

## First record of a thread-leg shrimp (Decapoda: Caridea: Nematocarcinidae) from California

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*Abstract.*—A thread-leg shrimp, *Nematocarcinus* sp., was photographed at 870 m off the San Juan Seamount off California. The shrimp was not collected. The color pattern is very different from previously described northeastern Pacific species of *Nematocarcinus*. The image in the photograph is too distant to see characteristic details of the rostrum. A previous report of *Nematocarcinus exilis* (Spence Bate, 1888) from Oregon cannot be verified, so this is the first well-documented report of this family in the eastern Pacific north of Mexico.

**Keywords:** California, Caridea, Nematocarcinidae, Thread-leg shrimp

Thread-leg shrimp, family Nematocarcinidae, live in deep benthic habitats almost world-wide at depths of 183 to more than 3700 m. Two species, *Nematocarcinus agassizi* Faxon, 1893 and *N. faxoni* Burukovsky, 2001 have been reported off the Pacific coast of Mexico and in the Gulf of California as far north as 30°56'24"N, 116°40'45"W and 30°56'24"N, 116°40'45"W, respectively (Hernandez-Payan & Hendrickx 2016, Fig. 2). Krygier & Percy (1981) reported *N. exilis* (Spence Bate, 1888) from off the Columbia River, Oregon, but this specimen cannot be located. The range of *N. exilis* today is considered to be the eastern Atlantic and Mediterranean Sea (Burukovsky 2012). Krygier & Percy (1981) identified the specimen by use of a key to Atlantic species, so this record is likely due to a misidentification at the species level.

The remotely operated vehicle *Hercules*, deployed from the Exploratory Vessel *Nautilus*, photographed an individual *Nematocarcinus* sp. at San Juan Seamount (33°02.2'N, 121°0.3'W, 870 m, 20 Oct

2020, Fig. 1). Although the *Hercules* is equipped with suction collecting equipment, most shrimp, including the photographed individual, are too quick for the nozzle and easily escape. The shrimp was not collected. The estimated total length of the shrimp was 10 cm. During a video transect at the Seamount, 2 or 3 *Nematocarcinus* sp. per m<sup>2</sup> were observed, scattered along the rocky sea floor.

Species of *Nematocarcinus* are easily differentiated from the more common shrimp of the family Pandalidae by their elongate, thread-like legs. Identification of the photographed shrimp to species is not possible without a specimen. The rostrum with its characteristic length and teeth is not in view in the photograph. The color pattern is very different from that of *N. agassizi* or *N. faxoni*, both of which are bright red in life (Hernandez-Payan & Hendrickx 2016, Fig. 2). Komai & Segonzac (2005) described two new species of *Nematocarcinus* from the East Pacific Rise. They included a color photograph of their new species, *N. burukovsky*, but this species was not collected farther north than 17°34'S. The illustrations of this



Fig. 1. *Nematocarcinus* sp. in situ at the San Juan Seamount.

species show prominent teeth on the dorsal part of the rostrum, not seen in the California shrimp. The other species, *N. ovalis*, collected as far north as 17°44'S, was not photographed. There is not enough detail in the photograph from California to accurately compare the shrimp with either of these two species.

Komai (2008, figs. 21.6, 21.7) provided photographs of two species of *Nematocarcinus*, possibly *N. tenuipes* Spence Bate, 1888 or *N. productus* Spence Bate, 1888, taken by a remotely operated vehicle off Japan. The photographs show that the shrimp were gathered in a small space. Positive identification to species was difficult without observation of fine details of the morphology. The shrimp were not collected, and even if they had been, specimens of *Nematocarcinus* spp. often are damaged during collection. The shrimp shown in fig. 21.7 were dark red, unlike the shrimp from southern California.

There have been no previous studies of the biota of San Juan Seamount, located at 180 km southwest of Point Conception, California. Previous studies at depths of 800 m or more have been conducted closer to the shore of southern California. Other species of *Nematocarcinus* seem to have extensive ranges, so this shrimp may be

found at depth in future studies of this region.

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### Literature Cited

- Burukovsky, R. N. 2001. Taxonomy of *Nematocarcinus* (Decapoda, Nematocarcinidae). Description of *Nematocarcinus* from waters of the American continent. *Zoologicheskii Zhurnal* 80:1429–1443 (in Russian).
- Burukovsky, R. N. 2012. Deep sea shrimps of the family Nematocarcinidae: history of study, systematics, distribution, and biology. *Prospekt Nauki Publishing House, Saint Petersburg*, 288 pp. (in Russian).
- Faxon, W. C. 1893. 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, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission steamer "Albatross," during 1891, Lieut.-Commander Z. L. Tanner, U. S. N., commanding. VI. Preliminary descriptions of new species of Crustacea. *Bulletin of the Museum of Comparative Zoölogy at Harvard College, in Cambridge* 24:149–220.
- Hernandez-Payan, J. C., & M. E. Hendrickx. 2016. Two species of the deep-water shrimp genus *Nematocarcinus* A. Milne-Edwards, 1881 (Crustacea, Decapoda, Caridea, Nematocarcinidae) from the Mexican Pacific. *Zootaxa* 4126(4):587–599.
- Komai, T. 2008. *Nematocarcinus* sp. 1 and *Nematocarcinus* sp. 2. P. 253 in K. Fujikura, T. Okutani, & T. Maruyama, eds., *Deep-sea life: Biological observations using research submersibles*. 2nd edition. Tokai University, Hadano, Japan, 487 pp. (in Japanese).

- Komai, T. & M. Segonzac. 2005. Two new species of *Nematocarcinus* A. Milne-Edwards, 1881 (Crustacea, Decapoda, Caridea, Nematocarcinidae) from hydrothermal vents on the North and South East Pacific Rise. *Zoosystema* 27:343–364.
- Krygier, E. E., & W. G. Percy. 1981. Vertical distribution and biology of pelagic decapod crustaceans off Oregon. *Journal of Crustacean Biology* 1:70–95.
- Spence Bate, C. 1888. Report on the Crustacea Macrura collected by H.M.S. Challenger during the years 1873–76. Report on the Scientific Results of the Voyage of the H.M.S. Challenger, *Zoology* 24(52):i–xc, 1–942, + pls. I–CL.