



Feeding on cnidarians by giant pycnogonids (Pycnogonida: Colossendeidae Jarzinsky, 1870) in the North Central Pacific and North Atlantic oceans

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ABSTRACT

At Physalia Seamount, North Atlantic and West Pioneer Bank, North Central Pacific, the remotely operated vehicle *Deep Discoverer* photographed giant pycnogonids of the genus *Colossendeis* Jarzinsky, 1870 feeding on cnidarians, a solitary hydroid, and a coronate medusa, respectively. Coupled with previous published reports and recent photographs from Antarctica, these latest photographs indicate that cnidarians constitute a common prey for species of *Colossendeis*.

Key Words: behavior, deep-sea fauna, sea spiders

Among the most bizarre deep-sea benthic animals are giant pycnogonids (family Colossendeidae). Seventy-one species of the genus *Colossendeis* Jarzinsky, 1870 have been described (Bamber *et al.*, 2017). The most detailed study of feeding in these pycnogonids is Braby *et al.* (2009), who photographed *Colossendeis gigas* Hoek, 1881 and *C. japonica* Hoek, 1898 feeding on the sea anemones *Anthosactis pearseae* Daly & Gusmão, 2007 and *Liponema brevicornis* (McMurrich, 1893). *Colossendeis proboscidea* (Sabine, 1824) and *C. robusta* Hoek, 1881 have been reported to “feed in soft sediments” or be deposit feeders (Meyer 2013; Stout and Shabica 1970). Shabica (1977) reported that *C. robusta* and *C. megalonyx* Hoek, 1881 preyed on the limpet *Nacella concinna* (Strebel, 1908) (as *Patinigera polaris*). *Colossendeis megalonyx*, *C. robusta*, and *C. scotti* Calman, 1915 were caught in baited traps in Antarctica and nearby islands (Arnaud, 1972). *Colossendeis megalonyx* has been photographed in Antarctic waters sucking on a sea anemone (N. Wu, pers. comm.), and *Colossendeis* sp. fed on medusae entrapped by sea anemones (A. Moran, pers. comm.).

The National Oceanographic and Atmospheric Administration (USA) RV *Okeanos Explorer* conducted in 2012 studies on the marine life of deeper areas of seamounts in the North Atlantic. The ship visited areas within or southwest of the Papahānaumokuākea Marine National Monument, northwest of the main Hawaiian Islands. The remotely operated vehicle (ROV) *Deep Discoverer* obtained high-definition video footage of the biota on deep hard substrates. The ROV was equipped with paired lasers mounted on the video camera that provided a scale of 10 cm. The camera could focus on animals as small as 7 cm from a distance of 3 m. The ROV had collecting baskets and a manipulative arm but did not collect any pycnogonids.

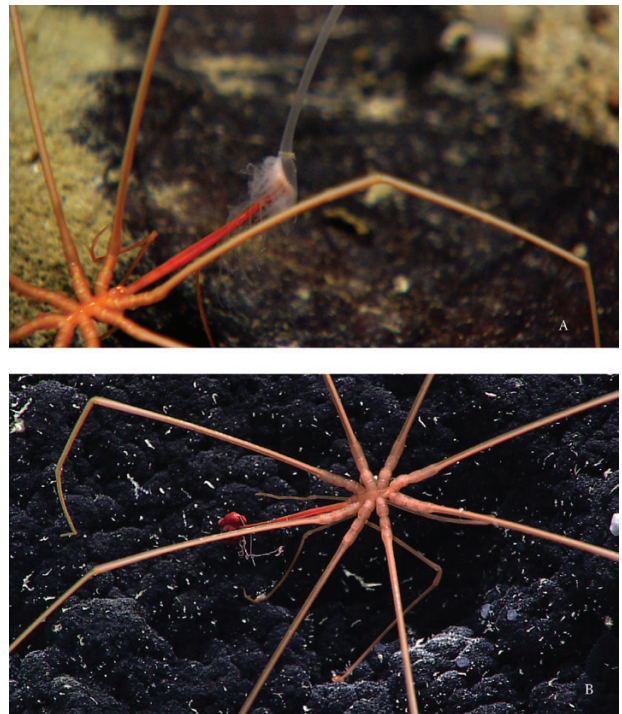


Figure 1. Giant sea spiders, *Colossendeis* spp. feeding on solitary hydroid, Physalia Seamount, 2480 m (A); feeding on medusa fragment, West Pioneer Bank, 1284 m (B). Photographs courtesy of NOAA Office of Ocean Exploration and Research 2014, 2016.

During Expedition 1401, Dive 11, 1 October 2014, the ship explored Physalia Seamount (39.81°N, 66.93°W). At 2480 m, the ROV encountered a large pycnogonid, *Colossendeis* sp., feeding on a large solitary hydroid (Fig. 1A). The photograph shows the proboscis inserted into the hydroid. During Expedition 1603, Dive 4, 4 March 2016, the ship explored West Pioneer Bank pinnacle (26.15°N, 173.36°W). At 1284 m the ROV encountered a large (estimated leg span 25 cm) sea spider on a steep, barren rocky slope. This sea spider, another species of *Colossendeis*, held a cnidarian at the apex of its long proboscis, presumably feeding on it (Fig. 1B). The prey may have been a medusa (Scyphozoa: Coronatae), which was swept against the rocks. Unidentified red coronate medusae were photographed soon before the giant sea spider was seen. The very long proboscis of both sea spiders resembles that of *Colossendeis macerrima* Wilson, 1881, which is known from the North Atlantic, Flores Sea, southern and southeastern Pacific, and Southern Ocean, Antarctica. This species has not been reported from the vicinity of the Hawaiian Islands. Definitive identification of the species would require specimens and closer examination of the body and legs, especially critical because of taxonomic confusion among similar species. Although the identifications of these sea spiders and their prey remain uncertain, these observations suggest that cnidarians constitute a common prey for species of *Colossendeis*.

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