Article

A revision of the genus *Heterogorgia* Verrill, 1868 (Anthozoa: Octocorallia: Plexauridae)

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Abstract

The genus *Heterogorgia* Verrill, 1868 is poorly known. Lack of good illustrations and clear definitions have historically led authors to assign or transfer species erroneously to it. The genus was established by Verrill for three eastern Pacific species, another was described by Breedy and Guzman in 2005, and the geographic distribution was extended with the discovery of a western Atlantic species described by Castro in 1990. *Heterogorgia* is characterised by colonies composed of a number of stout stems that branch laterally and irregularly and arise from a conspicuous spreading holdfast. Coenenchymal sclerites are mostly colourless spindles; anthocodiae have strong spindles arranged in collaret and points; and the calyces are prominently armed with whorls of strongly projecting thorns. To define *Heterogorgia* we examined original type material of all eastern Pacific and western Atlantic species described until now and reference specimens from recent expeditions along the eastern Pacific. Morphological characters are analysed and illustrated using scanning electron micrographs. Lectotypes are designated for *H. tortuosa* and *H. verrucosa* to establish their taxonomic status. We conclude that *Heterogorgia* is comprised of five valid species at present: *Heterogorgia hickmani* and *H. verrucosa* for the Galapagos Islands and Ecuador mainland; *H. papillosa* for Mexico; *H. tortuosa* and *H. verrucosa* for Costa Rica and Panama; and *H. uatumani* for Brazil and Bahamas. The genera *Astromuricea*, *Bebryce*, *Echinogorgia* and *Psammogorgia* are proposed for the western Pacific species that were historically misplaced in *Heterogorgia*. We recommend that regional biodiversity estimates and biogeography analyses consider the erroneous status of the species that are still listed as *Heterogorgia* within the data sets.

Key words: Alcyonacea, Cnidaria, Coelenterata, eastern Pacific, gorgonians, soft corals, western Atlantic

Introduction

Heterogorgia was established by Verrill (1868) based on specimens collected in the tropical eastern Pacific; two species from Pearl Islands (Panama), *Heterogorgia verrucosa* and *Heterogorgia tortuosa*, and one species from La Paz (Mexico), *Heterogorgia papillosa.* After that, several old and new species from the western Pacific were either erroneously transferred or assigned to this genus by several authors, Thomson and Henderson (1905), Nutting (1910), and Kükenthal (1924). Later on, Harden (1979) reported the occurrence of the genus along the eastern Pacific and the coast of California, and Prahl *et al.* (1986) mentioned *H. verrucosa* in the Pacific of Colombia. More recently, two new valid species were added, *Heterogorgia uatumani* described by Castro (1990) from Ilha Grande (Brazil), and *Heterogorgia hickmani* described by Breedy and Guzman (2005) from Galápagos Islands (Ecuador).

The absence of good illustrations of the type species (*H. verrucosa*) and of holotype designations has made it difficult to characterise Verrill's genus and species (Castro 1990; Breedy & Guzman 2005). For this reason, Verrill's descriptions could fit several species. Thus, the need for a complete taxonomic revision has been historically recognised (Verrill 1912; Castro 1990; Bayer 1994; Breedy & Guzman 2005; Vargas *et al.* 2010). Herein, we revise the genus based on original type material of all the species from the eastern Pacific and Brazil, described to date and on reference specimens from recent surveys and expeditions along the tropical eastern Pacific. Due to the bad condition of the type material of two species, we designate lectotypes to clearly establish their identity. We also