

NEW RECORDS OF *STEREOMASTIS SCULPTA*
PACIFICA (FAXON) (DECAPODA: POLYCHELIDAE)
IN THE EASTERN PACIFIC OCEAN

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Abstract.—The range of *Stereomastis sculpta pacifica* is extended south from Peru to Chile. Adults are reported for the first time from southern California. The larvae, taken in midwater trawls, reach a length of 87 mm. All but two of the adults measured over 70 mm. The large size of the larvae relative to the adults suggests that much of the life cycle is spent in midwater zones.

The deep-sea lobster *Stereomastis sculpta pacifica* is one of the most striking decapods occurring at bathyal depths in the eastern Pacific Ocean. The bright scarlet larvae have inflated, globose carapaces unlike those of other midwater decapods in the area. The adults are recognizable by their long chelipeds, flattened, hirsute carapace, and eyes without pigment.

In 1978, Paul Gregory and other biologists of the California Department of Fish and Game brought two specimens of these lobsters to the Allan Hancock Foundation for identification. Examination of the animals suggested that other polychelids in local collections might belong to the same species. I found more specimens in the midwater collections of the Allan Hancock Foundation and at Scripps Institution of Oceanography. Adults were taken in sablefish traps, otter trawls, and beam trawls. Larvae were collected in Isaacs-Kidd midwater trawls.

New records of *S. sculpta pacifica* extend its range south from Peru to Chile, and north from off San Clemente Island to off Point Conception, California. This paper presents new records, discusses the synonymy of the species, and comments on its life history.

Stereomastis sculpta pacifica (Faxon)

Fig. 1

Polycheles sculptus pacificus Faxon, 1893:196-197; 1895:122-123, pl. C, fig. 1, 1a.

Eryonicus caecus?—Faxon, 1893:197-198; 1895:110-111, pl. B, fig. 2; pl. 29, fig. 2-2f.

Eryoneicus Agassizi Bouvier, 1915:2.

Stereomastis sculpta pacifica.—de Man, 1916:5, 8.—Firth and Pequegnat, 1971:16, 71-72.

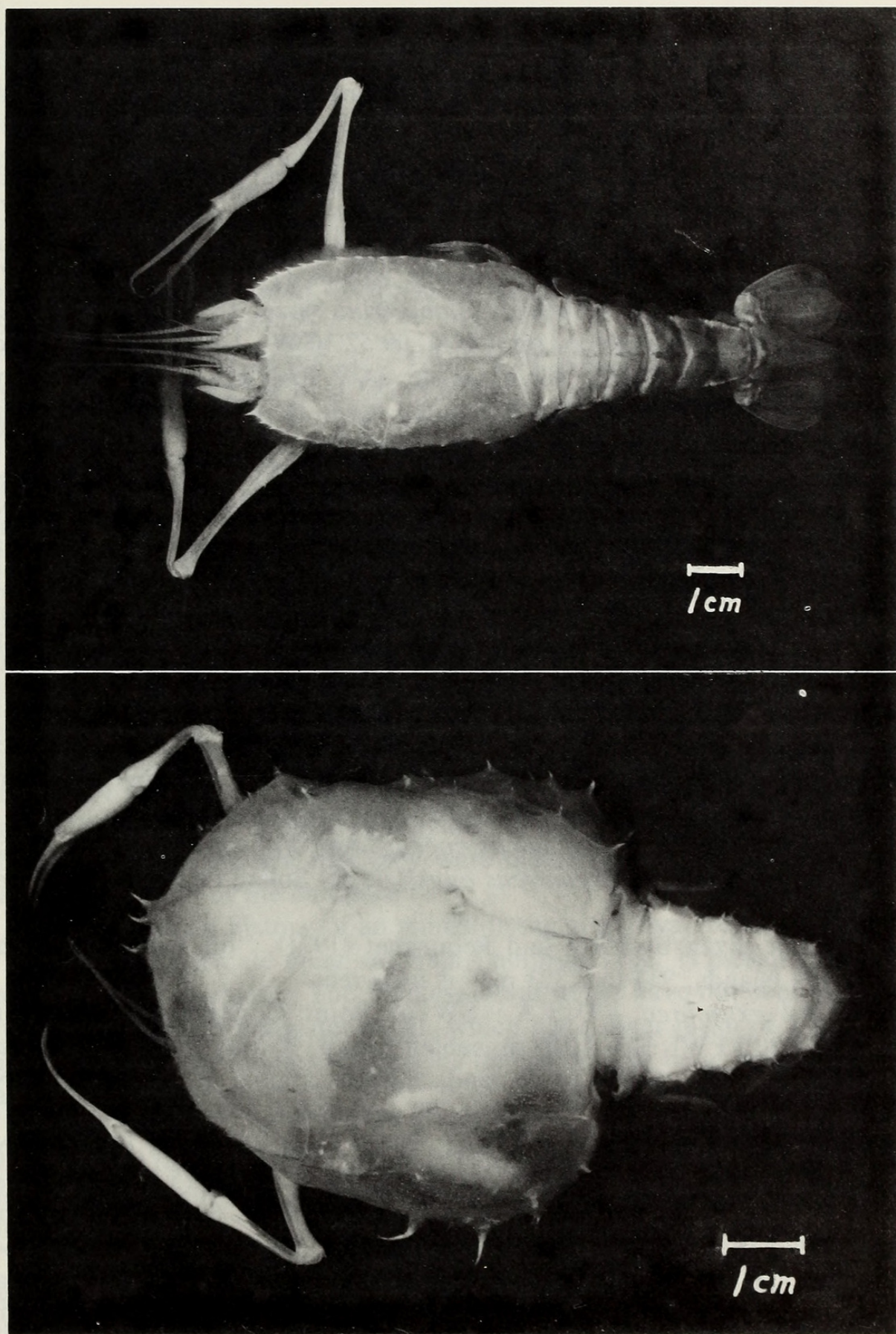


Fig. 1. *Stereomastis sculpta pacifica*. **Upper:** adult female, total length 102.5 mm. Off Baja California, Mexico (31°59.6'N, 118°47.4'W), 1,100 m, boat *Calafia*. **Lower:** larva, total length 87.0 mm. 34.3 mi. from Morro Hermosa, Baja California, 3,720–3,785 m, *Velero IV* sta. 11522.

Eryoniscus agassizi.—Schmitt, 1921:105–107, pl. 15, figs. 1–2.

Polycheles sculptus.—del Solar, 1972:11.

Not *Pentacheles Agassizi*.—A. Milne-Edwards, 1880:65–66 (= *Polycheles typhlops* Heller).

Previous records.—U.S.A.: 2.9 miles, 72°S of east point, Northwest Harbor, San Clemente Island, California (approximately 33°0'N, 118°40'W), 1,207–1,300 m, 9-foot Tanner beam trawl, 9 April 1904, *Albatross* station 4405. MEXICO: Near Las Tres Marias Islands (21°15'0"N, 106°23'0"W), 1,248 m, gray sand, black specks, *Globigerina* ooze, 18 April 1891, *Albatross* sta. 3424. Off Acapulco (16°33'0"N, 99°52'30"W), 1,218 m, brown sand, black specks, 11 April 1891, *Albatross* sta. 3419. PANAMA: Gulf of Panama (7°21'0"N, 79°35'0"W), 943 m, dark green mud, 10 March 1891, *Albatross* sta. 3394. Gulf of Panama (7°21'0"N, 79°2'0"W), 3,382 m, 8 March 1891, *Albatross* sta. 3383. Gulf of Panama (7°15'0"N, 79°36'0"W), 1,883 m, green mud, 10 March 1891, *Albatross* sta. 3393. Off Mariato Point (7°6'15"N, 80°34'0"W), 1,283 m, green mud, 23 February 1891, tow net, *Albatross* sta. 3353. Gulf of Panama (7°6'0"N, 79°48'0"W), 0–738 m, tow net, 9 March 1891, *Albatross* sta. 3388. Gulf of Panama (7°5'30"N, 79°40'0"W), 2,345 m, hard bottom, 10 March 1891, *Albatross* sta. 3392. COLOMBIA: Off Malpelo Island (3°56'0"N, 81°40'15"W), 1,410 m, 5 March 1891, *Albatross* sta. 3377. Cocos Island–Malpelo Island (2°34'0"N, 82°29'0"W), 2,217 m, surface tow net, 4 March 1891, *Albatross* sta. 3375. PERU: North of Callao (10°45'S, 78°36'W), 870 m, 1970–1972, *SNP-1* transect 7105. Off southern Peru (18°23'S, 71°13'W), 1,100 m, 1970–1972, *SNP-1* transect 7201.

Note: Faxon, 1895, as *Eryonicus caecus*? and *Polycheles sculptus pacificus*; Schmitt, 1921, as *Eryoniscus agassizi*; del Solar, 1972, as *Polycheles sculptus*.

The range given by Firth and Pequegnat (1971), “off Panama and the Galapagos Islands, 934 to 2,323 m,” is incorrect.

Material examined.—U.S.A.: SW of Point Conception, California (34°30'N, 120°35'W), 923–1,108 m, sablefish trap, 10 May 1979, boat *Arista*, 1 adult. 11 miles, 235°T to W end, Santa Catalina Island (33°26'0"N, 118°51'30"W to 33°21'42"W), 1,302 m, 23 June 1964, *Velero IV* sta. 9852, 1 larva. 13.2 miles, 188°T from W end, Santa Catalina Island (33°20'25"N, 118°47'20"W to 33°10'15"N, 118°31'15"W), 1,228–1,278 m, 25 July 1964, *Velero IV* sta. 9876, 1 larva. 24.5 miles from SE point, San Nicolas Island (33°8'20"N, 119°12'35"W to 32°50'15"W, 118°53'35"W, 1,643 m, 14 May 1964, *Velero IV* sta. 9661, 1 larva. 26.5 miles, 120°T from Aero Light, San Nicolas Island (32°52'30"N, 118°59'20"W to 33°05'0"N, 119°11'0"W), 1,588–1,735 m, 26 February 1969, *Velero IV* sta. 12726, 1 larva. CHILE: Off Arica (18°40.5'S, 70°36.0'W), 768–968 m, 25-foot otter trawl, 7 May 1972, *Thomas Washington* sta. MV72-II-27, 1 adult. Off Arica (18°42'S, 70°37'), 1,097–

1,152 m, 7 May 1972, 25-foot otter trawl, *Thomas Washington* sta. MV72-II-26, 1 adult. Off Valparaíso (30°46'S, 81°31'W), 3,000 m, 4 March 1969, *Piquero* trawl 2, 1 larva. Also an additional 32 adults from 20 stations; Costa Rica, Mexico, and southern California, 750–1,875 m; and 86 larvae from 63 stations; Costa Rica, Mexico, and southern California.

Total lengths of adults.—41.3–102.5 mm.

Total lengths of larvae.—16.9–87.0 mm.

Size distribution of larvae.—10–20 mm ($n = 9$); 20–30 mm ($n = 7$); 30–40 mm ($n = 35$); 40–50 mm ($n = 10$); 50–60 mm ($n = 9$); 60 mm or greater ($n = 19$). Undetermined ($n = 2$).

Depth distribution of larvae.—1,846 m or less ($n = 39$); 1,846–2,748 m ($n = 15$); 2,748–3,692 m ($n = 28$); 3,692 m or greater ($n = 3$); not recorded ($n = 4$).

Remarks.—Larval stages of polychelid lobsters have been called species of *Eryoneicus* or *Eryoniscus*. Bouvier (1915, 1917) noted that the eastern Pacific species, which he named *Eryoneicus Agassizi*, was different in its spination from *Eryonicus caecus*, taken by the *Challenger* expedition off the Canary Islands (Bate, 1888). Although he saw the similarity between *S. sculpta pacifica* and his *Eryoneicus Agassizi*, he considered the two to belong to distinct genera. Balss (1925) finally established that the large, open-water animals actually were larval polychelids. The generic names *Eryoneicus* and *Eryonicus* have been placed on the Official Index of Rejected Names and the generic name *Stereomastis* validated under the plenary powers (ICZN Opinion 702, 1964). Faxon (1895) considered the genus *Stereomastis* Bate 1888 as being a synonym of *Polycheles* Heller 1862. De Man (1916), however, thought that they were distinct based on their epipodites and the spination of the carapace.

Studying the life history of an animal living at bathyal depths is difficult. The eggs of the female taken off Baja California (Fig. 1) measure approximately 1 mm in diameter. The smallest larval stages have not been collected by the Isaacs-Kidd midwater trawl, which has a liner mesh of 3 mm. The size distribution of the larvae suggests that there may be at least five larger larval stages before settling.

The larvae were collected with myctophid fishes, cephalopods, sergestid shrimps, and other nektonic animals. Like these animals, larval polychelids may migrate vertically. Remains of a bony fish were found in the oral field of one larva.

All but two of the adults measured over 70 mm in total length. The other two measured 41.3 and 47.6 mm each. Nineteen of the larvae were 60 mm or greater in length. The small difference between most of the adults and the largest larvae suggests that maturity is reached soon after settling, perhaps after only one or two molts. The two very small adults indicate that not all the lobsters settle at the same size.

Little is known of the habits of adult *S. sculpta pacifica*. Faxon (1895) reported them from soft bottoms. Four specimens were caught on or inside traps for sablefish (*Anoplopoma fimbria* [Pallas]) baited with chopped fish. The lobsters may have been trying to scavenge on the fish. Wenner (1979) found foraminiferans and parts of crustaceans, fish and polychaetes in the stomachs of *S. sculpta sculpta* Smith, the Atlantic subspecies.

Wenner and Boesch (1979) found that *Stereomastis sculpta sculpta* occurred at 575–2,130 m in the western Atlantic Ocean. Most individuals were taken at 600–1,200 m, at 3.4–10.5°C. This depth range is similar to that of *S. sculpta pacifica*. At 1,300–2,400 m in the Atlantic, they reported *Stereomastis nana* (Smith) to be more abundant than *S. sculpta*. In the eastern Pacific, *S. nana* has been reported off Colombia and the Galapagos Islands (Faxon, 1895). It also has been taken off Chile (32°51'S, 72°8'W, 2,580 m, beam trawl, 19 December 1965, Anton Bruun Cruise 12, one specimen, Scripps Institution of Oceanography, unpubl. data). At depths greater than 2,400 m in the eastern Pacific, the lobsters *Willemoesia pacifica* Sund, *Willemoesia challengerii* Sund, and *Willemoesia inornata* Faxon have been collected.

The life history of *S. sculpta pacifica* is unusual for a decapod in having such large open-water larvae relative to the adults. Perhaps it is not surprising that earlier writers did not immediately recognize the midwater forms as larvae. Much of the lifespan may be spent in midwater zones. The catches of nektonic shrimp, fishes, cephalopods, and other invertebrates in the trawls with the larval polychelids suggest that food may be more abundant in the midwater zones than on the bottom. Spending a long time in the open water may aid these lobsters in avoiding competition for food and/or predation on the bottom.

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