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Reappearance of the rare clam, *Anatinella nicobarica* (Gmelin, 1791) (Family: Anatinellidae) after 72 years in India

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Anatinella nicobarica is a very rarely reported species of bivalve mollusc in the world. It was discovered in the Nicobar Sea by Gmelin, (1791) for the first time. After so many years, its rave occurrence was observed in India. Reappearance of this rare clam was reported after 72 years from Chennai beach (mainland coast of India).

[Keywords: Rare clam; Reappearance; Chondrophore; India**]**

Introduction

In the world, sandy beaches are often strewn with shells of many colours and forms. But marine bivalves live with few exceptions below low tide level and most of them are rarely seen if ever washed ashore. Generally, a few bivalves live in the sand between high and low tide marks, and others are brought by fishermen in their nets; but it is their shells alone that are commonly seen. Sometimes, some bivalves may rarely be found from fishermen's nets and trawlers.

Family Anatinellidae Deshayesin Gray, 1853 was introduced to distinguish the genus *Anatinella*, previously introduced by Sower by I[1], from Lutraria Lamarck, 1799. It was considered a subfamily of Mactridae by Dall[2]. However, it was placed in Mactroidea super family as a valid family by several authors[3-7]. Family Anatinellidae contains only one, monotypic genus, *Anatinella*. This genus is similar to members of the small mactrid Kymatoxinae subfamily in having tooth-like, but non-articulating shell lamellae near the hinge plate. However, the later is traditionally assigned to Mactridae family. Signorelli and Carter[8]suggested whether Anatinellidae and Kymatoxinae should be regarded as distinct at the family or subfamily level. The present study focused on description of *Anatinella nicobarica* under Family Anatinellidae and it global distribution.

Materials and Methods

Only one individual of *Anatinella* species was found unexpectedly in December 2011, in front of Light House (13°02'21.60"N, 80°16'53.51"E), in the sandy beach of Marina, Tamil Nadu (Fig. 1). This location is directly connected to open sea and subjected to extreme wave action. The specimen (Fig. 2) was measured using Vernier caliper and examined for its morphological characters in the laboratory. After a thorough examination, digital photographs were obtained for later reference. Using the standard books of Satyamurti[9-14] the specimen was identified. The status of this clam was updated from the World Register of Marine Species (WoRMS) database. This taxon does not come in the Red List of the International Union for Conservation of Nature (IUCN).

Results and Discussion

Taxonomic hierarchy:
Phylum: Mollusca
Class: Bivalvia Linnaeus, 1758
Subclass: Heterodonta Neumayr, 1884
Superorder: Imparidentia Bieler, P. M. Mikkelsen & Giribet, 2014
Superfamily: Mactroidea Lamarck, 1809
Family: Anatinellidae Deshayes, 1853
Subfamily: Anatinellinae Deshayes, 1853
Genus: *Anatinella* Sowerby G. B II., 1833
Species: *nicobarica* (Gmelin, 1791)

Synonymised names:

Anatinella candida Deshayes, 1850

Anatinella dilatata A. Adams, 1850

Anatinella sibbaldii G. B. Sowerby I, 1833

Anatinella ventricosa A. Adams, 1850

Mya angulata Spengler, 1793

Mya nicobarica Gmelin, 1791

Mya papyracea Spengler, 1793

Anatinella nicobarica (Gmelin, 1791)

1876. *Anatinella siebaldii*, Reeve, Conch.Icon., XIX. '*Anatinella*' pl. i - 1.

1941. *Anatinella nicobarica* Gravely, Bull.Mad.Govt.Mus. (N.H.) V (1), fig. 21e, p. 56

1956. *Anatinella nicobarica* Patil, Karnatak Univ. Dharwad, pl. XXIX, fig. 173, p.121

2010. *Anatinella nicobarica* Huber, Compendium of bivalves, Conch Books, Hackenheim, p. 454

Fig. 1— Study site near Light House along Marina beach

Fig. 2 — *Anatinella nicobarica* collected from Chennai beach, Upper figure: dorsal view of the shell, scale bar: 1 cm. Lower figure: interior surface of the shell, scale bar: 1 cm

Description: Shell is large, rather thin, moderately inflated and oval in shape. Equivalve, inequilateral, fragile valve; slightly gaping; commarginal sculpture with fine radial lines; Umbo is median and slightly deflected behind. Small cardinal tooth and an accessory lamella in each valve, no distinct laterals; inner ventral margin is smooth and periostracum is thin. Dimyarian, with a long narrow anterior scar, posterior scar irregularly rounded and anterior margin thicker; small parivincular ligament, hinge with a prominent resilium, resting in narrow projecting chondrophores in either valve.

Distribution: Indo-Pacific, Japan, Taiwan

Habitat: Lower intertidal to 50 m, presumably in faunal in sandy mud bottoms[12]. This was reported from sandy beach as dead shell in the present study.

Reproduction: Reproduction is dioecious[12].

Anatomy: Eulamellibranch gills; large well developed foot without a byssal gland[12].

Huber[12] suggested that it is suspension feeding organism. He further pointed out family Anatinellidae is an uncommon monospecific and insufficiently known. No fossil genera are known. Gmelin15reported *Anatinella nicobarica* species from Andaman Sea. Later it was reported from Madras coast (= Chennai coast) by Gravely[16].

Afterwards, Patil[17] reported this clam from Karnataka and stated that it occurred occasionally in Karnataka. In the present study, the clam found was one of the rare molluscan species in India, even in the world[12]. The length and breadth of this clam were 28.98 and 21.85 mm, respectively in the present study. Signorelli and Carter[8] stated that morphological and phylogenetic analysis of the mactrid subfamilies Kymatoxinae and Mactrinae, plus the mactroidean family, Anatinellidae, indicate that the Kymatoxinae shares closer common ancestry with the Anatinellidae than with family Mactridae. Therefore, Kymatoxinaeis reassigned from Mactridae to subfamily rank within Anatinellidae. They further stated that the lack of a pallial sinus in *Anatinella* suggests that their family was derived from anatomically plesiomophic members of Mactroidea with at best only weakly developed siphons.

Patil[17] observed that empty old valves are occasionally washed up on the beach in Karwar bay, Kamat's bay and Mavin Halla area, along southern coast of India. Appearance of *Anatinella nicobarica* after 72 years reported from the mainland of India was considered as rare record in the present study.

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