

Geographic range expansion of Bank's Murex, *Chicoreus banksii* (Gastropoda: Muricidae) to the east coast of India

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Abstract

A single empty shell of *Chicoreus banksii* (G. B. Sowerby II, 1841) was collected from the trawl bycatch of Petuaghat fish landing centre, West Bengal. The species identification was confirmed, based on the morphological characteristics of the shell, spine ornamentation, and colouration. The present study provides an overview of the species occurrence in the fish bycatch and its range expansion to the eastern coast of India, the Bay of Bengal. Previously, it was reported from the Bombay coast (Maharashtra), Andaman & Nicobar Islands and Lakshadweep Islands. The taxonomic details of *C. banksii* (G. B. Sowerby II, 1841) and a checklist with distributional records of the genus *Chicoreus* within the Indian region were presented in the article.

Keywords: Biogeography, bycatch, distribution, new record, predatory snail, taxonomy

Introduction

The species of the family Muricidae Rafinesque, 1815 are small to large predatory snails, taxonomically diverse marine gastropods commonly known as Murex snails or Rock snails. The family contains about 1,700 living species (Wikipedia, 2025), which is almost 10% of total species under the order Neogastropoda Wenz, 1938. Shells are unevenly shaped, with raised spires and strong sculptures with spiral ridges, three or more axial varices on each whorl, bearing spines, tubercles, and or knife-edge-like processes. The aperture with diverse shapes, ovate to contracted, outer lip denticulate and sometimes with tooth-like processes developed in the margin. Smooth to the faintly ridged columella. Periostracum absent. Hornlike operculum with variable thickness and a nucleus at the middle or anterior part. This family comprises 12 subfamilies (Bouchet *et al.*, 2017), and the subfamily Muricinae Rafinesque, 1815, has 19 genera (MolluscaBase, 2025a). The genus *Chicoreus* Montfort, 1810 is the largest with 100 valid living species around the globe within subfamily Muricinae (MolluscaBase, 2025b). The members of the genus *Chicoreus* have always been the topic of taxonomic misperception due to variation in colour, sculpture and spine ornamentation

(Houart, 1992). Few members of the genus are identical in sculpture, colour, and spine ornamentation with minor differences in different population, such as *C. trivialis* (A. Adams, 1854) and *C. capucinus* (Lamarck, 1822); some others have extremely variable forms in *C. brunneus* (Link, 1807) and *C. mcrophyllus* (Lamarck, 1816); and few species with minor variations, such as *C. torrefactus* (G.B. Sowerby II, 1841), *C. banksii* (G. B. Sowerby II, 1841) and *C. axicornis* (Lamarck, 1822) (Houart, 1992). Numerous studies have been carried out on the diversity of family Muricidae in Indian coast (Rao *et al.*, 1991; Rao & Rao, 1993; Rao & Dey, 2000; Rao, 2003; Apte, 2014; Ravinesh & Kumar, 2015; Dey, 2016; Tudu *et al.*, 2018a, b; Edward *et al.*, 2022) and there are 16 species of the genus *Chicoreus* was reported so far in Indian waters (Table 1).

A single empty shell was collected from the trawl bycatch of Petuaghat fish landing centre, West Bengal, though the exact collection locality was unknown and as per the fishermen, the trawl nets were operated along off West Bengal and Odisha coast. It is identified as *Chicoreus banksii* (G. B. Sowerby II, 1841) by examining the morphological characteristics, spine ornamentation and shell colouration, and commonly known as Banks murex. The literature suggests that this species has no occurrence on the east coast of India. It was previously

reported from the Andaman and Nicobar Islands, the Lakshadweep Islands and the Bombay coast (Mumbai), Maharashtra only (Rao & Dey, 2000; Apte, 2014; Ravinesh & Kumar, 2015; Dey, 2016). The present report is the first ever record of the occurrence along the eastern coast of India, as well as a biogeographic range extension to the north-western coast of the Bay of Bengal.

Abbreviations including Institutional Acronyms

abis – abapical infrasutural secondary cord (on subsutural ramp), ABP – abapical primary cords on the siphonal cords, abs – abapical secondary cords on the siphonal canal, adis – adapical infrasutural secondary cord (on subsutural ramp), ADP – adapical primary cords on the siphonal canal, ads – adapical siphonal secondary cords, IP – infrasutural primary cord (primary cords on subsutural ramp), MARC – Marine Aquarium and Regional Centre, Digha, mm – millimetre, MP – median primary cords on the siphonal canal, NZC – National

Zoological Collections of MARC, Digha, P1 – primary shoulder cord, P2 to P6 – primary cords on the convex part of the teleoconch whorl, Reg. No. – Registration number of the voucher specimen, s1 to s6 – secondary cords on the convex part of the teleoconch whorl, s7 to s9 – secondary cords on the siphonal canal, ZSI – Zoological Survey of India.

Materials and Methods

One empty shell was collected from trawl bycatch of Petuaghat fishing harbour, West Bengal, on 29th October 2021. The exact location of fishing trawl operations was unknown, but, according to the fishers, the trawl operation was conducted off the Odisha and West Bengal coasts. After collection, the specimen was washed in tap water and dry preserved in a container for future reference. It was identified as *Chicoreus banksii* (G. B. Sowerby II, 1841) by examining the shell colouration,

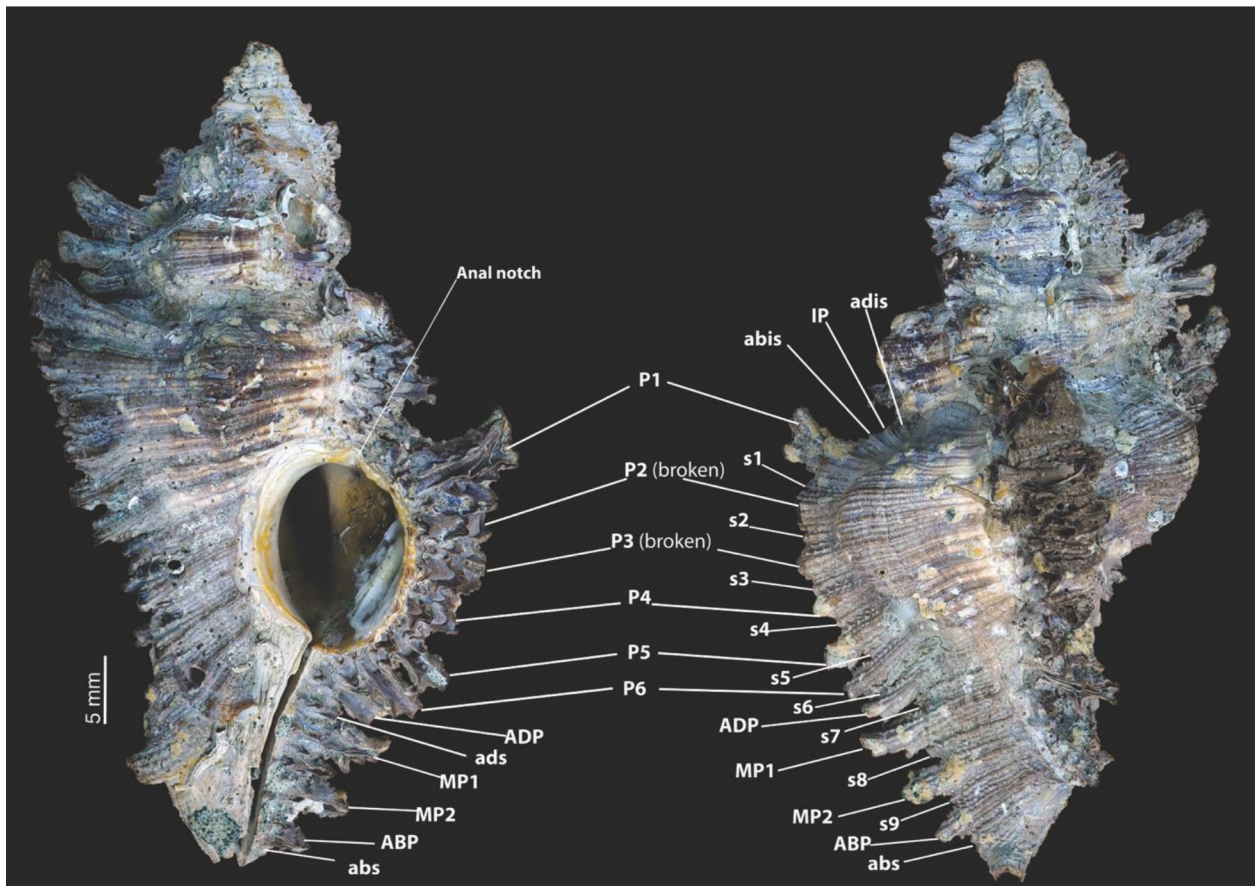


Fig. 1. Terminology used in the diagnosis of *Chicoreus banksii* (G. B. Sowerby II, 1841), apertural and abapertural views of shell (see abbreviations).

spine ornamentation and morphological characteristics. Variceal spines are counted consecutively abapically so that the adapical (shoulder) spine is considered the first spine, and so on, and the protoconch was verified for accurate identification (Houart, 1992). The terminology of the spiral sculptures (cords and denticles) of the outer lip follows Merle (2001; 2005) and Berschaucer *et al.* (2022). The description follows Houart (1992), and the classification follows Bouchet *et al.* (2017). The specimen was photographed by a Sony digital SLR camera with a macro lens, and morphometric measurements were taken with a Digital Calliper (Work Zone) of 0.03 mm accuracy. The specimen was deposited as a voucher specimen in the NZC repository of MARC, ZSI, Digha, West Bengal.

Results

Detailed taxonomic characteristics of Bank's murex based on the collected specimen are as follows.

Systematic Accounts

Class Gastropoda Cuvier, 1795

Order Neogastropoda Wenz, 1938

Family Muricidae Rafinesque, 1815

Chicoreus banksii (G. B. Sowerby II, 1841) (Fig. 1, 2)

(Type locality: Moluccas; Type materials: lectotype Natural History Museum, London, UK 197478).

Synonyms

Murex banksii Sowerby II 1841: 191, fig. 82.

Chicoreus (Triplex) banksii: Houart 1992: 69–70, figs. 26–28, 100–101, 338–343, 358.

Chicoreus banksii: Rao and Rao 1993: 16, pl. 1, fig. 4., -- Rao and Dey 2000: 98., -- Rao 2003: 224, pl. 52, fig.5., -- Apte 2014: 101, pl. 15, fig. 2., -- Dey 2016: 302, figs. 713–714, 719–720.

Material examined: 1ex, Petuaghat, Fishing harbour, West Bengal, 21°47'87.2"N & 87°52'72.7"E, 9-x-2021,

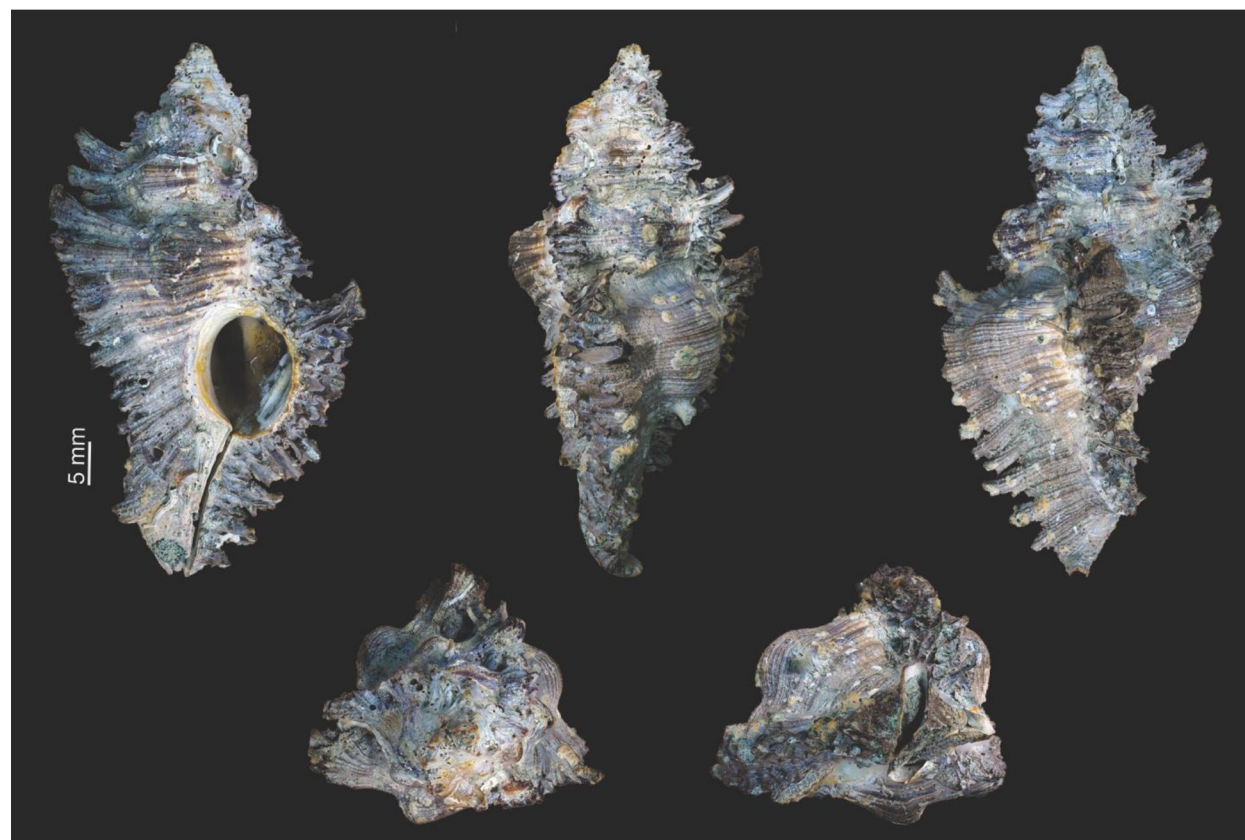


Fig. 2. *Chicoreus banksii* (G. B. Sowerby II, 1841), collected from Petuaghat fishing harbour (MARC/ZSI M9245).

S. Balakrishnan and team (NZC Reg. No. MARC/ZSI M9245).

Diagnosis: Shell larger in size, height 60 mm and width 34.35 mm; spire high, aperture small and ovate, suture slightly upraised, protoconch not examined (broken), eight weakly angulate teleoconch whorls, IP and abis more prominent compared to adis, and dominated by the shoulder spine of the previous whorl. Aperture roundly ovate, columellar lip smooth, outer lip dentate and liriate to smooth on its inner side, last whorl with three rounded varices each with six frondose spine, P1

(shoulder spine) long, followed abapically by P2 to P6, P2 and P3 were broken in the present specimen; ADP smaller than P6, ads comparatively smaller than ADP and MP1, two median primary cords (MP1 and MP2) present siphonal canal, ABP smaller than MP2, abs very small. Spiral sculpture consisting of five primary cords and five to six intermediate cords and threads in each interspace. Siphonal canal moderately elongated with three spines (MP1, MP2 and ABP), broad or tubular, axial sculpture with one to a few ridges or knobs. Anal notch is relatively shallow, delineated by low callus. Medium-sized siphonal

Table 1. Distribution of the Genus *Chicoreus* in the Indian region

S. No	Name of species	Distribution with references
1	<i>Chicoreus aculeatus</i> (Lamarck, 1822)	Gulf of Mannar, Tamil Nadu (Edward <i>et al.</i> , 2022), Lakshadweep (Ravinesh & Kumar, 2015)
2	<i>C. annandalei</i> (Preston, 1910)	Odisha (Rao <i>et al.</i> , 1991), Andaman Islands (Rao & Dey, 2000)
3	<i>C. axicornis</i> (Lamarck, 1822)	Andaman Islands (Rao & Dey, 2000; Dey, 2016)
4	<i>C. banksii</i> (G. B. Sowerby II, 1841)	Bombay coast, Maharashtra, Andaman and Nicobar Islands, Lakshadweep (Rao & Dey, 2000; Apte, 2014; Ravinesh & Kumar, 2015; Dey, 2016), off West Bengal and Odisha coast (present collection)
5	<i>C. brunneus</i> (Link, 1807)	Chennai coast (Rao <i>et al.</i> , 1991); Tarapur Atomic Power Station area, Maharashtra (Ambekar <i>et al.</i> , 2018); Gulf of Kachchh (Parmar <i>et al.</i> , 2019), Gulf of Mannar (Edward <i>et al.</i> , 2022), Puducherry (Dey, 2016), Andaman Islands (Rao and Dey, 2000; Dey, 2016);
6	<i>C. capucinus</i> (Lamarck, 1822)	Coromandel coast (Type locality) (Lamarck, 1822), Andaman Islands (Rao & Dey, 2000), Tamil Nadu (Dey, 2016)
7	<i>C. ceylonensis</i> Houart, 2015	Gulf of Mannar (Edward <i>et al.</i> , 2022).
8	<i>C. cnissodus</i> (Euthyme, 1889)	Andaman and Nicobar Islands, Gujarat, Maharashtra, Tamil Nadu (Dey, 2016)
9	<i>C. denudatus</i> (Perry, 1811)	Andaman Islands (Rao & Dey, 2000)
10	<i>C. microphyllus</i> (Lamarck, 1816)	Off Gopalpur coast, Odisha (Rao <i>et al.</i> , 1991), Maharashtra, Tamil Nadu (Dey, 2016), Andaman Islands (Rao & Dey, 2000)
11	<i>C. palmarosae</i> (Lamarck, 1822)	Gulf of Mannar, Tamil Nadu (Edward <i>et al.</i> , 2022; Dey, 2016), Lakshadweep (Ravinesh & Kumar, 2015), Andaman and Nicobar Islands, Odisha (Dey, 2016)
12	<i>C. ramosus</i> (Linnaeus, 1758)	Tuticorin coast (Mohanraj <i>et al.</i> , 2010), Veraval coast (Daves <i>et al.</i> , 2015), Off Gopalpur coast (Tudu <i>et al.</i> , 2018b), Gulf of Kachchh (Parmar <i>et al.</i> , 2019), Gulf of Mannar (Edward <i>et al.</i> , 2022), Andhra Pradesh, Odisha, Gujarat, Puducherry (Dey, 2016), Andaman Islands (Rao & Dey, 2000; Dey, 2016); Lakshadweep (Ravinesh & Kumar, 2015; Dey, 2016)
13	<i>C. rossiteri</i> (Crosse, 1872)	Puducherry (Dey, 2016)
14	<i>C. torrefactus</i> (G. B. Sowerby II, 1841)*	Gulf of Mannar (Parmar <i>et al.</i> , 2019; Edward <i>et al.</i> , 2022), Kerala (Matiew <i>et al.</i> , 2012); Gulf of Kachchh (Parmar <i>et al.</i> , 2019), Maharashtra (Dey, 2016); Andaman Islands (Rao & Dey, 2000)
15	<i>C. triqueter</i> (Born, 1778)	Andaman Islands (Rao & Dey, 2000)
16	<i>C. virgineus</i> (Röding, 1798)	Andaman and Nicobar Islands, Andhra Pradesh, Gujarat, Maharashtra, Puducherry, West Bengal (Dey, 2016), Gulf of Mannar, Tamil Nadu (Edward <i>et al.</i> , 2022; Dey, 2016), Lakshadweep (Ravinesh & Kumar, 2015),

**C. torrefactus* (G. B. Sowerby II, 1841) = *C. kilburni* Houart & Pain, 1982

canal, narrowly open and abaperturally curved at tip. Operculum not examined. Shell externally light brown with darker spiral cords, varices of whorls with brilliant iridescent brownish blue in colour, and the interior aperture whitish with orange fronds.

Distribution: Bombay coast (Maharashtra), Andaman and Nicobar Islands and Lakshadweep Islands (Rao & Rao, 1993; Rao & Dey, 2000; Apte, 2014; Ravinesh & Kumar, 2015; Dey, 2016); Elsewhere, Persian Gulf, Mozambique, Zanzibar, Sulu Sea, Queensland, Eastern Australia (Rao & Rao, 1993; Dey, 2016). The distribution of the genus *Chicoreus* in India is presented in Table 1.

Discussion

The bycatch is the unintentional catch of non-target species in the fishery industry; this may be the wrong species, sex, juvenile specimens of the target species, undesired species, etc. As part of the regular survey, the authors encountered a bycatch specimen at Petuaghat fishing harbour, Purba Medinipur district, West Bengal. This harbour is India's seventh-largest fishing port, located at the mouth of the Rasulpur River, with 400 deep-sea fishing trawlers and 200 traditional fishing trawlers. This specimen was collected from the bycatch of a bottom trawl net, and the exact location was unknown. According to the fishermen, the trawl nets were operated off the West Bengal and Odisha coast. Due to its attractive structure and varied appearance, *C.*

banksii was considered to be an ornamental mollusc that occurred on intertidal and inshore areas and was used for home decoration, preparation of garland and other domestic works. The *C. banksii* resembles *C. cnissodus*, but it has a broader shell, a larger aperture, a shoulder spine, four medium-sized spines enclosing between spinelets, and the canal bears two prominent spines curved backwards, while the former has a smaller aperture, one shoulder spine is large, and the rest are four are smaller. The *C. cnissodus* is white in colour, while *C. banksii* with a light brown shell, varices of whorls with brilliant iridescent brownish blue, and the interior aperture whitish with orange fronds. The sculpture of *C. banksii* is similar to *C. axicornis* but has a last whorl with three frondose varices, each with a long shoulder spine (Houart, 1992) as compared to single shoulder varices in earlier. Henceforth, the species was reported upon as the new record and distributional range expansion to the east coast of India along the north-western Bay of Bengal.

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