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FIRST REPORT OF *EULIMA PANAMENSIS* (BARTSCH, 1917) (GASTROPODA: EULIMIDAE) FROM INDIAN WATERS

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Abstract: We report *Eulima panamensis* (Bartsch, 1917) (Gastropoda: Eulimidae) for the first time in Indian waters. The morphological characters, species description and its distribution are presented in this paper.

Keywords: Eulimidae, India, echinoderm, parasite, *Eulima panamensis*

The gastropod family Eulimidae are exclusive parasites of echinoderms, each class of the host infected by a single lineage (Waren, 1984). It is one of the five most species-rich families of marine gastropods represented byabout 1,000 valid species in the Indo-Pacific region with diverse parasitic strategies (Bouchet *et al.*, 2002; Takno and Kano, 2014). Eulimids have evolved ectoparasitic or endoparasitic life styles, parasitizing shallow and deep water species (Chris, 2014), sticking their proboscis through the body wall to suck on the host's body fluids (WFS, 2012). This family has attracted considerable taxonomic attention in the recent times (Takno and Kano, 2014). Since there is a scarcity of well defined morphological characters on the shell, taxonomy of this family is challenging (Dgebuadze and Kantor, 2015).

In India, 11 species have been recorded under family Eulimidae of which, three species are represented under genus *Melanella*, one each under genera *Hypermastus, Prostilifer, Stilifer, Vitreobalcis* and three species under genus *Eulima* namely *E. balteata* (Adams, 1864), *E. bivittata* (Adams and Adams, 1853) and *E. recurva* Boettger, 1893. The present study reports *Eulima* cf. *panamensis* (Bartsch, 1917), for the first time in India, collected from the south east coast.

A single specimen of *Eulima panamensis* was collected from gill net discards at Kottivakkam beach, Chennai coast (12Ú57'56.1''N and 80Ú15'54.0''E) (Fig. 1). The echinoderm host was not identified and the shell itself was collected from trash amidst broken bivalve shells. The shell was fairly clean and glossy and, did not require much cleaning except for mild rinsing with distilled water in a Petri dish. Absence of animal inside the shell allowed us to dry and preserve the sample in an Eppendorf vial. The shell was deposited at the National Zoological Collections (NZC) repository in the Marine Biological Research Centre (MBRC), Zoological Survey of India (ZSI), Chennai (Regd. No. ZSI-MBRC-M-1906). The species was confirmed by Dr. Anders Waren, Scientist, Swedish Natural History Museum who is a specialist in the family Eulimidae. Microphotography and shell measurements were carried out using a NIKON SMZ 25 Stereo zoom microscope.

Systematics

Family: Eulimidae Philippi, 1853
Genus: *Eulima* Risso, 1826
Eulima panamensis (Bartsch, 1917) (Fig. 1)
Synonyms: *Strombiformis panamensis* Bartsch, 1917
Holotype details: Catalogue No: USNM 215787-*Strombiformis panamensis* Bartsch, 1917; collected from Panama Bay, Gulf of Panama, Panama, from a depth of 53.9 m; deposited in Smithsonian National Museum of Natural History, USA.

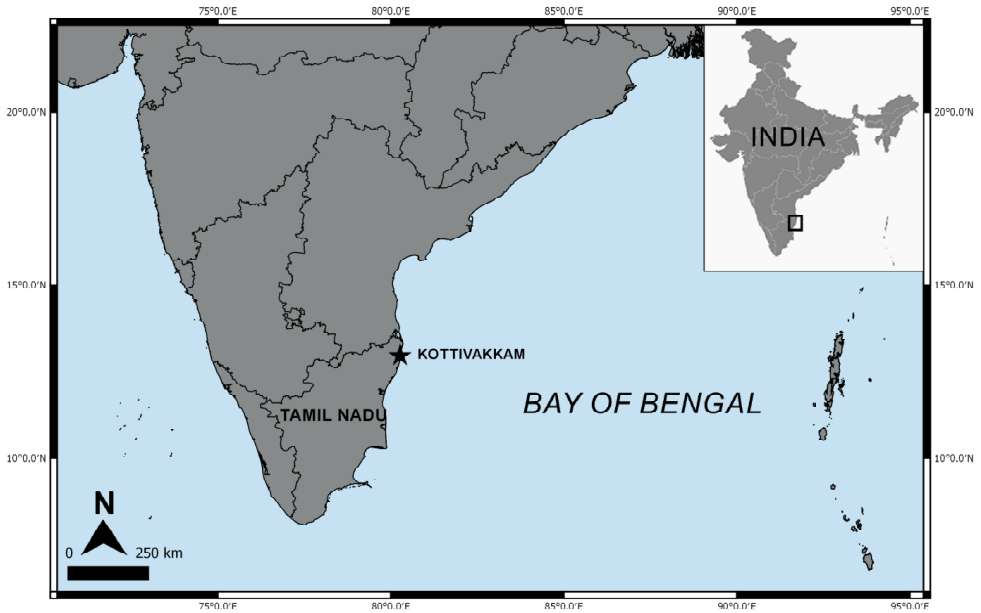

Fig. 1. Map of the study area from where the species was collected

Materials examined. One specimen; Length 9.17 mm x width 2.57 mm; collected from gill net trash dump amidst broken bivalve shell fragments at Kottivakkam, Chennai, east coast of India on 24th February 2016 by S. Goutham.

Description. The shell is elongated, slender, with a tall aperture and flat whorls. The narrow pale brown bands in the whorls end in round brown spots (Fig. 2). The spots are paler in the last whorl but darker in the previous ones. Vertical half of the space between the band and the suture is white in colour while the rest of the whorl is covered with pale brown, waning away on one side. A total of 11 whorls were counted. Vertical brown lines cut each whorl and the vertical line in the last whorl forms a curve to join the aperture line. Prominent brownish bands weaken from the fifth whorl when counted from the aperture. The elongate-ovate aperture is edged in dark brown colour. Aperture broke off while examining the specimen owing to the crack that developed at the time of collection. Shell has a polished effect on the entire body.

Distribution. Panama, Ecuador, Philippines, Chennai (India – present study).

The type species for genus *Eulima* is a sand dweller, parasitic on ophiuroids and, the species under this genus have tall (7–20 mm) slender shells possessing flat whorls with a tall aperture (Waren, 1984). The shells are usually smooth, shiny and white without many distinguishing characters, making them difficult to be identified (Skoglund, 2004). Bartsch (1917) classified several western American Eulimid species under genus *Strombiformis* however, Waren (1992) had placed them in genus *Eulima* judging, based on their shell characters. Waren (1984) points out that the color patterns are usually specific for a species. For example, *Eulima salsa* has two prominent spiral lines mid-whorl on each whorl (Myers et al. 2001) and can easily be confused with *E. panamensis*.

The Holotype of *E. panamensis* (*Strombiformis panamensis*) has lost its colour and patterns (Fig. 3) when referred to the original description of Bartsch (1917). Fig.4. reflects the pattern present in *E.panamensis*. Discussion with Dr. Waren (pers. comm) helped in understanding the complexities in identification based just on external morphology. He suggested DNA analysis as the best approach since there are many new species yet to be established under genus *Eulima*. He also suggested that the *E. panamensis* has to be closely studied because of the varying patterns exhibited in this species. Since the

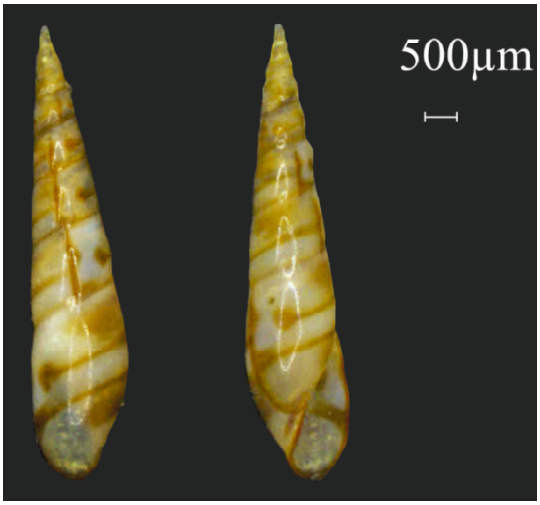

Fig. 2. *Eulima panamensis* collected from Kottivakkam beach, Chennai coast

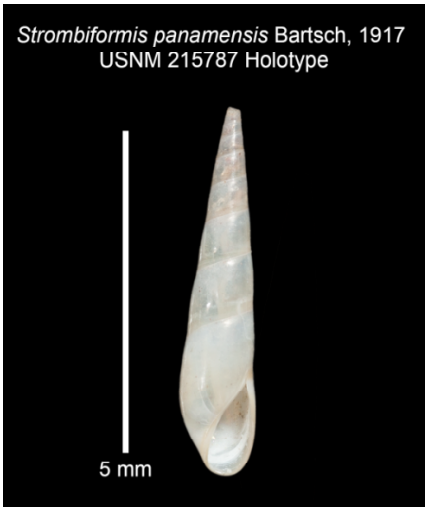

Fig. 3. Holotype – *Eulima panamensis* with the synonym name

Fig, 4. *Eulima panamensis* - image captured by Femorale at http://www.gastropods.com/0/Shell_72330.shtml

specimen we had collected did not have the animal inside, further analysis on DNA could not be carried out.

As far as the taxonomy of Indian echinoderms are concerned, their diversity and distribution is studied well (Sastry, 2007) however, only a few reports document biological interactions on parasitism. This report adds to the biodiversity number of existing marine molluscs in India.

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