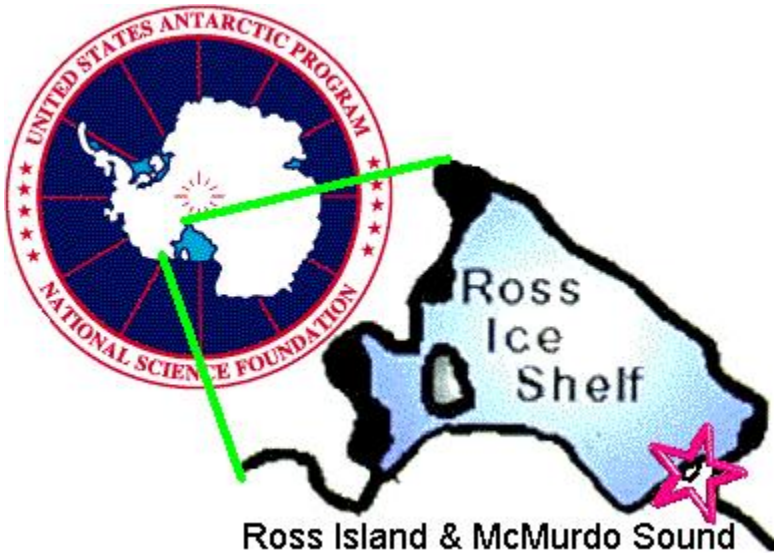
# Nemertina: proboscis worms

# UNDERWATER FIELD GUIDE TO ROSS ISLAND & MCMURDO SOUND, ANTARCTICA

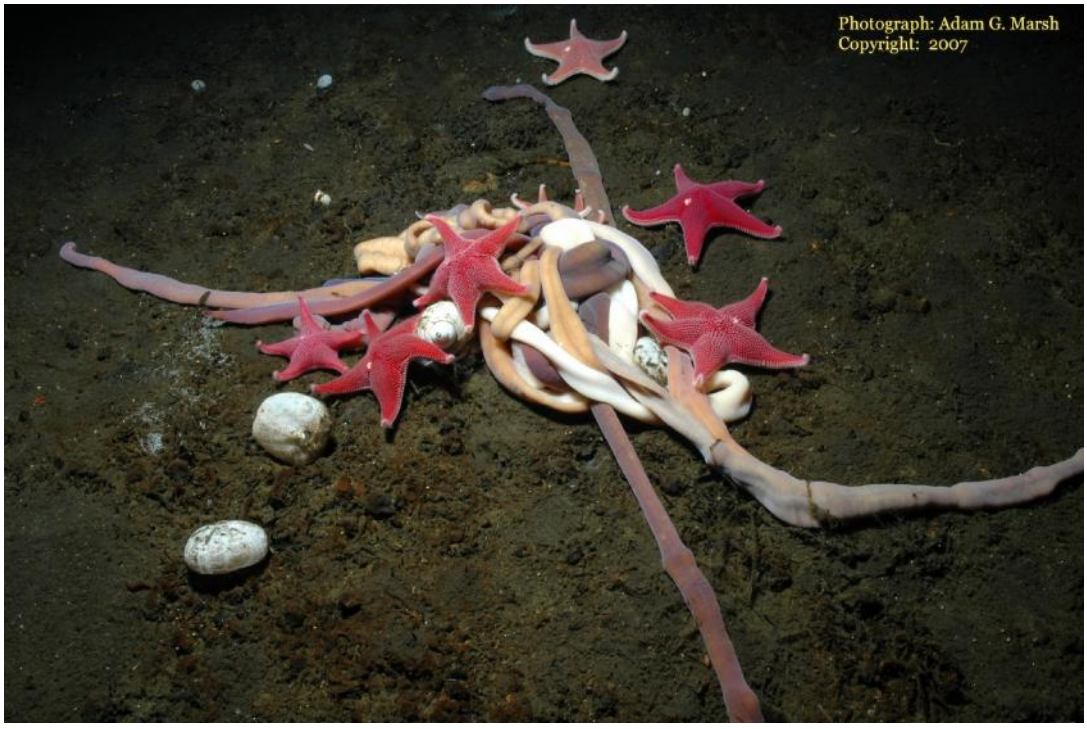
Peter Brueggeman

Photographs: Shawn Harper, Adam G Marsh, M Dale Stokes & Norbert Wu




The National Science Foundation's Office of Polar Programs sponsored Norbert Wu on an Artist's and Writer's Grant project, in which Peter Brueggeman participated. One outcome from Wu's endeavor is this Field Guide, which builds upon principal photography by Norbert Wu, with photos from other photographers, who are credited on their photographs and above. This Field Guide is intended to facilitate underwater/topside field identification from visual characters, and there can be some uncertainty in identifications solely from photographs.

## proboscis worm *Parborlasia corrugatus*


*Parborlasia corrugatus* is found throughout Antarctica and the Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Sandwich Islands, South Georgia Island, Bouvet Island, Kerguelen Island, Cargados Carajos Shoals in the Indian Ocean, Falkland Islands, Tierra del Fuego, southern Argentina, Peru, and Chile at depths from 0 to 3,590 meters [1,7,8].



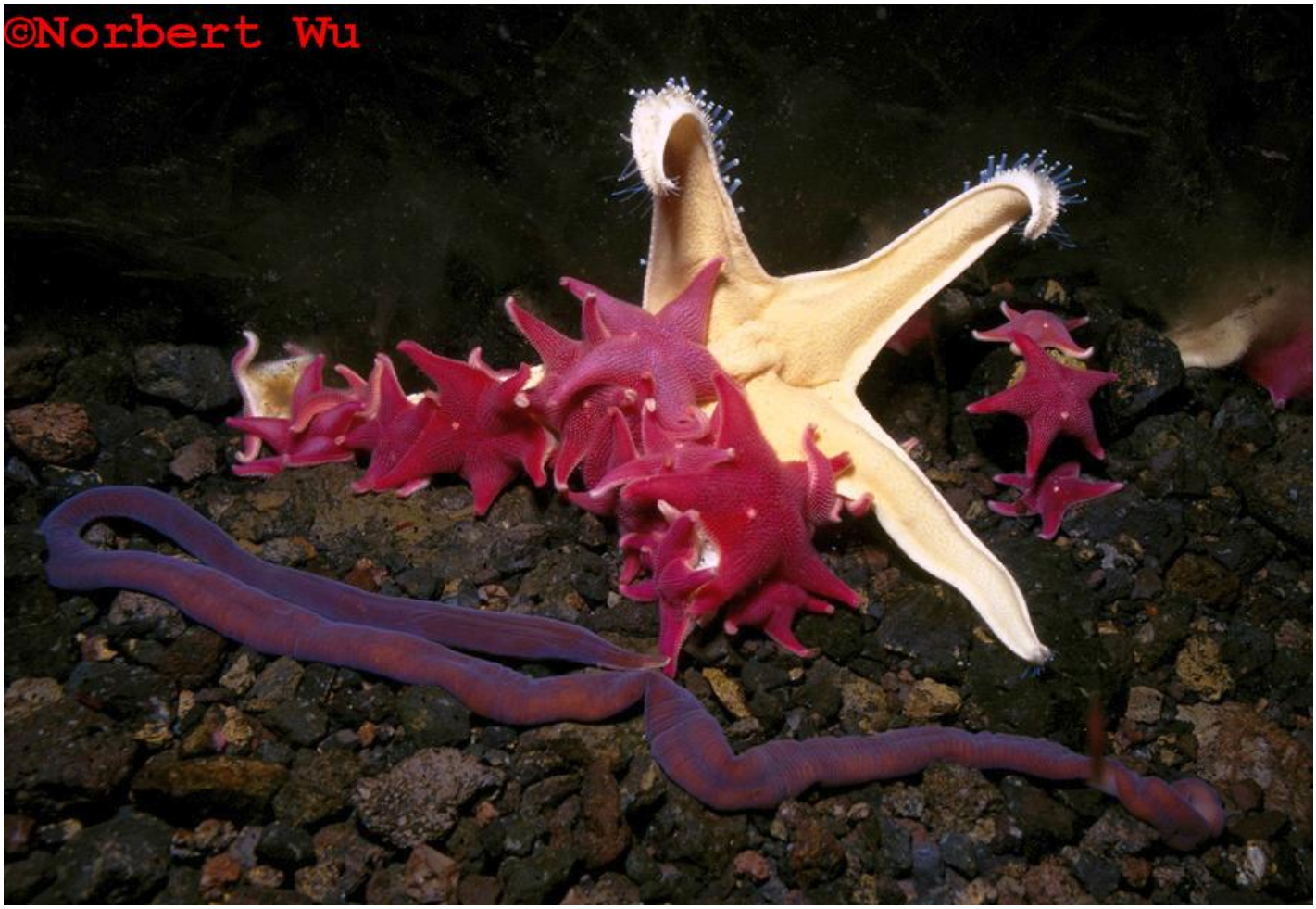
*Parborlasia corrugatus* has a smooth flattened body with variable coloration (cream through reddish-, greenish-, or grayish-brown to dark brownish-black) [1]. *P. corrugatus* grows to lengths of one to two meters, a diameter of two centimeters, and weighs up to 100 grams..... an example of Antarctic gigantism [1,6].



*Parborlasia corrugatus* is a scavenger and a predator with a voracious appetite and will eat almost anything; its diet includes sponges (including *Homaxinella balfourensis*), jellyfish (its eating *Desmonema glaciale* in this photo above), diatoms, seastars, anemones, polychaete worms, molluscs (including Antarctic scallop *Adamussium colbecki*), crustaceans, and fish [1,2,5].



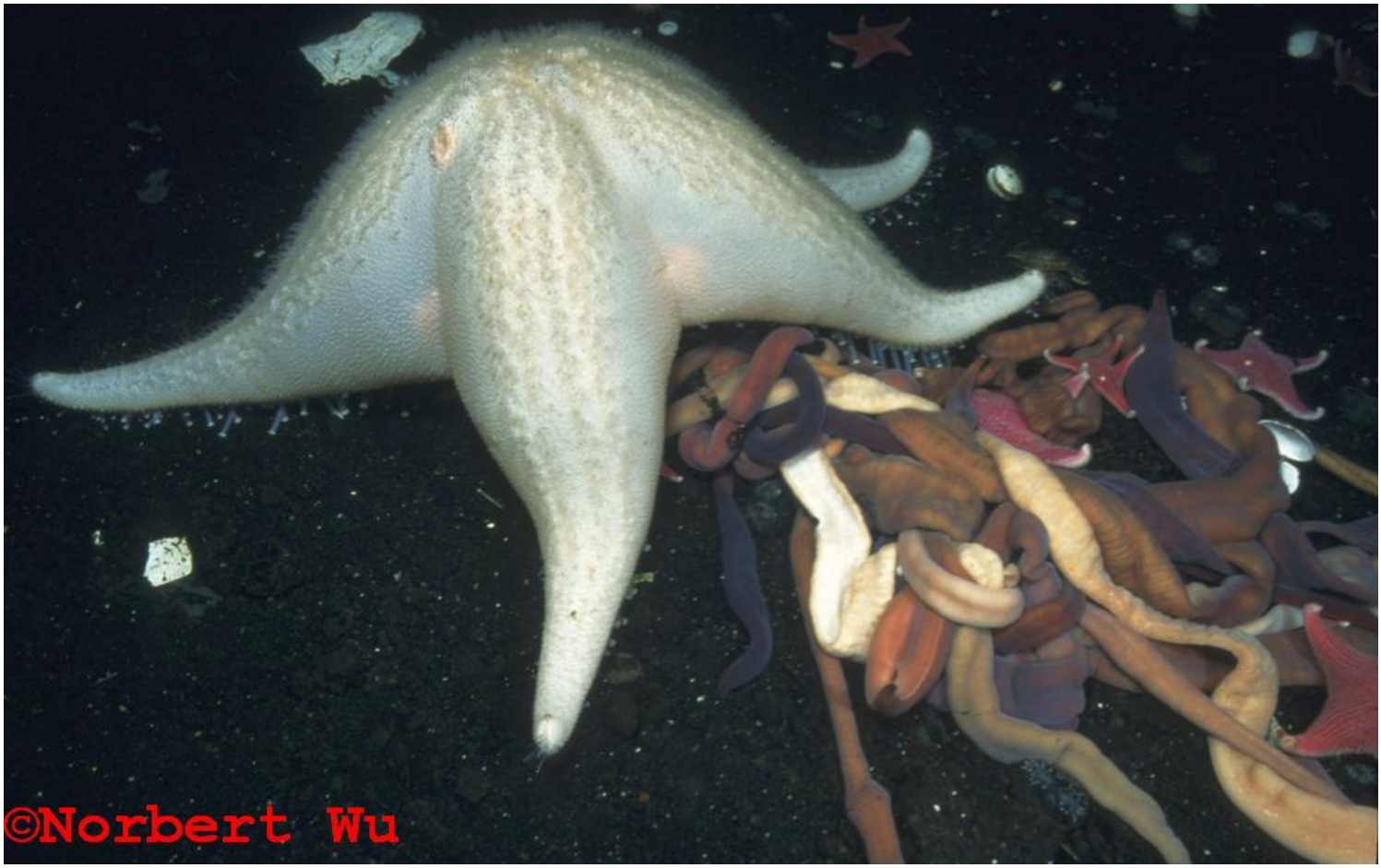
*Parborlasia corrugatus* may be eating that sponge in the above photo.

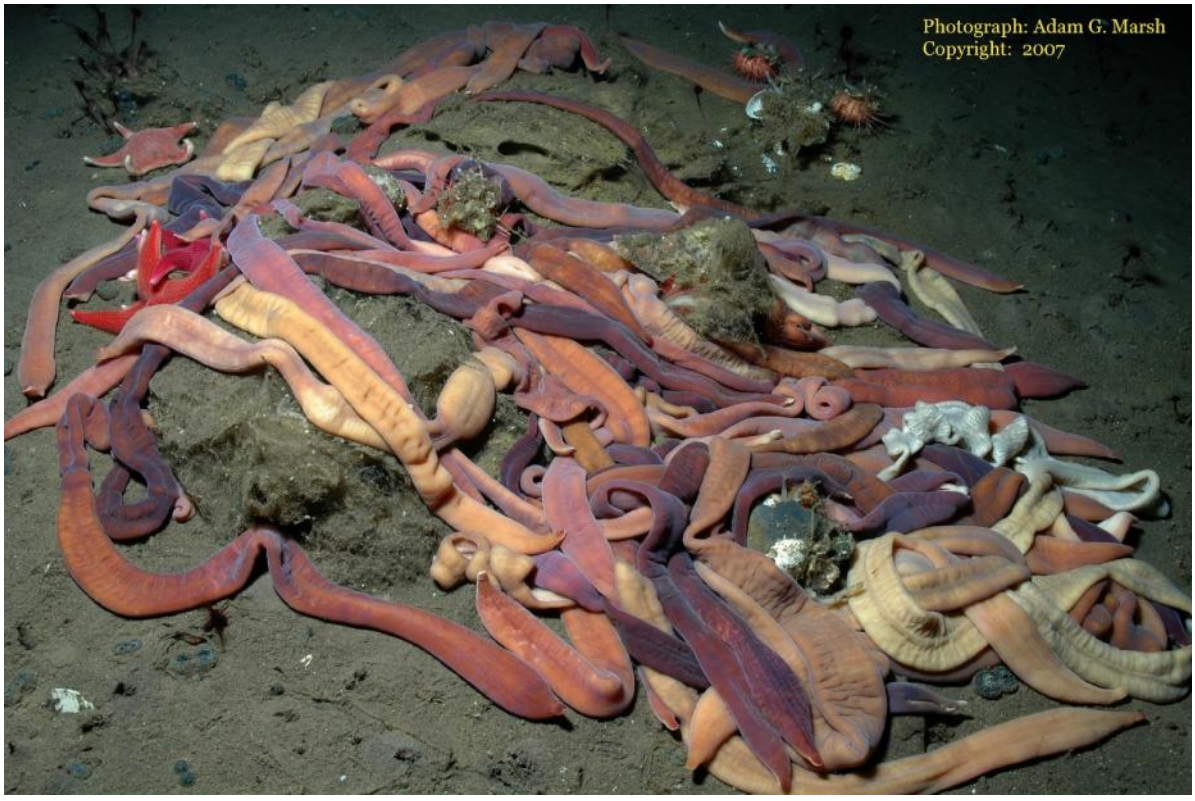



*Parborlasia corrugatus* joins in on the feeding frenzy when the small seastar *Odontaster validus* attacks en masse the large seastar *Acodontaster conspicuus* [3].


Feeding pile-ups of up to 22 *Parborlasia corrugatus* have been observed [4].


*Parborlasia corrugatus* can detect food at a distance with an efficient chemotactic sense and its large mouth and flexible body can engulf food almost as large as itself [1].




*Parborlasia corrugatus* lacks a respiratory system, absorbing oxygen through its skin [6]. Ordinarily, such a large animal would have difficulty getting sufficient oxygen through its skin, but its success is afforded by its low metabolic rate coupled with the high oxygen level of the cold Antarctic waters [6]. If the oxygen level drops in the water, *P. corrugatus* becomes more flattened and elongated; this facilitates oxygen uptake by increasing its skin area and also minimizes the distance that oxygen must diffuse into its body [6].


The cephalic slits on the head of *Parborlasia corrugatus* are yellowish-white in color, and usually two white patches just before the end of those cephalic slits [8]. Like other proboscis or nemertean worms, the wedge-shaped head of *P. corrugatus* has a fluid-filled cavity used to rapidly shoot a proboscis which the worm uses to capture prey and defend itself [1]. This proboscis has adhesive secretions which secure prey.

*Parborlasia corrugatus* is chemically defended by an acidic mucus (pH 3.5) which potential predators avoid [4].


Here *Parborlasia corrugatus* worms are eating eggs of the naked dragonfish *Gymnodraco acuticeps*.


*Parborlasia corrugatus* has a one-way gut with a large mouth (shown here) and a closed circulatory system; nemertean worms are the simplest animals with a circulatory system.

**Taxonomic Note:** Earlier genus was *Lineus*.

Feb 2017: Taxonomic name checked on World Register of Marine Species www.marinespecies.org

**References: 1:** Biology of the Antarctic Seas XIV, Antarctic Research Series 39(4):289-316, 1983; **2:** Science 245:1484-1486, 1989; **3:** Ecological Monographs 44(1):105-128, 1974; **4:** Journal of Experimental Marine Biology and Ecology 153(1):15-25, 1991; **5:** Antarctic Science 10(4):369-375, 1998; **6:** Polar Biology 25(3):238-240, 2002; **7:** Polar Biology 29(2):106-113, 2006; **8:** Marine Benthic Fauna of Chilean Patagonia. V Haussermann, G Forsterra. Puerto Montt, Chile: Nature in Focus, 2009. p. 379