



## Blue Soft Coral: Menace to Reef Society or Good Neighbor?

Recent observations in West Hawai'i national parks raised questions and potential concerns that a small blue soft coral may be spreading on coral reefs, possibly interfering with hard reef-building coral development and survival. After focused field observations, and literature and data review, I put together the following information and management recommendations.

### First, a few notes about soft

**corals:** Soft corals are in the phylum Cnidaria which includes jellyfish, sea anemones, and hard corals. All have single or multiple cup-shaped bodies called polyps, with a mouth surrounded by a ring of tentacles containing stinging cells used for defense or to catch prey. The cnidarian life cycle typically includes floating planktonic stage(s) and a stationary sea floor stage.

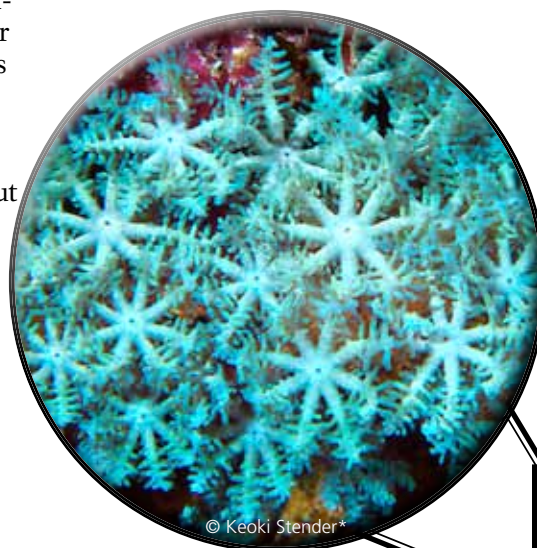
Although commonly called soft corals, these critters are not actually close relatives of the "hard" or "true" corals. Blue soft corals (*Sarcothelia edmondsoni*) are short, light blue clusters of colonial polyps with separate sexes that brood their young outside of their bodies. Colonies consist of many interconnected, tiny, up-turned mouths, each surrounded by 8 feather-like tentacles (see photo). There is some scientific confusion about whether this or a similar new species is endemic, native, or invasive. The blue soft coral has no known traditional or modern uses. Its only known predator is a sea slug.

Suspension, or filter-feeding animals like blue soft corals eat small particles floating in the water as plankton. This plankton includes microscopic algal spores and larvae of marine animals like other corals, crabs, sea urchins, and snails. Dense blankets of blue soft corals can eat a substantial amount of plankton and could prevent other species from settling or colonizing where these filter-feeding colonies occur. These processes would result in ecological competition for food and space on the sea floor. As a

consequence, a significant increase in the soft corals' dense coverage could have a profound negative influence on other reef organisms.

Based on recent observations we asked: Could this species be a problem to the reef ecosystem? Has the area of ocean bottom covered by these animals increased?

Blue soft corals live throughout the main Hawaiian islands, occurring in all West Hawai'i national parks, but are not known to occur in other Hawaii national parks. They generally live in shallow waters where they can tolerate reduced light due to high turbidity from suspended sediments, and low salinity due to freshwater seeps. Blue soft corals form a patchy but distinct horizontal band along shore up to 2 meters deep in shallow subtidal habitats. In the past, these animals have been reported to dominate sea floor cover in much of the deeper marine environment at Kaloko-Honokōhau NHP (KAHO).



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Studies from the 1970s -1990s indicate that the blue soft coral covered 50–90% of the sea floor in the extensive shallow habitats of KAHO. It was also found in the deep coral slope habitat with 10–50% cover living on dead finger coral skeletons. The soft

coral was also common at Pu'ukoholā Heiau NHS (PUHE) and Pu'uhonua o Hōnaunau NHP (PUHO). More recent work, including coastal inventories and sea floor monitoring between 10–20 meter depths, found that blue soft coral was not seen at PUHE in 2005, yet was abundant there in shallow water in 2009. While common at PUHO in the 1960's, in 2005 it only accounted for 0.04% of sea floor cover. Also, on average blue soft coral declined at KAHO from 11% cover in 2005 to 3% in 2008. So, blue soft corals have varied in abundance over time in shallower and deeper waters, and there is no apparent trend indicating an increase or decrease in overall cover.

These observations point to the important role of history, including natural history and even well-documented observations or anecdotal information, in both ecology and management. Without a historical perspective, observations or data can be misinterpreted and any resulting management actions could be inappropriate or inadequate. In this case, recommended management actions include: continuing (1) frequent field observations of blue soft coral and other potential invasives; (2) annual monitoring; (3) communications with other parks and agencies on resource trends, and; (4) if future information indicates an increase in blue soft coral, or a correlation with a decrease in hard coral, conduct further research to determine what other management actions might be applied.

— L. Basch, Marine Ecologist



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