.7 mm, Honduras, west end Roatan Island, 40-50 feet, on algae covered rocks

E. JKT 3558 *Purpuriconus kalafuti* (da Motta, 1987), 12.8 mm, scuba 5-15 m, on coral reef, Roatan Island, east Honduras

Figure 115

Two specimens of *Purpuriconus havanensis* (Aguayo and Farfante, 1947), the primary type for the species (E), and types of five synonymous species (A-D, G)

A. USNM 859873 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 15 mm, holotype of *Purpuriconus kirkandersi* (Petuch, 1987),, North end of Cozumel Island, Quintana Roo, Mexico. Photo by Alan J. Kohn

B. CMNH 47360 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 15 mm, holotype of *Conus bessei* (Petuch, 1992), 20 m, off Cayo Caratasca, Honduras. Photo by Alan J. Kohn

C. UF 225161 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 13.5 mm, holotype of *Conus (Magelliconus) deynzerorum* Petuch, 1995, 3 m, Banco Chinchorro Atoll, Quintana Roo, Mexico. Photo by Chris Meyer

D. IES *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 14.9 mm, holotype of *Conus olgae* Bacallado, Espinosa & Ortea, 2007, 18-20 m, Punta Tabaco, Pinar del Río, Cuba. Photograph courtesy of Paul Kersten.

E. JKT 3596 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 16.5 mm, Bahamas, Caratasca Keys

F. USNM 859877 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 22 mm, holotype of *Conus colombianus* Petuch, 1987, 35 m, off Islas del Rosario, Colombia. Photo by Alan J. Kohn

G. JKT 3265 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 13.7 mm, Colombia, Cayos de San Andres, snorkeling in 5-10 feet under dead coral rubble in heavy coral, 2001

Figure 116

Several specimens identified as *Purpuriconus havanensis* (Aguayo and Farfante, 1947) all from Guadeloupe

A. JKT 3266 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 16.3 mm, Guadeloupe, in 3-4 m on shallow reef, St. Anne

B. JKT 3266 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 15.1 mm, Guadeloupe, in 3-4 m on shallow reef, St. Anne

C. JKT 3266 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 16.4 mm, Guadeloupe, in 3-4 m on shallow reef, St. Anne

D. JKT 3266 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 11.2 mm, Guadeloupe, in 3-4 m on shallow reef, St. Anne

E. JKT 3266 *Purpuriconus havanensis* (Aguayo and Farfante, 1947), 12.7 mm, Guadeloupe, in 3-4 m on shallow reef, St. Anne

Figure 117

Specimens of *Purpuriconus richardbinghami* (Petuch, 1992) from the Bahamas and the holotype (C)

A. JKT 3268 *Purpuriconus richardbinghami* (Petuch, 1992), 36.3 mm, in 20 m night scuba, coral off Victory Cays, south of Cat Cay, SW Great Bahama Bank, Sept. 1992

B. JKT 3267 *Purpuriconus richardbinghami* (Petuch, 1992), 20.4 mm, in 20 m night scuba, coral off Victory Cays, south of Cat Cay, SW Great Bahama Bank, Sept. 1992

C. CMNH 47369 *Purpuriconus richardbinghami* (Petuch, 1992), 35 mm, holotype, 20 m, S of Cat Cay, Great Bahama Bank, Bahamas. Photo by Alan J. Kohn

D. JKT 3268 *Purpuriconus richardbinghami* (Petuch, 1992), 22.6 mm, in 20 m night scuba, coral off Victory Cays, south of Cat Cay, SW Great Bahama Bank, Sept. 1992

E. JKT 3267 *Purpuriconus richardbinghami* (Petuch, 1992), 25.1 mm, in 20 m night scuba, coral off Victory Cays, south of Cat Cay, SW Great Bahama Bank, Sept. 1992

Figure 118

Specimens thought to be the poorly known *Purpuriconus arangoi* (Sarasua, 1977)

A. *Purpuriconus arangoi* (Sarasua, 1977), 30 mm, Cuba, image courtesy Femorale

B. Monnier collection *Purpuriconus arangoi* (Sarasua, 1977), 40.9 mm, specimen of *Conus alainallaryi* Bozzetti & Monnier, 2009, Isla Tortuguilla, 200 km southwest of Cartagena, Colombia.

C. MNHN *Purpuriconus arangoi* (Sarasua, 1977), 33.2 mm, holotype of *Conus alainallaryi* Bozzetti & Monnier,

2009, Isla Tortuguilla, 200 km southwest of Cartagena, Colombia. Photo courtesy E. Monnier & P. Kersten

D. USNM 860544 *Purpuriconus arangoi* (Sarasua, 1977), 21 mm, holotype of *Conus hilli* Petuch, 1990, Portobelo, Panama. Photo by Alan J. Kohn

Figure 119

Specimens of *Purpuriconus kulkulcan* (Petuch, 1980), the holotype (E), and holotypes of two synonymous species (F & G)

A. JKT 3160 *Purpuriconus kulkulcan* (Petuch, 1980), 23.1 mm, under rocks in 10-15 feet at fringe of a small patch reef, southwest of Belize, Dec. 1986

B. JKT 3160 *Purpuriconus kulkulcan* (Petuch, 1980), 24.6 mm, under rocks in 10-15 feet at fringe of a small patch reef, southwest of Belize, Dec. 1986

C. JKT 4206 *Purpuriconus kulkulcan* (Petuch, 1980), 17.6 mm, Utila Island, dived at 6 m on rock reef, August 1999

D. JKT 1097 *Purpuriconus kulkulcan* (Petuch, 1980), 28.8 mm, in 20-50 feet in sand, off Riding Rocks, Bahamas, Oct. 1979, J. Cordy

E. USNM 784487 *Purpuriconus kulkulcan* (Petuch, 1980), 21.3 mm, holotype, 2 m, north side of Roatan Island, Honduras. Photo by Alan J. Kohn

F. UF 267866 *Purpuriconus kulkulcan* (Petuch, 1980), 26 mm, holotype of *Conus (Purpuriconus) donnae* Petuch, 1998, northwestern Great Bahama Bank, along Northwest Providence Channel, off east Brothers Cay, N. of North Bimini Island and E. of Great Isaac Light, Bahamas. Photo by Chris Meyer

G. UF 267864 *Purpuriconus kulkulcan* (Petuch, 1980), 22 mm, holotype of *Conus (Magelliconus) zylmanae* Petuch, 1998, northern Great Bahama Bank, off Paradise Island, N. of New Providence Island, Bahamas. Photo by Chris Meyer

Figure 120

Purpuriconus velaensis (Petuch, 1992), a poorly known species, and types of two possible synonymous species

A. UF 267868 *Purpuriconus velaensis* (Petuch, 1992), 17.5 mm, holotype of *Conus (Purpuriconus) ortneri* Petuch, 1998, Northern Great Bahama Bank, off Paradise Island, N. of New Providence Island, Bahamas. Photo by Chris Meyer

B. UF 267863 *Purpuriconus velaensis* (Petuch, 1992), 18 mm, holotype of *Conus (Magelliconus) jacarusoi* Petuch, 1998, Northeastern Great Bahama Bank, off East Samphire Cay, N.E. of New Providence Island, Bahamas. Photo by Chris Meyer

C. CMNH 47353 *Purpuriconus velaensis* (Petuch, 1992), 31 mm, holotype, 35 m, off Cabo La Vela, Goajira Peninsula,

Colombia. Photo by Alan J. Kohn

Figure 121

Three specimens of *Seminoleconus harlandi* (Petuch, 1987) and of the holotype (D)

A. JKT 3203 *Seminoleconus harlandi* (Petuch, 1987), 38.6 mm, Honduras, Utila Bay Islands, night scuba in 40-60 feet in sand and grass, off Sandy Cay, May 1996

B. JKT 3490 *Seminoleconus harlandi* (Petuch, 1987), 29.0 mm, Honduras, Utila, Bay Islands, in 40-60 feet on sand and grass bottom, off Sandy Cay, May 1996

C. JKT 3490 *Seminoleconus harlandi* (Petuch, 1987), 27.8 mm, Honduras, Utila, Bay Islands, in 40-60 feet on sand and grass bottom, off Sandy Cay, May 1996

D. USNM 859883 *Seminoleconus harlandi* (Petuch, 1987), Petuch, 1987, 33 mm, holotype, 60 feet, Utila Island, Bay Islands, Honduras. Photo by Alan J. Kohn

Figure 122

Specimens of *Spuriconus lindae* (Petuch, 1987) including the holotype (B)

A. JKT 3491 *Spuriconus lindae* (Petuch, 1987), 28.7 mm, Bahamas, dredged in 400 m, off Victory Cays, Bimini Chain. May 2000; this is Petuch, 2002, fig 3J.

B. USNM 859886 *Spuriconus lindae* (Petuch, 1987), 31 mm, holotype, 240 m, off southern coast Grand Bahama Island, Bahamas. Photo by Alan J. Kohn

C. uncataloged *Spuriconus lindae* (Petuch, 1987), 41 mm, Bahamas, dredged in 400 m, off Victory Cays, Bimini Chain. May 2000. photo courtesy Tom Honker

D. uncataloged *Spuriconus lindae* (Petuch, 1987), 52 mm, Bahamas, dredged in 400 m, off Victory Cays, Bimini Chain. May 2000 photo courtesy Tom Honker

Figure 123

Dalliconus pacei (Petuch, 1987) including images of primary types of the species and of a synonym

A. USNM 859947 *Dalliconus pacei* (Petuch, 1987), 18 mm, holotype of *Conus (Asprella) kremerorum* Petuch, 1988, 70m, off St. James, Barbados. Photo by Alan J. Kohn

B. USNM 859888 *Dalliconus pacei* (Petuch, 1987), 19 mm, holotype, 250 m, off southern coast Grand Bahama Island, Bahamas. Photo by Alan J. Kohn

C. Pace Collection *Dalliconus pacei* (Petuch, 1987), 18.6 mm, paratype, 250 m, off Bimini, Bahamas. Photo courtesy

Emilio Garcia

Figure 124

Drawings of radular teeth for a number of species (Abbreviations: TL = tooth length; SL = shell length, both in mm) drawings reproduced from Tucker & Tenorio, 2009 except where noted

1. *Gradiconus anabathrum* (Crosse, 1865b), Perfil Guayaba, Cuba. TL = 0.62 mm; SL = 32.4 mm.

2. *Purpuriconus cardinalis* (Hwass, 1792), Cuba. TL = 1.17 mm; SL = 31.9 mm.

3. *Gradiconus flavescens* (G. B. Sowerby I, 1834), Pompano Beach, Florida, USA. TL = 0.37 mm; SL = 20.5 mm.

4. *Gladioconus granulatus* (Linnaeus, 1758), Cuba. TL = 0.87 mm; SL = unknown.

5. *Gladioconus hieroglyphus* (Duclos, 1833), Aruba. TL = 0.39 mm; SL = 18.6 mm.

6. *Purpuriconus kulkulcan* (Petuch, 1980), Cienfuegos, Cuba. TL = 0.71 mm; SL = 20 mm.

7. *Conasprelloides villepinii* (Fischer & Bernardi, 1857), Santos, São Paulo, Brazil. TL ~ 0.54 mm; SL = 56.4 mm (specimen voucher MNRJ 8977, redrawn from Gomes, 2004).

8. *Purpuriconus ziczac* (Mühlfeld, 1816), Guarapari, Espiritu Santo, Brazil. TL = 0.55 mm; SL = 26 mm.

9. *Seminoleconus curassaviensis duffyi* (Petuch, 1992), Los Roques, Venezuela. TL = 1.1 mm; SL = 34.3 mm.

10. *Seminoleconus curassaviensis duffyi* (Petuch, 1992), Honduras. TL = 0.36 mm; SL = 18 mm.

11. *Seminoleconus mappa granarius* (Kiener, 1845), Honduras. TL = 0.60 mm; SL = 29 mm.

12. *Stephanoconus regius* (Gmelin, 1791), Martinique. TL = 1.63 mm; SL = 42.5 mm.

13. *Seminoleconus scopulorum* (Van Mol, Tursch & Kempf, 1971), off the north coast of Brazil, TL = 0.41 mm; SL = 26.5 mm, reproduced from Van Mol, Tursch & Kempf, 1971, fig. 3.

14. *Gradiconus largillierti* (Kiener, 1845), off Brevard County, Florida, USA. TL = 0.94 mm; SL = 35.7 mm.

15. *Gladioconus ritae* (Petuch, 1995), Rosalind Bank, Honduras. TL = 0.50 mm; SL = 18.4 mm

16. *Conasprelloides stimpsoni* (Dall, 1902), off Brevard County, Florida, USA. TL = 1.23 mm; SL = 55.6 mm.

17. *Kohniconus delessertii* (Récluz, 1843), Florida. TL = 0.61 mm; SL = 60.6 mm.

18. *Kohniconus centurio* (Born, 1778), off cabo de São Tomé, Brazil. TL ~ 0.53 mm; SL = not stated (specimen voucher MNRJ 8779, redrawn from Gomes, 2004).

19. *Dalliconus armiger* (Rehder & Abbott, 1951), SSW of Marsh Island, Louisiana, SL = 34 mm, TL unknown. (*Conus clarki* Rehder & Abbott, 1951)

20. *Jaspidiconus henckesi* (Coltro, 2004), Bahia, Brazil. TL = 0.23 mm; SL = 17.1 mm

21. *Jaspidiconus iansa* (Petuch, 1979a), Bahia, Brazil. TL = 0.18 mm; SL = 13.4 mm.

22. *Jaspidiconus jaspideus* (Gmelin, 1791), Bahia, Brazil. TL = 0.32 mm; SL = 19.6 mm

23. *Jaspidiconus mindanus* (Hwass, 1792), Espiritu Santo, Brazil. TL = 0.42 mm; SL = 29.1 mm.

24. *Artemidiconus selenae* (van Mol, Tursch & Kempf, 1967), off Fortaleza, Ceara, Brazil. TL = 0.21 mm; SL ~ 15 mm (redrawn from van Mol, Tursch, & Kempf, 1971).

25. *Chelyconus ermineus* (Born, 1778), reproduced from Rolán, 1986, fig. 12

26. *Spuriconus spurius* (Gmelin, 1791), Puerto Rico. TL = 1.15 mm; SL = 44 mm (redrawn from Warmke, 1960).

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