First Record of Dorid Nudibranchs *Chromodoris geminus* (Rudman, 1987) from the Palk Strait of South East Coast of India

Ramar Vinoth and Sundaram Ravikumar

Department of Oceanography and Coastal Area Studies, School of Marine Sciences, Alagappa University, Thondi Campus, Thondi-623 409, Ramanathapuram District, Tamil Nadu, India

Abstract: Nudibranchs are soft bodied sea slugs diversified along tropical India oceans. It has derived defense chemicals since the upper Cambrian the sea slugs are reported in Gulf of Mannar of south India. The present study reports the first time distribution of sea slugs along Palk Strait region of south India.

Key words: First Record • Sea Slugs • *Chromodoris geminus* and Palk Strait

INTRODUCTION

Nudibranchs are sea slugs which are soft-bodied animals like clams, snails, squid and mollusks. There are more than 3,000 known species of different colored Nudibranchs from bright blue to pink to white with orange polka dots. The patterns of color are more vivid and varied than any coral fish forms and are diverse. Those Nudibranchs which thrive in the hard, changing environment of the shore tend to be tough, unspectacular species. In the gastropod subclass Opisthobranchia there has been a general trend toward loss of the shell, with many lineages evolving from snails into sea-slugs and hence it named as “naked gills”. The loss of the shell has been compensated by various adaptations [1-6]. The molluscan order nudibranchia are capable of graceful swimming, passive floating in the plankton layers, creeping over hard rock surface or along delicate hydroid stems and burrowing into sand or mud.

Two most common groups of nudibranchs are the dorids and eolids. The dorids are broad footed, low profiled with delicate organs of small and gills retractable beneath a tough mantle. The eolid form is narrow footed with numerous dorsal projections which are unrelated to either sea slugs or dorids [7]. Among dorids *Dendrodoris limbata* is only a known species [8], which are belongs to the specialized suborder Porostomata. The diversity of form, color and ecology in the nudibranchia provides interesting study, because many of the typical marine snails have remained virtually unchanged for millions of years, appeared in the Upper Cambrian [9]. The loss of the restrictive shell has enabled the plasticity of the molluscan body be exploited and many more ecological niches to be occurred.

Slug with a defensive chemical is dependent upon its food source. The ability to synthesize its own feeding inhibitor would have obvious advantages. As another porostome, *Phyllidia* derives its metabolites from food synthetic capacity has evolved within the group [10]. In India distribution or nudibranchs have been reported in several parts of ocean [11-24], but the assessment of biodiversity of nudibranchs along Palk Strait of southeast Coast of India is overlooked and hence the present study has undertaken.

MATERIALS AND METHODS

A specimen of the *Chromodoris geminus* (Rudman, 1987) (Fig. 1a) were collected from 4 to 6m depth on seagrass beds using snorkeling method at Thondi coast along Palk Strait of Southeast Coast of Tamil Nadu (Fig. 1b), Latitude 9° 44’ 01.78” N and Longitude 79° 01’ 00.98” E during Dec 2011 to Jan 2012 and the specimen was brought to the laboratory and the identification was made using the standard guidelines: (http://seaslugs.free.fr/nudibranche/a_chromo_geminus.htm, www.seaslugforum.net/showall/chrogemi and [25].
RESULTS

The present study reported only one species *C. geminus* of sea slugs during this study in the Thondi Coast along Palk Strait of Southeast Coast of India. It belongs to Phylum: Mollusca, Class: Gastropoda, Subclass: Opisthobranchia, Order: Nudibranchia, Suborder: Doridina, Family: Chromodorididae and Species: *Chromodoris geminus*. The morphological features of presently observed nudibranchs are given below:

Similar Species: The *C. geminus* is looking more similar to offer species like *Chromodoris kuniei*, *Risbecia tryoni* and *Chromodoris leopardus*.

Description: The *C. geminus*, *R. tryoni*, *C. kuniei* and *C. leopardus* have oval body and wide mantle. Both have purplish or brownish mantle with dark round spots with white haloes in the mantle. They all have large purple or purple-brown spots or marks, usually ringed with white, an often reticulate brownish background and a purple border. *C. geminus* differs in having four color bands around the mantle edge, an outermost thinner than the rest is white, then translucent grayish purple, then another white band and finally a band of bright golden yellow. The other three have a distinct purple line at the border, narrow in *C. leopardus* and *R. tryoni*, but broad in *C. kuniei*. The shape of the body of *R. tryoni* was high with a reduced mantle overlap, is typical of the genus *Risbecia*. *Chromodoris* has a over lapped wide mantle with the purple mantle edge, *C. leopardus* and *C. kuniei* can be distinguished from *R. tryoni* by the broad purple border, consisting of three slightly different colored bands in *C. kuniei* and by the leopard-like multiple spots, or marks, forming a hollow square, found in *C. leopardus*. The Rhinophore stalk is translucent white with pointed tips and the club is a translucent gold with a brownish tinge to the lamellae. Gill circllets are simple pinnate (Fig.1c and 1d).
Size: 5.8 cm

**Locomotion**: A sea slug “crawls” by gliding along on its foot. The foot is a broad, flat muscle. It also adheres to rocks and other surfaces. Sea slug moves to the waves of fine muscular contractions sweep along the foot. The contractions lift the animal’s foot and then return it to the surface a little farther ahead and pulling the animal forward.

**Feeding**: Sea slugs are nudibranchs have a radula - a ribbon of curved, chitinous teeth. The radula functions to scrape or tear food particles. Nudibranchs are grazing carnivores that feed on sessile animals such as hydroids, sea anemones, soft corals, bryozoans, sponges, barnacles and fish eggs. Each family of nudibranchs is usually restricted to one type of prey.

**Reproduction**: They are hermaphrodites, having both male and female sex organs and can fertilize each other reciprocally.

**Respiration**: Dorids nudibranchs do not have cerata and as an alternative they have gills arranged around their posterior end.

**Habitat**: Sea slugs can be found in various habitats including tide pools, coral reefs and rocky, sandy, or muddy areas. Some nudibranchs are pelagic.

**Distribution**: Tropical Indian Ocean (Indonesia, Thailand, Red Sea, Maldives, South Africa and India (Gulf of Mannar Biosphere Reserve))

**Remarks**: New record to Thondi Coast along Palk Straight of southeast Coast of Tamil Nadu.

**DISCUSSION**

The first available report of opisthobranchiate fauna from India is the collection of nudibranchiate molluscs made by Walter Eliot [26] from Waltair which dealt with 42 species belonging to 10 families each of which, 30 species and 4 genera were newly described. Farran [27] reported nudibranchs from Gulf of Mannar based on the collection made by Herdman. This collection includes specimens collected from the Palk Straight also but the particular locality details are not available and so the species in the list are not authenticated as that of Gulf of Mannar [28].

In 2001, chemo-ecological studies on the opisthobranchiate fauna were also published from this area [29]. Fourteen species of nudibranchs have recently recorded from the Gulf of Mannar region including *C. geminus* [28]. The present study also reported *C. geminus* from the Palk straight region and it is a new record to this area.

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**REFERENCES**