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POTAMIDIDAE

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CERITHIDEA AND BATILLARIA IN THE WESTERN ATLANTIC

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Cerithidea and *Batillaria* are the two Western Atlantic genera of Potamididae. They are brackish water snails of our tropical and subtropical coasts, from South Carolina and Bermuda to Trinidad and Barbados and are often found in abundance on intertidal flats, in lagoons, or in mangrove swamps.

Cerithidea Swainson

Cerithidea Swainson, 1840, Treatise of Malacology, pp. 198, 203, and 342. Genotype, by designation of Pilsbry and Harbison (1933): *Melania lineolata* Griffith and Pidgeon, 1834 (not *Strombus lineolatus* Gray, 1828) = *Cerithium obtusum* Lamarek, 1822.

Shell turriculate, often decollate, with many convex whorls, strongly sculptured. Vertical ribs regularly spaced, either even or more or less cut into tubercles and stopping at the periphery of the body-whorl; in addition, weak vertical growth-striae and, in the intervals between the ribs, fine spiral striae; base, below the periphery, often with coarse spiral grooves and ridges, cut by fine growth-striae. Aperture with the columellar margin nearly straight, ending below in a slightly produced, very shallow groove; lower half of outer lip somewhat projecting beyond the base of the columella; edge of outer lip thickened, particularly over the upper two-thirds, smooth inside. In some cases the thickened lip is repeated several times during life, older shells showing a series of varices along the spire. Operculum corneous, subcircular, spiral, closely coiled about a central nucleus. Animal with an anterior snout and a subcircular foot, obtuse behind; eyes on the tentacles, some distance from the tips; siphon long or short, usually fringed.

The three Western Atlantic species are placed in the subgenus *Cerithideopsis* Thiele (1929, Handbuch der Weichtierkunde, 1, p. 206) with *Potamides iostomus* Pfeiffer, 1839 (= *Cerithium pliculosum* Menke, 1829) as the type. This subgroup is defined by peculiarities of the radula only.



Plate 1. Body-whorls and opercula. Enlarged

Cerithidea costata da Costa, Plate 1, fig. 1; Plate 2, figs. 1-7.

Strombiformis costatus da Costa, 1778, British Conchology, p. 118, pl. 8, fig. 14 (supposedly from the coast of Cornwall, England, but now known not to occur in Europe).

Cerithium lafondii Michaud, 1829, Bull. Soc. Linn. Bordeaux, **3**, p. 264, pl., figs. 7-8 ("Sea of the Indies"). Kiener, 1841-1842, Spéc. Gén. Icon. Coq. Viv., **6**, *Cerithium*, p. 97, pl. 24, fig. 3.

Cerithium ambiguum C. B. Adams, 1845, Proc. Boston Soc. Nat. Hist., **2**, p. 4 (Jamaica).

Cerithium salmacidum Morelet, 1849, Testac. Noviss. Insulae Cubanae Amer. Centr., **1**, p. 27 (Sisal, Yucatan).

Cerithium pelitii "Kiener" Schramm, 1869, Catalogues Coquilles Crustacés Guadeloupe, 2nd Ed., p. 11 (*nomen nudum*; Guadeloupe). Tryon, 1887, Man. of Conchology, (1) **9**, pp. 164 and 216 (as a synonym of *C. costata*).

Cerithidea pupoidea Mörch, 1876, Malak. Blätt., **23**, p. 93 (Antilles).

Description. Shell small, translucent, elongate turriculate, of 9 to 12 very convex whorls, either complete or with only the very earliest whorls lost in the adult; body-whorl evenly rounded at the periphery. Sculpture of prominent, thick, somewhat curved, vertical ribs, extending from suture to suture, of variable width, usually somewhat narrower than the intervals; from 25 to 30 ribs on the penultimate whorl; in fully adult shells they fade away on the body-whorl toward the outer lip, being gradually replaced by the strengthened growth-striae, which elsewhere are very fine. The ribs are smooth, bluntly rounded and even in typical *costata*. At least traces of an exceedingly minute spiral striation may be seen in the intervals between the ribs. On the body-whorl the ribs stop below the periphery, usually at a low spiral ridge, sometimes followed by a weaker one; peripheral ridge sometimes visible above the suture of earlier whorls; base otherwise with growth-striae only. Aperture obliquely oval; columellar margin deeply concave;

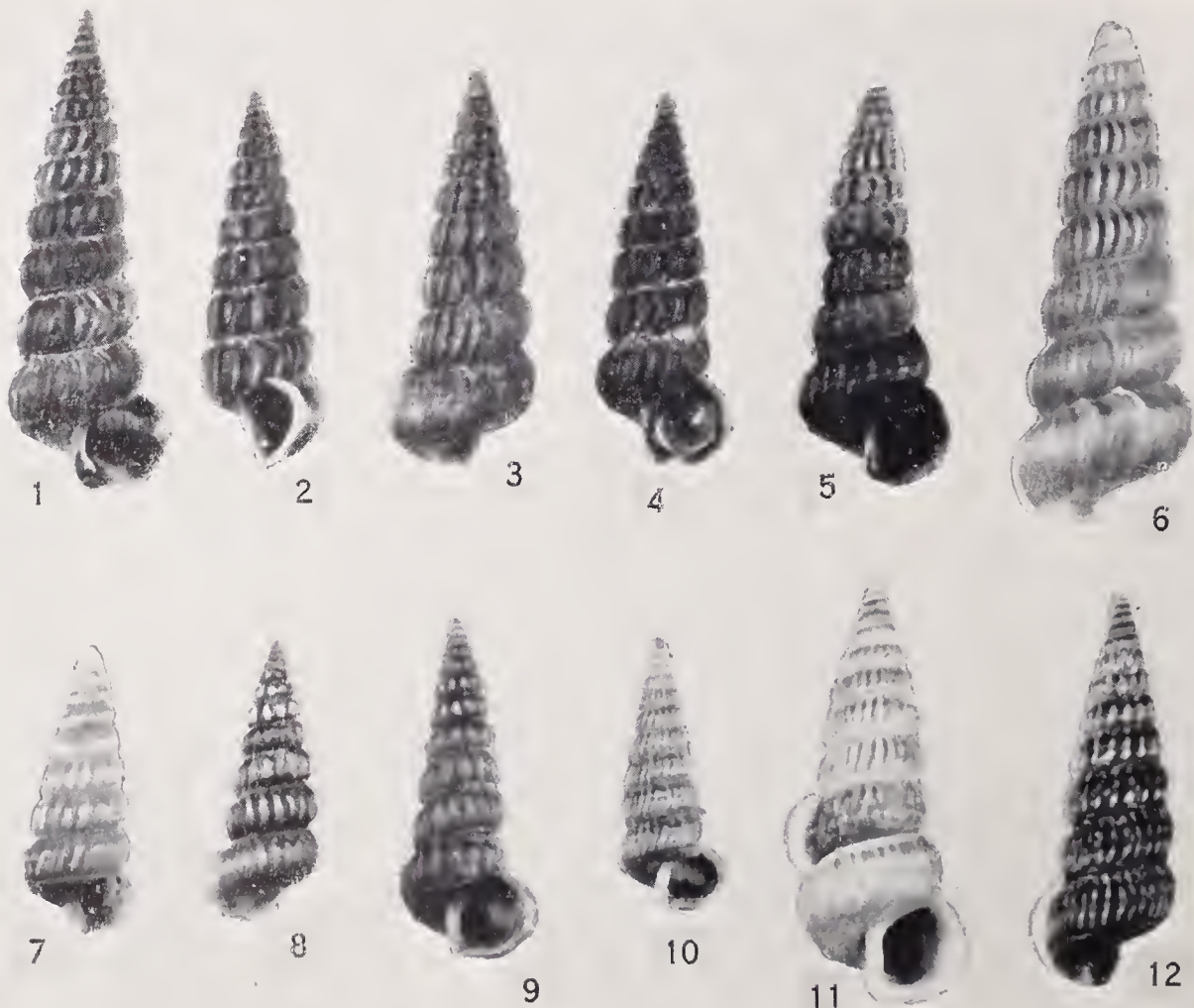


Plate 2. *Cerithidea costata* da Costa and subspecies. Enlarged

outer margin evenly and strongly convex; basal margin nearly horizontal and separated from the columella by a very shallow groove; outer lip usually thin or slightly thickened (very rarely varicose), smooth inside, moderately produced over basal half where it projects beyond the base of the columella in side view. Varices absent or very weak on the spire, exceptionally more pronounced. Color as a rule uniformly pale yellowish-brown; sometimes with faint paler spiral banding over the middle of the whorls or on the base of the body-whorl.

length	width (at body-whorl)	
8.5	3.6 mm.	Cat Id., Bahamas
11	3.8	Yucatan (cotype of <i>salmacidum</i>) Pl. 2, fig. 7
11.5	3.7	Grassy Key, Florida
13.1	4.5	Jamaica (cotype of <i>ambignum</i>) Pl. 2, fig. 5
17	5.7	Santa Fé, Havana, Cuba

Types. The type figure is that of da Costa (1778), but his locality is erroneous. As the first synonym with a correct, definite locality is *C. ambignum*, Montego Bay, Jamaica, is herewith designated as the type locality of *C. costata*.

Range. Typical race: The coast of South Carolina (Pawley's Id., according to Mazyck, 1913), Georgia (presumably) and Florida (common); West Indies; and the Caribbean shores of Central and South America, as far east as Venezuela. In Mexico, known only in Yucatan. The supposed occurrence alive in the Mediterranean is open to question.

Records. FLORIDA: many east coast localities to Key West. BAHAMAS: New Providence; Great Abaco; Watling Id.; Bimini Ids.; Long Island; Ragged Ids.; Eleuthera; Great Inagua; Cat Id. CUBA: Cayo de los Cinco Leguas; La Coloma, Pinar del Rio; Cabo Cruz; Mariel; Santa Fé, Habana. HISPANIOLA: Gonave Id.; Monte Cristi; Barahona. JAMAICA: Montego Bay. MEXICO: Talcha, Progreso and Dzixulub, Yucatan. VENEZUELA: La Cabrera, Lake Valencia. Mörch records it from Guadeloupe, St. Thomas, St. Martin and St. Bartholomew.

***Cerithidea costata turrita* Stearns, Plate 2, figs. 8-9.**

Cerithidea turrita Stearns, 1872, Proc. Boston Soc. Nat. Hist., **15**, p. 24 (Point Penallis, Tampa Bay, west coast of Florida, herewith designated as type locality). Tryon, 1887, Man. of Conchology, (1) **9**, p. 164, pl. 34, fig. 83.

Description. Differs mainly from the typical form in the more widely spaced and straighter ribs, of which there are 15 to 20 on the penultimate whorl. It averages smaller.

length	width (at body-whorl)	
8.5	3.8 mm.	Sanibel Id., Florida
11	3.7	Tampa Bay, Florida
13	4.2	Sanibel Id., Florida

Range. Restricted to the west coast of Florida, from the Cedar Keys southwards. Published records from elsewhere based on small specimens of typical *costata*.

Records. FLORIDA: Tampa Bay; Sanibel Id.

***Cerithidea costata beattyi*, new subspecies. Plate 2, figs. 10-12**

Cerithidea ambigua Reeve, 1866, Conchol. Iconica, **15**, *Cerithidea*, pl. 2, figs. 9a-b (Jamaica). Not *Cerithium ambiguum* C. B. Adams, 1845.

Description. Differs from typical *costata* in the vertical ribs being more or less divided by two or three spiral grooves into tubercles varying from low and elongate to rounded

and bead-like; one groove runs below the suture, another, usually wider, about midway between suture and periphery. The outer lip is often much more swollen and varicose than in the typical race. In some lots transitional specimens connect *beattyi* with typical *costata*.

whorls	length	width (of body-whorl)	
12	14.2	5 mm.	St. Croix, holotype. Pl. 2, fig. 10
12	15.7	5.5	Long Island, Bahamas, paratype

Types. Holotype, MCZ No. 118619, Salt Pond, St. Croix, Virgin Ids., H. A. Beatty collector. Paratypes, MCZ No. 137213 and USNM No. 522531, from locality of holotype; ANSP No. 18033, St. Croix; MCZ No. 104630, Riding Point, Grand Bahama; MCZ No. 143076, Bretts Hill, Long Island, Bahamas; USNM No. 391345, E. side of Little Halfway Creek, Grand Caicos Id., Bahamas; USNM Nos. 322322 and 322327, N. side of Barbuda Id.; ANSP No. 18034, Trinidad.

Remarks. Reeve, followed by Tryon, used the name *aubigua* Adams for this race of *C. costata* with slightly nodulose ribs; but Adams did not mention that character in the original description of *Cerithium aubiguuum* and it is not present in his cotypes at M.C.Z. The name *lafoudii* does not apply to this form, as both Michaud's and Kiener's figures show smooth, even ribs.

Range. Probably sporadically throughout the range of the species; known with certainty at present from the Bahamas, Virgin Islands, Barbuda and Trinidad. Reeve's locality "Jamaica" is doubtful. The form of *C. costata* with subnodose ribs, listed by Mörch from Guadeloupe, was presumably *beattyi*.

Cerithidea pliculosa Menke, Plate 3, figs. 1-3

Cerithium pliculosum Menke, 1829, Verzeichn. Conch.-Samml. Malsburg, p. 27 (with description; no locality). Mörch, 1876, Malak. Blätt., 23, p. 88 (Jamaica; Puerto Caballo, Venezuela; a doubtful variety from Haiti; saw Menke's type at the Copenhagen Museum).

Potamides iostomus Pfeiffer, 1839, Arch.f. Naturg., 5, pt. 1, p. 357 (Cuba).

Cerithium lavalleanum d'Orbigny, 1842, in de la Sagra, Hist. Phys. Pol. Cuba, Moll., Atlas, pl. 23, fig. 16 (binomial printed on plate); Text, 2, (1847-1853), p. 156 (Cuba).

Cerithidea varicosa Mörch, 1876, Malak. Blätt., 23, p. 88. Not *Cerithium varicosum* Sowerby, 1834; nor of Valenciennes, 1832.

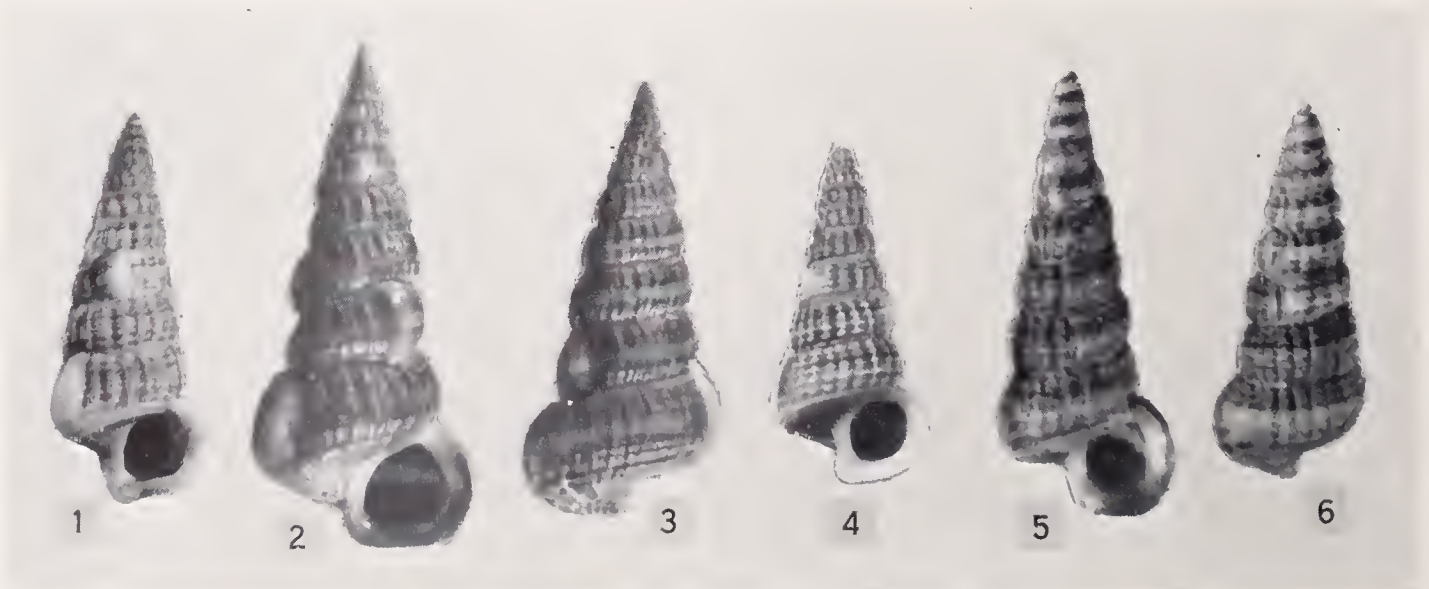


Plate 3. *Cerithidea pliculosa* Menke and subspecies. Enlarged

Description. Shell medium-sized, opaque, broadly turriculate, of 11 to 13 slightly convex whorls, complete or with only the first whorl lost in the adult; body-whorl evenly rounded at the periphery. Coarsely sculptured with vertical ribs and much weaker spiral ridges and, as a rule, with 5 to 8 prominent varices, often beginning with the sixth whorl. Vertical ribs strong, blunt, slightly curved, unevenly spaced, often nearly as wide as the intervals; from 18 to 25 on the penultimate whorl and continued on the body-whorl to near the outer lip. Many fine, well-marked, spiral striae in the concave intervals between the ribs; sometimes stronger but low spiral ridges, producing traces of unevenness where they cut the ribs. On the body-whorl the ribs stop below the periphery at a moderately strong spiral ridge, the base itself bearing 6 to 9 similar but weaker spiral ridges. Growth-striae very weak, except on varices and base. Aperture subcircular; columellar margin concave; outer margin evenly and strongly convex; basal margin horizontal, separated from the columella by a very shallow depression. Outer lip very thick, particularly in upper half, which is strongly set off as a varix from the body-whorl and is covered with many fine growth-striae; varix often separated by a crest from the smooth inner surface of the aperture. In profile the outer lip regularly produced below, where it projects slightly beyond the base of the columella. Color as a rule brownish-black with the varices of outer lip and spire bone-yellow or pale orange-yellow; sometimes with a narrow, dirty-yellow spiral band over middle of whorls.

length	width (of body-whorl)	
20.6	8 mm.	Matanzas, Cuba
24.3	8.9	Indianola, Texas
26.5	9.5	Sabana la Mar, Cuba
27	11	Caibarien, Cuba

Types. Menke's type of *C. pliculosum* has not been figured and he gave no locality. Pfeiffer's *P. iostomus*, also unfigured, was from Cuba, and I herewith designate Havana as the type-locality, as Pfeiffer most probably collected his specimens in that vicinity.

Remarks. Young *C. pliculosa* are much like small specimens of *C. costata*, but the whorls are flatter and the shell is relatively wider for the same number of whorls. *Cerithium hanleyi* Sowerby (1855) and *C. lafondii* Michaud (1829) are not synonyms of this species, as Tryon stated.

Range. The West Indies and the coast of the Caribbean as far east as Venezuela. Along the Gulf of Mexico it extends northward to Louisiana. Not known from Florida nor the Bahamas.

Records. TEXAS: Indianola, Matagorda Bay, Calhoun Co.; Corpus Christi; Port Aransas, Nueces Co. LOUISIANA: Chandeleur Id. CUBA: Muelles and Punta Brava, Caibarien; Caonao River, Soledad; Sabana la Mar; Havana; Rio Yumuri and Rio Conimar, Matanzas; La Coloma, Pinar del Rio; Laguna del Quibre, Havana Prov. HISPANIOLA: Jeremie, Haiti. Old Providence Id., off the coast of Honduras. PANAMA: Limon Bay, C.Z. COLOMBIA: Cartagena. There are published records from Jamaica and Venezuela.

***Cerithidea pliculosa veracruzensis*, new subspecies. Plate 3, figs. 4-6**

Description. Differs from typical *pliculosa* in the unusual development of the spiral ridges, which are often more pronounced than the vertical ribs and produce slight, smooth tubercles where they intersect the latter; the surface becoming reticulate. The varices are often weaker than in the typical race. Specimens from Tampico are transitional between *veracruzensis* and typical *pliculosa*.

length	width (of body-whorl)	
17.6	7.6 mm.	Vera Cruz, Mexico, holotype. Pl. 3, fig. 4
22.8	8.3	Puerto Barrios, Guatemala, paratype

Types. Holotype, MCZ No. 143087 and paratypes, MCZ No. 113739, Vera Cruz, Mexico. Paratypes, MCZ No. 88860, Puerto Barrios, Guatemala; ANSP Nos. 124569 and 124580, Esterro de Espantaperros, Isthmus of Tehuantepec, Mexico; USNM Nos. 220010 and 466164, 20 kilom. W. of Tampico, Mexico; USNM No. 150295, Belize, British Honduras; USNM No. 421632, Greytown, Nicaragua.

Range. The Atlantic coast of Mexico and Central America.

Cerithidea scalariformis Say, Plate 4, figs. 1-5

Pirena scalariformis Say, 1825, Jr. Ac. Nat. Sci. Phila., 5, p. 128 (Florida Keys).

Potamides tenuis Pfeiffer, 1839, Arch. f. Naturg., 5, pt. 1, p. 357 (Cuba).

Cerithidea hanleyana Reeve, 1866, Conchol. Iconica, 15, *Cerithidea*, pl. 3, figs. 16a-b (no locality). Not *Cerithium hanleyi* Sowerby, 1855.

Description. Shell medium-sized, translucent, elongate turriculate, of 10 to 13 strongly convex whorls, usually with only the first whorl lost in the adult; body-whorl evenly rounded at periphery. Coarsely sculptured with vertical ribs; spire without varices; normally with only a few strong spiral cords at sutures and on base of body-whorl. Vertical ribs strong, blunt, scarcely curved, evenly spaced, about as wide as their intervals; from 25 to 30 on penultimate whorl and continued on body-whorl to near outer lip. Normally no visible spiral sculpture on spire and above periphery of body-whorl; the ribs stop abruptly below the periphery at a sharply marked, rounded spiral ridge, which is prominent in the sutures of the spire; below this ridge, the base of the body-whorl bears 5 more very broad spiral ridges, separated by much narrower grooves. Growth-striae very weak everywhere. Aperture subcircular; columellar margin concave; outer margin strongly and evenly convex; basal margin somewhat produced and slightly flaring, barely separated from the columella by an extremely shallow concavity. Outer lip very thick, particularly in upper half, which is strongly set off as a varix from the body-whorl; outer portion of varix with a few coarse growth-striae, inner portion smooth and continued in the smooth inner surface of the aperture, without intervening crest. In profile, outer lip a little pro-

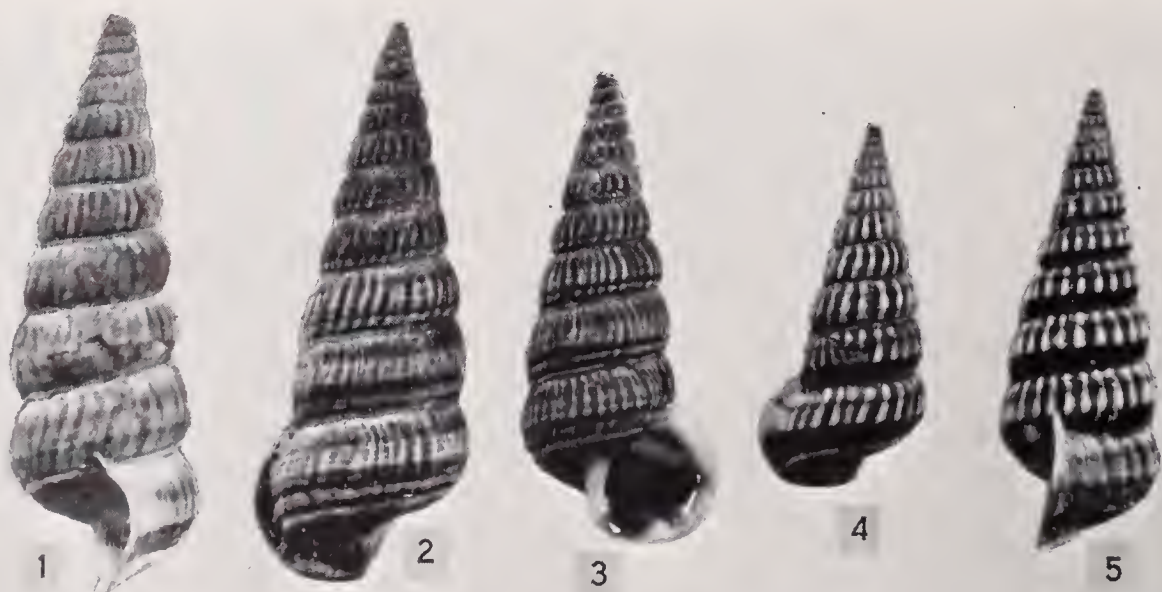


Plate 4. *Cerithidea scalariformis* Say. Enlarged

duced below, where it projects beyond base of columella. Color a pale russet-brown, slightly violaceous, usually with many conspicuous dirty-white spiral bands, of variable width, which may be seen in the translucent mouth.

length	width (at body-whorl)	
16	7 mm.	Terraceia, West Florida
23.7	9.2	South Carolina
29	11.2	Key West, Florida
30	10.6	Cayo Romano, Cuba

Types. Say's type and two paratypes are at A. N. S. P. (No. 18015); they have not been figured. The Florida Keys being rather indefinite as locality, Key West is herewith designated as the type locality, as it may well have been visited by Titian Peale.

Remarks. In this species growth is concluded with the formation of the varix of the outer lip of the mouth, regardless of the size reached. The number of whorls of adult shells varies from 10 to 13, even in the same lot. Tryon was no doubt correct in regarding *P. tennis* as an immature *scalariformis*. Pfeiffer mentioned the characteristic impressed line above the suture, as well as the spiral grooving on the base of the body-whorl. *C. scalariformis* lives a great portion of the day out of water, frequently crawling up the stems of grass.

Range. East coast of Florida and northward as far as South Carolina (rather rare according to Mazyck). West coast of Florida from Cedar Keys southward. Cuba (known only from some of the Keys off the north coast). Hispaniola (according to Mörch).

Records. SOUTH CAROLINA. GEORGIA: St. Simon's Id. (USNM). FLORIDA: along entire east coast and on the west coast as far north as Tampa Bay and Cedar Keys. CUBA: El Terraplén, Isla de Turiguano, Camaguey; Cayo Romano, Camaguey; N. shore of Cayo Megano Grande, Camaguey; at USNM from Ensenada de Sa. Rosa, Pinar del Rio.

Batillaria Benson

Batillaria Benson, 1842, Ann. Mag. Nat. Hist. **9**, p. 448. Monotypic for *Cerithium zonale* Bruguière, 1792.

Lampania Gray, 1840, Synopsis Contents Brit. Mus., ed. 42, p. 148 (*nomen nudum*: no description, no type); 1847, Proc. Zool. Soc. London, p. 153. Monotypic for *Cerithium zonale* Bruguière, 1792.

Shell pyramidal, rarely decollate, with many flat or weakly convex whorls, moderately to strongly sculptured. Sculpture of spiral grooves and ridges, cut by very fine growth-striae; some of the ridges usually stronger and often more or less wavy or cut into transverse nodules, particularly over upper half of whorl where they may form longitudinal or oblique vertical rows. Aperture with the columellar margin short, somewhat produced outward at the squarely truncate base which is separated from the outer lip by a deep but short, horizontal, oblique or vertical, semi-tubular channel; outer lip evenly and moderately thickened throughout, not projecting beyond base of columella in side view, smooth inside. Spire very rarely with varices. Operculum corneous, subcircular, spiral, closely coiled about a central nucleus (Plate 1, fig. 3).

The only Western Atlantic species is placed in the subgenus *Lampanella* Mörch (1876, Malak. Blätt., **23**, p. 93), with *Murex minimus* Gmelin, 1790, as type (by designation of Wenz, 1940). The group is scarcely worth recognizing.

Batillaria minima Gmelin, Plate 1, figs. 2-3; Plate 5, figs. 1-6

Murex minimus Gmelin, 1790, in Linné, Syst. Nat., 13th Ed., **1**, pt. 6, p. 3564 (Sea near Jamaica; based on Lister, 1770, Hist. Conchyl., Ed. Altera, pl. 1018, fig. 81).

Cerithium clathratum Menke, 1828, Synopsis Moll., p. 32 (*nomen nudum*: new name for "*Nassa septemstriata* Say" = *Cerithium septemstriatum* Say, which was not described until 1832). Mörch, 1876, Malak. Blätt., **23**, p. 93, first defined as a synonym of *B. minima* Gmelin.

Cerithium nigrescens Menke, 1828, Synopsis Moll., pp. 33 and 83 (with description; Havana, Cuba).

Cerithium septemstriatum Say, 1832, American Conchology, **5**, pl. 49, fig. 2, with description in letterpress (Southern coast of Florida).

Cerithium heteroclytes Potiez and Michaud, 1838, Gal. Moll. Douai, **1**, p. 365, pl. 31, figs. 21-22 (no locality). Not of Lamarek, 1822.

Cerithium peloritatum Kiener, 1841-1842, Spéc. Gén. Icon. Coq. Viv., **6**, *Cerithium*, p. 67, pl. 23, figs. 2-2a (Coast of Florida). Not of Cantraine, 1835.

Cerithium eriense "Valenciennes" Kiener, 1841-1842, Spéc. Gén. Icon. Coq. Viv., **6**, *Cerithium*, p. 59, pl. 24, fig. 1 (West coast of Florida and Lake Erie).

Cerithium albovittatum C. B. Adams, 1850, Contrib. to Conchology, No. 7, p. 122 (Jamaica).

Cerithium albocoopertum C. A. Davis, 1904, Nautilus, **17**, p. 129, pl. 4, figs. 32-33 (Bermuda).

Description. Shell small, slender or obesely pyramidal, with 9 to 11 flat whorls, only the two or three earliest whorls lost in the adult; body-whorl evenly rounded at periphery; as a rule distinctly ridged and nodulose, but without varices. Sculpture highly variable, normally of many fine spiral threads and a few much stronger spiral ridges; on last 6 or 7 whorls of spire and above periphery of body-whorl with four evenly spaced ridges, gradually decreasing from the subsutural to the peripheral one, the last partly hidden by the suture; ridges usually wavy, raised at fairly even intervals into spirally elongate tubercles or smooth crests; waving strongest on upper two ridges, often barely indicated on peripheral ridge, and, being fairly regularly spaced, it forms on the spire vertical or somewhat oblique rows of low tubercles which stop at the periphery of the

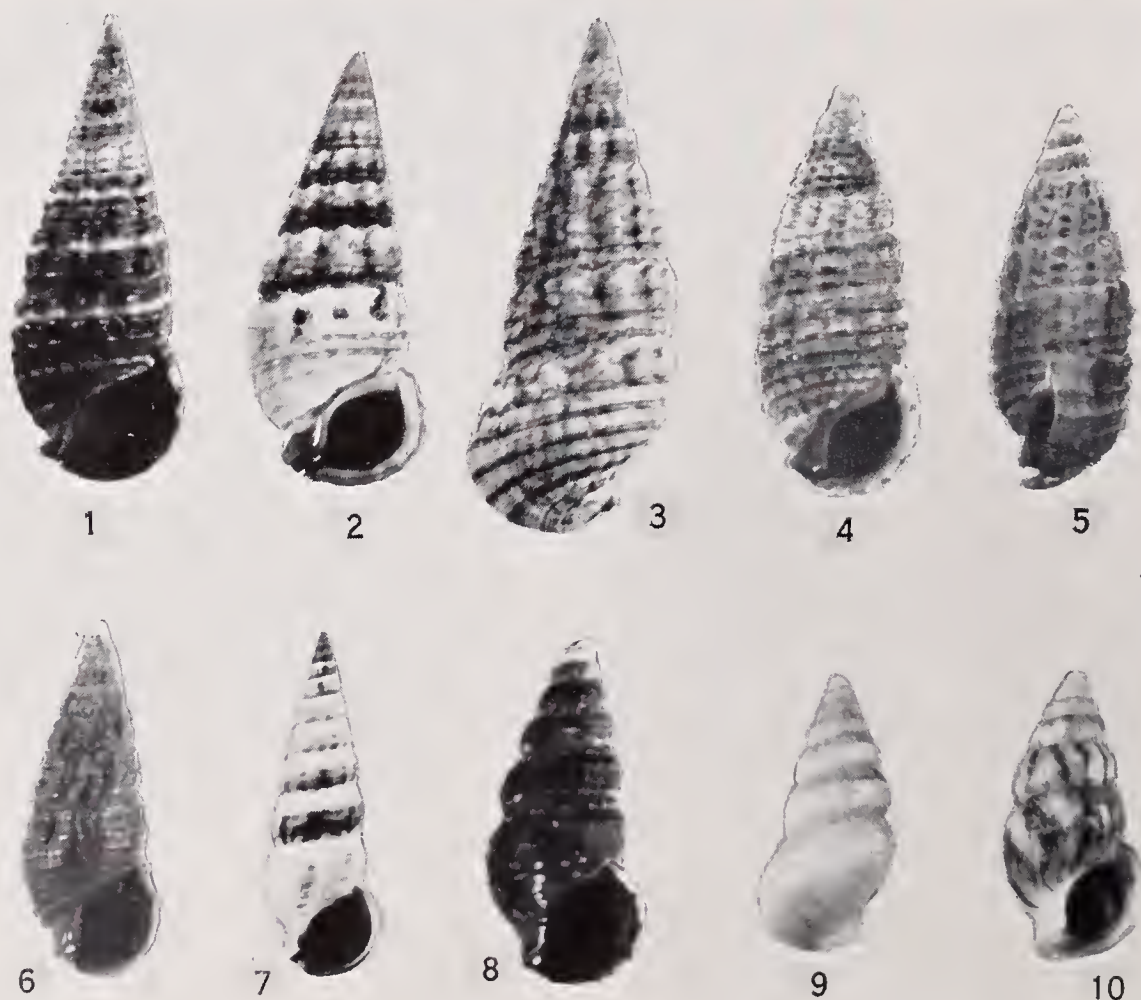


Plate 5. *Batillaria minima* Gmelin and subspecies. Enlarged

body-whorl: base, below periphery, with three or four more spiral ridges, about as strong as the peripheral one; growth-striae very fine. Aperture triangular with rounded sides; outer nearly vertical and lower nearly horizontal, sides connected by a broad, even curve; columellar margin concave; columella short and broad, vertical, abruptly truncate below, separated from base of outer lip by a deep but short, nearly horizontal channel; outer upper edge of channel projecting somewhat beyond outer lower edge and separated by a groove from lowermost spiral ridge of body-whorl; lip simple, scarcely produced basally, either thin or slightly thickened; mouth smooth inside; callus of columellar margin well marked and limited by a fine ridge which is slightly thickened at the upper corner, where it is separated by a notch and narrow groove from the outer lip. The color varies from completely black to almost white; most shells show broad or narrow, dark and light spiral lines or bands.

	length	width (at body-whorl)	
(Smallest adult)	11	3.7 mm.	Miraguana, Haiti
	12	4.1	Gulfport, Florida
	18.5	7.3	Knights Key, Florida
(Largest adult)	21.4	7.3	New Providence, Bahamas

Types. The type figure is that of Lister (1770) and the type locality, given by Gmelin, Jamaica.

Remarks. *B. minima* is often found in abundance in shallow brackish water where it lives in the mud of the intertidal zone. Variation in size, shape, sculpture and color is considerable, several forms usually occurring in one spot, so that they do not even have an ecological significance. Deformed shells are frequent. *B. minima* appears to be the main food of the American flamingo (*Phoenicopterus ruber*) in the Bahamas, this being evidently the snail mentioned as *Cerithium* by Frank M. Chapman (1908, Camps and Cruises of an Ornithologist, p. 155).

B. minima is often confused or mixed with *Cerithium variabile* C. B. Adams (1845) (Syn.: *Cerithium ferrugineum* Say, 1832; not of Bruguière, 1792), a snail of about the same size and general appearance and living under the same conditions. The *Cerithium* differs, however, in the more rounded or bead-like nodules and in the shape of the mouth; this is narrower, with the base of the outer lip shorter than its upper portion, the convex outer lip scarcely more curved than the concave curve of the columellar margin; the channel at the base of the columella is oblique, with the outer upper edge not or scarcely produced and not separated by a groove from the base of the body-whorl; there is a broad channel in the upper corner, where the outer lip joins the body-whorl; inside the mouth is thickened and grooved spirally or toothed some distance from the lip; operculum paucispiral with eccentric nucleus (Plate 1, figs. 4-5).

Range. Bermuda, Florida, West Indies, the Caribbean shores of Central and South America, as far east as Barbados. On the Gulf Coast of Mexico, as far north as Vera Cruz.

Records. FLORIDA: West coast from Gulfport southward; on the east coast from Lake Worth southward to Key West; BERMUDA: common. BAHAMAS: Great Bahama; Great Abaco; Bimini; New Providence; Cat Island; Miraguana; Little Abaco; Long Island; Exuma; Concepcion Island. CUBA: Cienfuegos; Bahia Honda; Caibarien; Cayo Romano; Sagua la Grande; Havana; Banes. Isle of Pines. HISPANIOLA: Monte Cristi; Miragoane; Gonave Id.; Sa. Barbara de Samana. JAMAICA: Kingston. PUERTO RICO: San

Juan; Ponce; Cabras Id. : Ensenada Honda, Culebra Id. VIRGIN IDS. : St. Croix; Virgin Gorda; Tortola; St. Thomas. MEXICO: Campeche. HONDURAS: Roatan Id. PANAMA: Aspinwall (Colon). DUTCH WEST INDIES: Curaçao. COLOMBIA: Cartagena. VENEZUELA: La Cabrera, Lake Valencia. At the A.N.S.P. there are old specimens (from Tryon and T. Say) labelled "South Carolina"; but Mazyek (1913) does not include it in his list. Published records from St. Kitts and Barbados. The reported occurrence in a living condition on the coast of Sicily needs confirmation.

Batillaria minima rawsoni Mörch, Plate 5, figs. 8-10

Cerithium rawsoni "Krebs mss." Mörch, 1876, Malak. Blätt., 23, p. 20 (doubtfully from Barbados).

Cerithium (Pyrazus) rawsoni Dall, 1894, Bull. Mus. Comp. Zoöl., 25, p. 115, pl., fig. 12 (Great Lagoon, Watling Id., Bahamas).

Description. Differs from typical *B. minima* in the shorter but broader shell, particularly at the body-whorl, and in the very weak or obsolete sculpture. The whorls are often very convex, but in some lots they are flat. Transitional stages occur, however, between the typical form and *rawsoni*, both being often found living together; and this applies also to *rawsoni* and *degenerata*.

length	width (at body-whorl)	
10	5 mm.	Mörch's type
10.2	5	Watling Id., Bahamas
12	5.2	Bermuda

Types. The type should be at the Copenhagen Museum. The locality Barbados, given with doubt, was certainly erroneous, and the type probably came from the Bahamas where Rawson also collected. As Watling Id. is the first correct locality published, it may be taken as the type locality. Mörch regarded *rawsoni* as a variety of *Cerithium mutabile* C. B. Adams, although he noted that the outer lip was smooth inside. His two references to Sowerby's figures were not intended as synonyms, but merely to give an idea of the general appearance of *rawsoni*.

Range. *B. m. rawsoni* has been found with typical *minima* in Bermuda and the Bahamas. Its range is therefore restricted, perhaps a valid argument in favor of its retention as a race, even though it may be entirely due to peculiar ecological conditions.

Records. BERMUDA. BAHAMAS: Great Lagoon, Watling Id. : Flamingo Cay, Ragged Id. Group; Long Pt. Pond, 1½ mi. S. E. of Governor's Harbor, Eleuthera Id. : Wemyss, 7 mi. S. E. of Simms, Long Island; Alicetown, N. Bimini Id.

Batillaria minima degenerata Dall, Plate 5, fig. 7

Cerithium (Pyrazus) septemstriatum var. *degeneratum* Dall, 1894, Bull. Mus. Comp. Zoöl., 25, p. 115, pl., fig. 11 (Great Lagoon, Watling Id., Bahamas).

Description. Agreeing with *rawsoni* in the great reduction or obsolescence of the sculpture, but much more slender, being often even more elongate than typical *minima*. It passes, however, gradually into *minima* and *rawsoni*, being usually found with them. The whorls may be very convex or almost flat.

length	width (at body-whorl)	
12	3.9 mm.	Cotype, Watling Id., Bahamas, Pl. 5, fig. 7
10.3	3.5	Lago Enriquillo, Hispaniola

Type. The type, figured by Dall, is at U.S.N.M. There are cotypes from the original lot (one figured here) at M.C.Z.

Range. Known thus far with certainty only from the Bahamas and Hispaniola. Dall and Simpson (1901) report a single specimen from San Juan Harbor, Puerto Rico, but this may have been a worn shell of typical *minima*.

Records. BAHAMAS: Great Lagoon, Watling Id. HISPANIOLA: Lago Enriqueillo, Rep. Dominicana.

Key to Western Atlantic Potamididae

1. A deep, nearly horizontal channel separates the base of the columella sharply from the outer lip. Adult shell 10 to 22 mm. long *B. minima*
A broadly open and very shallow groove scarcely separates the base of the columella from the outer lip 2.
2. Base of body-whorl without spiral threads, except for 1 or 2 where the vertical ribs stop. Outer lip not or slightly thickened. Varices rarely present. Adult shell 8.5 to 17 mm. long *C. costata*
Base of body-whorl entirely covered with evenly spaced spiral threads 3.
3. Spire with a number of well marked varices, irregularly spaced. Concave intervals between the vertical ribs with fine spiral striation. No spiral thread in the suture. Adult shell 17 to 27 mm. long *C. pliculosa*
Spire without varices. Intervals between the vertical ribs not spirally striate. A strong spiral thread in the suture. Adult shell 16 to 30 mm. long *C. scalariformis*

In addition to the collections of the Museum of Comparative Zoölogy (MCZ), I have been privileged to study material from the Academy of Natural Sciences of Philadelphia (ANSP) and the United States National Museum (USNM).

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Through lack of space, the generic diagnosis of *Amiantis* had to be omitted from Johnsonia no. 3, p. 7. We include it here.—W. J. CLENCH

Amiantis Carpenter

Amiantis Cpr. 1864, Rept. British Assoc. **33**, (1863) p. 640, (genotype, *Cytherea callosa* Conr.).

Shell ovate, moderately to strongly sculptured with concentric ridges. Lunule and escutcheon defined; inner margins smooth; pallial sinus large, acute and somewhat ascending. Anterior cardinal tooth thin, anterior laterals large and rather thickened.

This genus is limited to only one species in the Western Atlantic. It is exceedingly close to *Macrocallista* in its characters. The Western Atlantic form is without the pronounced thickening of the inner radial ridges which characterizes *A. callosa* Conrad, of the Eastern Pacific (California to Mexico). *A. purpurata* is the type of the section *Eucallista* Dall 1902.

Santa Barbara de Samana, Santo Domingo

Santa Barbara de Samana is a grand collecting ground for West Indian marine shells. The town proper is small, probably not over 1500 in population and is somewhat sprawled along part of the northern shore of Samana Bay. This little settlement is quaint and decidedly picturesque with its red roofs, white houses, and a background of green mountains.

The entire northern shore of Samana Bay (about twenty-five miles) consists of a series of small crescent-shaped bays created by short spurs or ridges from the main mountain mass of the peninsula. The horns of each crescent are rocky, the inner area a sandy or rubble beach. The town of Santa Barbara possesses as well two small islands which give not only additional beauty to the place but a few extra hundred feet of really fine collecting areas.

Marine shells are exceedingly abundant at this locality, both as to species and as to individuals. It is particularly advantageous in that it offers a remarkable number of habitats so that all types of collecting stations are available for the interested collector. Paths lead along the shores and over or around the small mountain spurs so that several of the bays are readily accessible from the town. We spent three weeks at this place (1937) and did not begin to exhaust the possibilities of Santa Barbara itself. Though our main object was land shell collecting, which was excellent, we did devote much time to the fine marine collecting in this delightful spot. Small boats are available, and more distant points can easily be reached by this method.

At the time of our visit Santa Barbara was completely isolated by road and had to be reached by motorboat from Sabana de la Mar, nine miles across the bay to the south. This last was accessible from Trujillo City (Santo Domingo City) by bus or private auto over a narrow but good road. Also from San Francisco de Macoris, in the interior of Santo Domingo, a tri-weekly train runs to Sanchez at the head of Samana Bay and from there passage is made by motorboat to Santa Barbara. We made the return trip by way of Sanchez and the tri-weekly train, an experience that alone was worth the trip to Santa Barbara. Marine collecting at Sanchez was very poor owing to the amount of fresh water delivered into the bay at this point by the Yuna River. Two or three miles west of this town the collecting would very probably improve. It certainly "looked good" from the boat, a trip of about twenty miles from Santa Barbara.—W. J. CLENCH