

REINSTATEMENT OF THE TURRID GENUS *BELLASPIRA*
CONRAD, 1868 (MOLLUSCA: GASTROPODA)
WITH A REVIEW OF THE KNOWN SPECIES

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ABSTRACT: The clavinid turrid genus *Bellaspira* Conrad is redefined and its type species, from the Virginia Miocene, is illustrated. Six known living species of the genus are treated. Two are from the Caribbean and four are from the eastern Pacific. Three new species are described: *B. acclivicosta*, from Guaymas in the Gulf of California; *B. clarionensis*, from Clarion Island, Mexico; and *B. margaritensis* from Venezuela.

The genus *Bellaspira* Conrad, 1868, type species *Mangelia virginiana* Conrad, 1862, from the Virginia Miocene, had served a need for a small group of American turrids showing rounded axial ribs, fine spiral sculpture and a closely constricted anal canal, not deeply notched as in most other clavinid genera. Conrad's original description of the genus was adequate and his illustration of the type species, although small, showed the diagnostic features in sufficient detail to allow Dall (1919) to associate with it a Recent west American species. Unfortunately, a specimen of some other species was mislabeled as the type of *B. virginiana*, causing Bartsch and Rehder (1939) to interpret it incorrectly. As a result, three Recent species, all of which had been associated with the genus *Bellaspira* at some time, have been without a satisfactory generic allocation until now.

Abbreviations for institutions cited in the text are as follows: AHF, Allan Hancock Foundation (on loan to LACM); AMNH, American Museum of Natural History, New York; ANSP, Academy of Natural Sciences, Philadelphia; CAS, California Academy of Sciences, San Francisco; LACM, Los Angeles County Museum of Natural History; SDNHM, San Diego Natural History Museum; SU, Stanford University, California; USNM, United States National Museum of Natural History.

ACKNOWLEDGMENTS

We are greatly indebted to Mrs. Virginia Orr Maes of the Academy of Natural Sciences, Philadelphia, for locating the type specimen of *Bellaspira virginiana* and providing us with photographs and helpful information about the western Atlantic species. Dr. Joseph Rosewater and Mr. Jack Byas of the U.S. National Museum kindly located and arranged the loan of specimens in

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that institution. Radula slides were prepared by Mrs. Ellen Brennan, Museum research assistant.

Bellaspira Conrad, 1868

Bellaspira Conrad, 1868, p. 261; Dall, 1918, p. 323; Woodring, 1928, p. 162; Grant and Gale, 1931, p. 584.

Type species, by monotypy, *Mangelia virginiana* Conrad, 1862, Miocene, Yorktown, Virginia.

Non *Bellaspira* Conrad. Bartsch and Rehder, 1939, p. 133; Gardner, 1948, p. 271; Powell, 1966, p. 103.

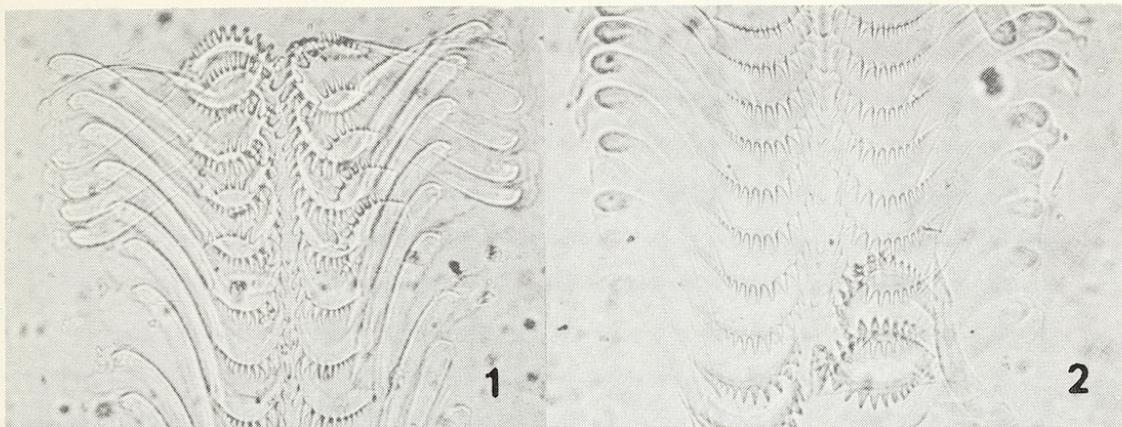
Conrad (1868) described the genus as follows: "Subfusiform, longitudinally ribbed; canal very short, labrum obsoletely and widely notched, curved outwards, simple; labium reflexed, entire; columella straight." With further reference to the type species, he added, "It is a beautiful and graceful shell with distant ribs and very minute, close revolving lines, which become gradually more distinct on the body whorl. The labium is slightly callous near the upper extremity."

The shell figured as the type of *Mangelia virginiana* by Bartsch and Rehder (1939), copied by Gardner (1948), and Powell (1966), in no way agrees with Conrad's description or illustration, and as Powell noted, the affinity of the specimen is "with the mangelias or eucitharids," in the subfamily Mangeliinae rather than the Clavinae.

Mrs. Virginia Maes has found that both the specimen figured by Bartsch and Rehder, ANSP 1610, and another specimen, ANSP 30737, are labeled "*Mangelia virginiana*" in Conrad's handwriting. There is no doubt that the latter specimen is the one figured by Conrad in 1868. There may have been another original specimen in lot 1610 which was subsequently lost. In order to avoid further confusion, the only extant specimen, ANSP 30737, is here considered the holotype. This specimen has seven postnuclear whorls, not five as stated in the original description.

Grant and Gale (1931) included two other genera in the synonymy of *Bellaspira*, the European *Atoma* Bellardi, 1875, and *Haedropleura* Bucquoy, Dautzenberg, and Dollfus, 1883, but these taxa, as treated by Powell, 1966, lack the features of *Bellaspira*. *Bellaspira* is therefore strictly an American genus, with Recent species in the Caribbean, Panamic, and Californian provinces.

Radulae of two west American species, *B. melea* and *B. acclivicosta*, new species, have been examined (Figs. 1, 2). The radula is of the prototypic type described by Powell (1966, p. 70) as occurring in many of the strongly ribbed, glossy shelled genera of Clavininae. The radula consists of a vestigial rachidian, comblike laterals and long, narrow marginals.



Figures 1-2. Radulae of *Bellaspira*, greatly enlarged. 1. *B. acclivicosta* sp. nov., Sola-dita Cove, Guaymas, Mexico. 2. *B. melea* Dall, San Carlos Bay, Guaymas, Mexico.

A new generic diagnosis, taking the features of the living species into account, follows:

Shell 7-19 mm in height, solid, spire elevated; outline concave below the suture, convex above; nuclear whorls two, smooth; axial sculpture of low rounded ribs, spiral sculpture of fine incisions or threads; anterior canal broad, only slightly notched, posterior notch constricted, mature specimens with a small deposition of callus at top of inner lip, immature specimens lacking a turril sinus; lip of mature shell not greatly thickened, but penultimate axial rib thickened, producing a swelling as in other clavinid genera; color white to pink, some with darker spiral banding or markings on the axial ribs; operculum leaf-shaped, nucleus terminal; radula prototypic.

***Bellaspira virginiana* (Conrad, 1862)**

Fig. 3

Mangelia virginiana Conrad, 1862, p. 286.

Bellaspira virginiana, Conrad, 1868, p. 261, pl. 21, fig. 12.

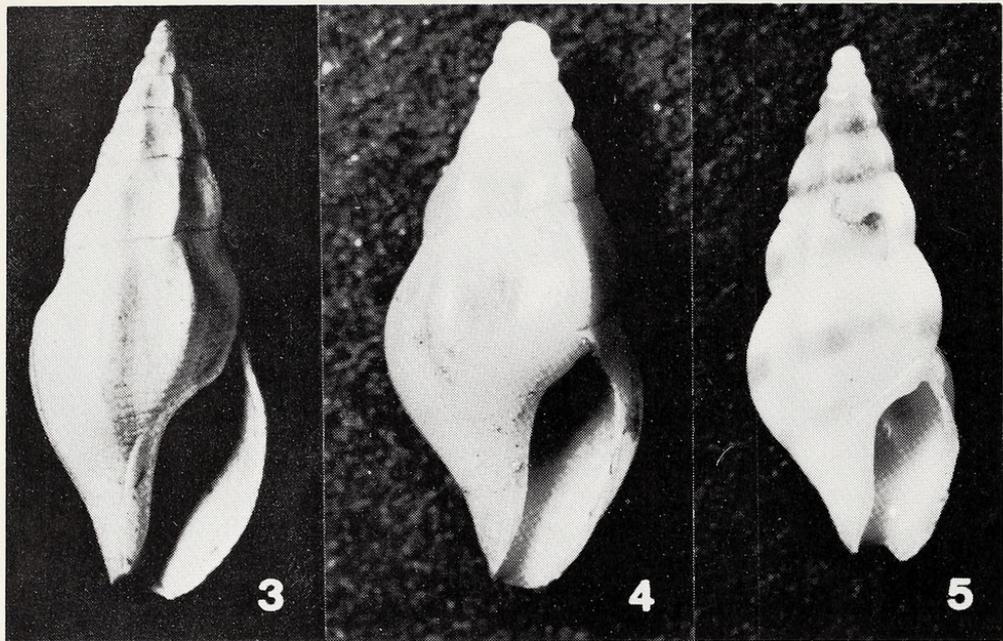
Non *Bellaspira virginiana*, Bartsch and Rehder, 1939, p. 133, pl. 17, fig. 6; Gardner, 1948, p. 271, pl. 37, fig. 14; Powell, 1966, p. 103, pl. 16, fig. 6.

Description: Postnuclear whorls seven, axial ribs eight, continuous from whorl to whorl, spiral striae well spaced; height, 14 mm.

Type locality: Miocene of Yorktown, Virginia.

Type material: Holotype (here regarded as discussed above): ANSP 30737 (Fig. 3).

Discussion: We have no other information on the occurrence of the type species. Additional material is not represented in the Philadelphia Academy.



Figures 3-5. 3. *Bellaspira virginiana* (Conrad). Holotype, ANSP 30737. X 4. 4. *B. pentagonalis* (Dall). Holotype, USNM 9300. X 8. 5. *B. pentapleura* Schwengel (= *B. pentagonalis*). Holotype, ANSP 176450. X 5.

***Bellaspira pentagonalis* (Dall, 1889)**

Figs. 4, 5

Drillia pentagonalis Dall, 1889, p. 90.

Bellaspira (?) *pentapleura* Schwengel, 1940, p. 51, pl. 3, figs. 3, 3a; Powell, 1966, p. 104.

Description: Postnuclear whorls six, axial ribs five, continuous from whorl to whorl, color white with a peripheral row of squarish chestnut spots on the axial ribs, spiral striae weakly developed; height, 8-10 mm.

Type material and type localities: Holotype, *Drillia pentagonalis*, USNM 9300 (Fig. 4); 1 paratype, USNM 679297. Type locality: USFC sta. 2596, 17 miles east of Cape Hatteras, North Carolina, 49 fathoms. Holotype, *Bellaspira pentapleura*, ANSP 176450 (Fig. 5); 3 paratypes, ANSP 315786. Type locality: Off Palm Beach Florida, 45 fathoms, T. L. McGinty.

Distribution: Cape Hatteras, North Carolina, to Key West and Saint Petersburg, Florida, 20-60 fathoms. Approximately 80 lots are represented in the National Museum collection.

Discussion: Dall's early name *Drillia pentagonalis* has been overlooked, evidently because the type was never illustrated. The holotype is worn and faded, measuring 6.9 mm in height. This species has only five axial ribs and thereby differs from all the other species having more numerous ribs.

***Bellaspira margaritensis* sp. nov.**

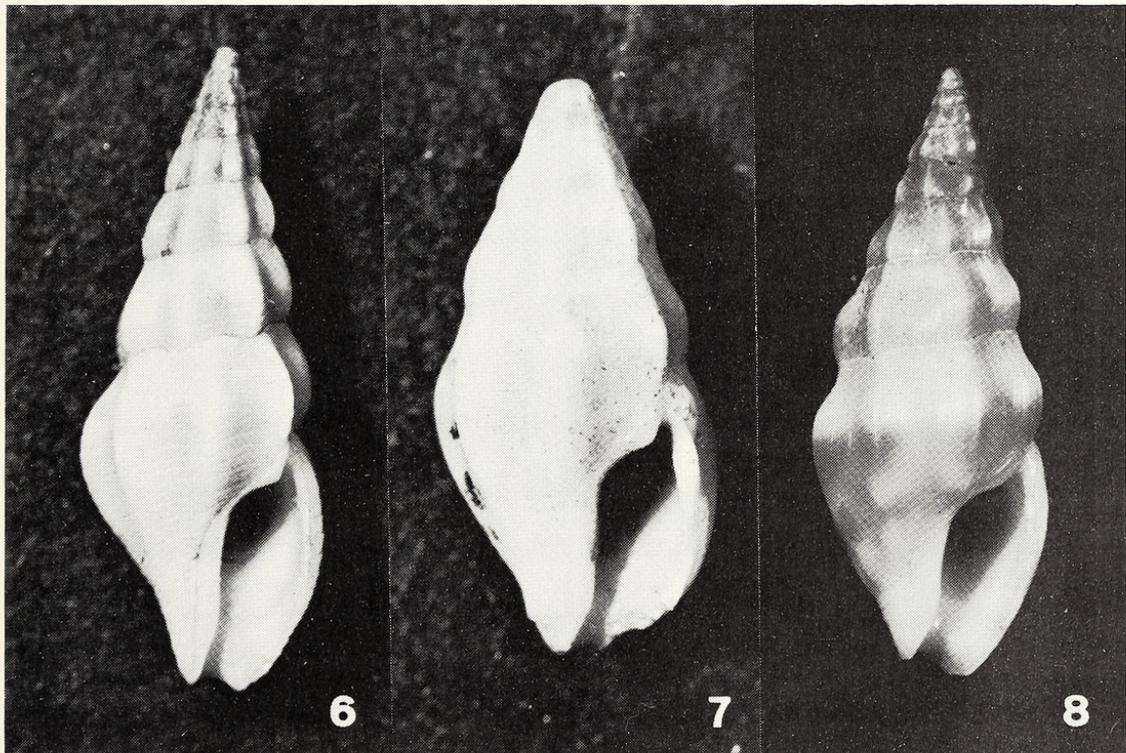
Fig. 6

Diagnosis: A relatively large species, having more numerous axial ribs and more deeply incised spiral striae than *B. pentagonalis*.

Description of holotype: Shell relatively large for the genus; nucleus of two smooth, rounded whorls; postnuclear whorls eight, axial ribs seven, continuous from whorl to whorl; suture simple, slightly undulating; axial ribs evenly rounded, no subsutural channel; spiral sculpture of well defined, broadly spaced spiral incisions, more crowded in the subsutural area, approximately 12 on the penultimate whorl. Color whitish except for a broad pinkish area about the periphery, weakly demarked and not extending over the rib surfaces. Parietal callus well defined, terminating in a small node in front of the anal sulcus. Edge of outer lip thin, with a shallow stromboid notch near the base, a minor axial rib slightly behind the edge; the penultimate rib more strongly developed than the others. Dimensions (in mm): height 15.0, diameter 5.5.

Type locality: Four to seven miles north of Margarita Island, Venezuela, 11° 08' N, 64° 17' W, 17-21 fathoms on sand, R/V *Velero* III Station A42-39, 21 April 1939, four specimens, two live-taken.

Type material: Holotype, LACM-AHF 1337 (Fig. 6); two paratypes, LACM-AHF 1338; one paratype, USNM 675964.



Figures 6-8. 6. *Bellaspira margaritensis* sp. nov. Holotype, LACM-AHF 1337. X 4.2. 7. *B. melea* Dall. Holotype, USNM 15952. X 4.5. 8. *B. melea* Dall. Off San Carlos Bay, Guaymas, Mexico. X 5.

Discussion: The only other species with roundly arched axial ribs is *B. pentagonalis*, from which *B. margaritensis* differs in having two additional axial ribs, more prominent and broadly spaced incised spiral sculpture, and a color band not developed across the rib surface.

***Bellaspira melea* Dall, 1919**

Figs. 7, 8

Bellaspira melea Dall, 1919, p. 29, pl. 19, fig. 8; Grant and Gale, 1931, p. 584.

Elaeocyma melea, Pilsbry and Lowe, 1932, p. 110.

Clavus (?*Cymatosyrinx*) *melea*, Keen, 1958, p. 448, fig. 736.

Description: Postnuclear whorls 7-8, axial ribs 6-8, continuous from whorl to whorl, first rib behind the lip greatly thickened; color whitish to flesh pink, with traces of darker banding, rib surfaces lighter in color; height, 13-19 mm.

Type locality: Panama, collected by Col. E. Jewett.

Type material: Holotype, USNM 15952 (Fig. 7).

Distribution: Tepoca Bay, Sonora, Mexico, to Port Utria, Colombia, 10-40 fathoms. Twenty-two lots are represented in the LACM collection. Intermediate stations in Mexico include Concepcion Bay, Baja California; Guaymas, Sonora; Cleopha Island, Tres Marias Islands; Sihauntanejo, Guerrero; Guatulco Bay, Oaxaca; and in Costa Rica, Port Culebra; indicating that the species is widely distributed throughout its range.

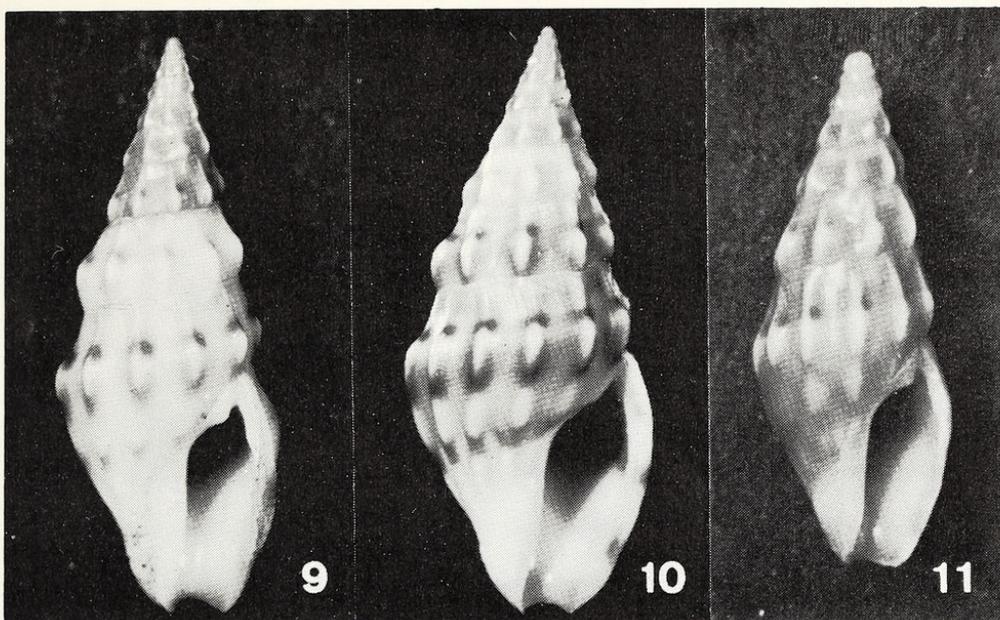
Remarks: Dall (1919) correctly assigned this species to *Bellaspira*, noting that it is "typical *Bellaspira*." It so resembles *B. virginiana* that it would undoubtedly be considered conspecific but for the discrepancies of age and distribution. The type specimen is a worn shell not showing spiral sculpture, but Dall observed that spiral sculpture could have been worn away. In fresh specimens (Fig. 8) the spiral sculpture is extremely minute and somewhat undulating. *Bellaspira melea* varies considerably in color. Some specimens are white and others have pink or flesh colored banding, the darkest band located at the periphery.

***Bellaspira acclivicosta* sp. nov.**

Figs. 9-11

Diagnosis: A relatively large species with a characteristic color pattern, having more numerous and more strongly crested axial ribs than *B. melea*.

Description of holotype: Shell large for the genus, pinkish white to flesh colored; nucleus of two smooth, rounded, glassy pink whorls; postnuclear whorls nine, axial ribs 10, not continuous from whorl to whorl; suture simple, slightly undulating at the base of the ribs; ribs weak on the shoulder, strong and nodulous at the periphery, becoming obsolete on the base. Entire shell



Figures 9-11. All *Bellaspira acclivicosta* sp. nov. 9. Holotype, LACM 1193. X 3. 10. Off Isla Candelero, Guaymas, Mexico, Poorman collection. X 3. 11. Pulmo Bay, Baja California, Mexico, LACM 66-19. X 5.5.

covered by microscopic, raised spiral threads, most numerous above the periphery and strongest on the base, crossed by incremental growth threads to form a minutely reticulated surface. Peripheral crests of ribs white, surrounded by red-brown, strongest above and below; a second and smaller row of dots on the ribs between the periphery and the anterior tip. Columella straight, parallel to axis of shell, twisting slightly to the left at the base. The parietal callus is well defined and terminates in a domelike pad in front of the anal sulcus. Outer lip thin, smooth within, nearly parallel to the columella, showing a shallow stromboid notch near the base and thickened by the final rib, which is preceded by an unusually wide valley and the penultimate rib that is stronger than all the others. Periostracum lacking; operculum with apical nucleus. Dimensions (in mm): height 18.1, diameter 6.8.

Type locality: One kilometer south of the east point at the entrance to Bahia San Carlos, Guaymas, Sonora, Mexico; 27° 56' N, 111° 03' W; 15-20 fathoms on rock and broken shell bottom, December, 1965, to April, 1967, Forrest and Roy Poorman, ten specimens.

Type material: Holotype, LACM 1193 (Fig. 9); one paratype, ANSP 315788, one paratype, AMNH 147999; one paratype, CAS 13159; one paratype, SDNHM 50000; one paratype, SU 9964; one paratype; USNM 679183; three paratypes, Poorman collection.

Referred material: Poorman collection, two specimens dredged at Isla Candelero, Guaymas (Fig. 10); LACM 68-27, four specimens, diving at 60 feet, Soladita Cove, Guaymas; LACM 66-19, one specimen, diving at 5-20

feet, Pulmo Bay, Baja California (Fig. 11); Shy collection (Westminster, California), one specimen dredged at Manzanillo, Colima, Mexico.

Discussion: Immature shells of *B. acclivicosta* do not show a turrid sinus and lack the callus deposition defining the anal sinus. Figure 10 shows a specimen slightly larger and broader than the holotype that has an immature lip. This specimen also is more distinctly colored than the holotype. The specimen from Pulmo Bay (Fig. 11) has six postnuclear whorls and measures 9.1 mm in height. It is evidently a miniature specimen of *B. acclivicosta* having a mature lip. It is similar to the type lot except for size.

The new species differs from *B. melea* in having about ten discontinuous axial ribs rather than seven continuous ribs per whorl. The spiral sculpture consists of fine raised spiral threads on *B. acclivicosta*, whereas the weak grooves on *B. melea* appear to be scratched into the surface.

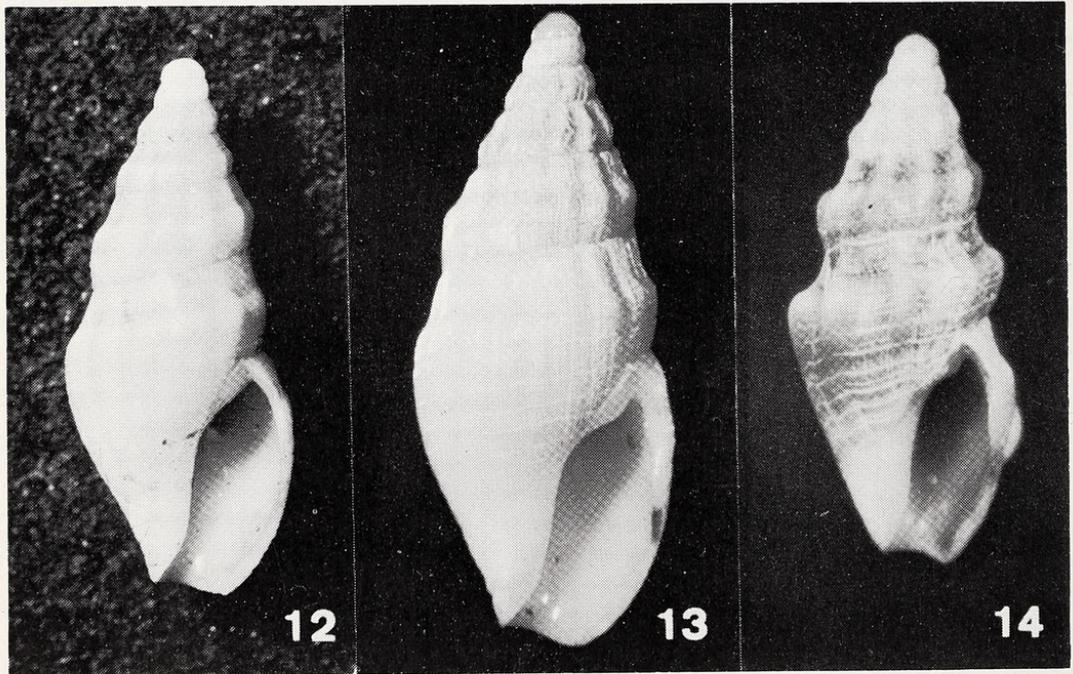
The name is derived from the Latin nouns *acclivis*, steep, and *costa*, rib, suggestive of the steep, concave slope of the ribs below the suture. The specific name is intended as a noun in apposition.

***Bellaspira grippi* (Dall, 1908)**

Figs. 12-15

Bela grippi Dall, 1908, p. 137.

Lora grippii, Dall, 1921, p. 74, pl. 3, fig. 8; Oldroyd, 1927, p. 100, pl. 7, fig. 6.



Figures 12-14. All *Bellaspira grippi* (Dall). 12. Holotype, USNM 200653. X 5.7. 13. San Martin Island, Baja California, Mexico, LACM 67-50. X 6.4. 14. Asuncion Island, Baja California, LACM 67-66. X 7.4.

Bellaspira grippi, Grant and Gale, 1931, pp. 514, 565; Burch, 1946, p. 19 ["*grippii*"].

Description: Relatively small, postnuclear whorls six, subsutural area markedly concave; axial ribs 12-14, not continuous from whorl to whorl, ribs obsolete at the base and often over the final whorl; color white to flesh pink, some with dark and light banding; height, 7-11 mm.

Type locality: Five miles south of the entrance to San Diego Bay, 15 fathoms, C. W. Gripp, collector.

Type material: Holotype, USNM 200653 (Fig. 12), one paratype, USNM 697389.

Distribution: Redondo Beach, California, to Asuncion Island, Baja California; Guadalupe Island, Mexico. Not uncommon on rocky bottoms under kelp and dredged on gravel bottoms to depths of 25 fathoms.

Discussion: Grant and Gale (1931) were the first to associate this species with the genus *Bellaspira*, a relationship missed by Dall, who had correctly assigned his *B. melea* in 1919.

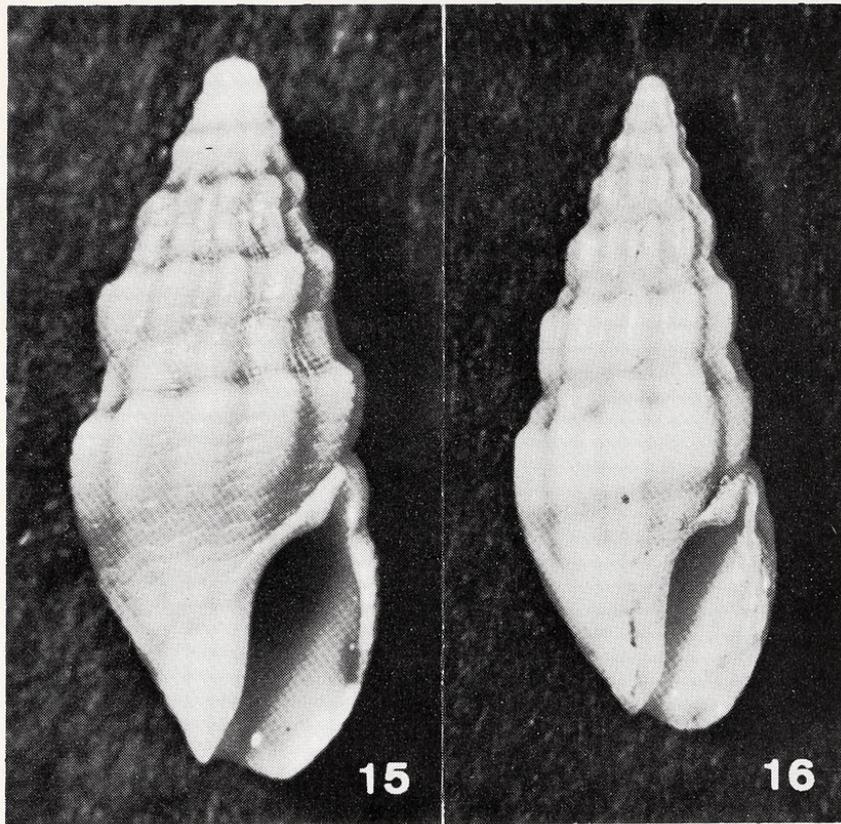
A wide range of variation is shown in this species. The typical southern Californian form, represented by the holotype (Fig. 12) and a specimen from San Martin Island, Baja California (Fig. 13), is whitish or flesh colored and usually shows a slightly darker band in the concave area of the shoulder. One specimen from Asuncion Island, outer coast of Baja California (Fig. 14), 6.9 mm in height, is dark rose colored, except on the siphonal fasciole, and the shoulder is more strongly tabulate, the axial ribs forming projecting nodes. Incised spiral sculpture is unevenly spaced on the body whorl. The largest of five specimens from Guadalupe Island (Fig. 15) is 7.5 mm in height. All are strongly tabulate and the spiral incisions are evenly spaced; two are dark flesh-colored and one is white.

***Bellaspira clarionensis* sp. nov.**

Fig. 16

Diagnosis: A medium sized species larger than *B. grippi* and having more numerous spiral striae.

Description of holotype: Shell of medium size for the genus, nuclear whorls two, rounded; postnuclear whorls seven, axial ribs 10, alternating in position on early whorls, but aligned from whorl to whorl on the final three whorls. Suture simple, slightly undulating; shoulder concave; axial ribs well defined across the shoulder, cresting at the periphery, extending across the body whorl and becoming obsolete on the base. Spiral sculpture of closely spaced spiral striae, more crowded upon the shoulder and overriding the axial ribs. Color whitish with a narrow band of flesh pink upon the shoulder and another uninterrupted narrow band across the base. Parietal callus projecting, anal sinus narrow. Lip edge thin, stromboid notch barely perceptible, the



Figures 15-16. 15. *Bellaspira grippi* (Dall). Guadalupe Island, Mexico, LACM 65-42. X 9.5. 16. *B. clarionensis* sp. nov. Holotype, LACM-AHF 1366. X 4.6.

second and third ribs behind the aperture coalesced and thickened. Dimensions (in mm): height 13.5, diameter 5.9 mm.

Type locality: Off Sulphur Bay, Clarion Island, Revillagigedo Islands, Mexico, 18° 20' N, 114° 44' W, 28-45 fathoms on sand, R/V *Velero III* Station 917-39, 16 March 1939, one specimen. Two additional paratype specimens were dredged at stations 136-34 and 921-39, Sulphur Bay, Clarion Island, 30-35 fathoms.

Type material: Holotype, LACM-AHF 1366 (Fig. 16), one paratype, LACM-AHF 1367; one paratype, USNM 675565.

Referred material: LACM A.375, five specimens, dredged by George Willett, 20-35 fathoms, Clarion Island, 24 March 1938.

Discussion: *Bellaspira clarionensis* differs from *B. grippi* in reaching a larger size, having a narrower shoulder area, elongate rather than nodular axial ribs, and more numerous spiral striae.

RESUMEN

El género clavínido túrrido *Bellaspira* Conrad se redifine y la especie tipo, del Mioceno de Virginia, se ilustra. Seis especies vivientes conocidas en este género son aquí tratadas. Dos de ellas son del Caribe y cuatro del Pacífico



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