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Association of the jellyfish Rhopilema hispidum with ophiuroid brittle star *Ophiocnemis marmorata*

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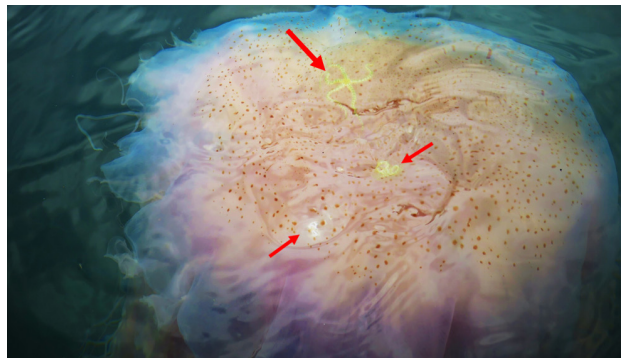
Jellyfishes are gelatinous zooplankton that drift through water column of the seas around the world. They are ancient animals, recent studies suggest that they evolved at least 500

million years ago (Cartwright et al., 2007). Jellyfishes belong to the phylum: Cnidaria with more than 10000 species reported globally. The phylum Cnidaria is divided into four groups namely, Scyphozoa, Hydrozoa, Cubozoa and Staurozoa. Scyphozoa are the most common jellyfish and are sometimes called "true jellyfish". Scyphozoa spend most of their lives in the medusa body form, and there are at least 220 valid species recorded world over, of which 35 species from Indian waters have been reported so far (Ramakrishna and Sarkar, 2003). These jellyfishes are predatory in nature, supported by network of nerve cells, however, some crustaceans, ophiuroids and fishes reported association with these scyphomedusae ranging from parasitoidism to mutualism (Boco and Metillo, 2018; Ingram et al., 2017).

During the routine underwater observation of experimental cages (treated with nano CuO2) deployed in the Vizhin jam coastal waters, a single specimen of rhizostome medusa (approximate bell diameter 500 mm) was photographed by snorkelling on 09 October 2018. Very interestingly, a few number of bright yellow coloured, black banded brittle stars were also seen over the umbrella margin of the jellyfish (Fig.1). The jellyfish was identified as *Rhopilema hispidum* using taxonomic key characters provided by Kitamura and Omori (2010) and the associated ophiuroid was recognised as *Ophiocnemis marmorata*. The incidence of the ophiuroid *O. marmorata* associated with the rhizostome medusa *R. hispidum* is reported for the third time in India. The other two observations were, Gulf of Mannar and Vellar estuary from south east coast of India (Panikkar and Prasad, 1952; Kanagaraj et al., 2008). Apart from this, Fujita and Namikawa, (2006) found this ophiuroid attached to jellyfish *Rhopilema esculentum* in the Philippines and Japan waters. A recent tropic relationship study using stable isotope by Ingram et al (2017), indicated kleptoparasitic relationship between ophiuroids and jellyfish.

R. hispidum is a common species in coastal waters of India and this species has been recorded in the East Pacific and Indian Oceans. With the advantage of the presence of long tentacles and oral arms, and drifting in the pelagic ecosystem, jellyfish act as fish aggregating device for many invertebrates and fishes, which make them an integral part of the marine ecosystem. Furthermore, studies to understand the relationship and interaction with other animals would throw more light on the ecological impacts and trophic interactions of both species.

Figure.1 The photograph showing the brittle stars present in the exumbrellar margin of jellyfish *Rhopilema hispidum* (indicated by an arrow).



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Ghost gear retrieval attempts from Enayam coast of Tamil Nadu

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Accidental loss of fishing gear during fishing operations is not a new phenomenon. As per FAO (Macfaden et al., 2009) 10% of all fishing gear operated around the world is lost in the sea. It has become a problem of severe concern as it adversely affects the ecosystem. The menace has assumed gigantic proportions in recent times due to a change in the material used for fabrication of gear since 1950s and the unusual increase in the volume of gear used per unit vessel. Replacement of natural fibers by synthetic fibers paved way for the lost gear becoming a threat to biodiversity.

Besides the accidental loss, forced abandonment and purposeful discarding of gear add to the - quantum of lost gear in water bodies. The low quality of netting material used for fabrication of gears result in easy breakage of nets at sea with irresponsible handling of gear by fishers adding to the gravity of the problem. The lost gears are collectively termed as ' ALDFG', viz., the abandoned, lost or otherwise discarded fishing gear.

ALDFG being plastic in origin, initially float on the sea surface drifting along with waves and ghost-fish until the fishing power of the netting is intact. Besides, ALFDG entangle non target