West American Species of *Lucapinella*

BY

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(Plate 49; 3 Text figures)

THE WEST AMERICAN SPECIES of *Lucapinella* are at present confused in the literature. Panamic specimens previously identified as *L. callomarginata* (DALL) belong to two separate species. One of these species, *L. milleri* BERRY, was described in 1959 but has remained unfigured. Another species misidentified as *L. callomarginata* is described herein. The four west American species are briefly characterized and new information on their distribution is offered.

ACKNOWLEDGMENTS

The type material of the new species described herein was collected on an expedition aboard the yacht "Sea Quest," as a guest of Mr. and Mrs. Richard F. Dwyer, who have very generously made their vessel available for field work of the Museum.

Mr. Emery Chace arranged the loan of comparative material from the collection of the San Diego Museum of Natural History (SDNHM). Photographs were made by Museum photographer Mike Hatchimonji and radular drawings were prepared by Christiane Charpides. I am grateful to Dr. A. Myra Keen for criticism of the manuscript.

Lucapinella PILSBRY, 1890

Lucapinella PILSBRY, 1890 (1888-1898), vol. 12, p. 179. – 1891 (1888-1898), vol. 12, p. 195. Type species, by SD of PILSBRY, 1890 (Dec.), p. 96: *Clypidella callomarginata* DALL, 1871.

Diagnosis: Shell elongate, anterior end narrow, fissure centrally located, oval or oblong. Sculpture of imbricating ribs; internal margin thickened, offset by a groove. Shell not covered by mantle margin but animal too large to be contained within the shell.

Radulae of 3 species of west American *Lucapinella* have been examined (Text figures 1 through 3). The basic features of each species are similar. The central and four inner lateral teeth are broad, with straight cutting edges, and the outermost lateral is large and bears two cusps, a main cusp and a lateral cusp. A lateromarginal plate is present and the number of marginal teeth is large.

Lucapinella is known only from the warm temperate and tropical regions of North and South America, in the Eastern Pacific and Western Atlantic. *Lucapinella limatula* (REEVE, 1850) is the best known Caribbean species (WARMKE & ABBOTT, 1961, p. 38; pl. 6, fig. 9), but the status of other named forms cited in FARFANTE (1943) and USTICKE (1959) is not clear.

Key to the West American Species of *Lucapinella*

1. Shell markedly narrow anteriorly 2
– Shell with sides nearly parallel 3
2. Fissure elongate, its length two times width ..... *L. callomarginata*
– Fissure oval, its length one and one-half times width ..... *L. eleanorae*
3. Fissure relatively large, one-fourth the length of the shell ..... *L. milleri*
– Fissure relatively small, more than one-fifth the shell length ..... *L. aequalis*

Lucapinella callomarginata (DALL, 1871) *ex* CARPENTER MS

(Plate 49, Figures 1 and 2; Text figure 1)

Clypidella callomarginata DALL, 1871, p. 133, pl. 15, fig. 8
Lucapinella callomarginata (DALL). – PILSBRY, 1890, p. 96. – 1891 (1888-1898), vol. 12, p. 196, pl. 44, figs. 3 - 5, pl. 61, figs. 1 - 5 [animal]. – DALL, 1909, p. 243. – KEEN, 1958, p. 250, fig. 29.

Diagnosis: Shell elongate, relatively large and thick, markedly narrow anteriorly, slopes straight or concave,

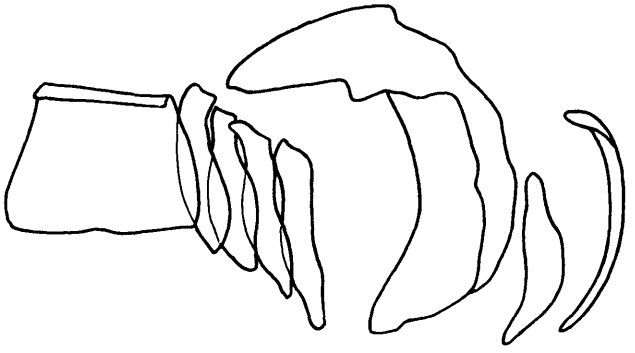

Figure 1

Radula of *Lucapinella callomarginata* (DALL)

Newport Bay, Orange County, California (LACM). Shown from left to right: rachidian tooth, four inner lateral teeth, the large fifth lateral tooth, the lateromarginal plate and the first of many marginal teeth.

posterior margin of shell slightly elevated. Foramen large, elongate, nearly central, sides of foramen elevated, forming the highest point of the shell. Sculpture of primary and secondary ribs, with tertiary ribs in mature specimens; concentric sculpture imbricate, raised on crossing major ribs. Color cream or buff with radiating bands of gray. Mature specimens with thick internal margin nearly obliterating the marginal crenulation. Muscle scar narrow, apertural callus narrow. Dimensions: long. 19, lat. 10, alt. 4.5 mm (holotype).

Type Material: Holotype, U. S. National Museum, cat. no. 19478 (Plate 49, Figures 1 and 2). Type locality: San Pedro, Los Angeles County, California.

Distribution: Morro Bay, California, to Magdalena Bay, Baja California. Records: Morro Bay, San Luis Obispo County, California (Dept. Zool., Univ. Calif. Berkeley collection); Magdalena Bay, Baja California (LACM; USNM no. 150847). Although the species has been reported from localities in northern California, no authentic specimens from north of Morro Bay have been examined. The species is not known in the Gulf of California or in the Panamic province proper. As suggested by KEEN (1958), records from the Panamic province undoubtedly apply to other species. DALL (1909) recorded the species from Chile but no specimens so labeled have been located in the U. S. National Museum. A record of *L. callomarginata* (DALL) from Puerto Rico given by FARFANTE (1946) is probably adventitious.

Discussion: *Lucapinella callomarginata* occurs on the undersides of rocks and on pilings near aggregations of *Mytilus edulis* in bays and channels in southern California. It has not been collected in the sublittoral zone.

Variation of the shell is not extensive. Mature specimens tend to develop thickened shells with a heavy inner margin, obliterating the crenulations.

Only *Lucapinella eleanorae* is as markedly narrow anteriorly as *L. callomarginata*. *Lucapinella callomarginata* has a larger, thicker shell and more elongate foramen than the former.

Lucapinella eleanorae McLEAN, spec. nov.

(Plate 49, Figures 3 and 4; Text figure 2)

Diagnosis: Shell thin, markedly narrow anteriorly, elevation low, base of shell nearly flat. Posterior slope of shell concave. Foramen relatively small, oval, slightly anterior to center. Radial sculpture of approximately 20 primary ribs, 20 secondary ribs and 40 tertiary ribs appearing at later growth stages. Concentric sculpture forming imbrications with the radial ribs, producing short spines on crossing primary ribs. Color reddish buff with radiating bands of gray. Margin crenulated, mature specimens with broad, slightly thickened internal margins. Apertural callus narrow, slightly truncate posteriorly in large specimens. Dimensions: long. 18.5, lat. 11.4, alt. 3.2 mm (holotype); long. 14.3, lat. 8.0, alt. 2.8 mm (paratype).

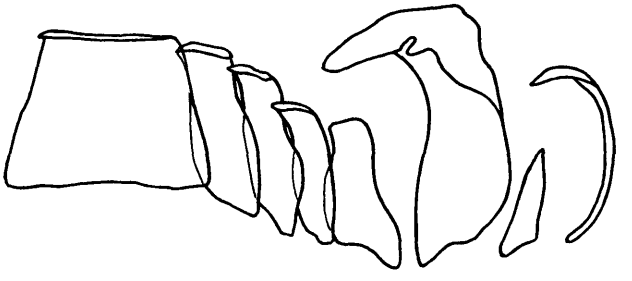

Figure 2

Radula from Holotype of *Lucapinella eleanorae* McLEAN, spec. nov.

Type Material: Holotype, Los Angeles County Museum of Natural History, cat. no. 1153; paratype, Stanford University, Paleontological Type Collection, cat. no. 9936. Type Locality: Banderas Bay, Jalisco, Mexico. Dredged, 10 fathoms depth, on bottom of cobbles, off the town of La Cruz, northern shore of Banderas Bay (20° 44′ N, 105° 29′ W), March 24, 1965. James H. McLean and A. Myra Keen on board the "Sea Quest."

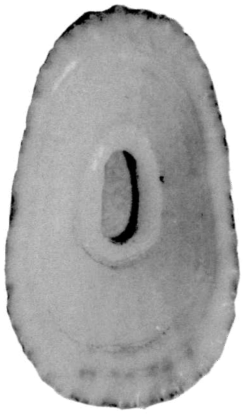

Figure 1

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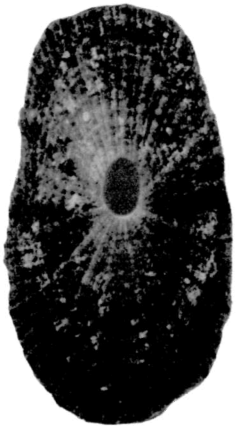

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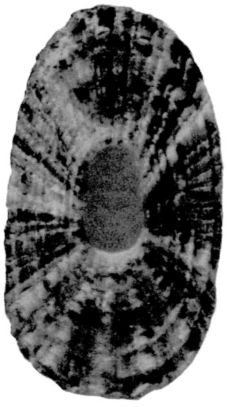

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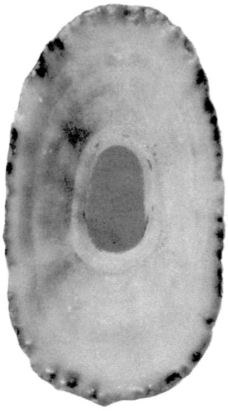

Figure 6

Figure 7

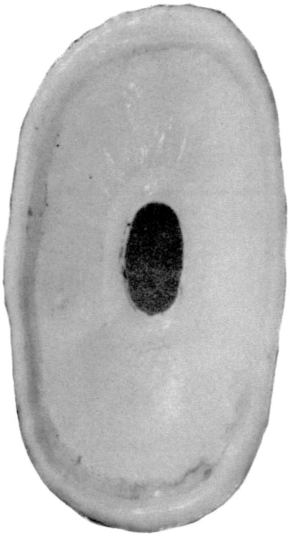

Figure 8

Figures 1 and 2: *Lucapinella callomarginata* (DALL). Holotype USNM 19478, San Pedro, California, x 3.
Figures 3 and 4: *Lucapinella eleanorae* McLEAN, spec. nov. Holotype, LACM 1153, Banderas Bay, Jalisco, Mexico, x 3.
Figures 5 and 6: *Lucapinella milleri* BERRY. Holotype, SUPTC 8588, Puertocitos, Baja California, Mexico, x 6.
Figures 7 and 8: *Lucapinella aequalis* (SOWERBY). SDNHM 30776, Taboga Island, Republic of Panama, x 3.

Distribution: Guaymas, Sonora, Mexico, to Santelmo Bay, Panama. Records: Guaymas, Mexico, Roy Poorman (LACM); San Juan del Sur, Nicaragua, H. N. Lowe (SDNHM 30774); Santelmo Bay, Panama (SDNHM 16733). The specimens known from Mexico have been recorded as dredged in 10 to 20 fathoms, but the bathymetric occurrence of the species in Nicaragua and Panama is not known. Dredging along the eastern shore of the Gulf of California has not as yet produced the species.

Discussion: Specimens of *Lucapinella eleanorae* have undoubtedly accounted for some reports of *L. callomarginata* in the southern Panamic province. No specimens are represented in the collection of the U. S. National Museum.

Lucapinella eleanorae differs from *L. callomarginata* in having a thinner shell, a reddish coloration and an oval rather than elongate aperture. It is larger than *L. milleri,* is more narrow anteriorly, and has a proportionately smaller aperture. It differs from *L. aequalis* in having more pronounced imbricate sculpture, being more narrow anteriorly, and having a proportionately smaller aperture.

I take pleasure in naming the species after Eleanor Dwyer (Mrs. Richard F.). Material collected by Mrs. Dwyer has added to our knowledge of Panamic mollusks.

Lucapinella milleri BERRY, 1959

(Plate 49, Figures 5 and 6; Text figure 3)

Lucapinella milleri BERRY, 1959, p. 109.

Diagnosis: Shell small, elongate, sides nearly parallel, ends rounded. Posterior slope of shell slightly concave, posterior margin elevated. Foramen elongate-oval, relatively large, slightly anterior to center, approximately one-fourth the length of the shell. Radial sculpture of closely spaced primary and smaller secondary ribs. Concentric sculpture forming imbrications, pronounced on crossing primary ribs. Color whitish with radiating bands of gray. Apertural callus narrow, internal margin weakly defined. Dimensions: long. 8.6, lat. 4.6, alt. 1.4 mm (holotype).

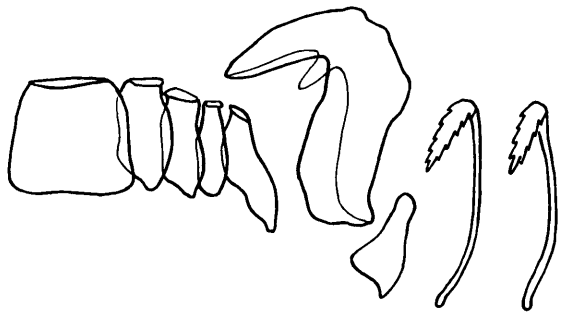

Figure 3

Radula of *Lucapinella milleri* BERRY

Rancho El Tule, Baja California, Mexico (LACM). The first two marginal teeth are shown.

Type Material: Holotype, Stanford University Paleontological Type Collection, cat. no. 8588 (Plate 49, Figures 5 and 6). Type Locality: Puertocitos, Baja California.

Distribution: Throughout the Gulf of California and south to Mazatlan. Records: Rancho El Tule, Baja California, C. Willis (LACM); Mulege, Baja California, J. H. McLean (LACM); Puertocitos, Baja California, H. DuShane (LACM); Puerto Peñasco, Sonora, A. Huffman (LACM); Guaymas, Sonora, J. H. McLean (LACM); Mazatlan, Sinaloa, J. H. McLean (LACM).

Discussion: *Lucapinella milleri* occurs not uncommonly in the intertidal zone at Puertocitos. It differs from the other species in its smaller size and its relatively large aperture. Shell color varies from grey to reddish.

Lucapinella aequalis (SOWERBY, 1835)

(Plate 49, Figures 7 and 8)

Fissurella aequalis G. B. SOWERBY, 1835 (1834-1835), p. 127. – G. B. SOWERBY, Jr., 1835 (1832-1841), fig. 56 – REEVE, 1849 (1849-1850), fig. 55.

Lucapinella aequalis (SBY.) – PILSBRY, 1891 (1888-1898), vol. 12, p. 197, pl. 31, fig. 24. – KEEN, 1958, p. 251, fig. 28.

Diagnosis: Shell elongate, sides nearly parallel, anterior end slightly narrowed, ends rounded. Foramen large slightly anterior to center, one-fourth to one-fifth of the shell length. Base of shell nearly flat. Radial sculpture of low primary, secondary and tertiary ribbing, becoming nearly obsolete in some specimens. Major ribs showing some evidence of imbricate sculpture on crossing concentric growth lines, imbricate sculpture often obsolete. Color whitish with dark radial banding, dark banding frequently covering major portion of shell. Internal margin thickened on mature specimens. Apertural callus narrow, no evidence of posterior truncation. Dimensions: long. 23.3, lat. 12.8, alt. 4.0 mm (SDNHM 30776).

Type Material: Probably in the British Museum (Natural History). Type Locality: "St. Elena, West Colombia (on dead shells at a depth of from six to ten fathoms), Cuming."

Distribution: Port Guatulco, Mexico, to Ecuador (KEEN, 1958). Records: Puntarenas, Costa Rica, H. N. Lowe

(SDNHM 30757); Montijo Bay, Panama, H. N. Lowe (SDNHM 30775); Taboga Island, Panama, H. N. Lowe (SDNHM 30776).

Discussion: The specimen cited above from Montijo Bay, Panama, is the only shell examined that shows evidence of the imbricate sculpture characterizing the genus. In the absence of this specimen, the inclusion of *Lucapinella aequalis* in the genus could be seriously challenged. The more frequently occurring forms of *L. aequalis* have obsolete imbricate sculpture.

Lucapinella aequalis is easily distinguished by its obsolete imbricate sculpture. In addition, it has more nearly parallel sides than either *L. callomarginata* or *L. eleanorae*. It reaches a larger size and has a relatively smaller aperture than *L. milleri*.

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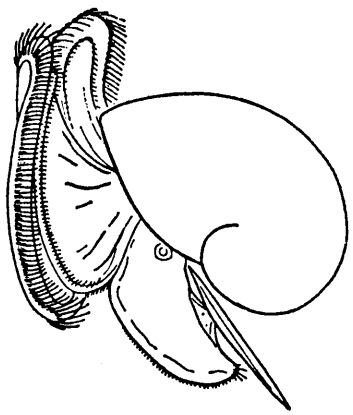
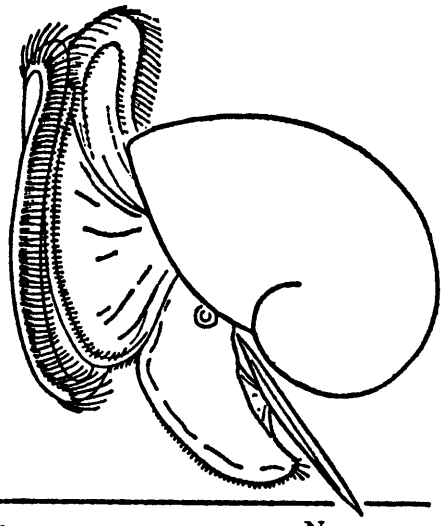


THE VELIGER



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Note: The various taxa above species are indicated by the use of different type styles as shown by the following examples:

ORDER, Suborder, **DIVISION, Subdivision,** SECTION,
SUPERFAMILY, FAMILY, Subfamily, *Genus*, (*Subgenus*).
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