Occurrence of opisthobranch mollusc *Umbraculum umbraculum* in Tuticorin coast, Southeast coast of India

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Live specimens of the opisthobranch mollusc, *Umbraculum umbraculum* were collected off Tuticorin, Southeast coast of India. Earlier literature mentions only the name of this species with photos of the shell without any description. This makes it difficult to characterize the species from another one *Tylodina corticalis*, which has similar shell shape. This is the first record of occurrence of live specimens along the Indian coast. The proximity of occurrence of the species near the Tuticorin Port area substantiates the possibility of its entry from some other place.

**Keywords**: *Umbraculum umbraculum*, Gulf of Mannar, invasive species, opisthobranch (mollusc), Tuticorin

**Introduction**

Tylopidinoidea, specialised superfamily of opisthobranchs, are commonly called as umbrella slugs. They have an external calcified shell and the body of the animal is larger than the shell. Though the species under the superfamily Tylopidinoidea are widespread in the tropical to warm temperate Indo-West Pacific Ocean, individuals are exceptionally rare in tropical zone. They feed on sponges. Subba Rao mentioned the occurrence of this species in Indian waters. No description was given and only the photo of shell was presented. This is the first time that live specimens were collected along the Indian coast, specifically from Gulf of Mannar area.

The *U. umbraculum* has many synonyms. They are *U. bertinia* (F. P. Jousseaume, 1833); *U. chinesis* (Schumacher, 1817); *U. mediterraneum* (J. B. Lamarck, 1819); *U. ovale* (P. P. Carpenter, 1856); *U. plicatum* (E. Von Martens, 1881); *U. rushii* (W. H. Dall, 1889); *U. sinicum* (J. F. Gmelin, 1791); *U. umbraculum* (Lightfoot, 1786); *U. indica* (Lamarck, 1819); *U. umbella* (Martyn) and *U. pulchrum* (Lin Guangyu, 1981). All except the last two are considered as synonyms of *U. umbraculum* or *U. mediterraneum* depending on whether they are from the Indo-West Pacific or the Atlantic. But, *U. umbraculum* is considered as the only living species under the genus *Umbraculum*.

The *U. umbraculum* has been recorded in Eastern Mediterranean (Turkey, Antalya; Colombia; Syria, Lebanon, Israel, Cyprus, Ionian Sea, Adriatic Sea, Aegean Sea, and Gulf of Iskenderun); Western Mediterranean (E. Spain, Balearic Islands, France, W. Italy, Corsica, Sardinia, Sicily); Marmara Sea; Eastern Atlantic (Portugal, Spain, Madeira, The Azores, Canary Islands and Selvagens Islands); Florida; Chinese Seas, south eastern Tasmania; New Zealand and Australia; South Africa; Mozambique; Tanzania; Gulf of Aden; Madagascar; Mauritius; Reunion Island (Indian Ocean); North Sulawesi, Indonesia; Hawaii; S. California to Panama and Cuba (Caribbean) to Brazil.

**Material and Methods**

Five live specimens of opisthobranch *Umbraculum umbraculum* (Lightfoot, 1786) were collected at the depth of 8 m by lobster nets along the Tuticorin coast; Gulf of Mannar (Lat. 8°44′39.37″N and Long. 78°10′12.49″E), Southeast coast of India during 2009 (Fig.1). The length and width of the shell were measured to the nearest mm.

**Depository**: Suganthi Devadason Marine Research Institute (SDMRI)

**Systematics**

- **Phylum**: Mollusca
- **Class**: Gastropoda
Sub class : Opisthobranchia
Superfamily : Tylodinoidea
Family : Umbraculidae
Genus : Umbraculum Schumacher, 1817
Species : umbraculum (Lightfoot, 1786)

Results

Description:

Only four specimens were in good shape. The shell of one specimen was broken and mangled. The external, highly calcified, more or less round, umbrella-like top shells (Fig. 2c) of the four specimens, which covered the dorsum, were 86, 90, 92 and 95 mm long and 73, 73, 77 and 79 mm wide. The shells were encrusted with barnacles, sponges and micro algae and covered with a thin layer of periostracum. The shell, at the posterior left from the center, has backwardly curved, conically elevated apex called protoconch. The bright orange coloured circular body with large white pustules was circular and larger than the top shell. The body doesn’t elongate when the animal was crawling.

The mantle with serrated margins was observed below the shell and mantle. The large gills, which appear like leaves (Fig. 2b) and located in the narrow
mantle cavity, originate in the front and extend to the right side of the body. The anal opening is located near the posterior end of the gills and appears as small rounded stick. A pair of large and distinct orange coloured rhinophores with longitudinal slit is located beneath the shell. The eyes are clearly visible and present at the base of the rhinophores. The mouth is located in the sole of the foot. The foot is large, tuberculate and the sole is smooth and flat.

Discussion

The literature search for Indian records showed that there are no reports of the species *U. umbraculum* except the mention in the records of Zoological Survey of India (ZSI) by Subba Rao\(^5\) in 2003. In addition, marine biodiversity database of India based in National Institute of Oceanography (NIO) also refers to Subba Rao\(^5\) only and there is no morphological or anatomical description of this species except photos of the shell and a very brief mention about shells. The brief detail mentioned about the shell of this species earlier\(^5\) was not clear and also coincides with that of *Tylodina corticalis*, a similar species. However, the morphological features observed in the present observation clearly distinguished *U. umbraculum* from *T. corticalis*.

The *U. umbraculum* feeds on sponges\(^22\) and has been recorded along with Desmospongia, including *Tethya spp.*, *Aaptos aaptos*, *Ancorina alata* and *Plakina trilopha*\(^22\). It is to be noted that the sponge fauna of India is dominated by the species of Desmospongia and out of 486 species described in India\(^32\), Gulf of Mannar and Palk Bay has the highest diversity of 319 species\(^33\). Demospongiae like *Hymedesmia mannaren sis*, *H. stylophora*, *Ectyodorx lissostyla*, *Clathria frondifera*, *Microciona rhopalophora*, *Axinella donmani*, *Halina plicata*, *Plakina monolopha* and *Poecillastra schulzii* have already been reported from Gulf of Mannar\(^34\).

The mention about the shell of this species in 2003\(^5\) and the observation of five live specimens in the present study revealed the increased incidence of this species along Tuticorin coast. Tuticorin port is the second largest major port in Tamil Nadu and is known for its busy shipping activities. The specific occurrence of this species along Tuticorin coast indicate the possibility of its transportation from some other place through shipping activities, through natural dispersal mechanism is not ruled out.

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