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CONIDAE

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THE GENUS *CONUS* IN THE WESTERN ATLANTIC

BY
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The very valuable and extensive list of *Conus* by Tomlin (see bibliography) contains more than 2700 names that have been employed for the fossil and recent species in this genus. Many of these names are synonyms and others are new names employed to replace homonyms, but this list gives in a very graphic way the large number of forms that have been described and indicates the extensive body of literature that has been written about this genus.

Though our recent forms are well under half of this number, the list is still an imposing one. The separation of the many species is exceedingly difficult as the differential characters are few in number and most of these are variable. Color and color pattern have played a conspicuous part in their differentiation with the shape of the shell and the contour of the spire as important diagnostic characters of species groups.

Conus has always been a very popular genus and with *Cypraea* and *Voluta* were and still are the most sought after shells among the marine gastropods. Interest in these forms among our early workers resulted in a very large number of names being employed, based unfortunately on a belief in the fixity of color pattern and a general lack of interest in, or lack of knowledge of, their geographic origin. Most of the early descriptions are meager with few or no comparisons, many are unfigured or refer to previously published figures, mainly wood-cuts, that have but slight diagnostic value. There are, of course, many exceptions, but I think the above holds true not only for *Conus* but for other genera that were held in high favor among our early European students.



Conus quercinus Hwass



Conus pulicarius Hwass

Plate 1. Showing cross-section of shell (natural size).

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It is exceedingly unfortunate that many specific names now in current use must be replaced by others less familiar. The collation of the literature by Tomlin and the greatly increased series of material now available for study have made possible a much better understanding of this genus. Errors in names as well as in determinations become apparent only when a large amount of factual evidence can be studied at one time.

The bites of all *Conus* are believed to be poisonous. There are many published records of fatal stings by members of this genus, though, so far, the known species responsible are few in number and are limited to the Indo-Pacific region. Care should be taken, however, when collecting our Western Atlantic forms alive. Certain specimens of *Conus spurius atlanticus* reach a fairly large size and a bite may prove to be very serious. We figure herewith (plate 2) an enlarged tooth of *Conus striatus* (3 fathoms, Rabbit Island, Oahu, Hawaiian Islands) to illustrate the biting apparatus used by *Conus*. This is only one of many teeth that are responsible for the bite. Our shell was a particularly large specimen, reaching 130 mm. in length. The size of the tooth as indicated is exceedingly long in comparison with the teeth on the radulae of most other mollusks.

As a defensive weapon, the bite of a cone is possibly only of secondary importance, its primary use probably being the procurement of food; the prey is bitten to paralyze it before an attempt is made to feed upon it. The purpose is strikingly parallel to that of a rattlesnake's bite.

Conus is essentially a tropical genus though a few species occur in the warmer portions of the temperate regions. They occur in many types of habitats, on mud flats, sand bars, exposed rocky coasts and reefs as well as in the more quiet waters of lagoons and bays. Many occur in the inter-tidal zone though most are to be found below the low water line. A very few species extend beyond the 100 fathom line, though they are not known to occur in the profound depths. The vast Indo-Pacific region is by far the richest in *Conus*. Our entire Western Atlantic province contains fewer species than could be obtained at any good collecting spot on the Barrier Reef off Queensland or in a coral-margined bay in any of the Philippine Islands.

The operculum is usually lengthened and rounded at the ends and not capable of closing the aperture. Its relative size varies with the different species. The periostracum also varies materially with the different species, ranging from a thin transparent covering with the coloration of the shell showing through, to a very heavy and non-transparent coat which may possess ridges, "hairs," or other sculptural growths.

The following comments and the translation of Bruguière's remarks are by my colleague, Dr. Joseph Bequaert.

"In his extremely valuable Catalogue of Recent and Fossil Cones, J. R. le B. Tomlin states, without further comment: 'The numerous species described in the Encyclopédie

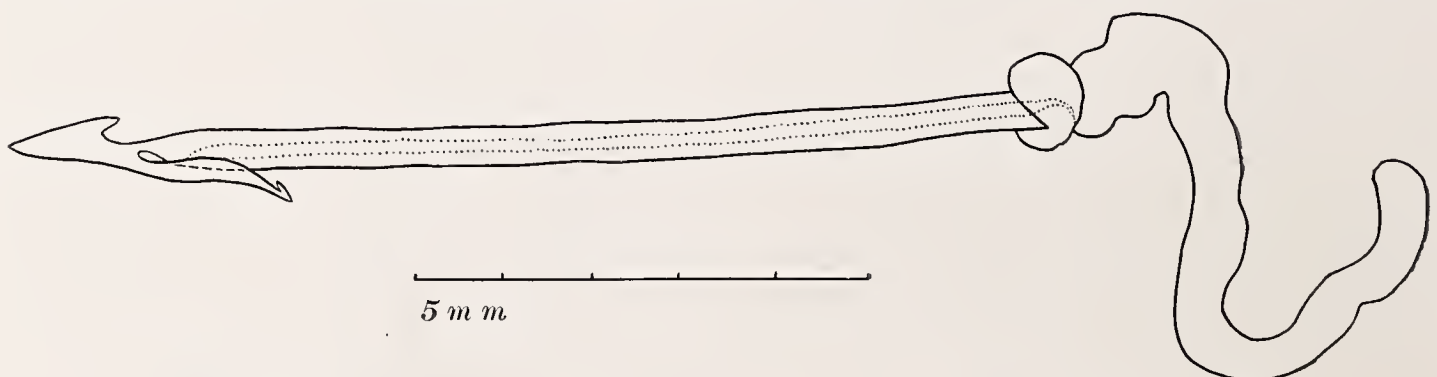


Plate 2. A single tooth from the radula of *C. striatus* Linné. Greatly enlarged.
Copied from a drawing by Y. Kondo.

Méthodique are attributed to Bruguière and not to Hwass.' This of course not only does a grave injustice to Hwass, who laid the foundation of the taxonomy of the genus, but is in direct opposition to Bruguière's statement (1792, *Encyclopédie Méthodique*, Vers, I, pt. 2, p. 598): 'The work which I present here on the cones was communicated to me by Mr. Hwass, who has consented to take it from a more extensive one, at present in the press and comprising the systematic catalogue of the precious shells in his collection. . . . In order to be worthy of the trust, of which the Danish savant gives me so high a token, I must warn the reader that the definition and divisions of the genus, and the Latin diagnoses ["phrases"] of species and varieties are his work ["lui appartiennent"] and one should regard as my work only the French table of specific differences, the general observations on the genus *Conus*, the additional synonymy of the species, and finally their descriptions.' In addition, Hwass' name follows every binomial for which he was responsible, so that the authorship is never in doubt.

'E. Lamy (1930, *Journ. de Conchy.*, 74, pp. 57-59) has traced the vicissitudes of Hwass' collection. From his account it appears that the cones should be at present in the Natural History Museum at Geneva. So far as I know, these types have never been critically examined.'

I am greatly indebted to several friends for the use of their material for study and for their records. These are acknowledged by name after the records. I am indebted to Dr. Pilsbry for the many records obtained during a visit to the Academy of Natural Sciences at Philadelphia (ANSP).

Conus Linné

Conus Linné 1758, *Syst. Nat.* ed. 10, p. 212.

Shell obconic, usually heavy and strong, generally ornamented with bright colors which are diffused, banded or spotted. Aperture generally long and narrow with a simple lip. Whorls numerous, rather tightly coiled and moderately descending. Inner whorls generally absorbed to a paper-thinness (Plate 1). Sculpture when present usually of a minor nature consisting of low riblets which may be smooth or tuberculate. Periostracum thin to heavy and often sculptured to a moderate degree. Teeth relatively few, proportionately long and equipped with a poison gland. This apparatus is capable of injecting an exceedingly powerful neurotoxin into its prey.

According to Iredale (1930, p. 79) the genotype of *Conus* is *C. litteratus* Linné, designated by Swainson (1840, *Treat. Malac.*, p. 148).

Conus regius Gmelin, Plate 3, fig. 1-4

Conus regius Gmelin 1791, *Syst. Nat.* ed. 13, p. 3379 (No locality).

Conus leucostictus Gmelin 1791, *Syst. Nat.* ed. 13, p. 3388 (Oceano Americano).

Conus insularis Gmelin 1791, *Syst. Nat.* ed. 13, p. 3389 (No locality).

Conus cedonulli curassaviensis Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 602 (Curaçao).

Conus cedonulli trinitarius Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 603 (Trinidad).

Conus cedonulli martinicanus Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 603 (Martinique).

Conus cedonulli caracanus Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 603 (Caracas [Venezuela]).

Conus cedonulli grenadensis Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 603 (Grenada).

Conus nebulosus Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 606 (Santo Domingo), *non nebulosus* Gmelin 1791.

Conus eques Hwass 1792, [in] Bruguière, *Ency. Meth. Vers.*, 1, p. 705 (Coast of Florida).

Cucullus coronacivica Röding 1798, *Mus. Boltenianum* p. 38 (No locality).

Conus leucostictus 'Gmelin' Green 1830, *Trans. Albany Inst.*, 1, p. 123, pl. 3, fig. 4 (Florida).

Conus armillatus C. B. Adams 1850, *Contributions to Conchology* no. 4, p. 59, Amherst, Mass. (Jamaica). [A young specimen of *regius* similar to figure 4, pl. 3].

Description. Shell 50 to 70 mm. in length, solid and strong and usually colored a mottled brown and cream. The color generally appears in the form of two irregular bands, a broad one above the middle and a narrower one between the mid area and the base. However, extensive mottling may partially or wholly obscure the band formation. The color is usually a deep chocolate-brown though occasional specimens are brownish-red. Aperture oblique, deeply inset above, long and fairly wide proportionately. Whorls 6 to 8, flat sided, tuberculated on the top and occasionally offset to form a shoulder. Spire rather extended, usually strongly concave and with a rather large nuclear whorl. Outer lip finely crenulated along its inner margin. Sculpture consisting of numerous spiral threads that are usually beaded and most strongly developed towards the base. Occasional specimens smooth above the mid area. The spire possesses numerous and fine spiral threads. Fine and irregular axial growth lines cross the beaded sculpture. Periostracum very thin and usually worn away even in live shells. Operculum with a terminal nucleus, long and strongly sculptured with irregular concentric growth lines. It is between one-half and one-third the length of the aperture.

	length	width	whorls	
(large)	71	41 mm.	8	Middle Sambo Shoals, Florida
(average)	60	32.5	7½	Pelican Shoals, Florida

Types. Gmelin cites several references for this species and we here select his citation "b," Martini 1773, Conchy.-Cab. (1) 2, pl. 62, fig. 684, to be the type figure. We also restrict the type locality to Jaimanitas, Cuba (near Havana). We figure the neoholotype, MCZ. 127816.

Common name. The Crown Cone.

Remarks. It is unfortunate that the well-known name of *nebulosus* Hwass, must be discarded owing to an earlier name by Gmelin. In addition, it is a homonym of *nebulosus* Gmelin, a totally different species.

This is a very remarkable shell and strikingly different from most other cones. Live

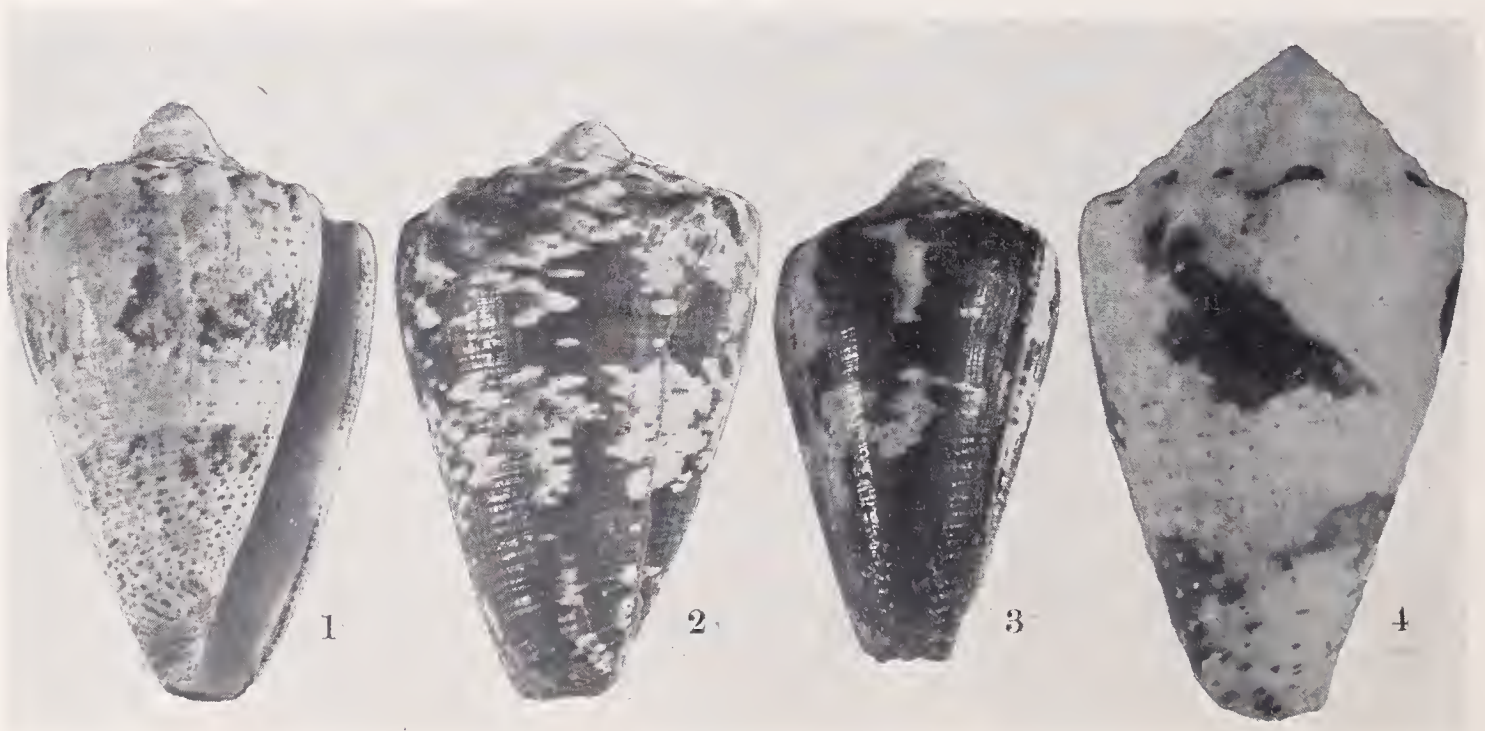


Plate 3. *Conus regius* Gmelin

Fig. 1. Nassau, Bahamas (nat. size). Fig. 2. Jaimanitas, Cuba (nat. size).
Fig. 3. Middle Sambo Shoals (nat. size). Fig. 4. Fowey Rocks, Florida (3×).

shells are difficult to obtain as they are reef dwelling and can only be had by diving or found at times when the outer reefs are exposed during calm weather. *C. regius* is exceedingly variable in character, particularly in its color pattern and sculpture. Specimens from the same locality show remarkable differences. In a large series, these variations are almost completely linked together by intermediates which show a homogeneity which would not be suspected if only a few isolated specimens were studied. This variation was responsible for the many names employed by Hwass and Gmelin.

C. leucosticus 'Gmelin' Green (err. for *leucostictus*) is a young specimen. The young show axially lengthened and irregular maculations which on older shells are more or less formed in two broad, spiral bands. The young shells have also been called *maculiferus* Sowerby in error, a species occurring in the Indo-Pacific area (Red Sea).

Range. Southern Florida, southern Mexico, the Bahamas and south to Brasil.

Records. FLORIDA: Boynton (T. Bayer; T. McGinty); Deerfield Beach (T. Van Hyning); Hillsborough Reef (T. Bayer; L. A. Burry); off Fowey Rocks (A. H. Patterson); Pelican Shoals; Sand Key; Washerwoman Key (all J. Schwengel); Boca Chica Key (T. Van Hyning); Middle Sambo Shoals (T. McGinty); Tortugas (L. A. Burry; T. Van Hyning). BAHAMAS: West End, Grand Bahama; South Bimini Id.; Arthurs-town, Cat Id.; Cape Santa Maria, Long Id.; Matthewtown, Gt. Inagua (all MCZ); Nassau, New Providence (A. H. Patterson). CUBA: Jaimanitas, Havana; Cayo la Farola, Santa Clara; Castillo de Jagua, Cienfuegos; Blue Beach, Guantanamo Naval Base (all MCZ). HISPANIOLA: Puerto Plata; Monte Cristi; Jerémie (all MCZ). JAMAICA: (Holotype of *armillatus* Adams, MCZ. 154005). VIRGIN IDS.: Guana Id., Tortola; The Baths, Virgin Gorda (both M. Dewey); St. Thomas; St. Croix; (both ANSP); St. Johns (MCZ). LESSER ANTILLES: St. Kitts; St. Vincent (both ANSP). CARIBBEAN IDS.: Playa Abau, Curaçao (ANSP). NICARAGUA: (ANSP). PANAMA: Colón (MCZ). VENEZUELA: Paria Peninsula (MCZ). BRASIL: Praia do Chega Negro, Cidade da Bahia; Praia de Itapoan, Est. Bahia (both P. E. de Oliveira).

Conus regius cardinalis Hwass, Plate 4, fig. 1

Conus cardinalis Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 632 (Indian Ocean; Santo Domingo; Martinique); *non* Röding 1798.

Conus roseus Lamarck 1810, Ann. Mus. Hist. Nat. Paris, 15, p. 37 (Seas of the Antilles); Kiener 1846, Icon. Coquilles Vivantes, 2, p. 22, pl. 9, fig. 3; *non* Fischer 1807; Sowerby 1834; Kiener 1847 (pl. 107, fig. 4).

Conus ornatus Sowerby 1833, Conch. Illust. pt. 29, fig. 22 (Locality unknown).

Conus speciosissimus Reeve 1848, Conch. Icon. 1, (Suppl.) pl. 2, fig. 274 (Curaçoa [Curaçao]).

Description. This race may possibly reach the size of *C. regius*. It agrees with the typical form in all of its general characters other than size and color. This color is generally a deep reddish-orange well diffused over the shell other than at the mid area where there is a narrow white irregular band which may even be discontinuous. Small patches of brown may also occur on this mid band. At the shoulder and again at the base there may be irregular patches of white with small brownish patches in addition. On the spire there are brown and white bars, usually axially formed with the red-orange between them. Occasional specimens are reddish-salmon throughout except for a very narrow mid band of white with the spire white and flecked with the salmon coloration.

length	width	whorls	
41.5	25 mm.	—	Kiener's figure
29	18	9	Guana Id., Tortola
25	15	8½	Bimini Ids., Bahamas

Types. Hwass listed Martini 1773, Conchy.-Cab. (1) 2, pl. 61, fig. 680, as one of his references and this is here selected as the type figure. As Hwass was not at all certain where his specimen came from, I select Tortola Id., Virgin Islands, as the type locality.

Common name. Cardinal Cone.

Remarks. I believe this to be a very rare form of *regius*. It agrees in all its essential characters with the typical form other than size and color. I have seen but few specimens, only one a "live shell," the remaining specimens a little beach worn. If it does reach the size of *regius*, an adult specimen with its intense reddish coloration would be an exceedingly beautiful shell.

Range. Possibly co-extensive with *C. regius*.

Records. FLORIDA: Tortugas (L. A. Burry). BAHAMAS: Bimini Ids. (W. A. Royce). VIRGIN IDS.: Guana Id., Tortola (M. Dewey).

Conus regius abbotti, new subspecies, Plate 4, fig. 2-3

Description. Similar in its general characters to *C. regius* except for coloration and perhaps size. In color it differs by possessing a grayish green or olivaceous green with a central mid band of white flecked usually with irregular brownish patches. Occasional specimens have axially formed, brownish zig-zag bars superimposed over the green; these sometimes invade the white band at the mid area. The spiral lines of beads which form most of the sculpture may also be dotted with reddish-brown.

length	width	whorls	
42	25.3 mm.	10	Arthurstown, Cat Id.
35	22	9½	Governors Harbor, Eleuthera, Id.

Types. Holotype, Mus. Comp. Zoöl. no. 145274, Arthurstown, Cat Island, Bahamas. Clench, Huntington and Russell collectors, July 1935. Three paratypes from the same locality and one from Governors Harbor, Eleuthera Island, Bahamas.

Common name. Abbott's Cone.

Remarks. I have been unable to find any published figure that agrees with the present new subspecies. It differs noticeably from typical *regius* by both its color and color pattern. Our few specimens were dead when collected but possessed excellent coloration. Similarly to *regius*, it occurs along rocky reefs below low water line.

Range and Records. Known only from the type series.

Named for R. Tucker Abbott, assistant and colleague.

Conus dominicanus Hwass, Plate 4, fig. 4

Conus cedonulli dominicanus Hwass 1792 [in] Bruguière, Ency. Meth. Vers, 1, p. 603 (Dominica).

Conus cedonulli surinameensis Hwass 1792 [in] Bruguière, Ency. Meth. Vers, 1, p. 603 (Surinam [Dutch Guiana]) non Gmelin 1791.

Conus cedonulli Lamarek 1810, Ann. Mus. Hist. Nat. Paris, 15, p. 31; Delessert 1841, Recueil Coquilles Déerites par Lamarek, pl. 40, fig. 3-4 (Paris) non Linné, 1758.

Description. Shell medium, probably reaching a length of 50 to 55 mm. It is strong and solid. Whorls 11 and flat sided. Color milky-white with two spiral bands of yellow-brown which are broken into many irregular patches. In addition there are numerous spiral bands of dots or beads of a darker brown which under a lens actually appear as strings of white beads outlined with brown and connected by a thread of brown. As these beadlike lines pass over the white areas, the thread appears as a whiter line than the back-

ground. On the lower half of the shell, the beads are built upon fine spiral ridges. Spire somewhat extended, moderately concave and produced at an angle of about 95° . Aperture oblique, fairly wide and moderately inset above. Sculpture of numerous threadlike ridges which occur mainly below the mid area. Shoulder of the body whorl slightly irregular and may be also somewhat nodulose. Periostracum and operculum not seen.

length	width	whorls	
46.2	23.5 mm.	11	West Indies

Types. Hwass refers to Chemnitz 1788, Conchy.-Cab. (1) 10, pl. 141, fig. 1306, which is here selected as the type figure. The island of Dominica, Lesser Antilles, is the type locality.

Common name. The Antillian Cone.

Remarks. We possess but a single specimen of this rare *Conus*, obtained originally by Governor Rawson (Bahamas). This general type of shell has long been confused with *C. cedonulli* Linné and *ammiralis* Linné (both from the Indo-Pacific).

In relationship it appears nearest to *C. regius*, mainly by its type of color pattern. It differs in being more slender, having a less concave spire and lacking the strong nodules which characterize *regius*.

Range and Records. Possibly occurring throughout the West Indies.

Conus citrinus Gmelin, Plate 4, fig. 5-6

Conus citrinus Gmelin 1791, Sys. Nat. ed. 13, 1, pt. 6, p. 3389 (Curacas [Caracas, Venezuela]) *non* Kiener 1849.

Conus mus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 630, (Guadeloupe).

Conus barbadensis Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 632 (Barbados, Guadeloupe and Santo Domingo).

Conus magellanicus Hwass 1792 [in] Bruguière, Ency. Meth. Vers, 1, p. 633. [Hwass changed the type locality given by Favanne as Martinique to the Straits of Magellan, which is certainly in error.]

Conus jamaicensis Hwass 1792 [in] Bruguière, Ency. Meth. Vers, 1, p. 700 (Jamaica).

Conus lubeckianus Bernardi 1861, Jour. de Conch. 9, p. 169, pl. 6, fig. 7-8 (Guadeloupe).

Conus minutus Reeve 1864, Conch. Icon. 1, pl. 47, fig. 259 (St. Vincent) *non* Röding 1798; Schröter 1803. [This is a very young specimen of *C. citrinus*.]

Description. Shell 30 to 35 mm. in length, rather solid but not heavy and covered with a moderately thick periostracum. Whorls 8 to 10, slightly convex above the middle and slightly concave below, each side forming a very flattened sigmoid outline. Color a pale gray to grayish-blue with two mottled brownish bands, a broad one above the mid-region and a narrower one below. Both of these bands are visible from within the aperture. Spire obtuse, short and flat sided to slightly concave, forming an angle of about 110° . In young shells, the spire is more concave and the nuclear whorls extend above the others disproportionately. The nuclear whorls are glass-like and smooth. Aperture oblique, long and narrow and deeply notched above. Outer lip simple, fairly thick and finely crenulated along its inner margin. Sculpture of numerous fine, spiral threads over the entire body whorl surface, coarser near the base. Shoulder of the whorl nodulose, which also characterizes each whorl of the spire. In addition, there are fine spiral threads on the whorls of the spire. Periostracum on "live" shells rather thick and sculptured with numerous ridges or threads. It is thick enough to conceal the coloration of the shell proper. In appearance, the periostracum is silken with very fine axial striations. Under a 14 power lens, this appears like netting that has been pulled very tightly parallel to the shell axis.



Plate 4. Fig. 1. *C. r. cardinalis* Hwass, Guana Id., Tortola (3×). Fig. 2. *C. r. abbotti* Clench, Arthurs-town, Cat Id., Bahamas (Holotype, nat. size). Fig. 3. *C. r. abbotti* Clench, Governors Harbor, Eleuthera, Bahamas (Paratype, nat. size). Fig. 4. *C. dominicanus* Hwass, West Indies (nat. size). Fig. 5. *C. citrinus* Gmelin, Hillsborough Inlet, Florida (nat. size). Fig. 6. *C. citrinus* Gmelin, Hillsborough Inlet, Florida (with covering of periostracum, nat. size).

	length	width	whorls	
(large)	41.5	25 mm.	10	Boynton, Florida
(average)	30	16.5	9	Puerto Sosua, Santo Domingo
(small)	21	12	8	Cienfuegos, Cuba

Types. Gmelin referred to Martini 1773, Conchy.-Cab. (1) 2, pl. 61, fig. 681, which is here designated as the type figure. Caracas, Venezuela is the type locality as given by Gmelin.

Common name. The Mouse Cone.

Remarks. A rather widespread and abundant species. It is found under and on rocks near low water line and in the West Indian region.

The soft parts are dull red. Among the Western Atlantic species, it appears to be nearest to *C. regius*, but it is much smaller, has a much heavier periostracum, a more sinuous outline and the spiral threads are not beaded. The color pattern also differs as can best be exhibited by the plates of these two forms.

Range. Bermuda and southern Florida, and from Vera Cruz, Mexico south to Trinidad.

Records. FLORIDA: Pelican Shoals; Sand Key; (both J. Schwengel); Tortugas; Lake Worth (both ANSP); Palm Beach (J. Schwengel); Hillsborough Inlet (L. A. Burry); Boynton Beach (T. McGinty); Soldiers Key (MCZ). BERMUDA: Warwick. BAHAMAS: Nassau, New Providence (ANSP); West End, Grand Bahama; Sweeting's Village, Gt. Abaco; Alicetown, Bimini Ids.; Governors Harbor, Eleuthera; Cape Santa Maria, Long Id.; Watlings Id.; Fortune Id.; Matthewtown, Gt. Inagua (all MCZ). CUBA: Casilda; Havana; Mota, Oriente Prov. (both ANSP); Gavilan, Cienfuegos; Cable Beach, Guantanamo Naval Base; Cayo la Farola, Santa Clara Prov.; Caibarien (all MCZ). HISPANIOLA: Yuma (ANSP); Puerto Sosua; Puerto Plata; Monte Cristi; Santa Barbara de Samana; Cape Haitien; Miragoâne; Jérémie; Gonaive Id. (all MCZ). JAMAICA: Port Antonio; Montego Bay (both MCZ). VIRGIN ISLANDS: St. Thomas (ANSP); Guana Id., Tortola (M. Dewey); Virgin Gorda (MCZ). LESSER ANTILLES: St. Vincent (ANSP); Antigua;

Barbados; Tobago; Toco, Trinidad (all MCZ). CARIBBEAN IDS.: Oak Ridge, Roatan Id.; Swan Id. (both MCZ). MEXICO: Vera Cruz (MCZ); Isla Mujeres (C.G. Aguayo). BRITISH HONDURAS: Belize (MCZ). PANAMA: Colón (MCZ). COLOMBIA: Cartagena (MCZ). BRITISH GUIANA: Corentyne River (H. G. Kugler).

Conus stearnsii Conrad, Plate 5, fig. 1-4

Conus stearnsii Conrad 1869, Amer. Jour. Conch. 5, p. 104, pl. 10, fig. 1 (Pine Key, west coast of Florida).

Description. Shell small, seldom exceeding 20 mm. in length, rather thin but strong. Whorls 10 to 11 and nearly flat sided. Color a dirty white overlaid by irregular areas of light to dark brown blotches. Under a lens there appears a series of small, spirally lengthened white dots with a smaller brownish dot at both ends or either end of the white dots. These are most distinct above the middle. The color varies considerably in specimens contained in a single series. Spire acute, extended and produced at an angle of about 70° . The spire is carinated on each whorl and the last forms a small but pronounced shoulder on the body whorl. The carinae have brownish dots more or less evenly disposed up to the nuclear whorls above. The nuclear whorls are not papilliform but continue the contour of the spire. The spire is flat sided to moderately concave. Aperture oblique, rather narrow and deeply inset above. The outer lip is finely crenulated below the mid-area: these crenulations are the termini of the incised lines. Sculpture of 10 to 13 fine, incised lines that are found only on the lower half of the body whorl. Under a lens an occasional specimen exhibits a continuation of these lines to the top of the body whorl but they are usually only faintly discernible. Spire dull, very finely and axially striate. On the spire, the periostriacum forms fine, bladelike and crescent-shaped ridges between the whorls. Operculum unknown.

	length	width	whorls	
(large)	21	9 mm.	11	Gulfport, Florida
(average)	18	8	10	Holotype

Types. Holotype, Acad. Nat. Sci. Phila. no. 34158. Type locality, Pine Key, west coast of Florida. This is in the Tampa Bay area. R. E. C. Stearns collector.

Common name. Stearns' Cone.

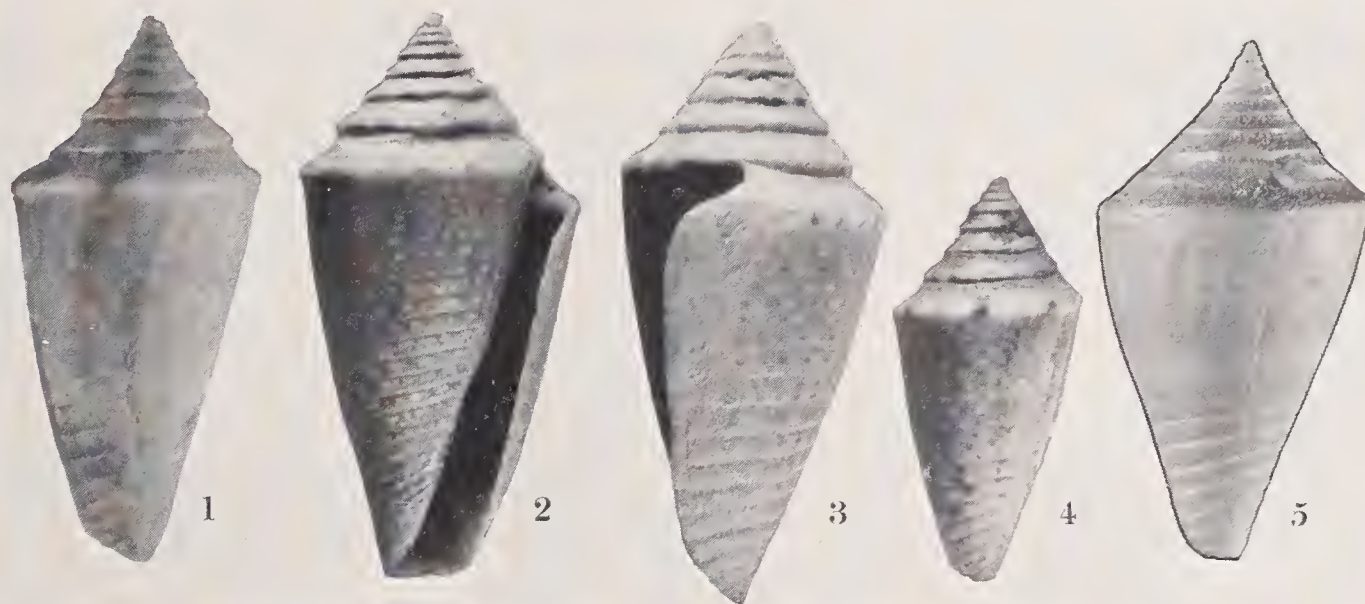


Plate 5. Fig. 1. *C. stearnsii* Conrad, Pine Key, West Florida (Holotype, $3\times$). Fig. 2 and 3. *C. stearnsii* Conrad, Punta Gorda, Florida ($3\times$). Fig. 4. *C. stearnsii* Conrad, Gulfport, Florida ($3\times$). Fig. 5. *C. stimpsoni* Dall, off Palm Beach, Florida ($2\times$).

Remarks. Both Tryon (1884, p. 36) and Dall (1889, p. 68) have considered this species of Conrad to be a synonym of *C. pealii* Green (= *jaspideus* Gmelin). In my opinion both are decidedly wrong. As far as our present knowledge indicates, the present species is limited to the east and west coast of Florida, the Atlantic coast of Mexico and perhaps south along the Central American coast. It exists from low water to depths of about 20 fathoms.

It differs from *C. jaspideus* in several respects. It has proportionally a higher spire, a more slender shape, a darker and more suffused coloration and usually has the five incised lines only on the lower half of the shell.

Range. East and West Florida and the Atlantic Coast of Mexico.

Records. FLORIDA: Marco (A. Koto); Bonita Springs (L. A. Burry); Tarpon Bay, Sanibel Id. (J. Schwengel; MCZ); off Sanibel Id. in 4 to 6 fathoms (J. Schwengel); Punta Gorda (A. Koto); Key West (MCZ); Gasparilla Id.; Osprey; Bradenton; Tarpon Springs; Clearwater (all ANSP); Sarasota Bay in 3 fathoms (W. A. Royce); Englewood (A. Koto); Cortez; Venice Bay (both B. R. Bales); Pine Key, Tampa Bay; Gulfport, Lemon Bay; Cedar Keys (all MCZ); off Destin in 14 fathoms (T. McGinty); 15 to 35 miles off Ft. Walton in 13 to 19 fathoms (L. A. Burry); Jupiter Inlet (ANSP); Biscayne Bay (T. McGinty). MEXICO: Progreso and Silam, Yucatan (both ANSP).

Conus jaspideus Gmelin, Plate 6, fig. 1-4

Conus jaspideus Gmelin 1791, Syst. Nat. ed 13, p. 3387 (Locality unknown).

Conus pusio Hwass 1792 [in] Ency. Meth. Vers, 1, p. 710 (Santo Domingo; Martinique and Guadeloupe).

Conus pealii Green 1830, Trans. Albany Inst. 1, p. 123, pl. 3, fig. 3 (Key Vache [Vaca] Florida).

Conus duwali Bernardi 1862, Jour. de Conch. 10, p. 404, pl. 13, fig. 3 (Guadeloupe).

Conus acutimarginatus Sowerby 1866, Thesaurus Conchyliorum 3, p. 328, pl. 288, fig. 640-641 (Locality unknown).

Conus beddomei Sowerby 1901, Jour. of Malac. 8, p. 101, pl. 9, fig. 1 (West Indies).

Conus bonbeae Sowerby 1903, Jour. of Malac. 10, p. 76, pl. 5, fig. 5, (Locality unknown).



Plate 6. *C. jaspideus* Gmelin

Fig. 1. Off Sanibel Id., Florida (3×). Fig. 2 and 3. Little Duck Key, Florida (3×). Fig. 4. Caibarien, Cuba (3×).

Description. Shell small, hardly reaching 25 mm. in length. Whorls 9 to 10, moderately convex above and slightly concave below, producing a flattened sigmoid outline. Color of irregular patches of brownish-red, usually grouped sufficiently to indicate an arrangement into two spiral bands. Occasionally the brownish-red is considerably diffused which obscures the band formation. Under a lens there are usually present very small and somewhat lengthened dots of brown which are usually spaced by small white areas. The basic color of the shell is milky white. The spire usually has a series of brownish-red spots that follow along each whorl. The spire is concave, acute and finely carinated, the carinae being the acutely shouldered margin of each whorl. The spire is produced at an angle of about 80° . Aperture oblique and a little wider near the base. It is deeply inset above at the notch. The aperture, deeply within, is colored a dull brownish or brownish-purple. The outer lip is thin and convexly though flatly arched in profile except for the deeply inset notch. Sculpture consisting of a series of rather regularly spaced incised spiral lines or grooves which may or may not extend from the base to the shoulders of the body whorl. The ridges between are generally quite flat. Periostracum thin, axially striated and usually persisting as very fine axially striated threads in the depressions of the incised lines or grooves. On the spire the periostracum is coarser and in strongly though finely formed concave ridges. Occasionally there are exceedingly fine spiral striae on the spire, visible only under fairly strong magnification.

	length	width	whorls	
(large)	22.5	12.2 mm.	11	Little Duck Key, Florida
(average)	19.5	10.5	10	Cape Romano, Florida

Types. Both Gmelin and Hwass refer to the same figure in Martini (Conchy.-Cab. (1) 2, pl. 55, fig. 612), which we here select as the type figure. The figure is almost valueless, but the description by Hwass leaves little to be desired. We here restrict the type locality to Puerto Plata, Santo Domingo, one of the three islands originally given by Hwass.

Common name. The Jasper Cone.

Remarks. A widely distributed and somewhat abundant cone occurring mainly in the West Indian region. It extends up the west coast of Florida at least as far as Santa Rosa Island. *Conus pealii* Green is unquestionably this species. Green's figure was based upon a small and half grown specimen. His description, however, adequately describes *jaspideus*. It is related to both *stearnsii* Conr. and to *verrucosus* Hwass, particularly to the latter. See remarks under both of these species.

Range. Florida, the West Indies and from Mexico south to Venezuela.

Records. FLORIDA: Jupiter Inlet (ANSP); off Palm Beach in 18 to 20 fathoms (T. McGinty; ANSP); off Miami Beach in $8\frac{1}{2}$ fathoms (J. Schwengel); Biscayne Bay (T. Bayer); Tavernier, Key Largo (MCZ); Lower Matecumbe Key (T. McGinty); Grassy Key and Bonefish Keys (B. R. Bales); Little Duck Key (B. R. Bales; T. Bayer; A. Koto); Big Pine Key (ANSP); Bahia Honda and Missouri Keys (T. McGinty); Sombrero Key (MCZ); Key West in 5 fathoms (MCZ); off American Shoals in $3\frac{1}{2}$ fathoms (J. Schwengel); 20 miles off Marco (J. Schwengel); Bonita Springs (ex Mrs. G. R. Fearing); 4 to 6 fathoms off Sanibel Id. (MCZ; J. Schwengel); Gasparilla Id. (ANSP); 15 miles off Sarasota in 6 fathoms (W. A. Royce); 15-35 mi. off Ft. Walton in 13 to 19 fathoms (L. A. Burry). BAHAMAS: West End, Grand Bahama; Whale Cay Channel, Gt. Abaco; James Cistern, Eleuthera; Arthurstown, Cat Id.; Little San Salvador Id.; Simms, Long Id.; Matthewtown, Gt. Inagua (all MCZ). CUBA: La Chorrera, Havana; Bahia

Guadiana (both MCZ); Caibarien (P.J. Bermúdez). HISPANIOLA: Puerto Plata (MCZ). VIRGIN IDS: St. John; St. Croix (ANSP); Virgin Gorda; Guana Id., Tortola (both M. Dewey). LESSER ANTILLES: St. John's Harbor, Antigua (ANSP). CARIBBEAN IDS.: (St. Andrew). MEXICO: off Isla Mujeres, Yucatan in 12 fathoms (C. G. Aguayo). GUATEMALA: Livingston (ANSP). VENEZUELA: Maiquetia (ANSP).

Conus jaspideus pygmaeus Reeve, Plate 7, fig. 1-2

Conus pygmaeus Reeve 1844, Conch. Icon. 1, pl. 47, fig. 260 (Locality unknown); Proc. Zool. Soc. London 1844, p. 179.

Description. Shell somewhat similar to typical *jaspideus* but differs by being proportionately wider at the shoulder, possessing somewhat more convex whorls and having the spire a little more concave. In addition, the color pattern differs somewhat by having the brownish patches formed generally in long axially arranged zig-zag bars.

	length	width	whorls	
(large)	27	15.2 mm.	11½	Couva Bank, Trinidad
(average)	20	10.2	10	Colón, Panama

Types. The holotype is in the Stainforth collection; its present location is unknown to me. As Reeve gave no type locality we here select Colón, Panama, a place where the species is known to occur.

Common name. The Pigmy Cone.

Remarks. This is a well marked subspecies of *jaspideus*, and limited, as far as our few records would indicate, to the lower Caribbean area. The axial color bars vary in width somewhat and are not always continuous. Interrupted spiral lines are generally present.

Range. Panama to Trinidad.



Plate 7. Fig. 1. *C. j. pygmaeus* Reeve, Couva Bank, Trinidad (3×). Fig. 2. *C. j. pygmaeus* Reeve, Colón, Panama (3×). Fig. 3 and 4. *C. largillierli* Kiener, Colón, Panama (nat. size). Fig. 5. *C. largillierli* Kiener, Cartagena, Colombia.

Records. PANAMA: Colón (MCZ). LESSER ANTILLES: 3 fathoms of Point-à-Pierre; Couva Bank, Gulf of Paria, Trinidad (both H. G. Kugler). COLOMBIA: Cartagena; Santa Marta (both MCZ).

Conus verrucosus Hwass, Plate 8, fig. 1-4

Conus verrucosus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 708 (Africa).

? *Conus puncticulatus* Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 702 (Santo Domingo, Guadeloupe and Martinique).

Conus nodiferus Kiener 1849, Icon. Coquilles Vivantes 2, p. 228, pl. 100, fig. 4 (Seas of the Indies).

Conus echinulatus Kiener 1849, Icon. Coquilles Vivantes 2, p. 270, pl. 105, fig. 2 (Locality unknown).

Conus papillosus Kiener 1849, Icon. Coquilles Vivantes 2, p. 271, pl. 72, fig. 4 (Locality unknown); *non* Tate 1890.

Conus sticticus A. Adams 1854, Proc. Zool. Soc. London for 1853, p. 117 (Locality unknown). [According to Tomlin this is a smooth form of *verrucosus*. It could be as well the same for *jaspideus*. The type is in the British Museum and has never been figured.]

Conus anaglypticus Crosse 1865, Jour. de Conch. 13, p. 314, pl. 11, fig. 8-8a (Antilles); Sowerby 1866 (as *anaglyptus*).

Description. Shell small to medium in size, usually not more than 25 mm. in length. It is solid and strong. Whorls 10 to 11 which are nearly flat sided. Most specimens show a slight concavity near the base. Others are faintly and flatly sigmoid. Nuclear whorls (2) slightly papillose. Color of shell generally a suffused pinkish-brown with darker brown and irregular blotches somewhat axially arranged as an overlay. The color, however, is quite variable and many specimens have a material reduction in the size and position of the darker color blotches. Periostracum thin, silken and minutely axially striated. On the spire the periostracum forms crescent shaped blades somewhat more widely spaced than is usual. Spire somewhat elevated, slightly concave and acute, produced at an angle of about 70°. Aperture oblique, somewhat wider at the base and deeply inset above. In profile, the outer lip is strongly convex with a deep recurve at the notch above. The outer lip is thin and finely crenulated. Sculpture of many spiral, incised lines producing some-



Plate 8. *Conus verrucosus* Hwass

Fig. 1, 2 and 4. Puerto Plata, Hispaniola (3×). Fig. 3. Tobago Id. (with covering of periostracum, 3×).

what rounded ridges between them. On each ridge there is a series of pustules or small rounded knobs that are quite regularly disposed. The spire is minutely nodulose as well as carinated, the pustules or nodules appearing on the carina. In the depressed incised lines on the body whorl there are very many fine axial threads which are strongest near the lines on the base of the shell and can be seen best under a 14 power lens.

	length	width	whorls	
(large)	24	12 mm.	11	Puerto Plata, Santo Domingo
(average)	19	10.2	10	Hillsborough Reef, Florida

Types. We here select pl. 55, fig. 612c in Martini, Conchy.-Cab., (1) 2, 1773, as the type figure which was referred to by Hwass. We also select Puerto Plata, Santo Domingo as the type locality.

Common name. The Warty Cone.

Remarks. An exceedingly attractive cone that does not appear to be at all common. It occurs at low water and out to a few fathoms, generally living in protected areas under stones and coral blocks. Young specimens may be without the small pustulations. It is apparently closely related to *C. jaspideus* Gmelin but can be differentiated easily from that species by the usually strong pustulations which are spirally disposed along the areas between the incised spiral lines.

Range. Southern Florida, Bahama Islands and south through the West Indies. It very probably occurs on the coast of both Central and northern South America but our meager records from this area are limited to Panama.

Records. FLORIDA: off Palm Beach in 8 to 10 fathoms (J. Schwengel; ANSP) and 50 fathoms (T. McGinty); Hillsborough Inlet (T. Bayer; L. A. Burry; A. H. Patterson); Tortugas (L. A. Burry). BAHAMAS: Sweetings Village, Gt. Abaco; Stranger Cay, Little Abaco; West End, Grand Bahama; Mangrove Cay, Andros; Savannah Sound, Eleuthera; Arthurstown, Cat. Id.; Little San Salvador Id.; Clarencetown, Long Id.; Cat Cay, Bimini Ids.; Matthewtown, Gt. Inagua (all MCZ); Nassau, New Providence (A. H. Patterson). CUBA: Cayo Frances, Caibarien (P. J. Bermudez). HISPANIOLA: Puerto Plata; Monte Cristi; Puerto Sosua (all MCZ). VIRGIN IDS.: Guana Id., Tortola (M. Dewey); St. Thomas (ANSP). LESSER ANTILLES: St. Martin (ANSP); Tobago; Trinidad (both MCZ). PANAMA: Ft. Sherman (MCZ); Colón (ANSP).

Conus verrucosus piraticus, new subspecies, Plate 11, fig. 1

Description. Shell similar in general outline to *verrucosus* but differs in having the pustules smaller, being white to yellow-mottled, possessing papilliform nuclear whorls and having spiral threads on the whorls of the spire. The pustules are formed on a raised thread rather than on a ridge between incised lines as is generally found in *verrucosus*.

length	width	whorls	
19	10 mm.	10	Holotype
12.8	7.2	8	Paratype

Types. Holotype in the McGinty collection (Boynton Beach, Florida) dredged off Singer's Hotel, Palm Beach, Florida in 33 fathoms, T. McGinty collector. Paratypes in the collection of A. H. Patterson and the MCZ, from a wreck, off Carysfort Reef, Florida, in 10 fathoms, A. H. Patterson collector, April 1941.

Common name. The Pirate Cone.

Remarks. I have provisionally considered this as a subspecies of *verrucosus*. More material may indicate this to be a full species and possibly related to *flavescens* rather than to *verrucosus*.

Parallels in sculpture are more than abundant in mollusks and this character considered alone indicates a relationship which is probably only superficial. The significant differences appear to be papilliform nuclear whorls and the presence of spiral threads on the whorls of the spire, characters not present on any specimen of *verrucosus* that I have examined. Also the present form appears to have a very small notch and as a consequence the growth lines on the spire are nearly parallel with the axis rather than strongly concave as on species where the notch and subsequent growth lines are concave.

Range and Records. Known only from three specimens, the localities of which are cited above under *Types*.

Conus stimpsoni Dall, Plate 5, fig. 5

Conus stimpsoni Dall 1902, Proc. United States Nat. Mus. 24, p. 503, pl. 29, fig. 7 (off Key West, Florida in 60 fathoms).

Description. Shell medium in size, probably reaching 40 mm. in length. It is light in structure but strong. Color yellowish-salmon, the color in three rather faint spiral bands, one at the base, a mid band and one at the top of the body whorl. The two narrow areas between the bands, a pale yellow or white. Entire spire yellowish-salmon. Whorls 12 to 12½, the body whorl weakly sigmoid in outline. Spire moderately elevated and slightly concave, forming an angle of about 87°.¹ Early whorls below nuclear whorls (2) smooth or finely beaded along a small but well pronounced carina. Sculpture consisting of rather deeply incised spiral lines. On the main part of the body whorl the incised lines may disappear and fine spiral threads occur. There are several rather indistinct low ridges, axially arranged, that appear stronger on the mid area of the body whorl. The spire has a few exceedingly fine spiral threads on the top of each whorl. Periostracum yellowish, fine and silken and minutely striated axially. On the spire the periostracum is coarser, formed in concave axial ridges which, in addition, may form two rows of suberect "hairs." These hair-like processes are small and follow one another on each ridge appearing in spiral formation. Operculum exceedingly small, being 3 mm. long or one-seventh the length of the aperture in one specimen examined.

length	width	whorls	
37	19 mm.	12²	Holotype
38	21.5	12	off Delray, Fla.
26.5	13.5	12½	off Palm Beach, Fla.

Types. Holotype, United States Nat. Mus. no. 107371, off Key West, Florida in 60 fathoms. Collected by the *Albatross*.

Common name. Stimpson's Cone.

¹The angle of the spire is apt to change materially as an individual increases in size. This is due to a change in the curvature, i.e., the curve of the spire may increase or decrease as the shell matures depending upon the species. In this way young specimens may possess a very acute spire while upon maturity the spire may actually become obtuse. The angle is obtained from the shoulder of the whorl to the summit and down to the shoulder again.

²Probably a loss of one or more whorls.

Remarks. The few specimens I have been fortunate enough to examine agree in all essential details with Dall's description. The only differences that I note are the presence of the faint axial ridges on some specimens and the occasional change of the incised lines to threads above the base. The periostracal outgrowths that form the little "hairs" on the spire are a little different in structure from anything that I have seen in the Western Atlantic species. The great rarity of this form is probably due to its occurring on or along rocky reefs in fairly deep water.

Range. Lower Florida between Palm Beach and Key West.

Records. FLORIDA: Off Key West in 60 fathoms (W. H. Dall, 1902); off Delray in 80 fathoms (F. B. Lyman, ex T. Van Hyning); off Palm Beach in 60 fathoms (T. L. McGinty); Tortugas in 4 to 5 fathoms (L. A. Burry).

Conus largillierti Kiener, Plate 7, fig. 3-5

Conus largillierti Kiener 1848, Icon. Coquilles Vivantes 2, p. 212, pl. 98, fig. 3 and pl. 101, fig. 1-1a (Mexico).

Conus japonicus Sowerby 1858, Thesaurus Conchyliorum, 3, p. 14, pl. 202, fig. 376; *non* Hwass 1792.

Conus largillardii Weinkauff 1874 [err. typ.] Conchy.-Cab. (2) 4, pt. 2, p. 266, pl. 44, fig. 9. (Mexico, Atlantic side).

Description. Shell medium in size, probably reaching 40 mm. in length. It is fairly thin but strong. Whorls 11 to 12, nearly flat-sided to slightly sigmoid. Color consisting of a series of spiral dots of brownish-orange, not always uniform, but with occasional groups of spots that have coalesced. Occasionally several of these spots merge to form long axial bars of color. Spire generally strongly concave. The spire is produced at an angle of about 100°. Aperture oblique, narrow and moderately inset above. Sculpture consisting of numerous spiral threads which are more strongly developed towards the base. Periostracum and operculum unknown.

	length	width	whorls	
(large)	39.8	19 mm.	12	Colón, Panama
(average)	33.2	16.2	11½	Colón, Panama

Types. The exact location of the type specimen is unknown. Though Kiener gave "Mexico" as the type locality, I suspect that the original specimen was probably collected on the lower Central American coast, perhaps in Panama.

Common name. Largilliert's Cone.

Remarks. This species is superficially similar to young specimens of *C. spurius atlanticus*. It differs, however, in many of its basic characters such as its much smaller size, its more slender outline, its more extended and pointed apex and its color pattern. In addition, it possesses the sculpture of spiral threads which usually are found over all of the body whorl. In general appearance it is also close to *C. floridanus floridensis* Sby. which it approximates in size and somewhat in color pattern. It differs from that species by possessing rather strong spiral ridges, a character almost lacking in *floridensis* other than at the base of the shell. It seems to me, on the basis of all of its characters, to be nearest to the next species. It is rare and, as far as is now known, limited to the southern Caribbean.

Range. Panama and Colombia.

Records. PANAMA: Colón (ANSP). COLOMBIA: Cartagena (MCZ).

Conus mazei Deshayes, Plate 9, fig. 1-2

Conus mazei Deshayes 1874, Jour. de Conch. **22**, p. 64, pl. 1, fig. 1 (Martinique); W. H. Dall 1889, Bull. Mus. Comp. Zoöl. **18**, p. 67.

Description. Shell about 60 mm. in length, exceedingly narrow and rather thin. Whorls 11 to 12, nearly flat-sided, the nuclear whorls smooth, the remainder sculptured. Color consisting of a series of small dots or squares arranged in 8 to 10 spiral rows. Occasionally the spots are enlarged and become diffused and mottled. Spire extended, smoothly and moderately concave with a series of nodules at the base of each whorl. Body whorl long, shouldered and strongly nodulose at the shoulder margin. Aperture oblique, long and narrow and rather deeply inset at its upper margin. Sculpture of numerous flattened ribs, separated by shallow grooves which are cut at right angles (axially) by deeper grooves. The shouldered portion of each whorl has 4 to 6 raised spiral threads which continue on the shoulder of each whorl to the nuclear whorls. Operculum and periostracum unknown; the latter, however is probably thin.

length	width	whorls	
59	16 mm.	12	Holotype
48	14	11	off Cayo Coco, Cuba
54.5	15	12	off Matanzas, Cuba

Types. I have no information as to the present location of the holotype. The type locality is the island of Martinique.

Common name. Maze's Cone.

Remarks. Little can be added to the history of this rather remarkable species. It has been dredged in 92 to 240 fathoms, the deeper records all from the north coast of Cuba. According to Dall (reference above) the present species is closely allied to *C. orbigny* Audouin, a species believed to occur in China.

Range. Known from Cuba, the Virgin Islands and the Lesser Antilles, but will probably be found in many areas of the West Indian region in deep water.

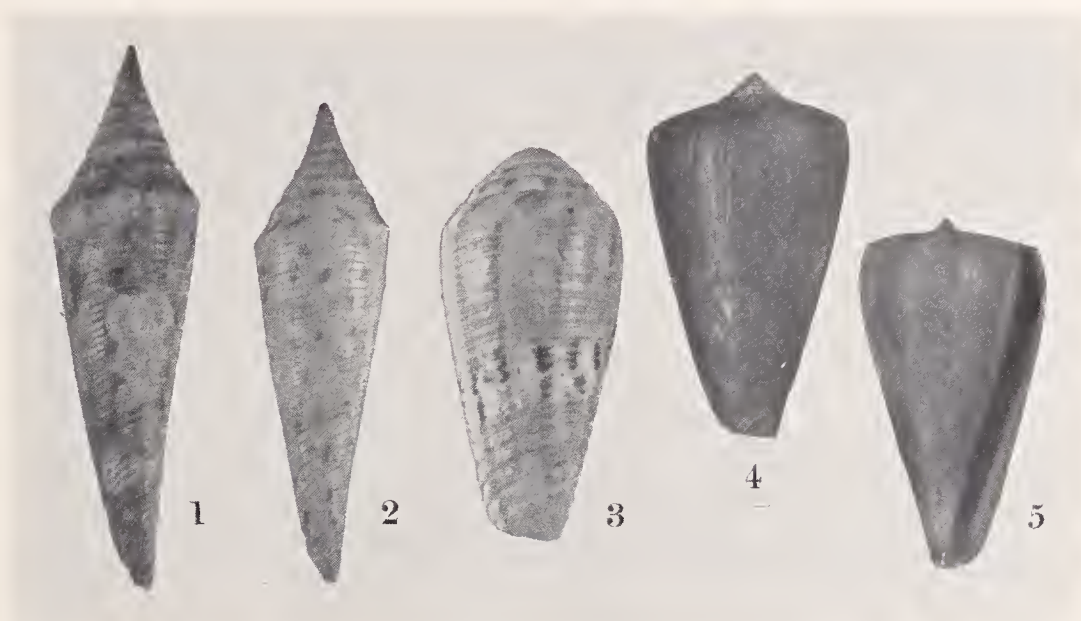


Plate 9. Fig. 1. *C. mazei* Deshayes, off Matanzas, Cuba (nat. size). Fig. 2. *C. mazei* Deshayes, off Cayo Coco, Cuba (nat. size). Fig. 3. *C. granulatus* Linné, Watlings Id., Bahamas (nat. size). Fig. 4. *C. daucus* Hwass, Nassau, Bahamas (nat. size). Fig. 5. *C. daucus* Hwass, off Palm Beach, Florida (nat. size).

Records. CUBA: The following Cuban records were all obtained by the *Atlantis*: Station 3460 (N. Lat. $23^{\circ} 05'$; W. Long. $81^{\circ} 31'$) off Matanzas in 240 fathoms, May 1939; Station 3415 (N. Lat. $22^{\circ} 51' 30''$; W. Long. $78^{\circ} 55' 30''$) off Punta Alegre, Santa Clara Prov. in 225 fathoms, March 1938; Station 3391 (N. Lat. $22^{\circ} 34'$; W. Long. $78^{\circ} 14'$) off Cayo Coco, Camaguey Prov. in 220 fathoms, April 1939. VIRGIN ISLANDS: *Blake* Station 132, off St. Croix in 115 fathoms. LESSER ANTILLES: Martinique (Deshayes): *Blake* (no station number) off Barbados in 100 fathoms; *Blake* Station 262, off Grenada in 92 fathoms.

Conus granulatus Linné, Plate 9, fig. 3

Conus granulatus Linné 1758, Sys. Nat. ed. 10, p. 716 (O. Africano); Gmelin 1791, Sys. Nat. ed. 13, 1, pt. 6, p. 3391; *non granulatus* Röding 1798; Borson 1830; Sowerby 1834.

Conus verulosus Hwass 1792, [in] Bruguière, Eney. Meth. Vers, 1, p. 719 (Seas of America).

Description. Shell medium in size, probably reaching 50 mm. in length. Whorls 8 to 10 and faintly sigmoid in outline. Color white with two rather broad irregular pinkish bands separated by a narrow white band in the mid area. Irregular brownish blotches margin the white area and occur elsewhere as spots, particularly near the base of the shell. Irregular brownish spots more or less regularly disposed on each whorl. Spire obtuse with each whorl strongly convex. Aperture oblique and not deeply inset above. Sculpture of numerous and rather deeply incised grooves, the areas between them as flattened ridges. Whorls on the spire with 3 or 4 spiral threads. Periostracum and operculum unknown.

length	width	whorls	
39	18.5 mm.	6 (remaining)	Watlings Id., Bahamas
31	15	8	West Indies

Types. Among the several references cited by Linné, we here select that of Gaultieri 1742, pl. 25, fig. H, for the type figure. Gmelin refers in addition to Martini 1773, Conchy.-Cab. (1), 2, pl. 52, fig. 575, which, though not so good a figure as that by Gaultieri, does certainly represent the species. Martini properly assigned it to the American Indies. The only localized West Indian specimens that we have seen came from Watlings Island, Bahama Islands and Jamaica. We here select this latter island for the type locality as it is near the center of its range.

Common name. The Granulated Cone.

Remarks. This is a very remarkable species and quite different from any other species occurring in the Western Atlantic. Nothing is known about its life history. I have seen but three specimens and upon these the above description was based. It probably occurs in water of some depth, possibly 10 or more fathoms and only a very occasional example is washed up above the tide line. It has been stated that this species has a granulated surface which originally gave Linné the suggestion for the name. The four specimens I have examined possess only the strong spiral sculpture.

Range and Records. Probably occurring throughout the West Indies, from the Bahamas and south to the coast of South America. Weinkauff (Conchy.-Cab. (2) 4, pt. 2) states that it occurs at Antigua (Lesser Antilles) Surinam and Brasil. We have an additional record from 2 miles off Fort Lauderdale, Florida, in 35 fathoms. This is a small, dead shell. It was dredged by W. A. Burry during August 1939. A single specimen.

Conus spurius Gmelin, Plate 10, fig. 4-5

Conus spurius Gmelin 1791, Sys. Nat. ed. 13, p. 3396 (Locality unknown).

Conus proteus var. B. Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 682 (Santo Domingo and Guadeloupe).

Conus leoninus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 683 (Mexico to Brasil); *non leoninus* Gmelin 1791.

Cucullus feruginens Röding 1798, Museum Boltenianum p. 41.

Cucullus syriacus Röding 1798, Museum Boltenianum p. 41.

Cucullus quadratus Röding 1798, Museum Boltenianum p. 41.

Conus ochraceus Lamarek 1810, Ann. Mus. Nat. Hist. Paris, 15, p. 275 (Locality unknown); Sowerby 1866, Thesaurus Conchyliorum 3, pl. 204, fig. 432 (West Indies). [If correctly portraying Lamarek's species which was unfigured, Sowerby's illustration shows a specimen of *spurius* in which the spiral lines of spots have coalesced to form two solid spiral bands.]

Conus characteristicus Dillwyn 1817, Desc. Catal. Recent Shells 1, p. 367 (St. Bartholomew).

Description. Shell 40 to 60 mm. in length, solid and ornamented with many spiral rows of orange or chocolate-brown spots or irregular squares. These spots usually coalesce in part, both above and below the mid area, to form two irregular and somewhat obscure spiral bands. Spire moderately elevated and strongly concave. Aperture oblique and relatively narrow. Outer lip thin. Sculpture of fine growth lines and crossed occasionally by very fine threads. Periostracum a dull straw yellow, thin with the color pattern showing through. Operculum long and narrow and crossed with fine, sinuous growth lines.

	length	width	whorls	
(large)	53.3	32 mm.	11	Tortola, Virgin Ids.
(average)	42.5	25	10½	Gt. Inagua, Bahamas

Types. The type figure of *spurius*, here selected, is that of Gaultieri 1742, Index Testarum Conchyliorum, pl. 21, fig. D. Reference to this plate and figure is given by both Gmelin for *spurius* and by Hwass for *leoninus*.

Common name. Chinese Alphabet (West Indian form).

Remarks. (See also under *C. spurius atlanticus*). It is exceedingly unfortunate that the well known name of *proteus* Hwass, long used for this species, must be changed to *spurius*

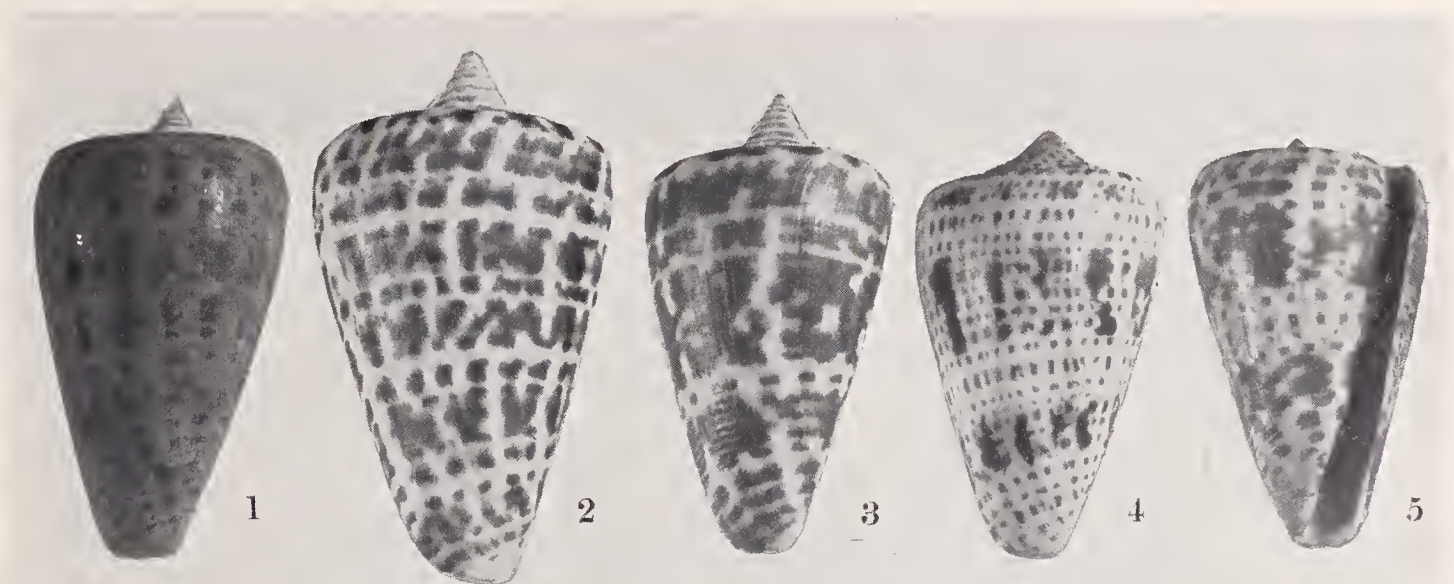


Plate 10. (All natural size). Fig. 1. *C. s. atlanticus* Clench, Bonita Springs, Florida. Fig. 2. *C. s. atlanticus* Clench, Marco Id., Florida. Fig. 3. *C. s. atlanticus* Clench, Ragged Keys, Biscayne Bay, Florida. Fig. 4. *C. spurius* Gmelin, Monte Cristi, Hispaniola. Fig. 5. *C. spurius* Gmelin, Matthewtown, Gt. Inagua, Bahamas.

Gmelin, which has one year priority. This refers to the variety "B" of Hwass. His variety "A" under *proteus* is credited to the "Asiatic Ocean" and he cites Rumphius (Thesaurus Piscium Testaceorum, 1739, pl. 34, fig. M) for his figure of variety "A," which was apparently based on an East Indian species of *Conus*. As a consequence, the name *proteus* Hwass, if eventually retained, will refer to an Indo-Pacific species.

Conus spurius appears to be quite rare in the West Indies to judge by the few specimens available for study. So far as our records would indicate, it is limited entirely to the islands of the West Indies and does not reach the continental coast line.

Range. Bahamas and south through the Greater Antilles.

Records. BAHAMAS: Marsh Harbor, Gt. Abaco; Matthewtown, Gt. Inagua. HISPANIOLA: Santa Barbara de Samana; Monte Cristi; Puerto Plata. VIRGIN IDS. Tortola; St. Johns; St. Thomas. (all MCZ).

***Conus spurius atlanticus*, new subspecies, Plate 10, fig. 1-3**

Conus proteus (in part of authors, not Hwass 1792).

Description. Shell 60 to 80 mm. in length, solid and strong. Whorls 10-12, sometimes offset to form a shoulder. Color consisting of a series of small orange dots, squares or oblongs arranged in a spiral pattern. Occasionally these markings coalesce forming bands that are more or less regularly delimited. Outer lip thin and straight though somewhat thickened within. Aperture oblique and narrow. Spire generally much depressed and deeply concave. Sculpture of fine growth lines that are crossed by exceedingly spiral lines. Periostracum a dull straw yellow, rather thin, exposing the color pattern below. Operculum narrow and nearly one-half the length of the aperture. It is crossed by fine sinuous growth lines.

	length	width	whorls	
(large)	80	47 mm.	13	Grove City, Florida
(average)	65	38	12	Lemon Bay, Florida

Types. Holotype. Mus. Comp. Zoöl. no. 140787, Bonita Springs, Florida, Mrs. J. F. Reahard collector, 1935. Paratypes from the same locality and from the following places in Florida: Sanibel Island; Lemon Bay; Naples; Gasparilla Sound; Grove City; Fort Myers Beach; Marco Island.

Common name. The Florida Chinese Alphabet.

Remarks. None of the names considered as synonyms of *spurius* refer to the continental form which occurs rather abundantly on the west coast of Florida. Though the relationship appears exceedingly close between *spurius* and *atlanticus*, we can readily differentiate most of the specimens examined.

The band formation on *spurius* is always present and rarely so on *atlanticus*. In formation, the bands on *spurius* consist of irregular groupings of the spots which tend to form patches of solid color, while on *atlanticus* the spots are more or less evenly grouped, even to forming solid areas that are quite regular.

C. s. atlanticus occurs on sand bars, grass covered flats and even the margins of mangrove swamps as long as the water is not brackish. It occurs from low water to 20 fathoms.

Range. Florida, southern Mexico and south to Venezuela along the coast of Central America.

Records. FLORIDA: Ragged Keys, Biscayne Bay (L. A. Burry); Cape Florida, Biscayne Bay; Carysfort Reef; Key West (all MCZ); Boca Chica Key; Key Vaca; Marquesas Key (all J. Schwengel); Duck Key (ANSP); Bonefish Key; Little Duck Key (both T. McGinty); Bonita Springs (L. A. Burry); Coney Id., Tampa Bay; Grove City; Punta Rassa; Sanibel Id.; Captiva Id.; Lemon Bay; Naples (all MCZ); Marco (T. McGinty); Cape Romano; Estero Bay; Hickory Pass; Little Gasparilla Id.; Boca Grande; Sarasota Bay (all ANSP); off Destin in 14 to 20 fathoms (T. McGinty). MEXICO: Vera Cruz (M. E. Bourgeois); *Blake* Station 38 (1877) Campeche Bank (N. Lat. 23° 10', W. Long. 88° 35') in 20 fathoms. PANAMA: Colón (ANSP). COLOMBIA: Cartagena (ANSP). VENEZUELA: Cumana (MCZ).

Conus clerii Reeve, Plate 11, fig. 2

Conus clerii Reeve 1844, Conch. Icon. 1, pl. 43, fig. 229 (Cape St. Thomas, Brasil); Proc. Zool. Soc. London, 1843 [1844] p. 175.

Description. "Shell turbinated, sharply angled round the upper part, rather thin, very finely ridged over the entire surface; white, somewhat irregularly variegated with longitudinally waved brownish streaks; spire rather depressed, slightly canaliculated, apex raised and pointed."

length	width	
32	15 mm.	(Reeve's figure)

Types. The holotype is in the British Museum, originally from the Cuming collection. Type locality, Cabo de São Thomé, Brasil, in 35 fathoms. Collected by Commander Clery of the French Navy.

Common name. Clery's Cone.

Remarks. The description above is copied directly from Reeve. This species has not been obtained since the original specimen was collected off Brasil by Commander Clery. Dall's statement that *C. villepini* "is very close to and possibly identical with *C. clerii*" [sic] is wholly in error. The two differ not only in color pattern but also by possessing very different spires.

Range and Records. Known only from type locality.

Conus daucus Hwass, Plate 9, fig. 4-5

Conus daucus Hwass 1792 [in] Bruguière, Ency. Meth. Vers, 1, p. 651, var. A (Seas of America, the Islands of Santo Domingo, Guadeloupe and Martinique).

Conus mamillaris Green 1830, Trans. Albany Inst. 1, p. 123, pl. 3, fig. 6 (Florida).

Conus avarausiensis 'Chemnitz' Reeve 1843, Conch. Icon. 1, pl. 20, fig. 114 (Seas of America).

Conus daucus luteus Krebs 1864, The West Indian Marine Shells p. 4. [Nude name. This form is probably only a light color phase of *C. daucus*.]

Description. Shell 35 to 50 mm. in length, solid and colored a brownish orange. There is usually a narrow, light band across the mid area and rarely one just below the upper margin of the whorl. Whorls 10 to 11 and nearly flat sided. Outer lip thin and straight. Aperture narrow and oblique and colored within the margin with a band of pinkish brown. Spire short, depressed and smoothly concave. Sculpture consisting of very fine and irregular growth lines which may be crossed by exceedingly fine and irregular spiral threads. Near the base of the shell there are 6 to 8 stronger spiral threads visible to the unaided eye. Periostracum is very thin, patchy even in live material and usually remains as low, erect, longitudinal, blade-like ridges. Along the basal threads the periostracum produces a series of low hair-like processes.

	length	width	whorls	
(large)	51	29 mm.	11	West Indies
(average)	45	25	10	Barbados
(small)	38	20	11	Nassau, Bahamas

Types. Hwass referred to Chemnitz 1788, Conchy.-Cab. (1) 10, pl. 144 A, fig. L, which is here selected as type figure. Also the island of Guadeloupe is here selected for the type locality from among several given by Hwass.

Common name. The Carrot Cone.

Remarks. A rather rare species owing to its preference for fairly deep water. Occasional specimens are cast up on the beach but live material occurs, as far as we know, only below the low water line. Published records of these species occurring in the Indo-Pacific area are certainly open to question.

Range. Florida, Bahamas and south through the Lesser Antilles.

Records. FLORIDA: off St. Marks in 20 fathoms (F. M. Bayer); 100 miles off Cedar Keys in 20 fathoms (J. Schwengel); off Palm Beach in 60 fathoms (T. McGinty). BAHAMAS: Nassau, New Providence (A. H. Patterson); Bimini Ids. (W. A. Royce); Mathtown, Gt. Inagua (MCZ). CUBA: Blue Beach, Guantanamo Naval Base (MCZ). VIRGIN IDS.: St. Croix; St. Thomas (both ANSP). JAMAICA: (MCZ). LESSER ANTILLES: Bridgetown, Barbados (ANSP); Blake Station 272, off Barbados in 76 fathoms (dead). CARIBBEAN ISLANDS.: Swan Island (MCZ).

Conus flavescens Sowerby, Plate 11, fig. 3

Conus flavescens 'Gray' Sowerby 1834, Conchological Illustrations, pt. 55, fig. 68; Sowerby 1858, Thesaurus Conch. 3, pt. 18, pl. 200, fig. 305 (South Australia).

Description. Shell small, rarely exceeding 25 mm. in length. It is strong and fairly solid. Whorls 11 to 12 and flat sided to slightly convex. Color white with a suffusion of pale brownish yellow, brownish orange or yellow bands leaving but a small mid area of white. This area may be invaded irregularly by the band above or below. A few speci-

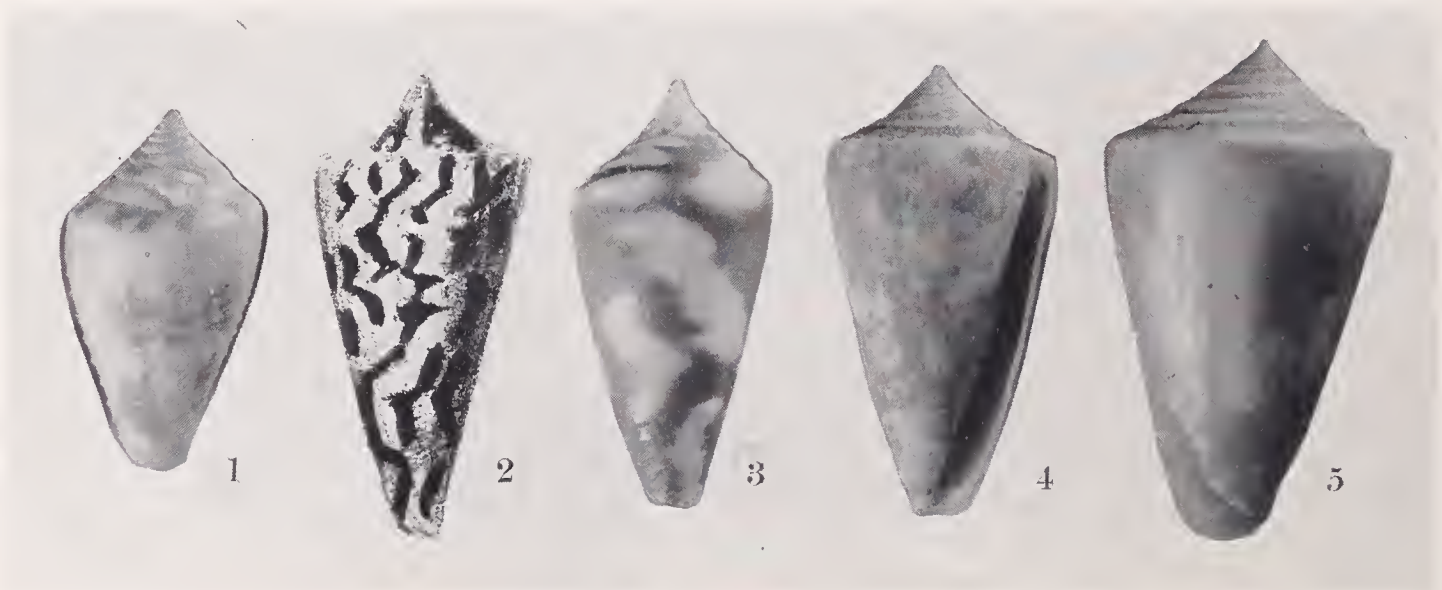


Plate 11. Fig. 1. *C. v. piraticus* Clench, off Palm Beach, Florida (Holotype, 2×). Fig. 2. *C. clerii* Reeve (after Reeve, 1½×). Fig. 3. *C. flavescens* Sowerby, off Hillsborough Light, Florida (2×). Fig. 4. *C. caribbaeus* Clench, off Palm Beach Co., Florida (Holotype, 1½×). Fig. 5. *C. caribbaeus* Clench, Nassau, Bahamas (Paratype, 1½×).

mens possess this color as blotches leaving areas of white between them. Spire usually depressed, non carinated, obtuse and with the two nuclear whorls papilliform. The spire is formed at an angle of about 105° to 110° . Aperture oblique and rather uniform in width throughout its length. It is not deeply inset above. Outer lip thin and convexly arched in profile. Sculpture limited to 10 to 12 finely incised lines near the base of the cone. Axial growth lines fine and relatively inconspicuous. No spiral threads on the spire. Periostracum probably thin. Operculum unknown.

	length	width	whorls	
(large)	25	13 mm.	11	Grand Bahama Id., Bahamas
(average)	21.8	12	10	“ “ “ “

Types. Sowerby gave "South Australia" as the locality, which is very probably an error as stated below. I am inclined to believe that the original specimens may have come from the Bahamas, the only area where this species appears to be at all common.

Common name. The Bahama Cone.

Remarks. We have specimens that agree exactly with Sowerby's excellent colored plate. His locality of "South Australia" as published in the Thesaurus was probably a guess rather than a statement of fact. It is not listed by Vereo (1935, Combing the South Seas, Adelaide) among the species occurring in South Australia.

In relationship it appears nearest to *C. daucus*, differing in its yellowish and orange coloration and its very much smaller size and possessing papilliform nuclear whorls. This latter characteristic is found only on live or very "fresh" specimens.

Range. Southern Florida, Bahamas and probably the Greater Antilles.

Records. FLORIDA: $8\frac{1}{2}$ fathoms off Miami Beach (J. Schwengel); Key West, 3 to 4 feet below low tide; off Hillsborough Light, Broward Co., in 50 fathoms (L. A. Burry). BAHAMAS: Eight Mile Rock and West End, Grand Bahama Id. (MCZ); Nassau, New Providence (A. H. Patterson); Bimini Ids. (W. A. Royce). CUBA: Pueblo Nuevo, Matanzas Bay (P. J. Bermudez).

Conus caribbaeus, new species, Plate 11, fig. 4-5

Description. Shell medium in size, probably reaching a length of 35 mm. Whorls 11 to 12, regularly increasing in size and flat-sided. Color a grayish white overlaid with a dull and pale yellowish periostracum. Spire rather depressed, slightly concave and finely carinated. Nuclear whorls papilliform. Aperture narrow and oblique, a little wider near the base of the shell and rather deeply inset above. Sculpture consisting of a few, usually 8 to 10, incised lines near the base, the remaining part of the body whorl smooth except for the very fine axial growth lines. Spire with exceedingly faint spiral threads, occasionally absent. Concave growth lines fairly strong on the spire. Periostracum fine and minutely axially striated. Operculum unknown.

	length	width	whorls	
(average)	31	15 mm.	$11\frac{1}{2}$	Holotype
(large)	33.5	18.5	11 (remaining)	Nassau, Bahamas
(small)	23	12.2	10	“ “ “

Types. Holotype, Mus. Comp. Zoöl. No. 138333, off Palm Beach Co., Florida. Frank Lyman collector (ex B. R. Bales). Paratypes from "Nassau," New Providence, Bahamas, in the collection of F. M. Bayer and A. H. Patterson.

Range and Records. Known only from off Palm Beach Co., Florida and New Providence, Bahamas.

Conus centurio *Born*, Plate 12, fig. 1

Conus centurio Born 1780, Testacea Musei Caesarei Vindobonensis p. 153, pl. 7, fig. 10 (Locality unknown); Dall, W. H. 1889, Bull. Mus. Comp. Zoöl. **18**, p. 69.

Description. Shell medium in size, reaching probably about 50 mm. in length. Color white with three band areas of yellowish orange. These bands are not solid but are composed of irregular patches of color which, in addition, have a few zig-zag lines connecting them. Whorls $9\frac{1}{2}$ to 10, regularly increasing in size and nearly flat sided. Spire depressed, obtuse and produced at an angle of about 110° . Each whorl on the spire is rather deeply concave. Aperture oblique and not very deeply inset above. Sculpture consisting of 12 to 15 rather strong spiral threads toward the base of the shell, usually with a fairly deep incised line or groove separating them. No spiral threads observed on the whorls of the spire. Periostracum and operculum unknown.

length	width	whorls					
43.2	24.1 mm.	$9\frac{1}{2}$ (remaining)	Puerto Plata,	Santo Domingo			
32.5	19	9	“	“	“	“	“

Types. The type figure is that of Born given above. According to F. Brauer, most of Born's types are still preserved in the Vienna Museum (F. Brauer, Sitzungs. Akad. Wissens. **77**, pt. 1, pp. 117-192, 1878). *C. centurio* Born is listed on p. 146 in the above. As Born gave no locality, Puerto Plata, Santo Domingo, is here selected as the type locality.

Common name. The Centurion Cone.

Remarks. Very little can be added about this species. It was dredged in about 5 fathoms in the small harbor of Puerto Plata. Its relationships are not clear but it appears to be nearest to *caribbaeus* herein described. The nuclear whorls are missing but the general spire contour would indicate their possible presence in live material.

Range and Records. Known only from the type locality. I have not seen the specimens referred to by Dall.

Conus brasiliensis, new species, Plate 12, fig. 2

Description. Shell relatively thin and small, probably reaching a length of 25 mm. Color a mottled reddish brown formed in two bands separated by mid area of white which is as well invaded by smaller patches of brownish red. Whorls 8 (remaining) and nearly flat sided. Spire depressed, obtuse, produced at an angle of about 125° and possessing fine spiral threads. Aperture oblique with a thin outer lip and a shallow notch above. Sculpture of 6 to 8 small spiral threads near the base of the shell. Remaining shell surface smooth except for the very fine axial growth lines. Operculum and periostracum unknown.

length	width	whorls	
22.2	13 mm.	8 (remaining)	Holotype

Types. Holotype, Mus. Comp. Zoöl. no. 146894, Victoria, Brasil. Thayer Expedition, Hartt and Copeland collectors, 1865-1866. Two slightly smaller paratypes from the same locality.

Remarks. This new species appears to be quite different from any so far described from the Western Atlantic, mainly on the basis of its distinctive color pattern. It was collected over 80 years ago by Agassiz's party of naturalists during the Thayer Expedition.

It is to be remembered that comparatively little work has been done along the vast Brazilian coast line. Though mainly West Indian in the character of its fauna, there are many species known from this region that appear only in the southern Caribbean or to the south of it. More collecting will certainly bring to light many new species.

Range and Records. Known only from the type locality.

Conus villepinii *Fischer and Bernardi*, Plate 12, fig. 3; Plate 13, fig. 5

Conus villepinii Fisch. and Bern. 1857, Jour. de Conch. 5, p. 292, pl. 9, fig. 12 (Marie Galante); Dall 1889, Bull. Mus. Comp. Zoöl. 18, p. 69.

Conus agassizii Dall 1886, Bull. Mus. Comp. Zoöl. 12, pl. 9, fig. 8 (No locality). Dall 1889, *ibid.* 18, p. 68 (Santa Cruz; Barbados).

Description. Shell small, known only up to 32 mm. in length. It is thin but strong. Color consisting of yellowish or brownish blotches, usually in three spiral rows, the blotches being exceedingly irregular in shape and size. Whorls 10–11 and nearly flat sided. Spire rather short and generally strongly convex. Aperture oblique, long and narrow and deeply inset above. Outer lip thin and not crenulated. Sculpture consisting of ten or twelve fine incised spiral lines near the base of the shell, the main portion of the body whorl being smooth except for the exceedingly fine axial growth lines. On the spire there are four to six very fine spiral threads crossed by strong though fine concave growth lines (concave because they are the growth layers following the "notch" or apertural inset). Periostracum thin on the body whorl, much stronger and producing very fine concave and axially arranged ridges on the spire. Operculum unknown.

	length	width	whorls	
(large)	32	13 mm.	7–8 ¹	Marie Galante
(average)	23	10.5	10	Grenada
(small)	19.8	10	11	St. Croix

Types. Holotype probably in the collection of the Jour. de Conch. The type locality is Marie Galante Island near Guadeloupe Island, Lesser Antilles.

Common name. Villepin's Cone.

Remarks. This rather small species is, so far, known only from fairly deep water, ranging from 38 to 175 fathoms. For reasons unknown to me, Dall listed this species under *flavescens*, *villepinii* and *centurio* in his Blake report (Bull. Mus. Comp. Zoöl.). These specimens are now before me and they are certainly all the same species.

In relationship, our present species is related to the *floridanus* complex, being smaller, having a more obtuse spire and possessing very fine spiral threads on the whorls of the spire and having a proportionately narrower shell.

In the original citation, Fischer and Bernardi did not give any depth but it was described with others that are now known to occur only in the deeper off-shore waters.

Range. Known only from fairly deep water off the Virgin Islands and the Lesser Antilles. It will probably be found more widespread in the West Indies when more dredging has been done.

¹This number probably did not include the nuclear whorls.



Plate 12. Fig. 1. *C. centurio* Born, Puerto Plata, Santo Domingo ($1\frac{1}{2}\times$). Fig. 2. *C. brasiliensis* Clench, Victoria, Brasil (Holotype, $2\times$). Fig. 3. *C. villepini* Fischer and Bernardi (after Fischer and Bernardi, $1\frac{1}{2}\times$). Fig. 4. *C. juliae* Clench, off Fort Walton, Florida (Holotype, nat. size). Fig. 5. *C. fosteri* Clench and Aguayo, off Sagua la Grande, Cuba (Holotype, about nat. size).

Records. VIRGIN ISLANDS: St. Croix, in 38 and 115 fathoms (MCZ, the latter record based on cotypes of *C. agassizii* Dall). LESSER ANTILLES: Marie Galante (Fischer & Bernardi); Guadeloupe, in 175 fathoms; Barbados, in 73, 76 and 84 fathoms; Grenada, in 170 fathoms (MCZ).

Conus juliae, new species, Plate 12, fig. 4

Description. Shell probably reaching 60 mm. in length, solid and strong. Whorls 10 to 12, regularly increasing in size. Color a pale pinkish-brown with a moderate and indistinct band of white at the mid area. This is overlaid with a series of fine spiral lines which are discontinuous. Over the white band area these interrupted lines are darker and coalesce somewhat to form rather indistinct axial bars of color. On the spire there are irregular and somewhat zig-zag marks of reddish brown on each whorl which alternate with white areas. Spire somewhat extended and nearly flat sided. Aperture oblique, with a comparatively shallow notch. Sculpture of fine incised spiral lines crossed by fine irregular growth lines. Near the base the spiral lines become fairly coarse, enough to produce crenulations on the extreme lower area of the outer lip. Operculum unknown. Periostracum thin.

length	width	whorls	
54	27 mm.	10 (remaining)	Holotype

Types. Holotype in the collection of the Florida State Museum, Gainesville, Florida. Type locality, 9 miles off Fort Walton, Okaloosa Co., Florida in 15 fathoms. F. B. Lyman collector, August 22, 1939.

Remarks. This is a very beautiful shell and very different from any hitherto described from the Western Atlantic. It would appear to be related to the *floridanus* complex but not at all closely.

This is only one of the several new forms that have been dredged off the Florida coast during the past few years. There is no question but that very many new species await the student who cares to investigate the comparatively shallow waters off the west coast of Florida.

Range and Records. Known only from the type locality.

Conus floridanus Gabb, Plate 13, fig. 1-2

Conus floridanus Gabb 1868, American Jour. of Conch. 4, p. 195, pl. 15, fig. 4 (Tampa Bay, Florida).

Description. Shell medium in size, occurring up to about 50 mm. It is generally quite solid and strong. Whorls 12 to 13 and flat sided. Color consisting of two bands of brown or yellowish-brown, more or less solid or broken into blotches. There is generally a narrow mid area of white. On the spire, color marks may be absent or consist of comma-shaped or concave bars extending between the sutures. Spire extended and usually strongly concave and generally with a strong carina. Aperture oblique, long and narrow, which is deeply inset above. Outer lip thin, non-crenulated and strongly convex in profile. Sculpture of 10 or 12 incised lines near the base of the shell which may be quite obsolete in some specimens. Main portion of body whorl smooth. Spire with numerous concave growth lines between the sutures of each whorl. Periostracum thin, occasionally heavy enough to more or less obscure the color pattern below. Under a 14 power lens it appears silken and formed in long but very fine axial ridges. On the spire it is somewhat coarser and concave, following the sculpture of the growth lines. Operculum not observed.

	length	width	whorls	
	48	24 mm.	12 remaining	Holotype
(large)	51.2	26	11	Marco Id., Florida
(average)	37	17.2	12½	Blind Pass, Sanibel Id., Florida
(small)	19	14.2	10½	Bonita Springs, Florida

Types. Holotype, Acad. Nat. Sci. Phila. no. 80917. Type locality, Tampa Bay, Florida.

Common name. Florida Cone.



Plate 13. Fig. 1. *C. floridanus* Gabb, Tampa Bay, Florida (Holotype, nat. size). Fig. 2. *C. floridanus* Gabb, off Sanibel Id., Florida ($1\frac{1}{2}\times$). Fig. 3. *C. b. lymani* Clench, off Lake Worth, Florida (Holotype, $1\frac{1}{2}\times$). Fig. 4. *C. bermudensis* Clench, Dyer Id., Bermuda (about nat. size). Fig. 5. *C. villepini* F. and B. (as *agassizii* Dall, after Dall, nat. size).

Remarks. This is a rather common species only along the west coast of Florida. Elsewhere it appears to be quite rare. It has a wide range of color pattern which does not seem to be either ecological or geographic as most phases are to be met with at any single locality. Specimens occurring off exposed beaches are somewhat heavier in structure than specimens found on protected grass-covered shallows. It occurs alive mainly just a little below low water though dead specimens are frequently found thrown up on the beaches.

It is occasionally confused with young specimens of *C. sozoni*, but this latter form has a more extended and less concave spire, possesses three color bands and generally has the spirally arranged spots coalescing in the region of the color bands. All of the few specimens of *sozoni* I have seen have a pinkish diffusion of color within the aperture, a character not found in *floridanus*.

Range. Hatteras, North Carolina (Dall) to Florida.

Records. FLORIDA: off Sanibel Id. in 4 to 6 fathoms; 20 miles off Marco in 7 fathoms (both J. Schwengel); off Bonita Springs in 3 to 4 fathoms (L. A. Burry); Tampa Bay; Little Gasparilla Id. (both ANSP); Indian Pass; Sarasota Bay; Cedar Keys; Gulfport; Lemon Bay; Captiva Id.; Naples (all MCZ).

Conus floridanus, form **floridensis** Sowerby, Plate 14, fig. 1-2

Conus floridensis Sowerby 1870, Proc. Zool. Soc. London, p. 256, pl. 22, fig. 11 (Florida).

Description. Shell similar to typical *floridanus* but differing in possessing a somewhat darker basic color of reddish brown (nearer yellowish brown in *floridanus*) and having a series of numerous dark brown spiral lines superimposed on the ground color. These lines may be continuous or more or less regularly interrupted. Both types may occur on the same specimen.

	length	width	whorls	
(large)	51	26 mm.	11+	Marco Id., Florida
(average)	38.5	18.2	12½	Pass-a-Grille, Florida



Plate 14. Fig. 1. *C. f. floridensis* Sowerby, Marco Id., Florida (nat. size). Fig. 2. *C. f. floridensis* Sowerby, Pass-a-Grille, Florida (nat. size). Fig. 3. *C. f. burryae* Clench, off Lower Matecumbe Key, Florida (Holotype, 1½×). Fig. 4. *C. f. burryae* Clench, Ragged Keys, Biscayne Bay, Florida (Paratype, 1½×).

Types. The type specimen is in the British Museum. We restrict the type locality to Pass-a-Grille, Florida (near St. Petersburg).

Common name. The Striped Florida Cone.

Remarks. This appears to be a rather strongly marked color form. The few specimens in our possession are distinctive but there may well be forms that will show complete intergradations with typical *floridanus*. On the other hand it shows a color pattern that closely approximates young specimens of *C. sozoni*. The spiral lines also indicate a close relationship with *C. burryae* of the Florida Keys. At the present writing our material is far too limited even to speculate on relationships other than to point out what seems to be apparent. It is unfortunate that this name was employed as it will always be confusing, but under the rules *floridanus* and *floridensis* do not constitute homonyms.

Range. Probably co-extensive with *C. floridanus*. We have seen specimens only from Florida.

Records. FLORIDA: off Ft. Walton in 13 to 19 fathoms (W. A. Burry); Marco Id.: off Palm Beach in 35 fathoms; Grassy Key; off Boca Raton in 33 fathoms (all T. McGinty); Sarasota Bay in 3 fathoms (W. A. Royce); off Miami Beach in 8½ fathoms (J. Schwengel); Hickory Pass, Bonita Springs (ANSP); Pass-a-Grille; Sanibel Id.; Terracia Bay; Pirates Cove, Sugar Loaf Key (all MCZ).

***Conus floridanus burryae*, new species, Plate 14, fig. 3-4**

Description. A smaller and narrower form than *floridanus* to which it appears closely related. The color is generally reddish brown to dark brown, usually in blotches and sometimes obscuring the mid band of white. The tip of the base is usually very dark brown to a deep brownish black. The secondary spiral and lengthened spots are present on the specimens so far examined. The whorls also are slightly convex, differing noticeably from the flat sided whorls of typical *floridanus*. Periostracum thin and silken and on young shells forming a few fine spiral threads over the main portion of the body whorl. Sculpture of the shell proper similar to *floridanus* with a few fine incised lines near the base. Operculum long and narrow.

length	width	whorls	
34.5	16 mm.	11½	Holotype
34	15.6	11	Paratype

Types. Holotype, Mus. Comp. Zoöl. no. 145296, off Lower Matecumbe Key, Lower Florida Keys, Mrs. L. A. Burry collector. A paratype from this locality is in the collection of Mrs. George R. Fearing from whom both specimens were received. Other paratypes from Grassy Key and the Florida Reefs.

Common name. Burry's Cone.

Remarks. This appears to be a well marked subspecies which is readily differentiated from *C. floridanus* Gabb and *C. f. floridensis* Sby. by its darker color, its more slender outline and by the slightly convex sides.

Range. Limited to the Lower Florida Keys as far as is now known.

Records. FLORIDA: off Lower Matecumbe Key (L. A. Burry); Florida Reefs (MCZ, collected by L. F. Pourtales in 1869). All these localities are in the Lower Florida Keys. Ragged Key, Biscayne Bay (L. A. Burry).

Named for Mrs. L. A. Burry of Pompano, Florida, who has done much collecting, particularly for the deeper water forms off the Florida Coast.

Conus amphiurgus *Dall*

Conus amphiurgus Dall 1889, Bull. Mus. Comp. Zoöl. **18**, p. 70 (off Yucatan in 27 fathoms).

I am unable to figure this species as the type collection in the United States National Museum is unavailable during the period of the war.

Dall, along with certain others, had an exceedingly unfortunate and vexatious habit of mentioning a few characteristics possessed by a specimen and then associating these notes with a name. These notes were generally given as added remarks under another species and as a consequence were many times overlooked. Tomlin (p. 211) has listed *amphiurgus* as a nude name, based upon Dall's reference to this name in his list of the mollusks of the southeastern coast (see bibliography). It appeared, however, as a note in his Blake report as cited above.

The following is the original citation by Dall:

"A beautiful species with very much the color of *roseo-tinctus* Sowerby, but with the form and size of *subcarinatus* Sowerby (see Thes. Conch. *Conus*, pl. XXV. figs. 604 and 615), the dark streaks longer and darker than in *roseo-tinctus* and always followed by an equivalent pale area, a thickish epidermis, and the top of the whorls excavated and striated, was dredged in 27 fms., near the coast of Yucatan, by the Fish Commission, and has been named by me *Conus amphiurgus*."

Conus sozoni *Bartsch*, Plate 15, fig. 1-4

Conus delessertii of authors (not of Récluz 1843, Mag. de Zool. text and pl. 42 (Red Sea)).

Conus sozoni Bartsch 1939, Smithsonian Misc. Collections **98**, no. 1, p. 1, fig. 1-3 (reef off Tarpon Springs, Florida).

Description. Shell 70 to 100 mm. in length, heavy and strong. Color consisting of three distinct pinkish brown bands, one at the shoulder, a mid band and one at the base. There are numerous lengthened spots in spiral arrangement which frequently coalesce irregularly where they are superimposed upon the pinkish brown bands. These lengthened spots are a dark mahogany brown in color. On the spire, they are strongly developed and appear to be lengthened axially. In young specimens the color is visible from within the aperture. Aperture long, narrow and oblique and deeply inset above. In profile, the outer lip is strongly convex in outline and deeply concave at the shoulder where the inset or notch is located. Spire generally extended, sometimes with flattened sides; usually, however, moderately concave. The curvature of the spire usually increases towards the earlier whorls. Whorls 12 to 13 (probably 15 would be the exact number as the small nuclear whorls do not persist in the adult specimens). Nuclear whorls glass-like and smooth. The body whorl is flat sided to slightly sigmoid and develops a strong shoulder which appears as an encircling ridge at the base of each whorl on the spire. Sculpture consisting of 10 to 12 spiral ridges at the base of the shell. These encircle the shell and disappear within the aperture. The outer lip of the aperture is crenulated at the termination of these ridges. The main portion of the body whorl is smooth, except for the very fine, incised lines crossed by rather prominent concavely arched growth lines. Operculum thin, less than one-third the aperture length and possessing a marginal nucleus. Periostracum thin on the body whorl, rather coarse on the spire. On the body whorl the color shows through the periostracum. On the spire, the periostracum indicates the pat-

tern of growth and consists of fine blade-like ridges, inwardly concavely arched and these arched ridges appear as if slightly jammed together.

	length	width	whorls	
(large)	100	47.5 mm.	13	off Tarpon Springs, Florida
(average)	71.5	42	13	off Cedar Keys, Florida
(small)	44	21.5	12	off Ft. Walton, Florida

Types. Holotype, United States Nat. Mus. no. 472849. Type locality, reef off Tarpon Springs, Florida. Collected by a sponge fisherman, Mr. Sozon Vatikiotis of Tarpon Springs.

Common name. Sozon's Cone.

Remarks. Since the publication of this species by Bartsch, there has been considerable collecting done by many competent and enthusiastic Florida collectors. More material has been accumulated and, though still somewhat limited, would certainly indicate that Dall's reference to this form as *delessertii* from the Red Sea is in error. Young specimens of *sozoni* do look like the excellent figure of Delessert but the adults indicate, through a series of color gradations, a rather different shell. It is to be borne in mind that many cones exhibit a rather wide range of color changes from young to adult and unless a large series of specimens from many localities is at hand for study, such changes, without the transitions, appear to indicate different species. The enormous number of synonyms that now exist for most of our species is ample testimony to these differences, the result of selected specimens rather than an extensive series of material for comparison. The young specimens of *sozoni* exhibit a strong relationship to *floridanus*.

Range. Florida from Palm Beach south to Tortugas and north along the Gulf coast to Santa Rosa Island.

Records. FLORIDA: 100 miles off Cedar Keys in 20 fathoms (J. Schwengel); off Destin in 18-20 fathoms, sandy marl bottom (T. McGinty); 40 miles south of Fort Walton in 23 fathoms (Mrs. G. Fearing); on beach (dead) north of Nigger's Head, near Schooner Rocks, Singer Island, Palm Beach Co.; off Palm Beach in 75 fathoms (both Ted Bayer); off Lantana in 100 fathoms (T. McGinty); off town of Gulfstream, Palm Beach Co. in 10 fathoms (F. Lyman); "Blake" Station 11, off Tortugas, Florida (N. Lat. 24° 43'; W. Long. 83° 25') in 37 fathoms (MCZ).

Conus perryae, new species, Plate 15, fig. 5

Conus melvilli Perry 1939, Nautilus 53, p. 40, pl. 8, fig. 1 (3 miles off Little Carlos Pass, Lee Co., Florida); Perry 1940, Marine Shells of the Southwest Coast of Florida, p. 162, pl. 37, fig. 258a-b; *non Conus melvilli* Sby. 1878.

Description. Shell small, rather thin but strong. Color a pale bluish-gray with fine pale brown, axially arranged zig-zag threads of color. These threads are more abundant near the base of the shell which gives a decided brownish tinge to this portion. Whorls 6, channeled at the suture and edged along the upper margin of each whorl by a narrow band of brown. Spire only moderately elevated and forming an angle of about 90°. Aperture oblique. Outer lip thin, hardly inset above and not crenulated. Sculpture of numerous, fine, thread-like, spiral ridges strongly developed near the base of the shell, becoming much less strong on the main portion of the body whorl. Growth lines exceedingly fine and numerous. Spire with a single spiral thread and above this a flattened ridge. The

sutural channel is narrow, shallow and rather inconspicuous. Periostracum very thin. Operculum thin and small for the relative size of the aperture.

length	width	whorls	
12.5	7 mm.	6	Sanibel, Florida

Types. Holotype no. 1934, collection of Jeanne S. Schwengel (Scarsdale, New York). Type locality, 6 miles off Sanibel Island (3 miles off Little Carlos Pass, Lee Co.) Florida in 6 fathoms. J. S. Schwengel collector, winter 1938-1939.

Common name. Perry's Cone.

Remarks. This appears to be a very distinctive species, differing quite sharply from all other Western Atlantic *Conus*. It is a young shell and probably would be 4 or 5 mm. larger when adult. Its confusion with *C. melvilli* Sby. is difficult to understand as Sowerby's original figure presents a totally different shell. *Conus perryae* has a definite sigmoid outline, i.e., the upper portion of the body whorl is convex, while the basal portion is concave, both forming a flattened "S" outline to each side. On the other hand, Sowerby's figure of *C. melvilli* indicates the upper portion of the whorl to be slightly convex and the lower portion to be strongly convex. The color pattern differs as well, *melvilli* possessing strong dark color blotches axially arranged, while in *perryae*, the color is faint and thread-like, forming axially arranged zig-zag marks. In *perryae*, the notch or inset at the upper part of the aperture is exceedingly shallow.

Range and Records. Known only from the type locality off Sanibel Island, Florida.

Melvill, in the citation given below, states that Sowerby was in error in giving Key West, Florida as the locality for *C. melvilli*. The specimen in question had been purchased with much other material, mainly *Conus*, at the sale of the Norris collection and had subsequently been mixed in with the shells he had collected at Key West. The locality of *C. melvilli* still remains unknown, though Melvill states that it is related to *C. adansonii* Lam. from Senegal. Below are given the citations for this species.

Conus melvilli Sowerby 1878, Proc. Zoöl. Soc. London, p. 795, pl. 48, fig. 1 (Key West, Florida), Sowerby 1887, Thesaurus Conchyliorum, 5, pl. 507, fig. 653; Melvill 1917, Jour. of Conch., 15, p. 222 (Locality unknown).

***Conus ranunculus* Hwass, Plate 15, fig. 6-7**

Conus ranunculus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 671 (American Ocean).

Conus testularius Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 694 (Surinam [Dutch Guiana]).

Conus informis Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 699 (American Ocean); *non informis* Reeve 1843.

Conus portoricanus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 714 (Puerto Rico); as *puertoricanus* Krebs 1864.

Cucullus barathrum Röding 1798, Museum Boltenianum p. 43.

Cucullus flammens Röding 1798, Museum Boltenianum p. 44; *non* Lamarck 1810.

Conus narcissus Lamarck 1810, Ann. Mus. Hist. Nat. Paris, 15, p. 281 (American Ocean).

Conus coerulescens Dillwyn 1817, Desc. Catal. Recent Shells 1, p. 368 (St. Thomas); *non* Schröter 1803.

Conus caeruleus Küster 1838, Conchy.-Cab. (2) 4, p. 85, pl. 14, fig. 3-4 (St. Thomas).

Description. Shell large, reaching 70 mm. in length, solid and strong. Whorls $9\frac{1}{2}$ to 10, moderately convex and rounded over the shoulder. Nuclear whorls somewhat papiliform. Color a grayish white with two very irregular spiral bands of chocolate brown, one above and one below the mid area. This color varies from dark to light mahogany



Plate 15. *C. sozoni* Bartsch, 15 miles off Destin, Florida (nat. size). Fig. 2. *C. sozoni* Bartsch, off Fort Walton, Florida (nat. size). Fig. 3. *C. sozoni* Bartsch, off Destin, Florida (nat. size). Fig. 4. *C. sozoni* Bartsch, off Destin, Florida (nat. size, showing periostracum). Fig. 5. *C. perryae* Clench, off Sanibel Id., Florida (Holotype, 3×). Fig. 6. *C. ramunculus* Hwass, "Puerto Rico" (nat. size). Fig. 7. *C. ramunculus* Hwass, West Indies (nat. size).

brown. A secondary color is sometimes present in the form of fine and interrupted spiral lines which may be lengthened or may be a series of dots. This secondary type of color may be absent. Spire obtuse, forming a flattened cone of about 117° . Aperture oblique, fairly wide and broadening slightly below. It is moderately inset above. Edge of outer lip thin but somewhat thicker below. Sculpture of numerous and fine, somewhat wavy threads that are a little stronger in development toward the base. Spire with four or five spiral threads on each whorl which are crossed by fine growth lines. Periostracum not observed but probably quite thin. Operculum not seen.

	length	width	whorls	
(large)	69	39.5 mm.	10	Saline Bay, Trinidad
(average)	49	27.6	10	Cape St. John, Spanish Guinea

Types. Hwass refers to A. Seba, 3, pl. 43, fig. 36, 1761, which I here select as the type figure. I limit the type locality to Dutch Guiana, where specimens have been described under the name of *testudinarius* Hwass, one of the many synonyms of this species.

Common name. The Turtle or Little Frog Cone.

Range. Possibly from Puerto Rico south through the Lesser Antilles to northern South America and along the west coast of Africa.

Records. LESSER ANTILLES: Anguilla Id. (MCZ); Saline Bay; Toco; Magueripe Bay, Trinidad (H. G. Kugler); Balata Bay, Trinidad (MCZ); Tobago Id. (ANSP).

VENEZUELA: Paria Peninsula (MCZ); Porlamar, Margarita Id. (ANSP). We also possess two lots, one from Cape St. John and one from Adjé, 20 miles south of Benito, Spanish Guinea, on the west coast of Africa.

Conus fosteri *Clench and Aguayo*,¹ new species, Plate 12, fig. 5

Description. Shell narrowly obconic, strong and rather thin for a *Conus*. Whorls 10, very regularly increasing in size. Color a milky white with two bands composed of irregular reddish brown blotches which are more or less axially lengthened. The holotype possesses two spiral rows of dots of the same color between the bands. The shell has, however, a thin transparent periostracum which gives it a dull straw yellow cast. Aperture long and recurved backwards at its upper end to form a fairly deep sinus. Below it flares out slightly. The outer lip is very thin. Spire moderately extended and rather strongly concave. The sides of the body whorl are also slightly concave. Sculpture of very fine axial growth lines which are crossed in the lower one-third of the shell by five spiral threads or riblets. These growth lines are strongly sinuous as they pass over the whorl shoulder.

length	width	whorls	
61.5	27 mm.	11½	Holotype
61	31	10	Paratype

Types. Holotype, Mus. Comp. Zoöl. No. 146003, *Atlantis* station 3434 (N. Lat. 23° 10'; W. Long. 79° 35') off Sagua la Grande, Santa Clara Prov., Cuba, May 1, 1939, in 260 fathoms. Paratype (Mus. Poey) from *Atlantis* station 2981B (N. Lat. 22° 47'; W. Long. 78° 49' off Punta Alegre, Camaguey Prov., Cuba, March 10, 1938, in 195–225 fathoms. Additional paratypes from *Atlantis* station 3415 (N. Lat. 22° 51' 30"; W. Long. 78° 55' 30") off Punta Alegre, Camaguey Prov., Cuba, April 29, 1939, in 210 fathoms; *Atlantis* station 3480 (N. Lat. 23° 10'; W. Long. 81° 28') off Matanzas, Matanzas Prov., Cuba, May 11, 1939, in 200 fathoms; *Atlantis* station 2963 (N. Lat. 22° 07'; W. Long. 81° 08') Bahia Cochinos, Santa Clara Prov., Cuba, Feb. 1938, in 180–190 fathoms; *Atlantis* station 3333 (N. Lat. 22° 13'; W. Long. 81° 11') Bahia Cochinos, April 1939, in 190–200 fathoms.

Remarks. The relationships of this species are not at all clearly defined. It is, perhaps, best compared with *Conus furvoides* Gabb (? Miocene) of Santo Domingo from which it differs in its stronger concave profile.

Range. Both north and south coasts of Cuba in fairly deep water.

Records. See under *Types*.

Named for R. W. Foster, assistant and colleague, who has done much to increase our knowledge of West Indian mollusks.

Conus bermudensis, new species, Plate 13, fig. 4

Conus agassizii Dall 1889, (in part) Bull. Mus. Comp. Zoöl. 18, p. 68 (Bermuda) [part of text, not the reference to the plate. See also under *C. villepini* F. and B.].

Description. Shell about 50 mm. in length, heavy and nearly smooth. Color porcellaneous white or with faint pinkish irregular blotches or spiral bands. Interior of aperture

¹The "Atlantis" material was collected by members of Harvard University and the University of Havana. All new forms are described jointly by W. J. Clench and C. G. Aguayo.

tinged with dull pink. Occasional specimens have many spiral lines of very fine, reddish brown dots that are just visible to the unaided eye. Whorls 9 to 10, regularly increasing in size and with slightly convex sides. The whorls composing the spire are generally channeled or grooved at their union. Spire short, straight sided and producing an angle of 90° . Aperture oblique, with nearly parallel sides, the upper end rather deeply recessed. Outer lip simple. Sculpture consisting of numerous incised lines which are most abundant near the base of the shell though faintly seen over the rest of the body whorl. Periostracum rather thin but opaque and of a rusty brown color, concealing the coloration beneath. Operculum not seen.

	length	width	whorls	
(large)	48	26.8 mm.	10	Bermuda
(average)	43	22.5	10	Dyer Id., Bermuda

Types. Holotype, Mus. Comp. Zoöl. no. 141965, Dyer Island, Bermuda. W.J. Crozier collector, August 1918. Paratypes from the same locality.

Common name. The Bermuda Cone.

Remarks. This species has long been known under the name of *agassizii* Dall. In 1881, Dall (Bull. Mus. Comp. Zoöl. 12, pl. 9) figured two specimens, 8 and 8a under this name. Later (*ibid.* 1889, p. 68) he listed the localities for the figured specimens as *Blake* station, no. 132, off Santa Cruz [St. Croix] in 115 fathoms and *Blake* station, no. 272, off Barbados in 76 fathoms. His figure 8 (here selected as the type of *agassizii*) is a synonym of *C. villepinnii* F. and B. His figure 8a is based upon a specimen which may be a very young example of *C. mazei* Deshayes. In his discussion and description (1889) he also included a third species from Bermuda. This resulted in a curious mixture in which three species were involved.

Range. Probably limited to Bermuda.

Records. BERMUDA: (L. L. Mowbray; Dyer Island (MCZ).

***Conus bermudensis lymani*, new subspecies, Plate 13, fig. 3**

Description. Shell solid, medium in size, probably reaching 35 mm. in length. Color a mottled reddish brown with a faint indication of a mid area of white. Under a lens there appears a series of white spiral lines (pale reddish over the patches of reddish brown) with dots of brown. These dots are more or less evenly disposed along these lines with fairly wide gaps between them. Whorls 10 and nearly flat sided. Spire subdepressed and produced at an angle of about 90° . The whorls of the spire are rather deeply concave. Aperture oblique, fairly wide, having a thin outer lip and a rather deeply inset notch above. Sculpture of 8 to 10 rather deeply incised spiral lines near the base of the shell. Operculum and periostracum unknown.

length	width	whorls	
34	17.2 mm.	10	Holotype

Types. Holotype, Florida State Museum. Dredged off Nellies Point, South Lake Worth, Palm Beach Co., Florida. Mrs. F. B. Lyman collector.

Remarks. This subspecies is fairly close in its relationship to *C. bermudensis* from Bermuda. Both have a similar outline. *C. b. lymani*, however, is much smaller and possesses

a very distinctive color pattern, a characteristic only moderately developed in *bermudensis*.

Range and Records. Known only from the type locality.

Named for Frank Lyman, who has added much to our knowledge of Florida marine shells.

* * * * *

The above report on the *Conus* in the Western Atlantic is far from being complete. Additional records must be obtained before the limits of distribution can be assigned to many of these species.

There is still much confusion regarding the various subgenera in *Conus*. The entire family of Conidae must be studied as a whole before any stability can be reached and the complex relationships worked out. For this reason I have made no attempt to group the various species under subgeneric headings.

A common name has been added where such was known or when such could be derived from the scientific name.

The "notch," "inset," or more properly the "subsutural flexure" is figured on Plate 5, fig. 3; Plate 6, fig. 3; Plate 8, fig. 4; Plate 15, fig. 1.

I neglected to state in the description of *C. mazzi* that the little circular areas that appear on Plate 9, fig. 1 are the attachment plates of barnacles, not a sculptural or color character of the shell itself.

* * * * *

Key to Western Atlantic *Conus* (Adult specimens).¹

The following key is based upon adult or nearly adult specimens. The adult in *Conus* is a specimen possessing about eight or more whorls. Most of the characters in *Conus* are relative and variable. Extreme variation may well cause any one specimen to fall outside the characters assigned to it in the key. I have attempted to give rather full descriptions and these, with the plates, should be considered in detail after a specimen has been "run down" in the key.

The key is not infallible, but is designed for use only as an aid to determination.

- | | |
|--|---------------------------|
| 1. Shell smooth or with spiral threads or ridges | 5 |
| 2. Shell with small pustules or warts in spiral rows | 3 ² |
| 3. No spiral threads on the spire | <i>verrucosus</i> , p. 13 |
| 4. Two to four threads on the whorls of the spire | <i>piraticus</i> , p. 14 |
| 5. Shell smooth or possessing only moderate spiral threads near the base | 19 ² |
| 6. Shell with rather strong spiral threads over the entire body whorl or from the mid area to the base | 7 |

¹ *Conus clerii* and *C. villepini* are not included in the key as I did not have adequate material for study.

² Young specimens of *regius* are finely pustulose and many of the adults have fine spiral ridges or threads over the entire surface of the body whorl. At this point, reference should be made to both description and figures of *regius* and *cardinalis*.

7. Shell less than 30 mm. in length 13
8. Shell greater than 30 mm. in length 9
9. Whorls on spire without beads or nodules 11
10. Whorls on spire with a series of fine beads or nodules *mazei*, p. 17
11. Color pink, with axial bars of brown usually in three bands *granulatus*, p. 18
12. Color yellowish or with spiral rows of brownish yellow as dots or bars 13
13. Whorls on spire usually convex, color in lines of spiral dots or interrupted lines, sometimes grouped to form axial bars of color *largillerti*, p. 16
14. Whorls on spire flat to slightly concave, color usually salmon yellow forming three spiral bands *stimpsoni*, p. 15
15. Spiral threads generally over the entire body whorl *jaspideus*, p. 10
16. Spiral ridges occurring from the mid area to the base 17
17. With axial color bars of brown or dark red *pygmaeus*, p. 12
18. Generally uniformly dark colored *stearnsii*, p. 9
19. Shell irregular or nodulose at the whorl shoulder 21
20. Shell smooth along the whorl shoulder 29
21. Shell colored red and usually with a central mid area of white *cardinalis*, p. 5
22. Shell with irregular patches of black, brown, cream or green 23
23. Shell with black, blackish brown or brown patches, generally in two more or less defined bands 25
24. Shell with two spiral bands of green and occasionally with axial bars of brownish *abbotti*, p. 6
25. Shell with two more or less solid, spiral bands of dull black or purplish black; usually less than 40 mm. in length *citrinus*, p. 7
26. Shell with patches of color, usually formed in two spiral bands; usually greater than 40 mm. in length 27
27. Color patches small, light brown or yellowish brown; spire somewhat extended; early whorls rather small *dominicanus*, p. 6
28. Color patches large, brown to blackish brown; spire depressed; early whorls large *regius*, p. 3
29. Body whorl rather sharply rounded over at the shoulder of the whorl 33
30. Body whorl broadly rounded over the shoulder of the whorl 31
31. Shell greater than 30 mm. in length; brownish or blackish brown color patches forming two irregular spiral bands *ranunculus*, p. 32
32. Shell less than 30 mm. in length; axial zig-zag lines near the base of the shell *perryae*, p. 31
33. Each whorl on the spire rather deeply concave 35
34. Each whorl on the spire flat or nearly so 41
35. Shell white or with two bands of pink or brownish pink 39
36. Shell with three bands of color 37
37. Spire extended; color consisting of three spiral bands of brownish orange with a series of brownish dots arranged in a spiral pattern *sozoni*, p. 30
38. Spire rather depressed; color consisting of three bands of orange with a series of zig-zag axial lines crossing the white areas *centurio*, p. 24
39. Shell white or with two pale pinkish bands *bermudensis*, p. 34
40. Shell with two irregular brownish pink bands *lymani*, p. 35

- | | |
|---|-----------------------------|
| 41. Sides of body whorl flat or slightly convex | 43 |
| 42. Sides of body whorl moderately concave | <i>fosteri</i> , p. 34 |
| 43. Spire with rather deeply concave sides | 47 |
| 44. Spire with flat sides | 45 |
| 45. Shell less than 25 mm. in length; spire with three or four incised spiral lines | <i>brasiliensis</i> , p. 24 |
| 46. Shell more than 30 mm. in length; spire without the incised lines | <i>juliae</i> , p. 26 |
| 47. Spire extended, occasionally carinated | 53 |
| 48. Spire well depressed, rarely carinated | 49 |
| 49. Shell with numerous spots of orange or orange brown in spiral formation | 51 |
| 50. Shell generally a solid brownish orange or brownish salmon with a narrow pale mid area | <i>daucus</i> , p. 21 |
| 51. Lines of spiral dots usually separated, seldom forming solid patches by coalescing | <i>atlanticus</i> , p. 20 |
| 52. Lines of spiral dots generally coalescing in patches to form two irregular banded areas | <i>spurius</i> , p. 19 |
| 53. Nuclear whorls papilliform | 55 |
| 54. Nuclear whorls acute but not papilliform | 58 |
| 55. Shell white or very pale flesh colored | <i>caribbaeus</i> , p. 23 |
| 56. Shell maculated with bright yellow or brownish orange | <i>flavescens</i> , p. 22 |
| 57. Color consisting of irregular areas of yellow, brown or brownish orange | <i>floridanus</i> , p. 27 |
| 58. Color as in 57 but in addition with a series of interrupted spiral lines | <i>floridensis</i> , p. 28 |
| 59. Color consisting of a warm brown with fine spiral lines that are nearly continuous. Base of shell usually tipped with chocolate brown | <i>burryae</i> , p. 29 |

* * * * *

Most of the following citations refer to species that at one time or another have been credited to the Western Atlantic. Many of these are now known to occur elsewhere or are known as synonyms of species found in other regions.

Conus ammiralis Linné 1758, Syst. Nat. ed. 10, p. 713 (Locality unknown).

Linné refers to G. E. Rumphius 1739, Thesaurus Piscium Testaceorum, pl. 34, fig. B, which is here selected as the type figure. This species is East Indian and not Western Atlantic.

Cucullus antillarum Röding 1798, Museum Boltenianum p. 47.

This is a synonym of *Conus pertusus* Hwass according to Tomlin (p. 213). It is not a Western Atlantic species.

Conus archetypus Crosse 1865, Jour. de Conchy. 13, p. 313, pl. 10, fig. 7 (Locality unknown).

This is certainly not a synonym of *C. daucus* as stated by Tomlin (p. 214). It appears to be a young specimen of *regius* or perhaps *C. r. cardinalis*. I have seen reddish brown specimens of *regius* that agree very closely with the specimen figured by Crosse. The type is in the British Museum.

Conus breviculus Sowerby 1833, Conch. Illust. pt. 37, fig. 55 (Locality unknown).

This is apparently a young specimen of *C. papilionaceus* Hwass from West Africa.

Conus candidus Kiener 1848, Icon. Coquilles Vivantes 2, p. 214, pl. 97, fig. 1 (Locality unknown).

This species has frequently been referred to as an earlier name for both *floridanus* Gabb and *pealii* Green. It may well be related but is certainly not either of these species.

Conus castus Reeve 1844, Conch. Icon. 1, pl. 47, fig. 267 (Locality unknown).

This species does not appear to be a synonym of *C. daucus* as stated by Tomlin (p. 226). The character of the spire and the general shape of the shell are very different from our West Indian species.

Conus cedonulli Linné 1767, Syst. Nat. ed. 12, p. 1167 (O. Americae meridionalis). Linné refers to A. Saba 1761, Rerum Naturalium Thesauri 3, pl. 48, fig. 8; *non cedonulli* Lamarek 1810.

I know of nothing in the Western Atlantic that approaches the excellent figure in Saba. This figure is the type.

Conus cidaris Kiener 1846, Icon. Coquilles Vivantes, 2, p. 57, pl. 63, fig. 1-1a (Indian Ocean).

This species is close to *citrinus* Gmelin but does not appear to be the same. It probably does not occur in the Western Atlantic.

Conus columba Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 709 (Asiatic Ocean and Mauritius).

Hwass refers to Gaultieri 1742, pl. 25, fig. G, which is here designated as the type figure. There appears to be nothing in the Western Atlantic that agrees with this species.

Conus croceus Sowerby 1833, Conch. Illustrations, p. 29, fig. 27 (Locality unknown); *non croceus* Smith 1877.

This is not a synonym of *C. daucus* as stated by Tomlin (p. 236) nor does it even appear closely allied to it. I have seen nothing in the Western Atlantic that even approaches the excellent figure of Sowerby.

Conus gracilis Sowerby 1823, Gen. Rec. Foss. Shells, pt. 16, pl. 267, fig. 4; *non* Wood 1828; Sowerby 1875.

This is a synonym of *australis* Lam. according to Sowerby himself.

Conus maculiferus Sowerby 1833, Conch. Illustrations, pt. 29, fig. 23 (Locality unknown).

Western Atlantic specimens appearing under this name are generally young specimens of *C. regius* Gmelin. True *maculiferus* differs in having the maculations definitely in an axial arrangement and not irregular or patchy as in young *regius*. A larger series may indicate this species to be a synonym of *regius*.

Conus praefectus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 734 (Seas of America).

This is not a Western Atlantic species.

Conus rattus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 700 (Seas of America).

This is an Indo-Pacific species though occasional specimens of *citrinus* approximate it in general character, especially by the broadening of the white bands.

Conus sanguinolentus Reeve 1849, Conch. Icon. 1, (Suppl.) pl. 8, fig. 274 (Locality unknown).

This is not *daucus* as stated by Tomlin (p. 305). It is not known to me as a Western Atlantic species.

Conus venulatus Hwass 1792, [in] Bruguière, Ency. Meth. Vers, 1, p. 695 (America or Manila).

This is not a Western Atlantic species.

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