



### Short Communication

## First record of Veneridae clam *Protapes ziczac* (Linnaeus, 1758) from east coast of India, Andhra Pradesh

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A venerid bivalve *Protapes ziczac* (Linnaeus, 1758) from benthic collections is reported for the first time from the coastal waters of Andhra Pradesh, east coast of India. The findings of this study indicate the extended distributional range of the species, until now documented from the west coast of India.

[**Keywords:** Benthos, East coast of India, Mollusca, New Record, *Protapes ziczac*, Veneridae]

### Introduction

Representatives of the family Veneridae commonly referred to as Venus clams are cosmopolitan and ubiquitous in distribution, occurring world-wide in littoral environments. Of the 800 extant species known globally<sup>1</sup> under the family, many are often subjected to wide-ranging commercial exploitation owing to their numerical dominance in benthic communities<sup>2</sup>. Veneridae, is one amongst the ten identified families popular with shell collectors<sup>3</sup>. Besides, most species are not only recognized as foods with high nutritional value, for example *Meretrix meretrix* rich in proteins, enzymes, polysaccharides, minerals, essential vitamins and essential amino acids<sup>4</sup> but also as poultry feed, and in extraction of lime by local fisher communities, thus contributing to livelihood economies. Majority of the venerid species reported from India are common to both west and east coasts. About ten species are restricted in their distribution to west coast, with two species known only from the Andaman Islands. From the coast of Andhra Pradesh, in all, 29 venerid species

have been reported<sup>5</sup> with the present species now as an addition to the existing bivalve fauna of the coast.

The genus *Protapes* Dall, 1902 is represented by three species in India: *Protapes cor* (G. B. Sowerby I, 1853), and *P. ziczac* (Linnaeus, 1758) from west coast<sup>5,6</sup> in addition to *P. gallus* (Gmelin, 1791) from both west and east coasts in extensive beds in estuaries in the proximity of the sea where marine conditions prevail<sup>6</sup>. Amongst the species documented, *P. ziczac* (Linnaeus, 1758) was recorded earlier from the Arabian sea<sup>7</sup> as *P. sinuosa* (Lamarck, 1818)<sup>8</sup>. Additionally, reports of the species off Kerala<sup>9</sup> corroborate the existence of the species from the south west coast of India. The objective of the present study is to further document the occurrence and range extension of *P. ziczac* (Linnaeus, 1758), previously unreported, from the east coast of India.

### Materials and Methods

Two specimens were obtained with a Naturalist's dredge (20 x 50 cm; mesh size ~ 0.6 cm<sup>2</sup>) operated from a fishing trawler at a depth of about 10-30 m from Singarayakonda in the coastal corridor (15°20.120' N, 80°08.218' E) off Andhra Pradesh, India (Fig. 1). After collection, the specimens were washed with seawater and sorted on board. The specimens were carefully preserved in 10 % neutralized formaldehyde. Morphometric measurements were recorded using a dial Caliper. Identification was carried out based on key taxonomic features with appropriate literature<sup>10</sup>. The specimens were photographed with a digital (Nikon) camera, vouchered (Reg. No. MBLDZAU-239; dated 01.03.2017) and deposited in the collections of the Marine Biology Laboratory, Department of Zoology, Andhra University, Visakhapatnam, India. The samples for hydrography were analyzed according to Standard methods for the estimation of water quality<sup>11,12</sup>. Sediment texture was determined through wet sieving and pipette analysis<sup>13</sup> and nomenclature assigned<sup>14</sup>. Organic matter was estimated by the wet oxidation method of Walkley-Black, later modified<sup>15</sup>.

### Material examined

Two live specimens, Voucher no. MBLDZAU-239; dated 01.03.2017; collected from Singarayakonda (15°20.120' N, 80°08.218' E) of Andhra Pradesh, India, at depth of 10 m.

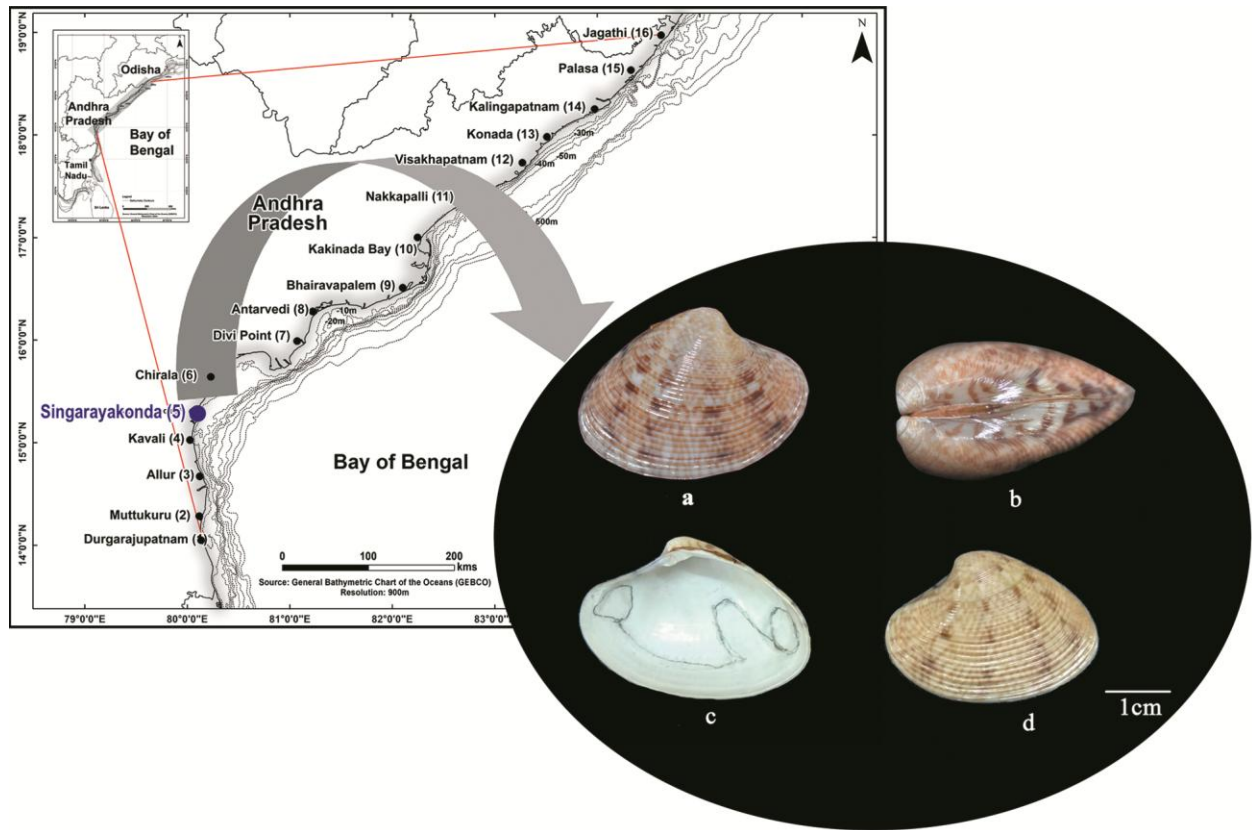


Fig. 1 — Location map showing site of collection, along the coast of Andhra Pradesh, east coast of India: a-d) *Protapes ziczac* (Linnaeus, 1758), a) Dorsal right valve, b) Shell with lunule, c) ventral left valve, and d) dorsal left valve

**Results**

**Identification**

*Systematic account*

Phylum: Mollusca  
 Class: Bivalvia  
 Subclass: Heterodonta  
 Infraclass: Euheterodonta  
 Superorder: Imparidentia  
 Order: Venerida  
 Superfamily: Veneroidea  
 Family: Veneridae Rafinesque, 1815  
 Genus: *Protapes* Dall, 1902  
*Protapes ziczac* (Linnaeus, 1758)

**Synonyms**

*Tapes inflata* Römer, 1870  
*Venus ziczac* Linnaeus, 1758 (Figs. 1a – d; Table 1)

**Diagnosis**

Shell color pale off-white tan with four prominent reddish-brown axial bands and zigzag streaks radiating from umbo to ventral margin. Externally shell sculptured with growth curves separated by more or less identical sized furrows; hard, compact,

Table 1 — Morphometric measurements in mm

Shell morphometrics <i>Protapes ziczac</i>	Specimen 1	Specimen 2
Shell height	24.52	24.50
Shell length	35.82	35.79
Shell thickness	15.32	15.32

thick, fairly distended, rotund, projecting into inflexed umbones towards the anterior margin; equivalve, oviform, trigonal of moderate dimensions (Table 1). Posterior margin curving upwards, ventral margin smooth, undulating. Lunule spindle shaped. Escutcheon slender, even. Interior shell color white; hinge with three cardinal teeth each; pallial sinus discernible with rounded apex; pallial line connects roughly trigonal anterior and elliptical posterior muscle scars.

*Remarks:* In comparison with the other two species of *Protapes* reported from India, *P. ziczac* has a much distended, swollen and bulky shell with well-defined strong external sculpture<sup>9</sup>.

**Ecology**

The specimens were recorded from a depth of 10 m with a salinity of 34.20 psu; sediment organic matter

was 1.21 % with silt loam texture (29.16 % sand, silt 70.78 % and clay 0.06 %). Two other venerids *Pelecycora excisa* (Röding, 1798) and *Placamen lamellatum* (Röding, 1798) were also observed from the same site.

### Conclusion

Extensive investigations as attempted in this study remain crucial in the exploration and documentation of benthic life. *P. ziczac* (Linnaeus, 1758) though described as a wide-ranging species of the western Indian Ocean, the possibility of a broader distribution across the Indo-Pacific was speculative<sup>16</sup>. The present finding of the species off Andhra Pradesh coastal waters, confirms an eastward extension into the Bay of Bengal.

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### Conflict of Interest

There is no competing or conflict of interest.

### Author Contributions

Specimen acquisition: AR; Laboratory analysis and figure: SSR & BD; Preparation of map: SSR & BD; Taxonomic identification: NVS and KVS; Writing: DR & SSR. Editing and review: AR and NVS; and funding acquisition: AR.

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