

Asteroidea from Malpelo Island with a Description of a New Species of the Genus *Tamaria*

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ABSTRACT

One new species, *Tamaria stria*, and a new subspecies, *Narcissia gracilis malpeloensis*, are described from shallow waters of Malpelo Island. A collection totaling six species of starfish is described, with notes on distribution.

Introduction

In the course of the faunal survey of the shallow waters (0–50 m) of Malpelo conducted by C. Birkeland and his colleagues, only six species of starfish were collected; however, all are species with interesting or unusual distribution patterns, and included in the collection are a new species of the genus *Tamaria* and a new subspecies of *Narcissia gracilis*. The abbreviation R refers to the major radius from center of disc to tip of arm; and r refers to the minor radius, from center of disc to interradial margin.

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OREASTERIDAE

Nidorellia armata (Gray)

Pentaceros (Nidorellia) armata Gray, 1840:277; 1866:7, pl. 14: fig. 1–3.
Oreaster armatus (Gray).—Mueller and Troschel, 1842:52.—Lutken, 1864:148.—Bell, 1884:79.—von Martens, 1865:433.
Goniodiscus armatus (Gray).—Lutken, 1859:75.
Goniodiscus conifer Möbius, 1859:10, pl. 3: fig. 5–6.
Nidorellia armata (Gray).—Verrill, 1867:280.—Perrier, 1876: 67.—Viguier, 1878:193.—Leipoldt, 1895:634.—H. L. Clark, 1910:332, pl. 4: fig. 2.—Doderlein, 1916:418; 1936:316, pl. 21: fig. 1–6a.—Boone, 1926:3, pl. 1; 1933:73, fig. 2.—Ziesenhenne, 1937:216.—H. L. Clark, 1940:333.—Steinbeck and Ricketts, 1941:381, pl. 10: fig. 1, pl. 11: fig. 2.—Ely, 1945:15.—Caso, 1943:9, 66, pl. 22: fig. 1–2, pl. 23: figs. 1–2; 1953:221; 1961:63, figs. 22–23.—H. L. Clark, 1958:95.—Caso, 1962:63, figs. 22–24.
Nirodella armata (Gray).—Stanek, 1955:48.

Nidorellia armata is represented in this collection by one specimen, quite large and heavy (R 10 cm, r 6.5 cm, dry weight 177 grams). The marginals, particularly the distal ones, are tremendously swollen and most bear 1 or 2 stout spines or low tubercles. The much smaller principal plates of the abactinal surface usually bear 1 or 2 low tubercles. The papular areas of the abactinal surface are covered with pedicellariae of the split granule type. This is a common shallow water species of the eastern tropical Pacific, known from lower California to Peru and the Hawaiian Islands.

OPHIDIASTERIDAE

Leiaster callipeplus Fisher

Leiaster callipeplus Fisher, 1906:1083, pl. 30: figs. 1, 1a, pl. 31: fig. 3.

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Leiaster callipeplus is a Hawaiian species, reported by Fisher from Maui, Lanai, Kauai, and Bird Islands, in 58–124 meters. One fine specimen, collected at Malpelo in 49 meters at the base of a rock wall (Station 5, Birkeland et al., Appendix, this volume) measures R 20 cm, r 2.9 cm. *Leiaster callipeplus* has also been collected near the central American mainland in the Gulf of Chiriqui, Panama (Birkeland, pers. comm.).

Narcissia gracilis malpeloensis, new subspecies

Narcissia gracilis malpeloensis is represented in this collection by six specimens. The species, described by A. H. Clark (1916:58) has previously been collected from Baja California to the Galapagos Islands. The average size of these specimens is R 12 cm, r 2.5 cm. The Malpelo specimens represent a new subspecies of *N. gracilis*, differing from the type-specimen and Clark's description in the following respects:

Narcissia gracilis gracilis: Pedicellariae abundant on all surfaces, of 2 slender valves with expanded toothed tips, lying in alveoli; granules hemispherical; subambulacral spines in 3 rows; madreporite round; papulae single; and proximal marginals longer than broad.

Narcissia gracilis malpeloensis: Few or no pedicellariae—when present, of 2 stout curved untoothed valves of uniform thickness, not in alveoli; granules flat-topped, polygonal; subambulacral spines in one row, plus other spines not in rows; madreporite triangular; papulae usually double; and proximal marginals broader than long.

Although the above differences are minor, and abundant pedicellariae versus few or no pedicellariae might be accounted for by the difference in size (holotype: R 54 mm, r 8.5 mm) between these specimens and the type (starfishes frequently have many pedicellariae when young and few or none when fully grown), the very dissimilar character of the pedicellariae, plus the other variations listed above seem, in view of Malpelo's isolated position, to warrant separation at the subspecific level.

Tamaria stria, new species

FIGURE 34

DESCRIPTION.—R 44 mm, r 8 mm. Disc small, arms five, long, blunt, cylindrical. Carinal, adra-

dial, superomarginal, and inferomarginal plates diamond-shaped, slightly overlapping distal corner of preceding plate, connected transversely to adjacent row of plates by small, irregular, secondary plates. Six rows of papular areas, 6–10 pores per area. Three rows of rounded actinal intermediate plates, becoming two distally. Entire body, up to adambulacral armature, covered with close uniform coating of granules, those in papular areas slightly smaller than those on plates. Adambulacral furrow spines two, one small, acicular, the other heavy, flared at tip, broad in plane of furrow. Subambulacral spines single, heavy, thick, longer than broad. No pedicellariae noted. Madreporite small, round, covered with fine radiating gyri. Anus subcentral, inconspicuous. Ocular plates large, rounded, raised, mostly bare, with few granules. Color in life is reddish orange; dried, bright orange with blue papular areas.

MATERIAL EXAMINED.—Holotype, USNM E11838, Station 4, Malpelo Island, 49 m, on rubble near base of vertical rock wall. Paratypes, USNM E11839, 4 specimens, Stations 4 and 5, Malpelo Island, 36–49 m.

ETYMOLOGY.—The species name is the latinized acronym for the Smithsonian Tropical Research Institute.

DISCUSSION.—Only one other species of *Tamaria*, *T. obstitpa* Ziesenhenne, has been described from the eastern tropical Pacific, *Tamaria obstitpa* is known from the type-locality, Cocos Island, Costa Rica, and from James Island, Galapagos Islands. The present species agrees closely with *T. obstitpa*, but differs in having secondary connecting plates not only intermarginally but between all abactinal plate rows; in having a carinal series, lacking in *T. obstitpa*; in the nature of the adambulacral armature; and in the lack of pedicellariae. The number of pores per papular area is smaller in *T. stria* (6–10) but is within the range of *T. obstitpa* (6–24).

MITHRODIIDAE

Mithrodia bradleyi Verrill

Mithrodia bradleyi Verrill, 1867:288.—Perrier, 1878:77.—Sladen, 1889:539.—Fisher, 1906:1094, pl. 36: figs. 1, 2, pl. 37: figs. 1–3; 1925:68; 1928:491.—H. L. Clark, 1910:327, pl. 6: fig. 1.—A. H. Clark, 1946:9.—Steinbeck and Ricketts, 1941:380, pl. 23: fig. 3.—Ely, 1945:27, pl. 8A, B.—Caso, 1944:

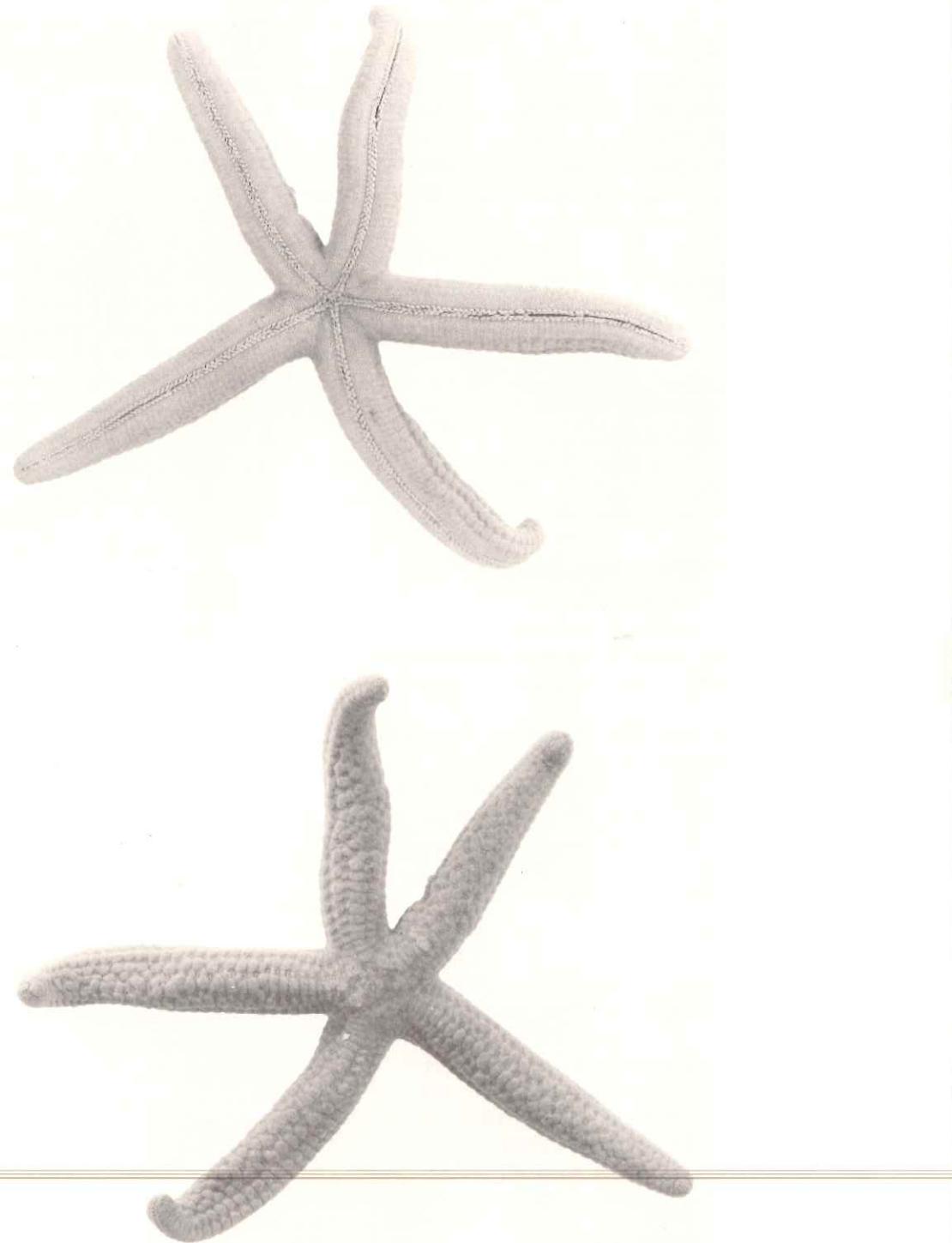


FIGURE 34.—*Tamaria stria*, new species, holotype, USNM E11838.

253; 1953:214; 1961:92, figs. 34-36; 1962:92, figs. 34-36; 1963:300.—Engel, John, and Cherbonnier, 1949:1.
Mithrodia clavigera Perrier, 1875:360.—Ives, 1889:171.

Three specimens of *Mithrodia bradleyi* were collected at Malpelo at depths from 12 to 14 meters; the known distribution for this species is from Baja California to the Galapagos Islands. The Malpelo specimens have many more pedicellariae than specimens from Baja California in the collections of the National Museum of Natural History, Smithsonian Institution, but correspond well with material from the Colombian coast.

PORANIIDAE

Asteropsis carinifera (Lamarck)

Asterias carinifera Lamarck, 1816:556.
Asterope carinifera (Lamarck).—Mueller and Troschel, 1840: 104.—H. L. Clark, 1920:33, pl. v: fig. 2.
Asteropsis carinifera (Lamarck).—Mueller and Troschel, 1840: 322; 1842:63.—A. M. Clark, 1967:37.—McKnight, 1968:713.
Gymnasterias inermis Gray, 1840:278.
Gymnasterias spinosa Gray, 1840:278.
Gymnasterias carinifera (Lamarck).—deLoriol, 1885:67, pl. 20: figs. 7-10.—Leipoldt, 1895:649, pl. 32: fig. 13.

One specimen of *Asteropsis carinifera* was collected at Malpelo on a vertical rock wall at 36 meters. It is distributed throughout the Indo-Pacific and the tropical eastern Pacific. This species is apparently attacked by the shrimp *Hymenocera* (Birkeland, pers. comm.), well known as a predator on *Acanthaster plancii*, the crown-of-thorns starfish.

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