



The World's largest known Gorgonian

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Abstract

Gorgonians in the deep sea can be much larger than their shallow water counterparts, but there are only a few scattered measurements. We have estimated the size of a chrysogorgiid gorgonian, *Iridogorgia magnispiralis* Watling 2007, observed from a submersible on Twin Banks in the Northwest Hawaiian Islands, as being 5.7 m tall.

Introduction

As the bathyal depths of the ocean are explored with submarines and remotely operated vehicles, octocorals are more routinely being imaged *in situ*. In Hawaii, octocorals are quite rare in shallow water (Devaney 1977; Cairns & Bayer 2008) but can be very common in water more than 160 m deep, with a total of 70 species currently known and another 20-30 still to be described (Grigg and Bayer 1976; Watling personal observation). While most deep-sea gorgonians share a similar size range as those from the shallow tropics, a few species, primarily in the families Chrysogorgiidae Verrill, 1883, and Isididae Lamaroux, 1812, are much larger. For example, in the North Atlantic, the chrysogorgiid *Iridogorgia magnispiralis* Watling 2007 was described as being more than 3 m tall (Watling 2007). In addition, an unidentified bamboo coral measuring 3.8 m total length was collected from a depth of 2252 m on Kelvin Seamount in the New England Seamount Chain (see oceanexplorer.noaa.gov/explorations/04mountains/logs/may19/may19.html) and some very large specimens of *Paragorgia* Milne-Edwards and Haime, 1857, have been brought up by trawlers fishing along the slopes of the Chatham Rise. These are massive, but so far do not appear to exceed 2 m in height (e.g. <http://www.greenpeace.org/international/en/news/features/Landmark-for-deep-sea240507/>).

Material and methods

Specimens were observed from the submersible *Pisces IV*, operated by the Hawaii Undersea Research Lab, during dive P5-224 on Twin Banks (23°03.005'N, 163°09.233'W, 1366 m, 28 November 2009), within the Papahānaumokuākea Marine National Monument (Permit number PMNM 2009-053). While the colony was not sampled, a nearby colony was sampled to verify species identification. Measurements were made using the program ImageJ (Rasband 1997-2012) from images taken while laser beams were focused along the colony axis. The two lower laser points were 19.9 cm apart (Fig. 1, inset).

Results and discussion

During a dive on Twin Banks, a specimen of *Iridogorgia magnispiralis* was imaged, but not collected, that is possibly the largest gorgonian ever observed (Fig. 1). Using the program ImageJ the total length of the colony was estimated to be 5.7 m. This measurement does not include the additional length attributable to the coiling of the central axis in the part of the colony where branches are present. The branches themselves are approximately 50 cm long, giving the colony an average width of 1.1 m when the approx. 10 cm diameter of the coil is included.

There were many *I. magnispiralis* colonies at this site; all were large, generally in the range of 3 m or so in overall length. Most noticeable was the complete lack of young colonies. In other areas, such as the New England Seamounts, where we have observed this species, very small (i.e., the colony consists of an axis only partially coiled) and intermediate sized colonies (the axis has few coils; see Watling 2007, Fig. 2a) are usually present. The absence of juveniles suggests that Twin Banks only very rarely experiences recruitment of new individuals. Rarely in this instance might mean once a century or more since most octocorals live to be anywhere from 100-400 years (Watling et al. 2011).

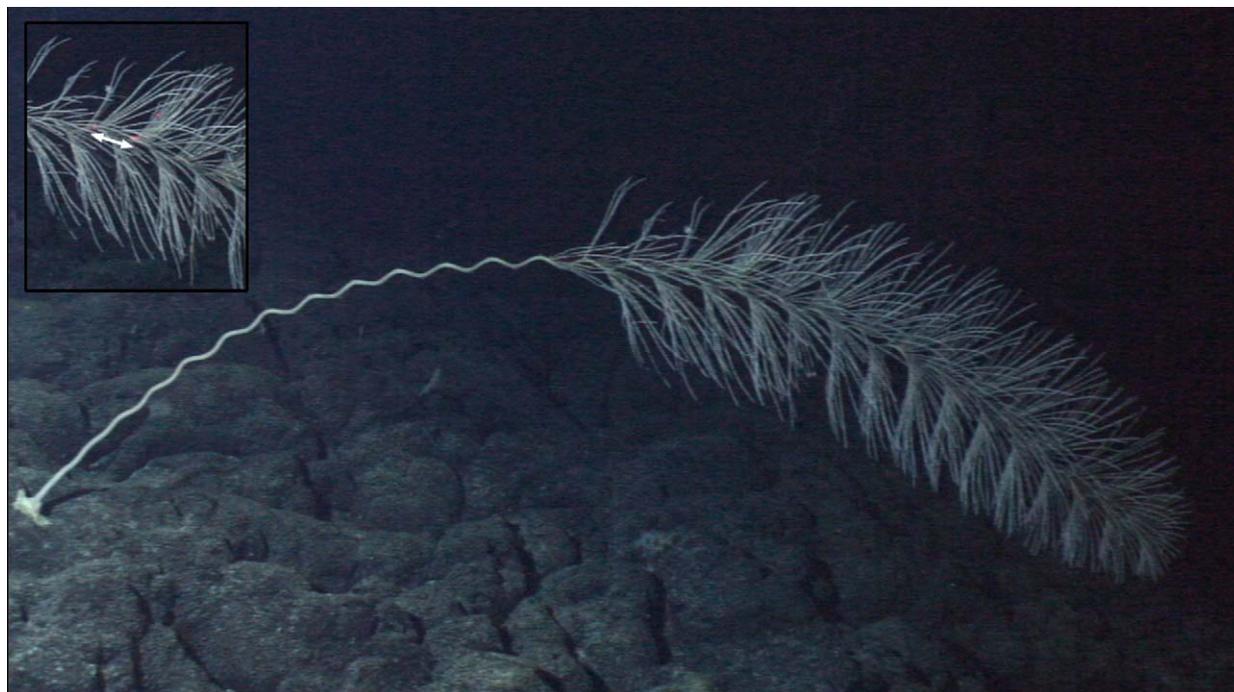


FIGURE 1. The 5.7 m long specimen of *Iridogorgia magnispiralis* Watling, 2007, photographed at a depth of 1366 m on Twin Banks, Northwest Hawaiian Islands within the Papahānaumokuākea Marine National Monument. Inset shows laser dots spaced at 19.9 cm used for measuring colony dimensions.

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