First Report of Rare Tellin *Serratina Ostracea* (Lamarck, 1818) (Tellinidae: Venerida) From Indian Mainland

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Research Article

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Abstract

The present paper reports the occurrence of Tellin clam *Serratina ostracea* (Lamarck, 1818) from the Indian mainland. It was collected from the Talsari coast of Odisha state. This species was earlier reported from Andaman and Nicobar Islands and the probable reason for the dispersal of veliger larvae from its previous locality, Andaman, and Nicobar Islands to present locality Talsari (Odisha) coast was discussed here.

Significance Of Statement

The present manuscript was original research representing the first report of rare Tellin *Serratina ostracea* (Lamarck, 1818) from the Indian mainland, that is from Talsari coast of Odisha state. Previously, this species was only reported from Andaman and Nicobar Islands; the probable reason for the dispersal of veliger larvae from its previous locality, Andaman, and Nicobar Islands to the present locality Talsari (Odisha) coast was discussed here.

Introduction

The family Tellinidae are commonly known as Tellins, Tellinids, or Tellens. They are marine bivalve mollusc that lives deeply in the soft sediments in the shallow zone and they have a long siphon for respiration which reaches up to sediment surface. These are of small to large shell size, usually elongate, flat and thin, with low umbones and a rounded anterior end and elongate and rostrate posterior end, valves more or less unequal, hinge narrow, pallial line with deep and well developed sinus (Subba Rao 2017). A total of sixty five species of this family are known to occur in Indian Seas, and only two species of the genus *Serratina* Pallry, 1922 are existing in this region (Subba Rao 2017) *viz. Serratina capsoides* (Lamarck, 1818) and *S. ostracea* (Lamarck, 1818); and there are twenty one valid species in this genus available globally (MolluscaBase 2020). The extraordinary studies on mollusca especially bivalve around the Indian Seas are done by Dey (2006), Subba Rao and Dey (2000), Ramakrishna and Dey (2010), and Subba Rao (2017). Tudu et al. (2018) has updated the checklist of Odisha coast (present collection locality). As per the previous studies, it is confirmed that the present species is the first record from Indian mainland and this report extends its zoogeographic distribution to the northern east coast of India.

Materials And Methods

One complete shell was collected from Talsari (21° 35′ 48″ N; 87° 27′ 17″ E) by random collection method from the intertidal zone on 19.02.2020 by authors and deposited at National Zoological Collections (NZC) of Marine Aquarium and Regional Centre (MARC), Zoological Survey of India (ZSI), Digha, West Bengal with voucher no. MARC/ZSI/M7165. The specimen was dry preserved in a polypropylene sample container. Species confirmation is decided through the examination of

morphological characters and descriptions available from the literature of Dey (2006) and Subba Rao (2017), and classification follows Bieler et al. (2010).

Results

Systematic Position

Class Bivalvia Linnaeus, 1758

Order Venerida Gray, 1854

Superfamily Tellinoidea Blainville, 1814

Family Tellinidae Blainville, 1814

Genus *Serratina* Pallary, 1920

Serratina ostracea (Lamarck, 1818) (Fig.1)

Synonym

1986. *Tellina (Moerella) ostracea:* Tikader, Daniel and Subba Rao, p.177.

2000. *Tellina (Moerella) ostracea:* Subba Rao and Dey, *Rec. zool. Surv. India, Occ. paper,* 187: 256.

2006. *Tellina (Moerella) ostracea:* Dey, *Rec. zool. Surv. India, Occ. paper,* 249: 30, PL.VI, fig.2, PL. VIII, fig.6.

2010. *Tellina (Moerella) ostracea:* Ramakrishna and Dey, *Rec. zool. Surv. India, Occ. paper,* 320: 187

2017. *Tellina ostracea:* Subba Rao, *Rec. zool. Surv. India, Occ. paper,* 375: 368, fig.383.

Description:

Shell medium, 44.8mm length, 32.5mm height, and 14mm body depth, sub trigonal, and compressed. The right valve was bigger than left, having unequal ridges. Umbo raised and posterior. Anterior margin rounded while the posterior margin short, straight, and formed an oblique truncation. Dorsal margin straight and slopes gradually on the anterior side and abruptly on the posterior end. Sculpture of raised concentric ridges more prominent at the posterior end, radial striae absent. Ligament short, brown colour and lunule absent. Pallial sinus equal in both valve and large with an arcuated anterior end that does not touch anterior adductor. In the left valve, the cardinal complex consists of an unequal bilobed anterior tooth and a thin laminated posterior tooth, laterals less prominent and forms by the thickening on the hinge line. In the right valve the cardinal complex with a thin, laminated anterior tooth and a bifid posterior tooth, laterals strong, socketed above and anterior one closer to cardinal complex. Muscle scars

moderately impressed. Anterior adductor scar elongate, posterior adductor scar more or less rectangular. Cruciform scars two, oval shaped. Shell externally dull white and internally shiny.

Distribution: Andaman (Chiriatapu) and Nicobar Islands (Camorta and Nancowry) (Subba Rao 2017).

Discussion

There are two species of the genus *Serratina* Pallry, 1922 are reported in Indian waters. The congener species, *S. capsoides* (Lamarck, 1818) was common on the Indian coast, which is reported from Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh, and Nicobar Islands and *S. ostracea* (Lamarck, 1818) was a rare species, not common, only reported from Andaman and Nicobar Islands (Subba Rao 2017) (Fig.2). The latter can be easily distinguished by smaller size, dull white in external colour, more prominent concentric ridges, spinose dorsal margin, and the pallial line was originated from little above the bottom of the anterior part of posterior adductor muscle scar. Whereas the pallial line of *S. capsoides* was originated from the bottom of posterior adductor muscle scar. Further study on taxonomy was recommended for these species. The present report is of its first report from Indian mainland and extension of the zoogeography of this species as it was only reported from Andaman and Nicobar Islands.

One of the probable reasons for the dispersal of veliger larvae from Andaman and Nicobar Islands to the Talsari (Odisha) coast may be due to seawater currents developed during the Northern Indian Ocean tropical cyclones. The Indian coast was the most adversely affected region in the world and exposed to nearly 10% of the world's Tropical Cyclones (NCRMP). The Bay of Bengal witnessing a greater number of severe to very severe cyclones, including the super cyclones which devasted the Odisha state in the year 1999, and thereafter the recent cyclones like Amphan (2020), Fani & Bulbul (2019), Titli & Gaja (2018), Hudhud (2014), Phailin, & Helen (2013) were some of the major cyclones which originated from Northern Indian Ocean or Andaman Sea region, it may be one reason for dispersal of bivalve larvae from Andaman group of Islands to the present locality. Further, we are expecting the veliger larvae may be shifted to the present collection locality and grown up to adult size, as the intact shell of bivalve was collected, and hence, the shell was not shifted through the cyclonic water currents. Another reason may be the water currents developed due to mega Tsunami occurred due to Sumatra-Andaman earthquake on 26th December 2004, through which the larvae are transported to present locality. Also, the ballast water may be another reason for dispersal larvae, as the regular ship transportations are between the Port Blair of Andaman to Kolkata port.

Declarations

Funding- Not applicable

Conflicts of interest/ Competing interests- There is no conflict of interest.

Ethics approval- Not applicable

Consent to participate- Not applicable

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Availability of data and material- Not applicable

Code availability- Not applicable

Authors' contributions- PCT- collection, identification, and preparation of manuscript; SB- planning of survey and edited the manuscript; AKV- collection and edited the manuscript; SG- collection and processing of the specimen.

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Figures

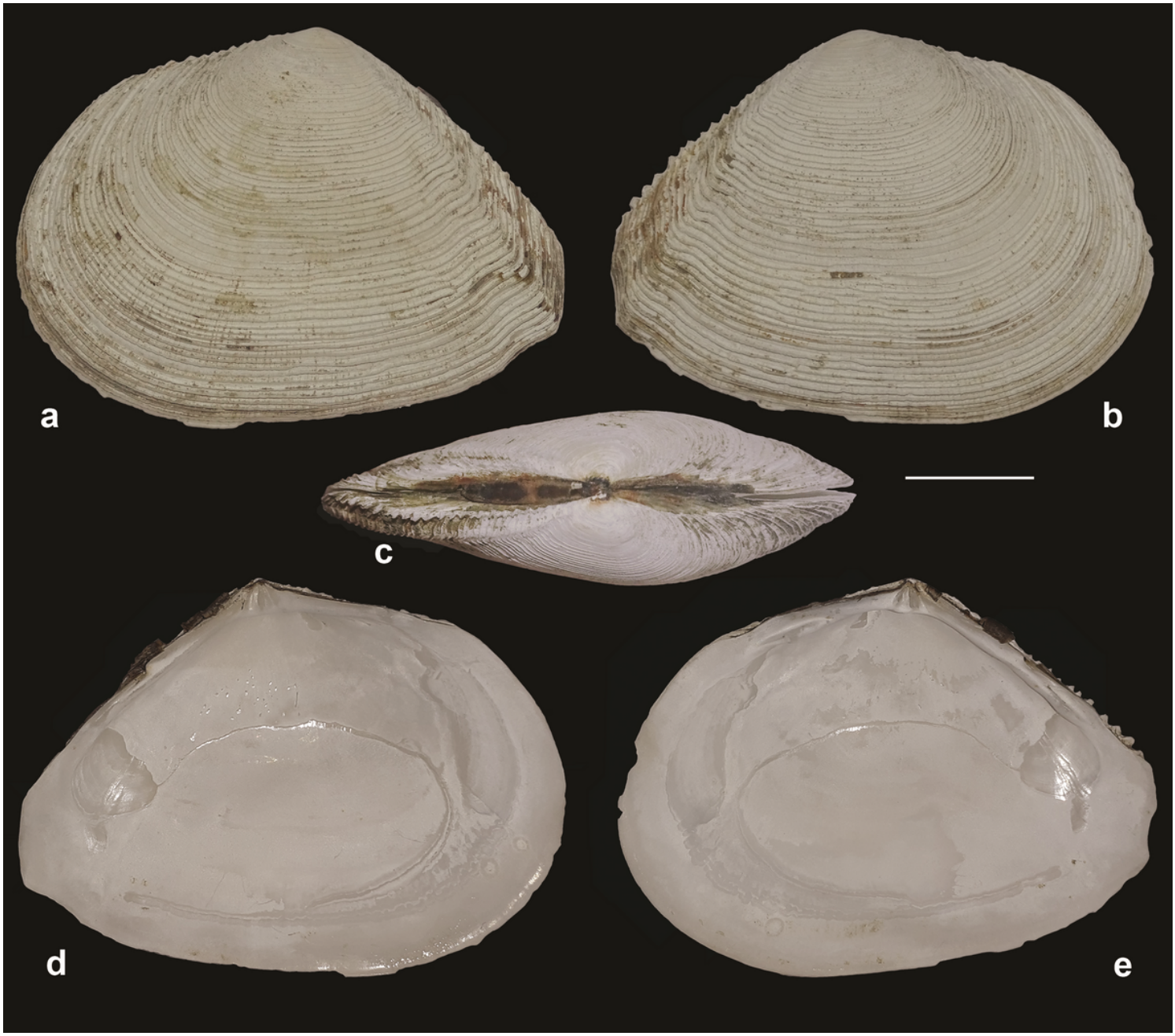

Figure 1

Serratina ostracea (Lamarck, 1818), a- exterior of left valve, b- exterior of right valve, c- dorsal view, d- interior of left valve, e- interior of right valve (Scale = 1cm).

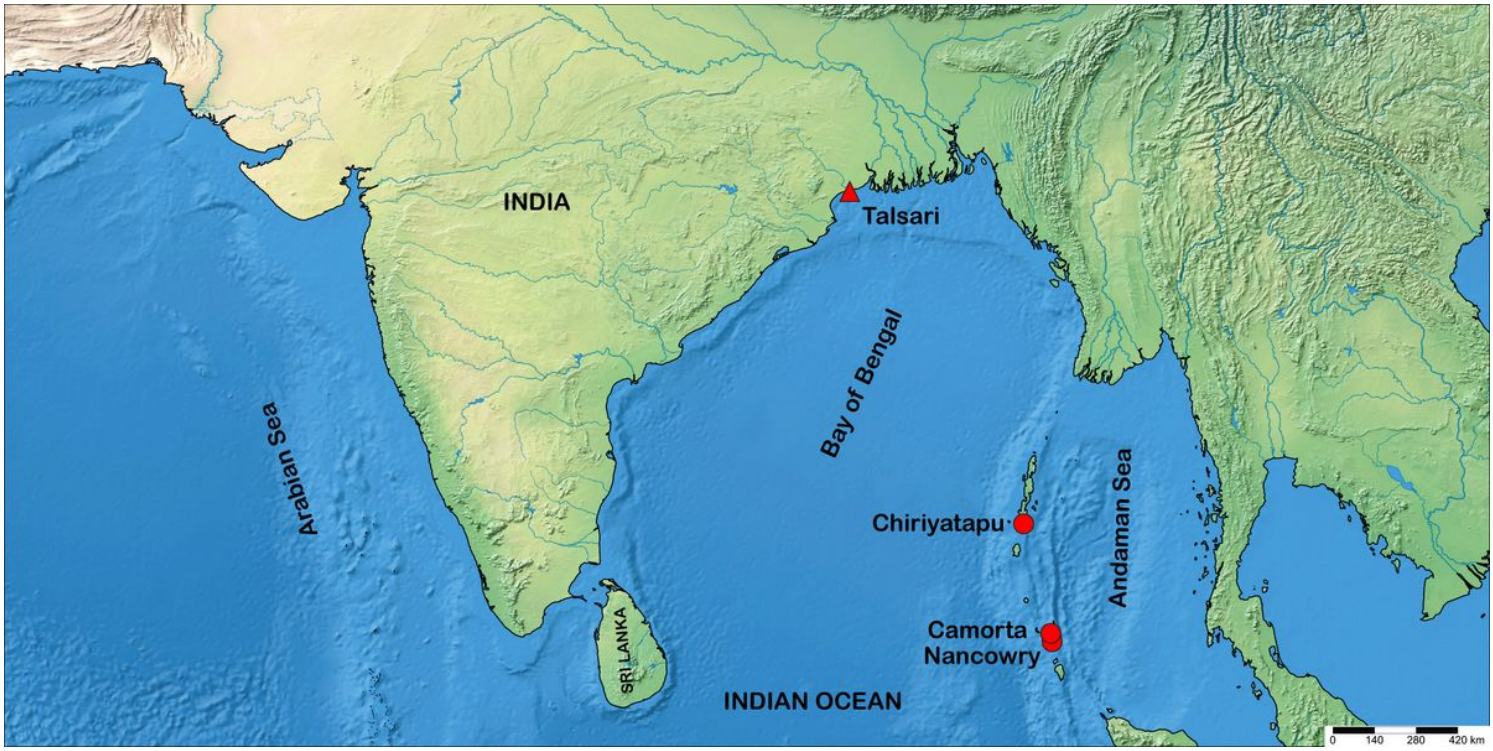

Figure 2

Map showing the distribution of Serratina ostracea (Lamarck, 1818) in Indian region, previous record in circle and present locality in triangle (Map source SimpleMaprr, https://www.simplemappr.net).