



Short Communication

First report of *Lioconcha polita* (Röding, 1798) from East peninsular India, Andhra Pradesh

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Incidence of a bivalve *Lioconcha polita* (Röding, 1798) in the benthic collections dredged from a depth of 21 m, off Andhra Pradesh, on the east coast of India, is the first report from coastal waters of the mainland. The present findings indicate a westward range expansion of the species from the Andaman and Nicobar Islands.

[**Keywords:** Benthos, East coast of India, First report, Mollusca]

Introduction

The widely recognized Venus clams belong to the family Veneridae, the most speciose family consisting of 172 genera and approximately 800 species globally¹. With 29 genera and 97 species of venerids from a total of 760 bivalve species representing 71 families reported^{2,3}, the venerids have established predominant visibility in the Indian waters: besides being among the ten identified families familiar with shell collectors⁴. A venerid shell is ovate to sub trigonal, thick, heavy, polished externally, and porcelaneous internally. The valves are devoid of a gape. Lunule and escutcheon are well developed with distinctly delineated borders^{2,3}. However, high intraspecific morphological variability within the family⁵ makes species-level identification of several genera, including the genus *Lioconcha* Mörch, 1853, challenging. Given the 5,423 km coastline of peninsular India, in addition to the 2,094 km of Andaman, Nicobar, and Lakshadweep group of Islands⁶, seven species of the genus have been

reported (Table 1), with six species occurring mainly off the Andaman and Nicobar Islands. In this communication, we report *L. polita* as the first from the mainland India, suggestive of a range expansion of the species westwards from the Andaman and Nicobar Islands in the direction of coastal Andhra Pradesh.

Materials and Methods

In our attempts to preparing an atlas on the macrobenthos of east Peninsular India, a re-examination of benthic samples collected at 500 locations (depth 1 – 50 m) using a Naturalist's dredge (20×50 cm; mesh size ~ 0.6 cm²) during the last 30 years (1987 – 2017) is in progress. As a part of this endeavor, the present specimen was collected off Vodarevu (15°30'55" N, 80°31'20.01" E) on 09-07-2008 using a dredge. The dredge was operated from a fishing trawler moving at three nautical miles. The samples were hauled on board, gently cleaned using seawater, live specimen separated with care, and then bottled in 10 % neutralized formaldehyde. A dial Caliper was used to measure the specimen morphometrics. Key taxonomic attributes with appropriate literature⁷ were taken into account for the identification. A digital (Nikon) camera was used for photographing the obtained specimens, vouchered (Reg. No. MBLDZAU-318), and deposited in the museum collections of the Marine Biology Laboratory, Department of Zoology, Andhra University, Visakhapatnam, India. Analysis of water quality was according to Standard analytical methods⁸. Sediment texture was obtained through wet sieving and pipette analysis⁹ followed by nomenclature¹⁰. The modified wet oxidation method of Walkley-Black¹¹ was used to estimate sediment organic matter.

Results

Extensive sampling off coastal Andhra Pradesh revealed a total 98 species of bivalves from 28 families. Of the latter, Veneridae was the most predominant in the collections, with 24 species belonging to 14 genera. Amongst these, the first-time occurrence of *L. polita* in the waters off Vodarevu

Table 1 — Species of genus *Lioconcha* recorded from India

Sl. No.	Species recorded from India	Distinguishing character	Distribution in India	References
1	<i>L. castrensis</i> (Linnaeus, 1758)	Dark brown chevrons and broken rod shaped structures with white lunule and umbo.	Andaman, Nicobar	3, 15, 16
2	<i>L. ornata</i> (Dillwyn, 1817)	Externally white with Dense brown v shaped patterns with brownish lunule.	Andaman, Nicobar Lakshadweep, Kerala, Tamil Nadu	20, 21, 15, 16, 22, 3
3	<i>L. philippinarum</i> (Hanley, 1844)	Distinct concentric raised ridges with dark brown rays on the outer shell.	Andaman, Gulf of Mannar, Tamil Nadu	15, 16, 19, 23
4	<i>L. picta</i> (Lamarck, 1818)		Lakshadweep, Andaman, Nicobar	19, 20, 22, 24, 25
5	<i>L. rumphii</i> Van der Meij, Moolenbeek & Dekker, 2010	Outer shell covered with tent shaped markings which looks like dripping wet paint.	Lakshadweep	26
6	<i>L. trimaculata</i> (Lamarck, 1818)	Color on the exterior white with brownish and raised ridges as ribs in the ventral half of the shell. Internally light brown color, which spreads towards the adductor muscle scar.	Andaman, Nicobar	3,15,16, 23
7	<i>Lioconcha polita</i> (Röding, 1798)	Lunule encircled by sturdy groove, wide radial orange chevrons towards the ventral margin of shell.	Andaman, Nicobar (Present find and New record to peninsular India)	3,15, 16, 19

(15°30'55" N, 80°31'20.01" E) is of interest. The systematic classification and morphological descriptions of the species under report are discussed with collection details.

Systematic account

Order : VENERIDA
 Super family : VENEROIDEA
 Family : VENERIDAE Rafinesque, 1815
 Genus : *Lioconcha* Mörch, 1853
 Type species : *Lioconcha polita* (Röding, 1798) (Fig. 1)

Synonymy

Venus polita Röding, 1798
Cytherea sulcatina Lamarck, 1818
Circe (Lioconcha) sulcatina (Lamarck)
Lioconcha sulcatina (Lamarck)
Lioconcha polita (Röding)
Lioconcha (Lioconcha) polita (Röding, 1798)
Lioconcha polita (Röding, 1798)

Material examined

One live specimen, Vodarevu (15°30'55" N, 80°31'20.01" E), 09-07-2008, (Reg. No. MBLDZAU-318) Andhra Pradesh, India, depth of 21 m. Shell length: 34.17 mm, shell height: 31.46 mm, thickness of shell: 18.84 mm (Fig. 1).

Diagnosis

Shell medium sized, moderately inflated, solid, trigonal shape, posteriorly attenuated. Externally

white with radial orange or dark red-purple zigzag/v shaped pattern. Chevrons become wider towards ventral margin of shell. Internal appearance of shell smooth, glossy, white or light brown. Last growth lines very prominent than those near apex. Umbones strongly prosogyrate or bent towards anterior. Lunule pointed at one end and recessed at the opposite side, even, dark colored brown, demarcated by a notched mark. Compressed concentric elevations formed posteriorly with growth gaps. Anterior adductor muscle scar elongated, in contrast to sub ovate shaped posterior adductor muscle scar. Pallial line very weak connecting adductor muscle scars.

Ecology

In the present collections, *L. polita* was found in silty-clay (sand 28.35 %, silt+clay 71.65 %) sediment, with 2.23 % organic matter and 30 PSU salinity, contrary to the occurrence of the species from loose sand, muddy or marine grass flats or coral reefs off shore islands in shallow/moderate waters (< 50 m)^{12,13}. The overall morphological features and size are comparable to the type^{14,5} reported from the Eastern Indian Ocean (Nicobar Islands) and Western Indian Ocean (North Mozambique, North Red sea)¹².

Distribution

Northern Indian Ocean⁵; Andaman Islands^{3,14-16}; North Mozambique, North Red Sea¹²; Gulf of Thailand, Pacific Ocean¹³.

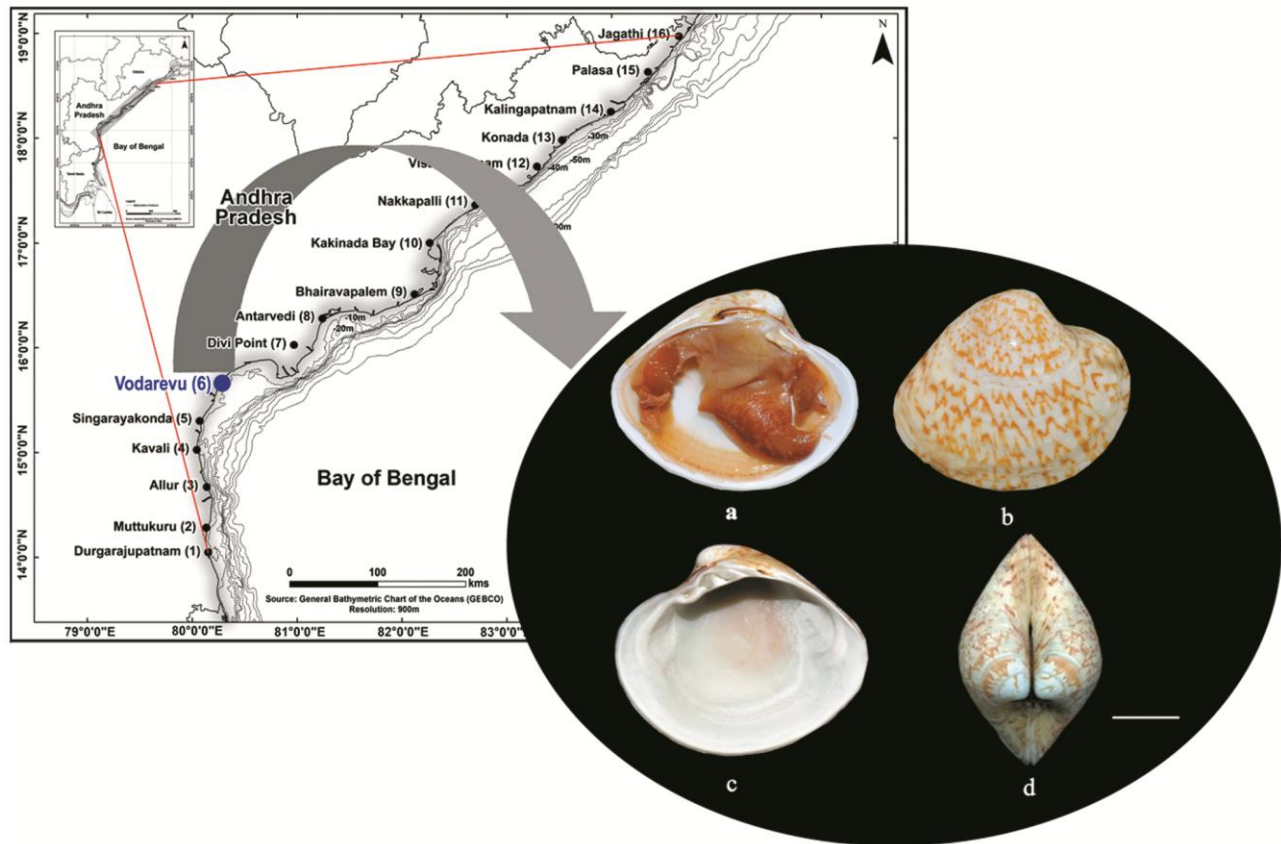


Fig. 1 — Sampling locations of *L. polita* from the coast off Andhra Pradesh, Left valve ventral (a), Right valve dorsal (b), Right valve ventral (c), Dorsal margin and umbo (d), Scale (10 mm)

Remarks

L. ornata is comparable to *L. polita* in contour and outer structure, but the former is characterized by red-dark brown dense patches on the shell, unlike the latter.

Discussion

The genus *Lioconcha* includes 23 valid species worldwide¹⁷. The species of genus *Lioconcha* recorded from India are listed in Table 1. Mörch, 1853 described the genus *Lioconcha* for the first time, and the type specimen was *Venus castrensis* Linnaeus, 1758, subsequently reported from India^{15,3}. A revision of the genus⁵ was done with 19 species documented worldwide. The species *Venus polita* was illustrated¹⁸ citing Chemnitz¹⁴. Lamarck's description of the bivalve as *Cytherea sulcatina* was also based on the same figures¹⁴. It was stated as *Lioconcha sulcatina*¹⁹ and reported from the Andaman Islands. The outcome of our investigations revealed *L. polita*, previously unreported from the mainland, from east coast of

India, evidencing its extended distribution westward in the Bay of Bengal waters.

Conclusion

The present finding thus confirms a westward extension of the species from the central Bay of Bengal towards Andhra Pradesh coastal waters.

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Conflict of Interest

The authors declare that they have no competing or conflict of interests.

Author Contributions

Taxonomic analysis: NVS & KVS; Funding acquisition and investigation: Late AVR; Writing: BD, SSR & DR; and Review & editing: NVS, DR & Late AVR.

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