



### The first record of *Cavernulina orientalis* (Thomson & Simpson, 1909) (Octocorallia: Pennatulacea: Veretillidae) from the Bay coast of Visakhapatnam, Andhra Pradesh

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Benthic fauna from in and around Visakhapatnam has been studied by: Radhakrishna (1964); Sudarsan (1983); Adiseshasai (1992) and Vijayakumaran (2003). Previous records have mentioned the collection of specimens of the sea pen genus *Cavernularia* Valenciennes, 1850 from these waters (Radhakrishna 1964) but species of the closely related (or perhaps synonymous) genus *Cavernulina* Kuekenthal & Broch, 1911 have not been identified until now.

Pennatulaceans are quite common in benthic communities from a depth of a few metres to more than 6200 and thirty-four genera in fourteen families of living pennatulaceans are currently recognised (Williams 2011). They have been reported from in and around India by a number of authors (Parulekar 1981, Harkantra & Rodrigues 2003, and see Williams 1999: 47–48 for other references).

Following information published by Williams (1989, 1995), the genus *Cavernulina* is considered to comprise 4 species. However the validity of keeping *Cavernulina* and the closely related *Cavernularia* as separate genera has been discussed on several occasions. Kuekenthal & Broch (1911) investigated the previous work of Thomson & Simpson (1909) on the identification of two new *Cavernularia* species *C. orientalis* and *C. andamanensis* from the Indian Ocean. They stated that the very large variability of sclerite shape described for these species was actually not a characteristic of that genus and correspondingly they erected the new genus *Cavernulina* for these species and added a new species, *Cavernulina cylindrica*. Kuekenthal & Broch defined the genus *Cavernulina* as being radially built, club to cylinder-shaped, having an axis, polyps without calyces, rachis sclerites that are branched at the ends and peduncle sclerites that are broad and bone-shaped or rod-shaped. They also stated that the outer layer of the peduncle is free of sclerites. They defined *Cavernularia* as having sclerites oval to stick-shaped or spindle-shaped and unbranched, with or without an axis and without a sclerite-free outer layer to the peduncle. However, Hickson (1916) synonymised *Cavernulina* with *Cavernularia*, on the grounds that the sclerite differences do not justify a generic or even a specific distinction, and that the absence of a sclerite free layer in *Cavernularia* was due to abrasion. D'Hondt (1984) stated that separating *Cavernulina* and *Cavernularia* based solely on the former having branched sclerites in the rachis looks "delicate". On the other hand, Imahara (1991) stated that he distinguished *Cavernulina* from *Cavernularia* on account of the bifurcate spicules and the presence of an axis in the former (even though both genera have species with an axis). Williams (1989) mentioned that *Cavernularia* and *Cavernulina* are closely related genera but differentiated them stating that: the rachis sclerites of *Cavernulina* are short (less than 0.4 mm in length) mostly branched or bifurcated at one or both ends, irregularly bone-shaped or rod-like; whereas *Cavernularia* possesses smooth sclerites that are ovals, elongate rods, spindles or needles (0.02–0.70 mm long) and are mostly unbranched or non-bifurcated at the ends. Later in 1995, Williams suggested both could probably be synonymised, considering *Cavernulina* to be of dubious validity taking into consideration the variable nature of branched and unbranched sclerites in several species of both *Cavernularia* and *Cavernulina*. Until a definitive revision of the genera is carried out, we record Thompson and Simpson's species as it appears in Williams (1995), namely *Cavernulina orientalis*.

Past records of *Cavernulina orientalis* from Indian waters are from the Orissa coast, Bay of Bengal (Thomson & Simpson 1909) and from Malvan, Maharashtra (Parulekar 1981, as *Cavernularia orientalis*).

The specimens studied here were collected by the first author in 2009, during regular sampling from the beach at Mangamaripeta, Visakhapatnam. The area under survey is a small fishing region where the operation of gillnets is very common. The specimens were dislodged from their habitat at a depth of 10–15 m, and brought ashore by fishermen along with the fish catch. The specimens were fixed in buffered formaldehyde (4% in seawater) and then transferred to 70%