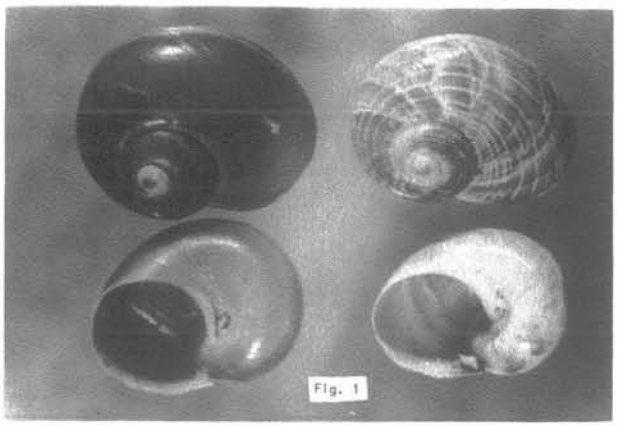
# MINUTE SHELLS - Part 4

by Bert Draper

In this fourth part of my series of articles on Minute Shells, we will consider the Eastern Pacific small and minute species in the superfamily TROCHACEA. There are at least four families in this superfamily which include species that fall into the category of shells that are usually smaller than 10 mm when fully grown. Many of these species have been pictured and described in either Dr. James McLean's "Marine Shells of Southern California" or Dr. A. Myra Keen's "Sea Shells of Tropical West America", and will therefore only be mentioned here. Other species not included in these two books will be discussed in more detail and some will be figured to further assist in their identification by readers.

The first family, Trochidae, has several genera which include small or minute species. The genus *Margarites* Gray, 1847 has the following small species: *M. helicinus* (Phipps, 1774), found from the Arctic Sea to the West Coast of Southern Canada, is a low, well rounded shell, shining and almost translucent, of a yellowish or light olive color. It is smooth except for a slight spiral ridge around the periphery of the final whorl in adult specimens. A subspecies *M. helicinus excavatus* Dall 1919 has spiral lines of lighter color and is more of a flesh color. Both reach about 9 mm in diameter in adult shells and have a colorful pink and green iridescence inside their apertures. (Fig. 1).

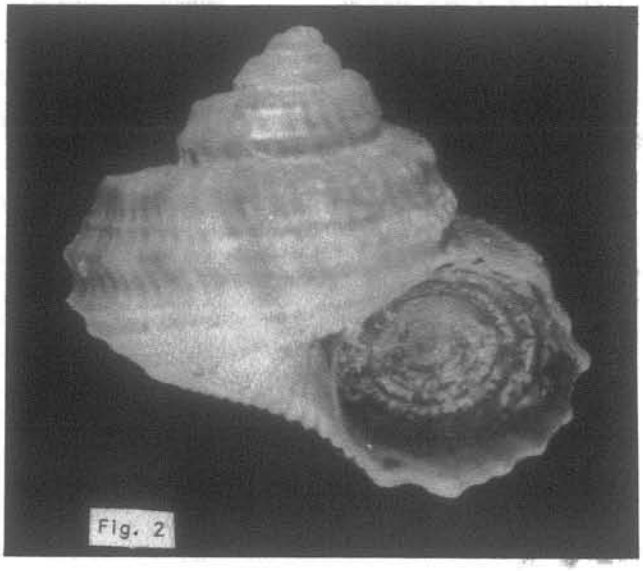



*Margarites helicinus* (Phipps, 1774) left specimens, and *Margarites helicinus excavatus* Dall, 1919 right specimens. Largest 9.4 mm in diameter. Collected at Unalaska, Alaska by W. J. Eyerdam.

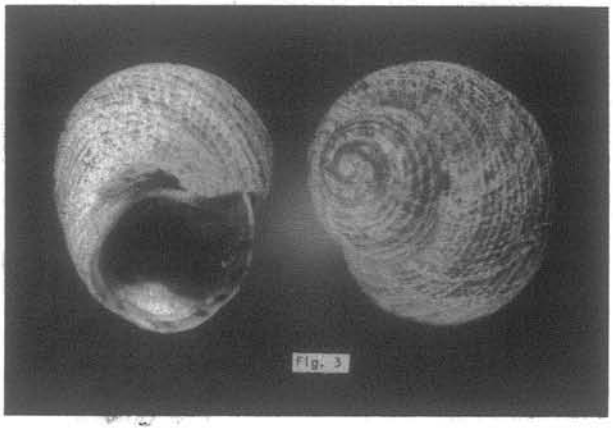
Four other species of small *Margarites* are found in this range of cold waters off Alaska and Canada, none of which are seen very often in collections. They are *M. frigidus* Dall, 1919, *M. marginatus* Dall, 1919, *M. pribiloffensis* Dall, 1919 and *M. vahli* (Moller 1842). All of these species resemble *M. helicinus* in general, in shape, color, and size. Apparently the *Margarites* are found only in cold waters and, if encountered off the U.S. coast at all, would be found only in deep cold water dredgings or as fossils.

One tropical species probably related to the above genus is *Mirachelus galapagensis* McLean, 1970. This is figured and described in Keen's book. Three small species of the genus *Solariella* Wood, 1842 found in tropical waters are also shown in Keen. They are *S. diomedia* Dall, 1919, *S. elegantula* Dall, 1925, and *S. triplostephanus* Dall, 1910. All are well figured and described, so will not be discussed here.

Along our Southern California coast probably the only species of *Solariella* to be found is *S. peramabilis* Carpenter, 1864. (Fig. 2) This species also ranges as far north as Alaska and south to the Gulf of California, and has a very attractive shell, tan in color, with sharp spiral ridges and axial lamellae between these ridges. A greenish iridescence shows through the shell's surface where the periostracum is thinnest. Adult shells may reach 10 to 12 mm, but most are smaller. These shells are found intertidally in the colder northern part of the range, but only in deeper water farther south. One other small species, *Solariella micraulax* McLean, 1964, is found in Alaskan waters. It was described from two specimens in the U.S. National Museum.




*Solariella peramabilis* Carpenter, 1864. Width 5.5 mm. Taken by diver at Seal Cove, San Clemente Is. Calif. 1961. (Larger specimens are taken in deep water, and in the North).



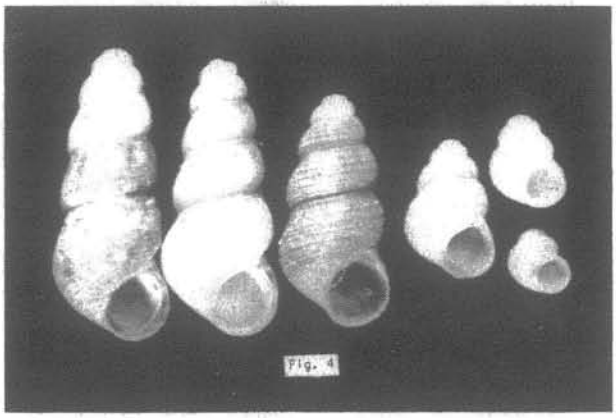

*Lirularia succincta* (Carpenter, 1864) Smooth blue-gray form from Anchor Bay, Mendocino Co. Calif. Diameter 3.5 mm. Collected by Emery Chace about 1934.

It looks more like a *Margarites*, being quite smooth, except for evenly spaced fine spiral threads on all surfaces. However on the basis of a study of the body parts, which had been saved, it appears to be a *Solariella*.

The genus *Lirularia* Dall, 1909 includes a number of small species ranging from Alaska to the Galapagos Islands and Peru. Some of these species are quite variable in color patterns as well as in sculpture, and this has led to the naming of more species than are justified. Before this confusion can be completely straightened out, a study of the soft parts of many of these small mollusks will probably be necessary. McLean has figured and described three of the U.S. West Coast *Lirularia: L. acuticostata* (Carpenter, 1864), *L. parcipicta* (Carpenter, 1864) and *L. succincta* (Carpenter, 1864). To the north along Puget Sound, *L. funiculata* (Carpenter, 1864) is found. This is a tawny or pinkish shell with smoothly rounded spiral cords, 5 on earlier whorls and about 12 on the final whorl. The base is well rounded, with a small umbilicus which is without the groove found in most *Lirularia* shells. (Fig. 3)

*Lirularia lirulata* (Carpenter 1864) is highly variable, but generally rather similar to *L. succincta*. This is probably a Northern species, collecting reports from more southern areas being of doubtful accuracy. Two other minute species from the southern part of the California Province are *L. bicostata* McLean, 1964, very colorful shells with two prominent spiral ridges on the final whorl, both of which show on the previous whorl; and *L. aresta* (Berry, 1941)described from a small Pleistocene fossil. Recent specimens have been found off the coast from Monterey to Pt. Loma, San Diego. This species also has two prominent spiral ridges on the final whorl, but only one on the previous whorl.

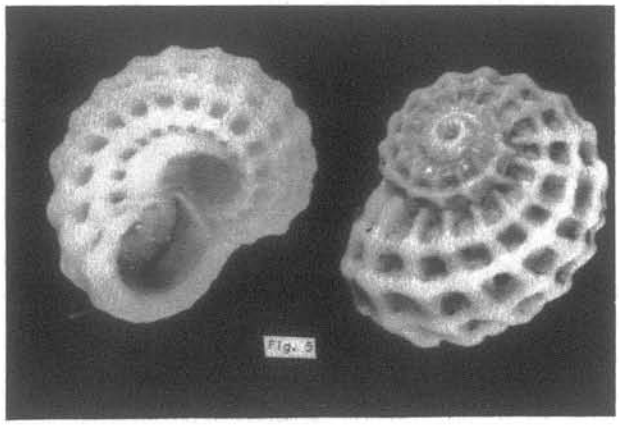
Only one species of the genus *Halistylus* Dall, 1869 is known in our waters. It is *H. pupoideus* (Carpenter, 1864), very pretty little shells in pastel shades of orange, yellow, brown or gray solid colors, or spiral stripes, or mottled in these colors; also of pure white. The sculpture consists of many evenly spaced spiral threads, and the shells taper from a rounded base with a circular aperture which is lined inside with what looks like white porcelain. The largest shells seldom reach 6 mm in length. The species ranges from Alaska to Panama, but they are never very plentiful at any location. (Fig. 4)



Growth series of *Halistylus pupoideus* (Carpenter, 1864). All shells are from the Los Angeles area, intertidal to 60 feet. From the collection of Bert Draper.

The next family with small species is Skeneidae. The best known genus of this family is *Parviturbo* Pilsbry & McGinty, 1945. One species, *P. acuticostatus* (Carpenter, 1864) is quite common from Monterey all the way to the Gulf of California. This species is well figured and described by both McLean and Keen. Three other Panamic species are shown in Keen: *P. conceptionensis* (Lowe, 1935), *P. erici* Strong & Hertlein, 1939, and *P. stearnsii* (Dall, 1918). All are quite small white shells, the adults ranging from 2 mm to 5.5 mm. Keen also shows four other deep water small species of this family: *Brookula galapagana* (Dall, 1913), *Ganesa panamensis* Dall, 1902, *Granigyra filosa* (Dall, 1919), and *Granigyra piona* (Dall, 1919). Two other Mexican species also shown in Keen are *Haplocochilias cyclophoreus* Carpenter, 1864, and *H. lucasensis* (Strong, 1934). Both species are found intertidally to 10 meters.

The third family in TROCHACEA is Liotiidae, which has three genera within the Eastern Pacific, two of these having only small or minute species. *Liotia fenestrata* Carpenter, 1864 is the only species of its genus found on our coast. (Fig. 5). Tiny shells of this species are truly beautiful when viewed under a microscope. The evenly spaced spiral and axial ribs make a latticework of ivory white, which outlines square pits, the bottoms of which shine with a bronze iridescence. The largest of these shells seldom reach 5 mm in diameter. You may find these little beauties in intertidal fine grunge anywhere from Monterey to midway down the outer Baja California coast. The other genus with small shells is *Arene* H. & A. Adams, 1854. All species of this genus on our coast are in tropical waters. Myra Kenn figures and describes eleven species of *Arene*.



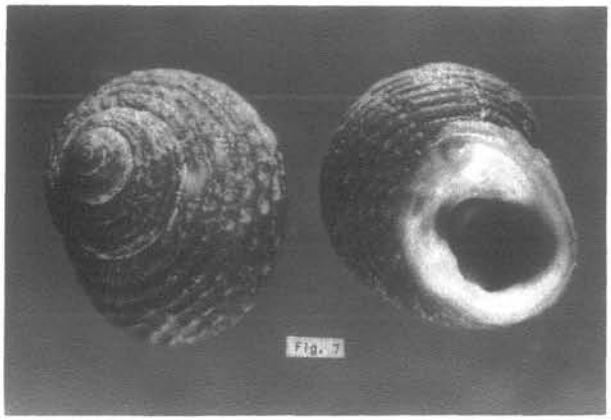
*Liotia fenestrata* Carpenter, 1864. Collected at San Pedro, Calif., in fine gravel, 1963 - 1970 by Bert Draper. Both shells 4.3 mm in diameter.

Family number four is Turbinidae, a rather extensive family, with most of its shells being quite large. However, one genus, *Homalopoma* Carpenter, 1864 has only small shells, some quite minute. These little mollusks generally live on intertidal rocks, although some must be found much deeper also. The most prolific species is *Homalopoma luridum* (Dall, 1885), whose shells are found in many colors from red through brown and gray to black, and with a spiral white stripe at times. This and the next three species are well covered by McLean, so they will only be mentioned here. They are *H. baculum* (Carpenter, 1864), *H. paucicostatum* (Dall, 1871), and *H. fenestratum* (Dall, 1919). My photograph (Fig. 6) gives a dorsal view of these and one other species of this genus, *H. berryi* McLean, 1964, to show how the spiral sculpture varies in these species. *H. berryi* is one of the smallest of this

Dorsal view of five So. Calif. species of *Homalopoma*. Left to right: *H. berryi* McLean, 1964, *H. baculum* (Carpenter, 1864), *H. luridum* (Dall, 1885), *H. paucicostatum* (Dall, 1871) and *H. fenestratum* (Dall, 1919). From the collection of Bert Draper. Largest shell 5 mm.

genus, seldom reaching 4 mm in diameter. It is rosy red in color with very fine spiral threads. It was originally described from a fossil shell; however, recent specimens have been collected from several places around the Channel Islands of California and at Isla Todos Santos off Baja California del Norte.

Another species, *Homalopoma juanensis* Dall, 1919 may be just a form of *H. luridum;* however enough specimens answering to its description have shown up in Southern California grunge to justify its mention here. (Fig. 7).



*Homalopoma juanensis* Dall, 1919. Diameter 7 mm. Color speckled red, black and white; ribs narrower than their interspaces. (This may be a variant of *H. luridum.*

It has about the same shape and size range as *H. luridum*, but its spiral ribs are narrower and separated, with interspaces often much wider than the ribs. The color pattern ranges from dark olive to speckled black, red and white, also reddish brown, sometimes with a white spiral stripe.

Four species of *Homalopoma* are figured and described in Keen. One of these, *H. grippi* (Dall, 1911) is found off Southern California as well as in Mexican waters. It is a very attractive red shell with white spots or bars spiralling around the periphery of the shell. The other three species mentioned in Keen are taken only from deep water, and will not be discussed further in this article. They are *H. panamense* (Dall, 1908), *H. clippertonense* (Hertlein & Emerson, 1953), and *H. rubidum.* (Dall, 1908).

The final family of TROCHACEA, Phasinellidae, will be discussed in Part 5 of Minute Shells. This will be followed by the next few families in the taxonomic order which have species of small or minute shells.

(All photos by Bert Draper)

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## NORTH CAROLINA STATE SHELL

We are indebted to Corrine E. Edwards, Lt. Col. USAF Ret., of Coconut Grove, Florida, for the following note:

"I noticed in Volume 3, Number 4, October 1970, that you know that Florida has an official state shell [*Pleuroplaca gigantea* (Kiener, 1840)], and you asked about other states. Well, North Carolina has one, too.

"North Carolina started work on a state shell on October 2, 1964 and on May 28, 1965 a bill was passed establishing *Phalium (Semicassis) granulatum* (Born, 1780)--the Scotch Bonnet--as their state shell. It is even featured on official state maps with a beautiful, colorful illustration letting the world know that North Carolina shores and waters are as great as its forests and mountains."

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