

Rapid Communication

Marivagia stellata Galil and Gershwin, 2010 (Scyphozoa: Rhizostomeae: Cepheidae), found off the coast of Kerala, India

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Abstract

A specimen of the cepheid scyphozoan *Marivagia stellata* Galil and Gershwin, 2010, described from the Mediterranean coast of Israel, is here reported from Kerala, on the southwestern coast of India. The present record establishes *M. stellata* as the fourth scyphozoan species introduced to the Mediterranean through the Suez Canal.

Key words: *Marivagia stellata*; Cepheidae; jellyfish; Indian Ocean; Mediterranean; Erythraean alien

Introduction

With the exception of documented intentional introductions (*i.e.* culture and stocking activities, introduced live food), only rarely are the pathways and vectors of marine non-indigenous species (NIS) known from direct evidence. Mostly they are deduced from: the taxonomy, biology and ecology of the species; the habitats and locales it occupies in both the native and introduced range; and its pattern of dispersal. A temporal succession of records from the Red Sea, the Suez Canal, and along the coasts of the Levantine Basin suggests a species passed through the Suez Canal.

The earliest record of *Marivagia stellata* Galil and Gershwin, 2010 in the Mediterranean Sea consisted of a single specimen collected in January 2006 on the southern rim of Haifa Bay, Israel. Another specimen was photographed in June 2008 along the central coast of Israel, and in the summer of 2010, additional specimens were collected and photographed in several locations along the Israeli coast. In October 2010 a swarm of *M. stellata* was reported and photographed off the southern coast of Lebanon (The Daily Star - Lebanon News - Odd marine

changes strike coast of Sidon, 7 October 2010). Galil et al. (2010) argued that *M. stellata* is a NIS, as it is highly unlikely that a large native littoral species, markedly different from all known scyphozoans in the Mediterranean Sea, would escape attention until the 21st century. Yet, the question of its origin remained unresolved.

A specimen of *M. stellata* is here reported from Vizhinjam, Kerala, India, establishes the species' origin in the Indian Ocean.

Results

The first specimen of *Marivagia stellata* in the Indian Ocean was observed (but not collected) on 8 June 2013 among a swarm of beached cepheid scyphozoans in Vizhinjam, Kerala, India (08°22'N; 76°59'E). Another specimen was obtained on 6 August 2013 when the junior author (AJR) revisited Vizhinjam. The specimen (umbrella diameter 13 cm) was collected by beach seine. It was photographed (Figure 1), preserved in 10% formalin, and retained at the Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram, India (DABF-UoK CN 2).

Figure 1. *Marivagia stellata* Galil and Gershwin, 2010, umbrella diameter 13 cm, Vizhinjam, Kerala, India. Left, aboral view; right, oral view. Original photo by A. Biju Kumar, edited by O. Rittner.



Discussion

While unusual, the case of *M. stellata*, first described in its introduced rather than native range, is not unique. It can be ascribed to serendipity, availability of taxonomical expertise, and unequal research efforts along the coasts of the Mediterranean and the Indian Ocean. When swarms of a previously unknown rhizostomid jellyfish whose stings resulted in severe burn like injuries appeared off the Israeli coastline in the mid 1980s, it was compared with the listed Red Sea rhizostomid species, since the Suez Canal is the principal pathway of Levantine NIS. Comparison with Stiasny's material from the Red Sea (Stiasny 1938, 1939), preserved in the Nationaal Natuurhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden, proved it to be identical with the Mediterranean material, and one of Stiasny's specimens (RMNH 7058) was chosen as the holotype of *Rhopilema nomadica* Galil, 1990 (Galil et al. 1990), thus confirming it as an Erythraean introduction. Nor was that the first case of a species new to science to be described as a NIS in the Mediterranean: the shrimp *Alpheus migrans* (Lewinson and Holthuis, 1978) was collected off Israel in 1977 and recognized as an Erythraean introduction. Yet, only 25 years later was its origin confirmed with a record collected off the Egyptian coast of the Red Sea (Dworschak and Pervesler 2002). Similar cases have occurred since the 19th century (Galil and Gevili, in press).

The presence of *M. stellata* in Kerala establishes its origin in the Indian Ocean, and confirms its introduction through the Suez Canal, in accordance with nine out of ten NIS recorded off the Israeli coast (Galil 2007).

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