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THE MARINE MOLLUSCAN FAUNA OF
GUADALUPE ISLAND, MEXICO

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A NEW MOLLUSK FROM SAN FELIPE,
BAJA CALIFORNIA

BY

E. P. CHACE

Curator of Conchology, San Diego Museum of Natural History

SAN DIEGO, CALIFORNIA

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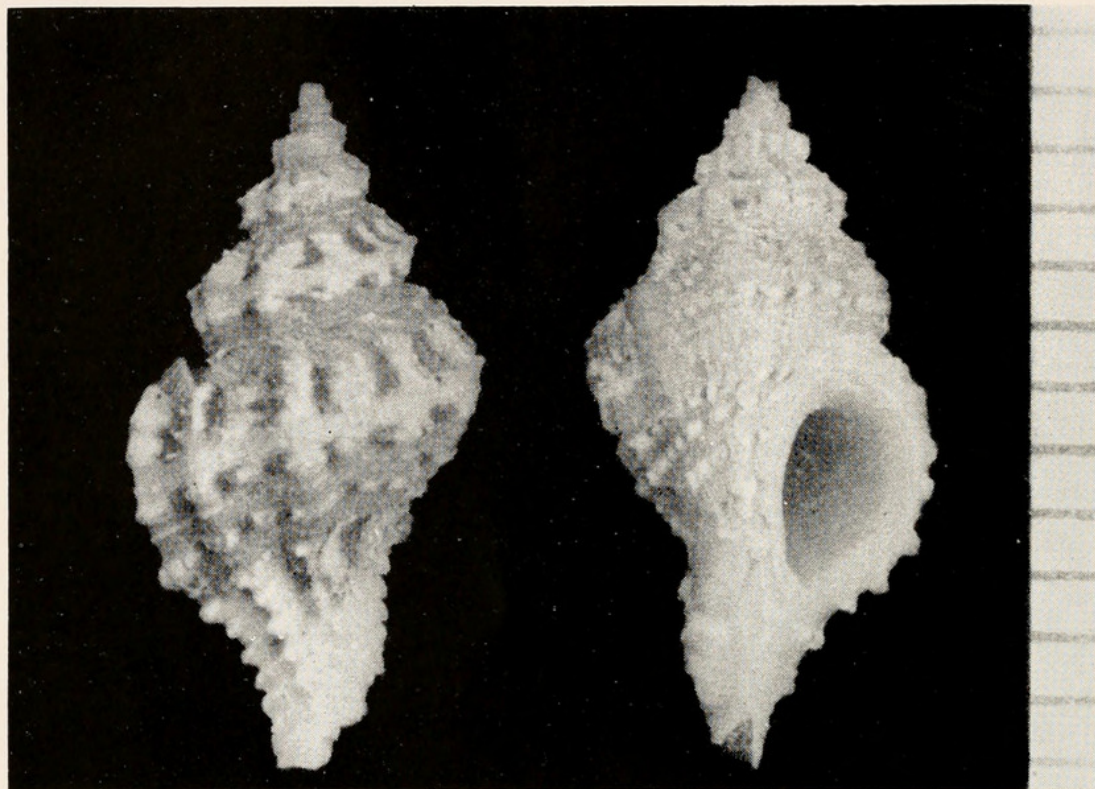


FIG. 1. *Ocenebra seftoni* sp. nov. Holotype (left) and paratype.

Millimeter scale at right.

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INTRODUCTION

Guadalupe Island is 250 statute miles south-southwest of San Diego and 162 miles off the coast of Baja California. The island is 22 miles long and 4 to 6 miles wide. The highest point, 4257 feet above sea level, rises some 16,000 feet above the floor of the ocean. Thus the island is surrounded by deep water.

The part of the island above sea level is volcanic in origin. Strong (1954) suggested from the character of the lava and the amount of disintegration that its geologic age might be Pliocene. Johnson (1953) reported a small fossil marine fauna probably of Upper Tertiary or Quaternary age. In 1957 Dr. Carl L. Hubbs found exposures of Pleistocene fossils near the high-tide line at several points around the island, and in December of that year he and the writer collected about 50 pounds of shells and matrix at three localities. This material, representing a warm-water fauna, is under study.

Strong and Hanna (1930) listed 87 species of marine mollusks from Guadalupe Island, collected mainly by an expedition of the California Academy of Sciences in 1925. Strong (1954) increased the number to 116 species on the basis of a collection of 82 species by M. Woodbridge Williams on an expedition of the Scripps Institution of Oceanography in 1946. Pilsbry (1927) treated the land and freshwater mollusks of the island.

Since 1945 Dr. Hubbs and his associates from the Scripps Institution have collected mollusks on several trips to the island. Some of this material was collected in the littoral zone, some was dredged, and some was brought up by divers. Most of this material has come to the San Diego Museum of Natural History, and it has now been identified except for some microscopic shells. Since this material includes 77 species not reported from the island before, it seems worth while to publish a new list.

FAUNAL RELATIONSHIPS

Since there are no protected bays on Guadalupe Island, the only littoral species are those of exposed habitats, such as *Littorina*, *Acmaea*, *Lottia*, and *Haliotis*. Most of the species listed are from deeper water.

Many species are represented in the collections by only one or two specimens each. Several species were found only in one dredge haul, which happened to hit a mud pocket; these include *Lima subauriculata*, *Leiomya scaber*, *Cuspidaria pectinata*, *Thracia squamosa*, and *Crenella megas*. And each big collection has added several species to the list. These facts suggest that sampling has been somewhat haphazard and that further collecting may add many species. Nevertheless, since eight collecting trips have yielded only 193 species of mollusks, the marine molluscan fauna of Guadalupe Island may be characterized as scanty.

Of the 193 species of marine mollusks known from Guadalupe Island, 149 species, or 77.2 percent, belong to the Southern California Fauna, though some of these extend as far south as Cedros Island or beyond. Twenty-one of these, or 10.9 percent, are not otherwise known south of San Diego. Thirty-four species or 17.6 percent, belong to the Panamic Fauna, occurring on the mainland between San Diego and Panama but apparently not north of San Diego. Three of these are known only from Guadalupe Island and Panama: *Bursa calcipicta* Dall, *Liotia heimi* Strong & Hanna, and *Crenella megas* Dall. (Distributional data are mostly from Keen [1937].)

As with the other terrestrial and marine biota of Guadalupe Island, the mollusks show some endemism. Ten species, or 5.2 percent of the marine molluscan fauna, are not known to occur elsewhere. These are:

<i>Ocenebra seftoni</i> Chace	<i>Rissoina willetti</i> Strong
<i>Diastoma slevini</i> Strong	<i>Rissoella bakeri</i> Strong
<i>Alabina jordani</i> Strong	<i>Astraea guadalupiana</i> Berry
<i>Rissoina guadalupensis</i> Strong	<i>Haliotis californiensis</i> Swainson
<i>Rissoina lowei</i> Strong	<i>Glycymeris guadalupensis</i> Strong

Only two species of brachiopods have been collected at Guadalupe Island. Both occur also in southern California.

Scharff (1911) believed that Guadalupe Island and the other islands off the west coast of North America were remnants of a large land mass reaching in the distant past from Alaska to Peru and extending a considerable distance west of the present coastline. He claimed that the flora and fauna of the islands supported this hypothesis. It is now generally believed, however, that Guadalupe Island is an oceanic island and that its biota has resulted from fortuitous dispersal. Since many of the molluscs are kelp dwellers or are associated with kelp, Strong and Hanna (1930) believed that much of the molluscan fauna had arrived on drifting kelp from the islands of southern California.

LIST OF MOLLUSKS AND BRACHIOPODS

With one or two exceptions, the systematic arrangement of this list is that of Strong (1954). Trips on which the various species were collected are indicated as follows— S: California Academy of Sciences in 1925; W: M. Woodbridge Williams in 1946; 50, 54, 55, 56, and 57: Scripps Institution in 1950, 1954, 1955, 1956, and 1957. Notes as to abundance are based only on the collections of 1950 to 1957.

GASTROPODA

UMBRACULIDAE

Tylodina fungina Gabb (W, 57). Two specimens in dredgings.
Umbraculum ovale Carpenter (57). Two specimens in dredgings.

ACTEONIDAE

Acteon punctocaelata (Carpenter) (54). Several specimens.

ACTEOCINIDAE

Acteocina angustior Baker & Hanna (S, W, 57). A few specimens.
Acteocina magdalenensis Dall (50, 57). A few specimens each trip.
Acteocina planata (Carpenter) (54). Nine specimens in dredgings.
Retusa harpa (Dall) (S, 50). Seven specimens in dredgings.

SCAPHANDRIDAE

Cylichna attonsa Carpenter (50). Eight specimens.

AKERATIDAE

Haminoea angelensis Baker & Hanna (54). One specimen.

SIPHONARIIDAE

Williamia peltoides (Carpenter) (S, W, 55). One specimen.

CONIDAE

Conus californicus Hinds (50, 54, 57). Apparently fairly common.

TURRIDAE

Kurtzia beta (Dall) (S).
Mangelia barbarensis Oldroyd (54). Fifteen specimens in dredgings.
Mangelia interlirata Stearns (W).
Mitromorpha crassaspera Grant & Gale (50). Three specimens.
Mitromorpha filosa (Carpenter) (W, 50, 54).
Philbertia crystallina (Gabb) (50).

MARGINELLIDAE

- Cypreolina pyriformis* (Carpenter) (S, W, 50, 54).
Cystiscus jewettii (Carpenter) (S, W, 57).
Cystiscus minor (C. B. Adams) (54). One specimen in dredgings.
Cystiscus politulus (Dall) (S, W, 54).
Hyalina californica (Tomlin) (S, W, 50, 57).

MITRIDAE

- Mitra catalinae* Dall (S).
Mitra fultoni E. A. Smith (54). One specimen in dredgings.

FASCIOLARIIDAE

- Fusinus kobelti* (Dall) (54, 57). One specimen each trip.

BUCCINIDAE

- Cantharus lugubris* (C. B. Adams) (54). Two specimens.

NASSARIIDAE

- Nassarius insculptus* (Carpenter) (W, 50, 54, 57).

COLUMBELLIDAE

- Aesopus arestus* Dall (S).
Aesopus eurytoides (Carpenter) (W, 50). Three specimens in dredgings.
Aesopus sanctus Dall (W).
Anachis subturrita Carpenter (S, W).
Mitrella carinata (Hinds) (50). Five specimens.
Parametaria duponti (Kiener) (50). One very small specimen.

MURICIDAE

- Ceratostoma nuttallii* (Conrad) (50, 57). Eight specimens in the two trips.
Maxwellia gemma (Sowerby) (50, 57). One specimen each trip.
Ocenebra gracillima (Stearns) (W).
Ocenebra poulsoni (Carpenter) (W).
Ocenebra seftoni Chace (50, 57). Five specimens.

THAISINAE

- Acanthina lugubris* (Sowerby) (W, 50, 54, 57) Common.

EPITONIIDAE

- Epitonium* sp. cf. *E. apiculatum* Dall (50). Three specimens.
Epitonium bellastratum (Carpenter) (54). One specimen.
Epitonium californicum Dall (W).
Epitonium sp. cf. *E. columbianum* Dall (50). One specimen.
Epitonium savinae Dall (50). Three specimens.
Turbonilla (*Pyrgiscus*) *halidoma* Dall & Bartsch (50).

JANTHINIDAE

Janthina globosa Blainville (50). Two small ones.

EULIMIDAE

Eulima californica (Bartsch) (50). Three specimens.

PYRAMELLIDAE

Odostomia (Miralda) aepynota Dall & Bartsch (W, S).

Odostomia (Menestho) amilda Dall & Bartsch (W).

Odostomia (Menestho) callipyrga Dall & Bartsch (55). One specimen.

Odostomia (Chrysallida) clementina Dall & Bartsch (W).

Odostomia (Chrysallida) decepatrix Dall & Bartsch (S).

Odostomia (Iolina) eucosmia Dall & Bartsch (S).

Odostomia (Ividella) navisa Dall & Bartsch (S, W).

Odostomia (Chrysallida) pulcia Dall & Bartsch (W).

Odostomia (Ivara) turricula Dall & Bartsch (S).

Odostomia (Chrysallida) virginalis Dall & Bartsch (S, W).

CYPRAEIDAE

Cypraea spadicea Swainson (50). One specimen.

Erato columbella Menke (W, 50). Eight specimens.

Trivia californiana (Gray) (54). Four specimens.

Trivia solandri (Gray & Sowerby) (W, 57). One specimen.

RANELLIDAE

Bursa calcipicta Dall (W). Judging from photographs of the type specimen, this species is very close to the following species.

Bursa californica (Hinds) (S, 50, 54, 57). Many specimens.

TRIPHORIDAE

Triphora sp. cf. *T. chamberlini* Baker (50). One specimen.

Triphora pedroana Bartsch (S, W).

CERITHIOPSIDAE

Cerithiopsis guadalupensis Strong (S).

Cerithiopsis oxys Bartsch (S, W).

Metaxia diadema Bartsch (S, W).

Seila montereyensis Bartsch (S, W).

CERITHIIDAE

Alabina diomede Bartsch (50). One specimen.

Alabina jordani Strong (S, W).

Bittium interfossum (Carpenter) (S).

Diastoma slevini Strong (S, 50, 54, 57). Common in dredgings.

CAECIDAE

- Caecum californicum* Dall (S).
Fartulum hemphilli Bartsch (S, W).

VERMETIDAE

- Aletes squamigerus* Carpenter (W).
Bivonia compacta Carpenter (57). Several on *Haliotis* shells.
Spiroglyphus lituellus (Morch) (W, 50, 57). Six on *Haliotis* shells.
Vermicularis eburnea (Reeve) (50). A few small specimens.

TURRITELLIDAE

- Turritella orthosymmetra* Berry (50, 54). Several specimens, mostly small.

LITTORINIDAE

- Littorina planaxis* Philippi (S, W, 50, 54, 57). Common.

FOSSARIDAE

- Iselica fenestrata* (Carpenter) (S).

LITIOPIDAE

- Alaba jeannettae* Bartsch (S).

BARLEEIIDAE

- Barleeia californica* Bartsch (S, W).

RISSOIDAE

- Alvania aequisculpta* Keep (S).
Alvania cosmia Bartsch (S, W).
Alvania oldroydae Bartsch (S, W).
Alvania purpurea Dall (S, W, 50). A few specimens in dredgings.
Amphithalamus inclusus Carpenter (S).
Amphithalamus tenuis Bartsch (S).
Nodulus kelseyi Bartsch (S).

RISSOINIDAE (as used by Dall)

- Rissoina californica* Bartsch (S, W).
Rissoina cleo Bartsch (S, W).
Rissoina guadalupensis Strong (S, W).
Rissoina lowei Strong (S, W, 57). Several specimens.
Rissoina willetti Strong (S, W).

RISSEOELLIDAE

- Rissoella bakeri* Strong (S).

HIPPONICIDAE

- Hipponix antiquatus* (Linnaeus) (S, W, 50, 57). Two specimens.
Hipponix tumens Carpenter (S, W, 50, 57). Three specimens.

CALYPTRAEIDAE

- Crepidula (Crepipatella) lingulata* Gould (S, W, 50, 54, 57). Common on *Astraea undosa* Wood.
Crepidula perforans Valenciennes (57). One specimen.

VITRINELLIDAE

- Macromphalina occidentalis* Bartsch (50). One specimen.

NATICIDAE

- Lamellaria stearnsi orbiculata* Dall (57). One specimen.

ACMAEIDAE

- Acmaea digitalis* Eschscholtz (S, W, 50, 54, 57). Several specimens.
Acmaea limatula Carpenter (W, 50, 57). A few specimens.
Acmaea mesoleuca var. *vespertina* Reeve (57). A few specimens.
Acmaea paleacea Gould (S, W).
Acmaea pelta Eschscholtz (S, W).
Acmaea scabra (Gould) (50). Several specimens.
Lottia gigantea Gray (S, W, 50, 54, 57). Many specimens.

PHASIANELLIDAE

- Tricolia pulloides* (Carpenter) (S, W, 50).
Tricolia (Eulithidium) rubrilineata (Strong) (S, W).

TURBINIDAE

- Astraea guadalupeana* Berry (50). One specimen, with *A. inequalis*.
Astraea inequalis (Martyn) [= *A. gibberosa* (Dillwyn)] (57). The two specimens are close to the original figure of *Trochus inequalis* (Martyn 1784, pl. 31), and they match the original figures of *A. diademata* (Valenciennes 1846, pl. 3, figs. 2-2b).
Astraea lithophora (Dall) (W).
Astraea sp. cf. *A. petrothauma* Berry (50). One specimen.
Astraea undosa (Wood) (S, 50, 54, 57). Many specimens; apparently more variable than on the mainland.
Homolopoma carpenteri (Pilsbry) (W, 57). A few specimens.
Homolopoma paucicostatum (Dall) (S, W).
Homolopoma luridum (Dall) (55). Two specimens.

LIOTIIDAE

- Liotia acuticostata* Carpenter (S, W).
Liotia californica Dall (S, 50). Five specimens.
Liotia fenestrata Carpenter (S).
Liotia heimi Strong & Hertlein (50, 57). Several specimens.

TROCHIDAE

- Calliostoma splendens* Carpenter (S, 50, 57). Two specimens.
Calliostoma sp. (W). An unidentified species also in 1957.
Margarites acuticostata Carpenter (W, 50, 54, 57). Common in dredgings.
Margarites parcipicta (Carpenter) (S, W).
Norrisia norrisii (Sowerby) (S, W, 50, 54, 57). Many specimens.
Tegula gallina (Forbes) (S, W).
Tegula gallina multifilosa (Stearns) (50, 57). Several specimens.
Tegula regina (Stearns) (S, 50, 54, 57). Several specimens.

VITRINELLIDAE

- Circulus rossellinus* Dall (S).
Teinostoma invallatum (Carpenter) (S, W).
Teinostoma supravallatum (Carpenter) (S, W).

HALIOTIDAE

- Haliotis californiensis* Swainson (S, 54, 57). Many specimens.
Haliotis corrugata Gray (S, 55). Only four or five specimens.
Haliotis cracherodii Leach (S, W).
Haliotis sp. cf. *H. fulgens* Philippi (S, 54, 57). Not typical of *H. fulgens*; may be a new species.

FISSURELLIDAE

- Fissurella volcano* Reeve (W, 50, 54). Only a few specimens.
Megathura crenulata (Sowerby) (50, 54). Three specimens; evidently not common.

PELECYPODA

ARCIDAE

- Arca bailyi* (Bartsch) (S).

GLYCYMERIDAE

- Glycymeris guadalupensis* Strong (S, W, 50, 54, 57). Common in dredgings.

PHILOBRYIDAE

Philobrya setosa (Carpenter) (S, W).

MYTILIDAE

Crenella columbiana Dall (57). One specimen.

Crenella divaricata (d'Orbigny) (S, W).

Crenella megas Dall (50). Fifteen valves.

Lithophaga plumula (Hanley) (54). One specimen.

Modiolus pallidulus Dall (50). Two specimens.

PECTINIDAE

Hinnites gigantea (Gray) (W).

Pecten diegensis Dall (50, 54). Several valves.

Pecten lowei Hertlein (50). One valve.

Pecten pernomus Hertlein (50, 54, 57). Many good pairs.

LIMIDAE

Lima subauriculata (Montague) (50, 54). Many valves.

THRACIIDAE

Thracia diegensis Dall (W).

Thracia squamosa Carpenter (50, 54, 57). Many small valves.

LYONSIIDAE

Lyonsia californica nesiotes Dall (50, 54, 57). Several live specimens.

CUSPIDARIIDAE

Cuspidaria pectinata (Carpenter) (50). Two valves.

Leiomya scaber (Carpenter) (50, 54). Three pairs and several valves.

ASTARTIDAE

Bernardina bakeri Dall (W).

CARDITIDAE

Glans carpenteri (Lamy) (W).

Milneria kelseyi Dall (S).

Milneria minima (Dall) (W).

CHAMIDAE

Chama buddiana C. B. Adams (50). Two upper valves.

Chama pellucida Browerip (S, W).

THYASIRIDAE

Thyasira barbarensis (Dall) (54). One valve.

UNGULINIDAE

Diplodonta subquadrata Carpenter (50). Eight valves.

LUCINIDAE

Lucina approximata (Dall) (50, 54). Six specimens plus some valves.

Lucina californica Conrad (S, W, 50, 54). A few valves.

LEPTONIDAE

Kellia laperousii Deshayes (W, 50). One valve.

CARDIIDAE

Cardium biangulatum Broderip & Sowerby (54). Several pairs and valves.

Protocardia centifilosa (Carpenter) (50). Two valves.

VENERIDAE

Antigona fordii Yates (W, 54). Several pairs and valves.

Psephidea cymata Dall (S, W, 50, 54). Several pairs and valves.

Psephidea salmonea (Carpenter) (54). Three pairs and nine valves.

Transenella puella (Carpenter) (S, W, 50, 54, 57). Many live specimens and valves.

TELLINIDAE

Tellina pacifica Dall (W, 54, 57). Two pairs.

SEMELIDAE

Semele incongrua Carpenter (54). One specimen.

CORBULIDAE

Grippina californica Dall (S).

SCAPHOPODA

DENTALIIDAE

Cadulus fusiformis Pilsbry & Sharp (S).

Dentalium berryi Smith & Gordon (50). One specimen.

Dentalium splendidulum Sowerby (50). One specimen in dredgings.

Siphonodentalium quadrifissatum Pilsbry & Sharp (S, W, 50, 57). Many specimens.

POLYPLACOPHORA

LEPIDOPLEURIDAE

Lepidopleurus rugatus Pilsbry (57). One specimen.

LEPIDOCHITONIDAE

Lepidochitona sp. (55). One very small specimen.

Nuttallina californica Reeve (57). Three specimens.

ISCHNOCHITONIDAE

Ischnochiton biarcuatus Dall (57). One specimen.

Ischnochiton mertensi (Middendorff) (57). Two specimens.

ACANTHOCHITONIDAE

Acanthochitona arragonites Carpenter (55). Two specimens.

PTEROPODA

CAVOLINIDAE

Cavolina inflexa (Lesueur) (50). Seven specimens.

Cavolina occidentalis Dall (50). One specimen.

Clio pyramidata Rang (50). Four fragments.

Cuvierina columella Rang (50). One specimen.

BRACHIOPODA

TEREBRATULIDAE

Terebratulina unguicula Carpenter (50). One valve.

TEREBRATELLIDAE

Platidia sp. cf. *P. anomioides radiata* Dall (57). Three specimens and five valves.

A NEW SPECIES OF GASTROPOD

***Ocenebra seftoni* sp. nov.**

Shell small, white with a light tan-colored band on the shoulder and another below the periphery and with a few darker spots on the spiral cords and between the axial ribs on the base. Nuclear whorls $1\frac{1}{2}$, squarish, a prominent keel at the top of the first whorl and a second keel developing below it on the last half of the nuclear. Later whorls 5, slopingly shouldered and distinctly angled at the periphery. Two spiral cords on the first whorl, increasing to 4 on the penultimate and to 9 on the body whorl. Axial ribs 9, rather strong, reaching from suture to suture and down over the base. Whole surface with fine axial lamellae, which are strongest where the cords pass over the axial ribs. Aperture oval, the outer lip thickened, especially where it joins the previous whorl; three denticles within. Callus rather heavy on the body whorl and on the slightly twisted columella. Siphonal canal about half as long as the aperture and well covered, the small umbilical chink nearly covered by the end of the columellar callus. Measurements of the holotype: height 12 mm.; diameter 6.2 mm.; height of the aperture 3.4 mm. Color description taken from one of the paratypes, which is brighter colored than the type.

The holotype is number 12955 in the conchological collection of the San Diego Natural History Museum. It was dredged in about 40 fathoms by Dr. Carl L. Hubbs and party, February 2, 1950, at Melpomene Cove, Guadalupe Island, Baja California, Mexico. Paratypes are at the California Academy of Sciences and at the Museum of Comparative Zoology, Harvard University. The species is named for Mr. Joseph Sefton, then owner of the Research Ship *Orca*, from which the type was collected.

The angular nuclear whorls indicate that the new species is closely related to *Ocenebra crispatisima* Berry, from Catalina Island, and to members of the *O. barbarensis* group. It is especially similar to *O. crispatisima* but has fewer spiral chords on the body whorl and a shorter siphonal canal.

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