A New Species of *Macrarene* (Turbinidae: Liotiinae) from Brazil

James H. McLean
Los Angeles County Museum of Natural History
900 Exposition Boulevard
Los Angeles, California 90007, USA

Ricardo Silva Absalão
Renato Luiz dos Santos Cruz
Departamento de Zoologia,
Instituto de Biologia, C.C.S.
Universidade Federal do Rio de Janeiro
Ilha do Fundão, Rio de Janeiro, Brasil 21940

ABSTRACT

The new species *Macrarene digitata* from the northeast Brazilian coast represents the first record of this principally eastern Pacific genus in the western Atlantic. The species had previously been known from juvenile specimens reported as *Liotia admirabilis* E. A. Smith, the holotype of which is not a member of the subfamily Liotiinae.

INTRODUCTION

The species here described was first recognized as a member of the Brazilian fauna by Rios (1975, 1985), who referred it to *Liotia admirabilis* E. A. Smith, 1890. That species was described from the oceanic island of Saint Helena. According to the original description, Smith's species has a maximum dimension of 1⅓ mm. The 15 syntypes were examined at the British Museum (Natural History) (catalogue numbers 1889.10.1.1554–68) by the senior author in 1984 and found to be similar (although not clearly referable) to the skeneiform genus *Parviturbo* Pilsbry & McGinty, 1945, which is not a member of the Liotiinae.

The Brazilian species was clearly undescribed, but its true generic affinity was not readily apparent because the specimens available to Rios, which have been examined by McLean (figure 2), were not mature and the expression of the mature lip was impossible to determine. More recently, two larger specimens have come to light and it can now be maintained that the species has the characters of the genus *Macrarene* Hertlein & Strong, 1951.

Abbreviations for institutions are as follows: LACM, Los Angeles County Museum of Natural History; MORG, Museu Oceanografico, Universidade do Rio Grande, R.S., IBUFRJ, Instituto de Biologia, Universidade Federal do Rio de Janeiro.

SYSTEMATICS

Family **Turbinidae** Rafinesque, 1815

Subfamily **Liotiinae** H. & A. Adams, 1854

Shells of the subfamily are characterized by turbiniform to discoidal profiles, nacreous interiors, fine lamellar sculpture, intritacalx (calcified periostracum) in most genera, circular apertures, and multispiral opercula with calcareous beads. Radula like that of members of other turbinid subfamilies.

Although previously treated by most authors as a full family, the Liotiinae have recently been ranked as a subfamily of Turbinidae by McLean (1987).

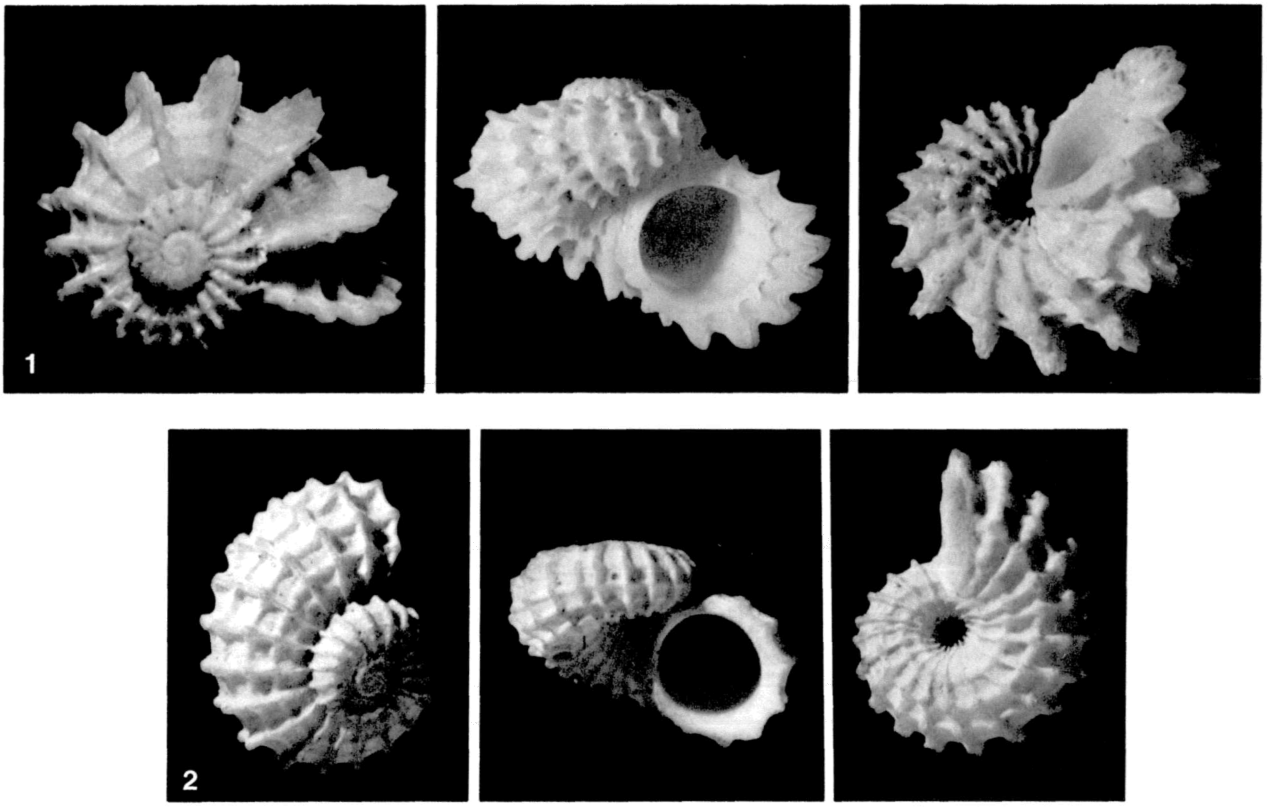
Genus *Macrarene* Hertlein & Strong, 1951

Type species (original designation): *Liotia californica* Dall, 1908. Recent, off Baja California, Mexico.

Macrarene species are characterized by turbinate white shells, broad umbilici, and presence of axial ribs and spiral cords that form spines at their intersections. Spacing of the axial ribs increases in the final whorl. In some species the ribs then become more closely spaced in the final quarter whorl. The final lip is not thickened at maturity.

Some *Macrarene* species reach relatively large sizes. The genus differs from *Arene* in lacking shell pigmentation and in having the spacing of the axial sculpture increasingly separated as the shell matures. The white-shelled genus *Liotia* is smaller and retains tight spacing of the axial sculpture.

The white-shelled, new world Liotiine genera *Macrarene, Liotia,* and *Cyclostrema* differ as a group from those of the Indo-Pacific and Australasian regions in lacking the thickened mature lips that characterize the genera *Bathyliotina* Habe, 1961, *Liotina* Fischer, 1885, *Dentarene* Iredale, 1929, and *Austroliotia* Cotton, 1948.



Figures 1, 2. *Macrarene digitata* new species. **1.** Holotype, IBUFRJ 1562. × 7.1. **2.** Immature specimen, MORG 18.359. × 10.0.

For further remarks on the Indo-Pacific group see McLean (1988).

There are six previously described species of *Macrarene*: *M. californica* (Dall, 1908), *M. cookeana* (Dall, 1908), *M. diegensis* McLean, 1964 (Pliocene); *M. farallonensis* (A. G. Smith, 1952), *M. lepidotera* McLean, 1970, and *M. spectabilospina* Shasky, 1970. All occur offshore in the tropical to temperate eastern Pacific.

Macrarene digitata new species
(figures 1, 2)

Description: Shell small for genus, turbinate, white, interior weakly nacreous, maximum diameter 6.7 mm, whorls 3.5, aperture only slightly oblique, final lip not thickened. Whorls circular in outline; final whorl in contact with previous whorl at tips of axial ribs. Shell surface marked by microscopic lamellar growth increments; intritacalx present. Protoconch diameter about 200 μm. Suture deeply impressed, first and second whorls rising above protoconch, third whorl descending, resulting in flat-topped profile for early whorls. First teleoconch whorl nearly smooth (except for fine lamellar sculpture), second with about 20 strong axial ribs and nine, nearly equal spiral cords defining deep, rectangular pits. Intersections of axial and spiral sculpture produce sharply projecting spines that are slightly upturned adapically. Spiral cords of final whorl increasing to 12; axial ribs decreasing to 15. Spines produced on final whorl by interaction of spiral and axial sculpture; spines with weblike interconnections. Axial ribs narrow across umbilical wall, forming single descending row of sharp-pointed projections along innermost spiral cord. Operculum and radula unknown.

Type locality: Off northeast coast of Brazil (03°59′N, 49°35′W), 100 m, Brazilian Naval Research Vessel *Almirante Saldanha*, station 1913, May 6, 1968, 1 specimen.

Type material: Holotype (figure 1), IBUFRJ 1562. Height 5.0 mm, diameter 6.7 mm. The holotype is a dead collected specimen in good condition. Paratype, LACM 2377, off Cabo San Roque, Rio Grande do Norte, Brazil (04°30′S, 50°03′W), 146 m, Brazilian Naval Research Vessel *Almirante Saldanha*, station 1921, May 8, 1968 (height 4.3 mm, diameter 6.6 mm). The paratype agrees with the holotype in size and sculptural details but is in subfossil condition with attached sedimentary deposits on the base.

Referred material: MORG 18.359, 2 immature specimens [height 2.7, diameter 4.3 mm (figure 2); height 1.5, diameter 2.6] from Paripueira, Alagoas, Brazil, in beach drift collected by P. S. Cardoso, December, 1964; MORG 20.620, 2 immature specimens (height 2.1, diameter 3.7 mm; height 2.4, diameter 3.6 mm), Fernando de Noronha Island, 6 m, collected by L. Barcellos, January, 1979.

Etymology: From the Latin *digitatus*, having fingers.

Remarks: *Macrarene digitata* is the smallest species of the genus described to date. However, it is not certain that the holotype is mature. Although this genus does not form a thickened lip, maturity in other members of the genus is indicated by closer spacing of the axial elements in the final quarter whorl of growth, as indicated in the original illustration of *M. spectabilospina* of Shasky (1970: fig. 2). The absence of such closer spacing of the axial element suggests that a quarter whorl of additional growth (and a substantial increase in diameter) is possible for *M. digitata.*

Macrarene digitata is unique in the genus in having all elements of the spiral sculpture of similar strength, rather than having a strongly projecting peripheral carination. Such a sculptural distinction is not regarded as a generic level character because generic characters in the Liotiinae are more reliably based on apertural morphology, particularly the structure of the final lip.

The most characteristic feature of this species is the fingerlike aspect of the projecting spines. It cannot easily be confused with any other member of the Liotiinae.

ACKNOWLEDGEMENTS

We are grateful to Prof. E. C. Rios for the loan of the referred material of this species.

LITERATURE CITED

Dall, W. H. 1908. Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California . . . XIV. The Mollusca and Brachiopoda. Bulletin of the Museum of Comparative Zoology, Harvard University 43: 205–487, pls. 1–22.

Hertlein, L. G. and A. M. Strong. 1951. Eastern Pacific expeditions of the New York Zoological Society, XLIII. Mollusks from the west coast of Mexico and Central America. Zoologica, Scientific Contributions of the New York Zoological Society 36:67–120, pls. 1–11.

McLean, J. H. 1964. New species of Recent and fossil west American aspidobranch gastropods. The Veliger 7:129–133.

McLean, J. H. 1970. New species of tropical eastern Pacific Gastropoda. Malacological Review 2:115–130.

McLean, J. H. 1987. Angariinae and Liotiinae—the primitive living trochaceans. Annual Report of the Western Society of Malacologists 19:16.

McLean, J. H. 1988. Two new species of Liotiinae (Gastropoda: Turbinidae) from the Philippine Islands. The Veliger 30:408–411.

Rios, E. C. 1975. Brazilian marine mollusks iconography. Museu Oceanografico, Fundaçao Universidade do Rio Grande, 331 p., 91 pls.

Rios, E. C. 1985. Seashells of Brazil. Museu Oceanografico, Fundaçao Universidade do Rio Grande, 328 p., 102 pls.

Shasky, D. R. 1970. New gastropod taxa from tropical western America. The Veliger 13:188–195.

Smith, A. G. 1952. Shells from the bird guano of southeast Farallon Island, California, with description of a new species of *Liotia.* Proceedings of the California Academy of Sciences, Series 4, 27:383–387.

Smith, E. A. 1890. Report on the marine Mollusca of the island of Sta. Helena. Proceedings of the Zoological Society of London 1890:247–322, pls. 21–24.