

OCCURRENCE OF *RHOPILEMA NOMADICA* GALIL, 1990 (CNIDARIA: SCYPHOZOA: RHIZOSTOMEAE: RHIZOSTOMATIDAE) IN PAKISTANI WATERS

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ABSTRACT

During a collection survey, a large specimen of Scyphozoan jellyfish *Rhopilema nomadica* Galil, 1990 was collected from Ketti Bundar, Hajmero Creek (24° 11' N 67° 27' E). It belongs to the order Rhizostomeae and family Rhizostomatidae. This is the first record of the species from Pakistani waters in the Indian Ocean in its native range (east coast of Africa). A brief account of the species with a note on its distribution and ecology is given.

KEYWORDS: Scyphomedusae, New record, Pakistani waters, Rhizostomatidae.

INTRODUCTION

The Scyphomedusan *Rhopilema nomadica* is a member of phylum Cnidaria and class Scyphozoa. It is an Indo-Pacific Scyphomedusan, as suggested by Galil *et al.* (1990), which has migrated into the eastern Mediterranean in recent years (Lotan *et al.*, 1994). There are three orders of class Scyphozoa viz., Coronatae, Samaeostomeae and Rhizostomeae. The specimen at hand belongs to order Rhizostomeae which comprises eight families: Catostylidae Gegenbaur, 1857; Cepheidae L Agassiz, 1862; Lychnorhizidae Haeckel, 1880; Lobonematidae Stiasny, 1921; Mastigiidae Stiasny, 1921; Stomolophidae Haeckel, 1880; Rhizostomatidae, Cuvier, 1799 and Cassiopeidae L Agassiz, 1862.

The family Rhizostomatidae is so far represented in Pakistan by two genera. They are: *Rhopilema* (Haeckel, 1880) and *Rhizostoma* (Cuvier, 1880). The genus *Rhizostoma* comprises two species, *Rhizostoma luteum* (Quoy & Gaimard, 1827) and *R. pulmo* (Macri, 1778), the latter one is reported from Pakistan (Muhammed and Sultana, 2008). According to Kramp (1961) and Galil *et al.* (1990) there are five species of the genus *Rhopilema* viz., *R. verrilli* (Fewkes, 1887), *R. rhopalophorum*, (Haeckel, 1880), *R. esculentum* Kishinouye, 1891, *R. hispidum* (Vanhoffen, 1888), *R. nomadica* (Galil *et al.*, 1990). Whilst the first two species are distributed in the Atlantic coast, the others three are found in Indo-Pacific region. Recently, *R. hispidum* is reported for the first time from the coast of Pakistan by Gul and Morandini (2015). *Rhopilema nomadica* was first named as *Rhopilema hispidum* in 1938 by Stiasny (1938), both species are near relatives.

In 1995, this jellyfish was recorded off the southeastern coast of Turkey (Kideys and Gücü, 1995) and in 1998 a single specimen was reported off Izmir, on the Aegean coast of Turkey (Galil and Zenetos, 2002) and in 2006 two specimens from Lakonikos Gulf, on the Ionian coast of Greece (Siokou-Frangou *et al.*, 2006) were found and lastly during 2008-2013 the Tunisian beach was strewn with stranded specimens (Yahiya *et al.*, 2013).

MATERIAL AND METHODS

The sample was collected from Ketti Bundar during a survey project sponsored by the HEC Pakistan assigned to the second author. The specimen was measured and photographed. The material is housed in Marine reference collection & Resource Centre (MRC & RC).

Systematics

Class Scyphozoa Goette, 1887
Order Rhizostomeae Cuvier, 1799
Family Rhizostomatidae Cuvier, 1800
Genus *Rhopilema* Haeckel, 1880
Species *R. nomadica* Galil, 1990
(Figs. 1-3)

MATERIAL EXAMINED

One specimen, 27.11.2006, Ketti Bundar (Hajmero Creek) 24° 11' N 67° 27' E, MRC CAT No. Scy.2, R = 120mm; bell width; 720 mm; arm length = 70mm.



Fig. 1. *Rhopilema nomadica* Galil, 1990, Entire specimen.



Fig. 2. *Rhopilema nomadica* Galil, 1990, Umbrella margin with pedalia.



Fig. 3. *Rhopilema nomadica* Galil, 1990, closer view of bell and arms showing rhopalar and velar lappets.

Short Description (Figures 1-3)

The bell or umbrella (Fig. 1) diameter is 360 mm. It is rounded. Exumbrellar surface is rough having minute blunt tuberculation and warts. The mouth arms ending in vermicular filament (Figs. 2-3).

DISTRIBUTION

Indo-Pacific, East Africa and Red Sea (native), Mediterranean (immigrant from Red Sea), Israel, Turkish coast, Lebanon, Syria, Tunisia, Greece, Maltese Island and now reported from Pakistani coast.

Ecology

According to Galil (2000) each summer since the mid-1980s huge swarms of *R. nomadica* appear along the Lavantine a species originated in the Red Sea and the east African coast. Tropical invader Scyphomedusan's physiology and migration appears to be temperature dependent, as the laboratory experiments on temperature relation of strobilation suggest. This factor seems to be important for this Indo-Pacific jelly fish migrating into non-tropical seas (Lotan *et al.*, 1994). This jellyfish is a fairly speedy animal (Kideys and Gücü, 1995). On a touch to an individual at the very surface with umbrella upward position, it was observed that the jellyfish immediately turn upside down to swim to the bottom. Coastal trawling and purse seine fishing are disrupted for the duration of the swarming of this animal. Due to the overwhelming presence of this venomous jellyfish in the nets, there is great problem in sorting yield (Siokon-Frangou *et al.*, 2006). Its painful stings have been the bane of bathers and fishermen from Egypt to Turkey. Reports show the presence of haemolytic activity and α -chymotrypsin-like serine protease activity in the venom of the *R. nomadica* nematocysts with the presence of phospholipase A₂ activity (Gusmani *et al.*, 1997). It is considered among the worst invasive marine species in European Seas.

The present medusa was accompanied by juvenile fish and a shrimp. A total of nine juveniles of Indo-pacific fish *Thryssa dussumieri* and one shrimp was found in association with *R. nomadica* sheltering under its umbrella among the filamentous mouth arms. This is interesting as the box jelly is known to eat fish and crustaceans. The muscular pedalium pushes the prey into the bell of medusa.

Previously Galil *et al.* (1990) and Kideys & Gücü (1995) also reported that juveniles of Indo-pacific invasive Carangid fish *Alepes djedaba* and a Mediterranean crab species, *Liocarcinus depurator* were found to co-occur with the medusae of *R. nomadica*.

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