



First record of three tritons (Gastropoda: Tonnoidea: Ranellidae) from the Andaman Islands, India

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Original Article

Abstract

The *Cymatium* Röding, 1798 is a small-to large-sized marine gastropod genus belonging to family Ranellidae Gray, 1854 and it is widely distributed in the tropical seas. Three species, namely *Cymatium (Ranularia) tripum* (Gmelin, 1791), *Cymatium (Septa) hepaticum* (Röding, 1798) and *Cymatium (Monoplex) pilearis* (Linnaeus, 1758) were collected by hand picking and skin diving from Andaman Islands. This is the first study to report the occurrence of these three species from Andaman and Nicobar Islands, providing a detailed description of the species with the illustrations for the shell morphology.

Keywords: *Ranellidae*, *Cymatium*, *Ranularia tripum*, *Septa hepaticum*, *Monoplex pilearis*, *Andaman*.

Introduction

The *Cymatium* Röding, 1798 is a small to large-sized marine gastropod genus, with its size ranging from a few cm to nearly 20 cm (Lee *et al.*, 2012). It comprises of about one hundred species, of which majority are found in tropical waters (Henning and Hemmen, 1993). The genus *Cymatium* is carnivorous that usually prey on diverse invertebrate species, such as tube worms, ascidians, bivalve mollusks (Houbrick and Fretter, 1969; Littlewood, 1989; Govan, 1995). The shell morphology of this genus is characterized by having a club-shaped body whorl with an ornamentation of knob, spiral ribs

and axial varices. Although surveys on the molluscan fauna of Andaman and Nicobar Islands were periodically conducted in the past few decades, thus far, only ten species of this genus have been reported from these Islands. Recently, several unrecorded species of marine gastropods were collected during an ecological study in the intertidal zones on the northeast and southwest coasts of Andaman group of Islands. Herein we report the new records of *Cymatium (Ranularia) tripum* (Gmelin, 1791), *Cymatium (Septa) hepaticum* (Röding, 1798) and *Cymatium (Monoplex) pilearis* (Linnaeus, 1758) in the Andaman waters with species description and illustration for the shell morphology. This study adds a new geographic locality to their originally reported distribution ranges.

Material and methods

Gastropods were collected from the inter-tidal region on the northeast and southwest coasts of north and south Andaman group of Islands during a survey conducted by Andaman and Nicobar Centre for Ocean Science and Technology (ANCOST) from April to July, 2011 (Fig. 1). The specimens were identified to species level and verified following Dance (1992), Poutiers (1998), Subba Rao (2003), Poppe (2008) and Rosenberg (2009). Morphological measurements viz., the shell lengths and shell widths are recorded to the nearest millimeter. A

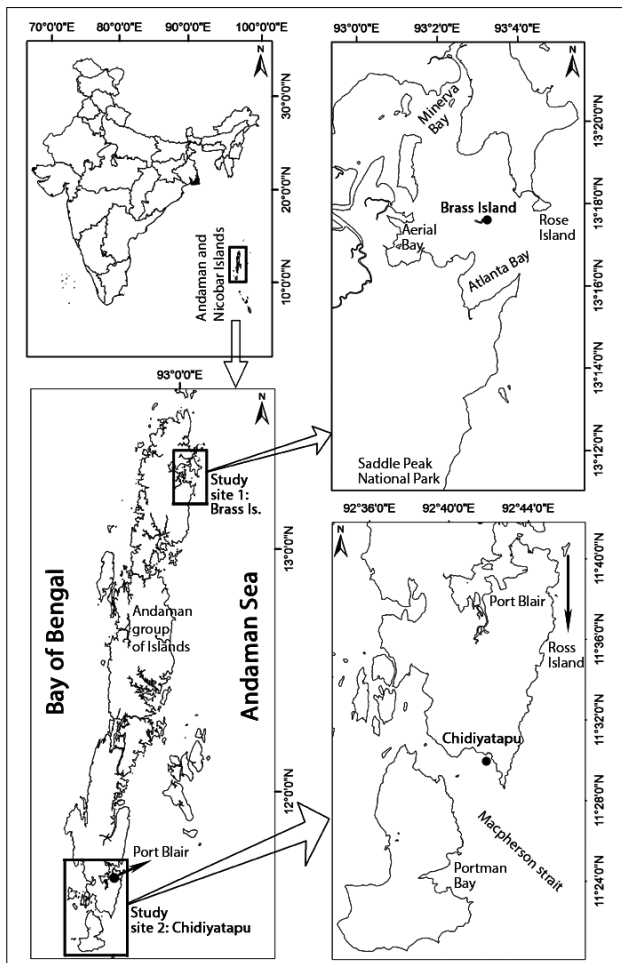


Fig. 1. Map showing the Andaman group of Islands. The dark spots represent the marine gastropods sampled area.

representative specimen of each species was deposited in the holdings of National Zoological Collections (Regn. Nos.: ZSI/ANRC7143, ZSI/ANRC7144 and ZSI/ANRC7145) of the Zoological Survey of India, Andaman and Nicobar Regional Centre (ZSI/ANRC), Haddo, Port Blair 744102, India.

Results and discussion

Of the nine specimens collected, three species namely *Cymatium (Ranularia) tripum* (Gmelin, 1791), *Cymatium (Septa) hepaticum* (Röding, 1798) and *Cymatium (Monoplex) pilearis* (Linnaeus, 1758) belonging to the family Ranellidae were identified. The detailed descriptions of each species are given below.

Systematic accounts

Phylum : Mollusca Linnaeus, 1758
 Class : Gastropoda Cuvier, 1798

Superfamily : Tonnoidea Suter, 1913
 Family : Ranellidae Gray, 1854
 Subfamily : Cymatinae Iredale, 1912
 Genus : *Cymatium* Röding, 1798
Cymatium (Ranularia) tripum (Gmelin, 1791) (Fig. 2A and B)

Synonym
 Triton tripus Lamarck, 1822

Materials examined

Two specimens, of shell length 25-28 mm; and shell width 14-15 mm; with Reg. No. ZSI/ANRC-7143 (Fig.2); collected on 12.04.2011 from 11°30'05.74"N lat., 92°42'06.46"E long. of Chidiyatapu, South Andaman.

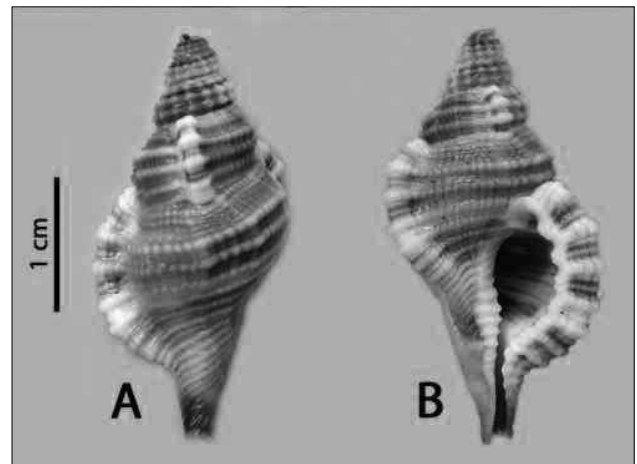


Fig. 2. *Cymatium (Ranularia) tripum* (ZSI/ANRC-7143). A) abapertural view B) apertural view.

Description

The shell is large and solid with elevated spire. Body whorl nearly as high as broad, varices are regular and broadly spaced. Spiral rows of rounded beads cover all whorls. The thickened outer lip constricts the aperture, seven rounded teeth on the inside of the outer lip. The columella has strong folds. The small and thin parietal callus has a short tubercle at the upper end. Siphonal canal long, slightly twisted and opens throughout. The shell is pale to dark brown, varices striped brown and white. Columella and teeth on outer lip white. Anterior siphon dark brown. Aperture white the brown bands in the outer lip continues in aperture.

Distribution

The global distribution range of *Cymatium (Ranularia) tripum* is thought to be the central and east Indian Ocean (Henning and Hemmen, 1993). In India, Hylleberg and Kilburn (2002) and Subba Rao (2003) earlier reported this species from Gulf

of Mannar. Nevertheless, no previous records of this species are known from Andaman and Nicobar Islands.

Habitat: Sandy

Cymatium (Septa) hepaticum (Röding, 1798) (Fig 3A and B)

Synonyms

Tritonium hepatica Röding, 1798

Tritonium rubeculum Linnaeus, 1758

Materials examined

Five specimens (3 collected alive) of shell length 30-35 mm and shell width 18-22 mm with Reg. No. ZSI/ANRC-7144 (Fig. 3) collected on 12.04.2011; from 11°29'58.38"N lat., 92°42'11.91"E long. of Chidiyatapu, South Andaman.

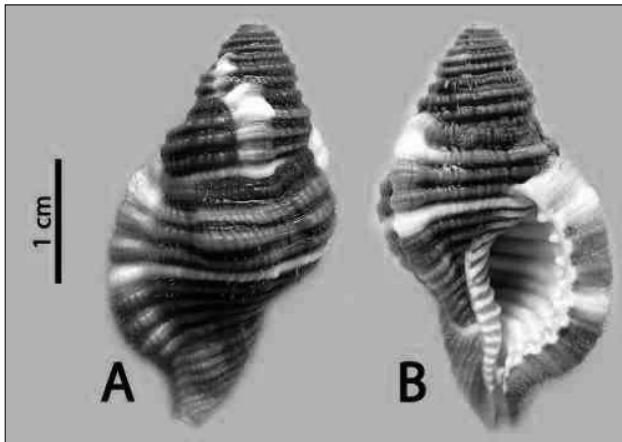


Fig. 3. *Cymatium (Septa) hepaticum* (ZSI/ANRC-7144). A) abapertural view B) apertural view.

Description

The shell is small, solid with spire narrower and straight sided than the rounded body whorl. The varices are regular and broadly spaced. The spiral rows of distinctly rounded beads are closely packed and cover all whorls. The columella has strong folds. The inside of the outer lip has nine distinct, rounded denticles. The spiral ridges of outer lip continue inside aperture. The aperture is broad and the siphonal canal short, broader at anterior end and opens throughout. Periostracum is hairy. The shell is dark reddish brown, with thin black spiral bands, the varices have white bands. The strong folds on columella and teeth of outer lip white, orange staining between labial denticles and folds.

Distribution

The global distribution of *Cymatium (Septa) hepaticum* is reported to be from Philippines to Polynesia (western and

central Pacific Ocean) (Cernohorsky, 1967). There are no previous reports from mainland India or from the Andaman and Nicobar Islands.

Habitat

This species is commonly found under coral rocks, sand and coral substrate in both shallow and deeper (>10 m) waters.

Remarks

The species *Cymatium (Septa) hepaticum* very closely resembles its congener *Cymatium (Septa) rubeculum*, but the transverse black bands (3-5 nos.) are limited to the body whorl of the latter species. In addition the interstices of the labial denticles are coloured white in *C. rubeculum*, whereas in *C. hepaticum* it is reddish orange. This is the first case report of its occurrence in the Indian waters.

Cymatium (Monoplex) pilearis (Linnaeus, 1758) (Fig 4A and B)

Synonyms

Cymatium martinianum (d'Orbigny, 1847)

Cymatium pileare (Linnaeus, 1758)

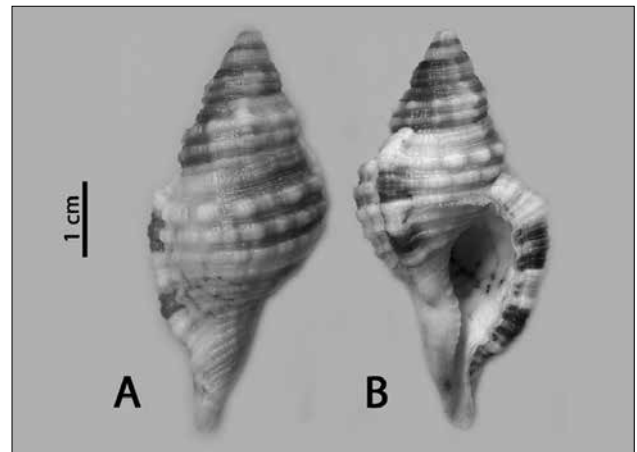


Fig. 4. *Cymatium (Monoplex) pilearis* (ZSI/ANRC-7145). A) abapertural view B) apertural view.

Materials examined

Two specimens (1 collected alive) of shell length 45-47 mm and shell width 18-20 mm with Reg. No. ZSI/ANRC-7145 (Fig. 2) collected on 06.07.2011 from 13°17'41.38"N lat., 93°03'00.20"E long. of Brass Island, North Andaman.

Description

The shell is large and thick the elevated spire is short compared to the very tall body whorl. The siphonal canal is

short, broad and slightly recurved. The strong, broad, spiral cords are with prominent nodules that are sinuously aligned axially. The varices are prominent in body whorl, each whorl has usually two prominent varices. The outer lip, virtually the final varix, is thickened; its strong in-turned edge is wavy. The columella has weak folds. The siphonal canal is broader at the base. Shell is white except for the reddish-orange bands in spire, extremities of varices and outer lip. Aperture is white.

Distribution

The species *Cymatium (Monoplex) pilearis* is extensively reported from the Atlantic and very few reports exist from the Indian and the Pacific Oceans. This species has been reported from both east and west of Atlantic Ocean (Rolán, 2005; Magno and Frietas, 2009). Gofas *et al.* (2001) have reported this species from the European waters (North Atlantic). This species has also been reported from the Caribbean Sea (Miloslavich *et al.*, 2010), the Red Sea (Vine, 1986) and the western Indian Ocean (African waters) (Sheppard, 1984; Dautzenberg, 1929). However, this is the first report of this species from Andaman and Nicobar Islands.

Habitat

This species is usually found in *Coral Reefs* and associated habitats at depths > 10 m and uncommon in shallow waters.

Remarks

The species *Cymatium (Monoplex) pilearis* has a wide distribution along the north and south Atlantic (amphi-atlantic distribution) (Magno and Frietas, 2009). However, *Cymatium martinianum* (d'Orbigny, 1847), a closely similar species distributed in the Indo-Pacific was earlier considered as distinct species based on the shell morphological characters (Nordseick and Talavera, 1979). Nevertheless, recent revisions (Beu, 1986; Beu and Alison, 1988; Bouchet, 2013) of the genus *Cymatium* Röding, 1798 have merged both the species. Presently, *Cymatium martinianum* (d'Orbigny, 1847) is considered as a synonym of *Cymatium (Monoplex) pilearis* (Linnaeus, 1758). This is the first report of the species from the Indian waters including the Andaman and Nicobar Islands.

The present study concluded that three species namely, *Cymatium (Ranularia) tripum* (Gmelin, 1791), *Cymatium (Septa) hepaticum* (Röding, 1798) and *Cymatium (Monoplex) pilearis* (Linnaeus, 1758) as new records to the Andaman and Nicobar Islands. At present, the estimated total number of *Cymatium* species occur in the Indian seas is 18 (Hylleberg and Kilburn, 2002) and from the Andaman and Nicobar Islands is 13 (Subba Rao and Dey, 2000) including the present 3 species reported.

This number is less when compared with other parts of the world oceans. The identification of tritons are challenging as they closely resemble Murexes. However, a typical difference is that only two prominent varices are found on a whorl and those on adjacent whorls rarely connect in tritons. The major ecological significance of this genus *Cymatium* is the presence of long planktonic larval period. Marine snail species exhibit a range (modes) of larval development (Thorson, 1950; Krug, 2011). The different developmental modes are characterized by very different amounts of time spent as plankton. The genus *Cymatium* spends several months as plankton that allows the larvae to travel long distances and to reach new territories. This is one of the key factors that impact the broad geographic distribution of this genus *Cymatium* in the tropical seas.

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