

Original Article

New records of two rare crabs of *Nursia plicata* (Herbst, 1803) and *Trichia indica* (Sankarankutty, 1968) (Crustacea: Decapoda: Brachyura) from the Gujarat coast, India

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Abstract: In the present study, two rare brachyuran crabs were caught from the intertidal zone of Kachchh and identified for the first time from Gujarat, India. The first species, *Nursia plicata* (Herbst, 1803), previously known from the Indo-West Pacific region and the Indian coastline (Maharashtra, Tamil Nadu, and Orissa), is reported here for the first time from the Gujarat waters. The second species, *Trichia indica* (Sankarankutty, 1968), was originally described from a single female specimen collected from Sri Lanka. Later, it was only known from the locality of Thailand. This specimen represents the third global record of this species, marking the first report of this species and genus from the Indian coast. Detailed morphological descriptions, habitat, and present distribution status are provided for their biogeographic range.

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Introduction

Leucosiid crabs, commonly known as nut crabs or pebble crabs, inhabit intertidal and sublittoral zones, where they are often partially buried in sediment during the day and actively forage for prey at night. Species of Leucosiidae are easily recognized by their highly polished carapace and the presence of a thoracic sinus, a feature unique to the family. They are typically found on soft sediment substrates, ranging from intertidal flats to shelf and slope depths (Schembri, 1982; Poore, 2004). The genus *Nursia* Leach, 1817, has a pentagonal shape of the carapace and a buccal cavern in the pterygostomian region (Ng et al., 2008).

Xanthid crabs, often referred to as mud crabs or pebble crabs, are a diverse group commonly found in shallow marine environments, particularly in coral reefs, rocky shores, and intertidal zones. Many compact, black-fingered, cryptic crabs are xanthids, members of a family that possibly contains more species in the Indo-West Pacific than any other

(Poore, 2004). The genus *Trichia* de Haan, 1839, is among the most distinctive xanthid crabs of the Indo-West Pacific region, characterized by dense pilosity covering much of its external surfaces. It can be readily identified by the notably bulbous carpus of the third maxilliped (Ng and Chia, 1995).

The global diversity of brachyuran crabs comprises 6,793 species distributed across 1,271 genera and 93 families, among them, 21 species in the genus *Nursia* and six species of the genus *Trichia* have been known (Guinot, 1976; Ng et al., 2008; Ng and Komatsu, 2016). In India, a total of 944 brachyuran crab species across 393 genera and 65 families have been documented. Among these, three species belong to the genus *Nursia*, while no species from the genus *Trichia* have been reported to date (Valarmathi, 2024).

From Gujarat, 190 species of marine brachyuran crabs, belonging to 107 genera and 32 families, have been reported to date (Beleem et al., 2019; Vadher et al., 2025). Among these, 16 species of leucosiid crabs and 25 species of xanthid crabs have been recorded. In

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the present study, we add a new genus *Nursia* Leach, 1817, to the existing list of leucosiid crabs, and the new genus *Trichia* De Haan, 1839, to the xanthid crab fauna of the Gujarat coast, India. This study aims to describe the species *N. plicata* (Herbst, 1803) and *T. indica* (Sankarankutty, 1968), focusing on their range extensions and habitat characteristics along the Gujarat coast, India.

Materials and Methods

A single female specimen of *N. plicata* was collected from a sandy-clay area at Sikka Reef (22°27'27.3"N, 69°48'06.6"E), while a single female specimen of *T. indica* was collected from the by-catch of deep-sea water lobster trawlers operating near Goose reef (22°30'32.7"N, 69°47'07.4"E), Gujarat, India. The collected specimens were transferred to the laboratory of the Fisheries Research Station, Kamdhenu University, Sikka. Upon arrival, the specimens were cleaned, photographed, and subjected to a detailed examination of their morphological characters. Taxonomic identification was performed using standard references (Alcock, 1896; Sankarankutty, 1968; Guinot, 1976; Naderloo and Sari, 2005) and verified through expert consultation. Both specimens were preserved in 70% ethanol and deposited under accession number FRSACDB in the Museum of the Fisheries Research Station, Kamdhenu University, Sikka. Measurements of maximum carapace width (CW) and maximum carapace length (CL) were taken, with all values expressed in millimetres (mm). The following abbreviations are used: CL = carapace length; CW = carapace width; P1-P5 = first to fifth pereopods.

Results and Discussions

Systematics

Order: Decapoda Latreille, 1802

Infraorder: Brachyura Latreille, 1802

Family: Leucosiidae Samouelle, 1819

Genus: *Nursia* Leach, 1817

Species: *Nursia plicata* (Herbst, 1803) (Fig. 1A-B)

Synonymized names:

Cancer plicatus Herbst, 1803: 2-3, pl. 59, fig. 2.

Nursia plicata De Man, 1881: 129; Alcock, 1896: 180-181; Stimpson, 1907: 160; Stephensen, 1946: 70, fig. 6c; Titgen, 1982: 248 (in list); Yamanishi, 1988: 41; Sakai, 1999: 16, pl. 6b; Apel, 2001: 54; Naderloo and Sari, 2005: 34-35, fig. 5; Naderloo and Sari, 2007: 342; Dev Roy, 2013: 151 (in list); Dev Roy, 2015: 81 (in list); Dev Roy and Rath, 2017: 93 (in list); Naderloo, 2017: 102-104, figs. 14.21 g-h, 14.29, 14.31; Yasser and Naser, 2023: 115-117, figs. 2-3; Wong et al., 2021: 21-24, fig. 31a-b, pl. 6e; Wong et al., 2024: 41-42.

Nursia hardwickii Gee, 1926: 161.

Material examined: FRSACDB-78, 1♀ (CL = 11 mm, CW = 15 mm), (22°27'27.3"N 69°48'06.6"E) lower intertidal zone, Sikka reef, Gujarat, India: Coll: Piyush Vadher on 01 April 2025.

Diagnosis: Carapace pentagonal shaped, wider than long, with two semi-circular dorsally concave lobes on posterior margin. Carapace with distinct swelling in gastric, cardiac, and branchial regions, while urogastric and intestinal regions compressed. Front hardly noticeable beyond eyes, with a thickened granular edge. Carapace margin smooth and entirely covered with fine evenly distributed granules. Third maxillipeds, pterygostomian regions, thoracic sterna and proximal part of female abdomen distinctly granular. Chelipeds (P1) identical in size and armature, merus as long as carapace, entirely granulate; carpus as long as broad, covered with minute granules at upper and inner margin; merus longer than finger. Pereiopods (P2-P5) subequal in size and equal in structure, covered with dense setae, second and third Pereiopod (P2-P3) subequal, longer and P4-P5 decreasing gradually in length, Pereiopods (P2-P5), merus of each P2-P5 longer than broad, carpus and propodus longer than broad, dactylus of each P2-P5 ending with sharp tipped spine and pubescent.

Colouration: Carapace pale cream to light pinkish beige, claws pinkish orange, with a lighter, almost whitish tone towards the tips of the fingers, ambulatory reddish at merus and legs after carpus, propodus, and dactylus whitish.

Habitat: Previously, this species was reported from



Figure 1. *Nursia plicata* (Herbst, 1803), FRSACDB-78, female: (A) dorsal view, and (B) ventral view (scale = 10 mm).

sandy substrates mixed with clay and stones in the subtidal zone at depths ranging from 3 to 49 meters (Stephensen, 1946; Naderloo, 2017). In the present study, observations were made on a sandy-clay substrate in the lower intertidal zone at Sikka Reef.

Distribution in India: Gujarat (Present study); Maharashtra (Alcock, 1896; Dev Roy, 2013, 2015); Tamil Nadu (Alcock, 1896); Orissa (Alcock, 1896; Dev Roy and Rath, 2017).

Distribution in world: Iraq (Yasser and Naser, 2023); Kuwait (Apel, 2001); Persian Gulf (Alcock, 1896; Titgen, 1982; Naderloo, 2017); Iran (Stephensen, 1946; Naderloo and Sari, 2005; Naderloo and Sari, 2007); Pakistan (Alcock, 1896); East India or Indo-Malayan Archipelago (Herbst, 1803); China (De Man, 1881); Hong Kong (Alcock, 1896; Stimpson, 1907; Gee, 1926; Wong et al., 2021; Wong et al., 2024);

Japan (Yamanishi, 1988; Sakai, 1999).

Remarks: Taxonomical characters of the present specimen examined agree well with the detailed description given by Alcock (1896), Naderloo and Sari (2005), and Yasser and Naser (2023). *Nursia plicata* was reported by Alcock (1896) from the coast of Maharashtra, Tamil Nadu and Orissa. After approximately 129 years, this species has now been recorded again from the Indian coast, specifically from the Gulf of Kachchh, Gujarat.

Family: Xanthidae MacLeay, 1838

Genus: *Trichia* De Haan, 1839

Species: *Trichia indica* (Sankarankutty, 1968) (Fig. 2A-B)

Synonymized names:

Zalasius indica Sankarankutty, 1968: 351-352, pl. 1, fig. 4.

Trichia indica Guinot, 1976: 126-127, pl. 3, fig. 8; Ng and Chia, 1995: 438 (in list); Crab Database, 2025: Website.

Zalasius indicus Paterson et al., 2004: 261.

Material examined: FRSACDB-77, 1♀ (CL = 34.5 mm, CW = 38 mm), (22°30'32.7"N 69°47'07.4"E) 20-25 m depth, near Goose reef, Gujarat, India: Coll: Piyush Vadher on 07 January 2025.

Diagnosis: Carapace slightly longer than broad, hexagonal shaped, width to length ratio 1:0.91, regions well defined, most of dorsal surface heavily tomentose, covered by numerous rounded granules, frontal region narrow broader than orbit, bilobed with median part deflexed and almost touching epistome thereby separating antennular fossa of either side; frontal lobes not separated from inner angle of orbit. Antero-lateral margin strongly convex, without teeth but with tuberculated border. Antero-lateral border after orbit forming a concave shape, followed by uniformly convex tuberculated border, line of tubercles curving inwards and ending on other sides of cardiac region. Postero-lateral border short and more or less straight. Third maxillipeds subpediform, merus longer than broad; proximal part gaping between first and second sternal segments; carpus highly convex at inner surface, carpus bulbous; when maxillipeds

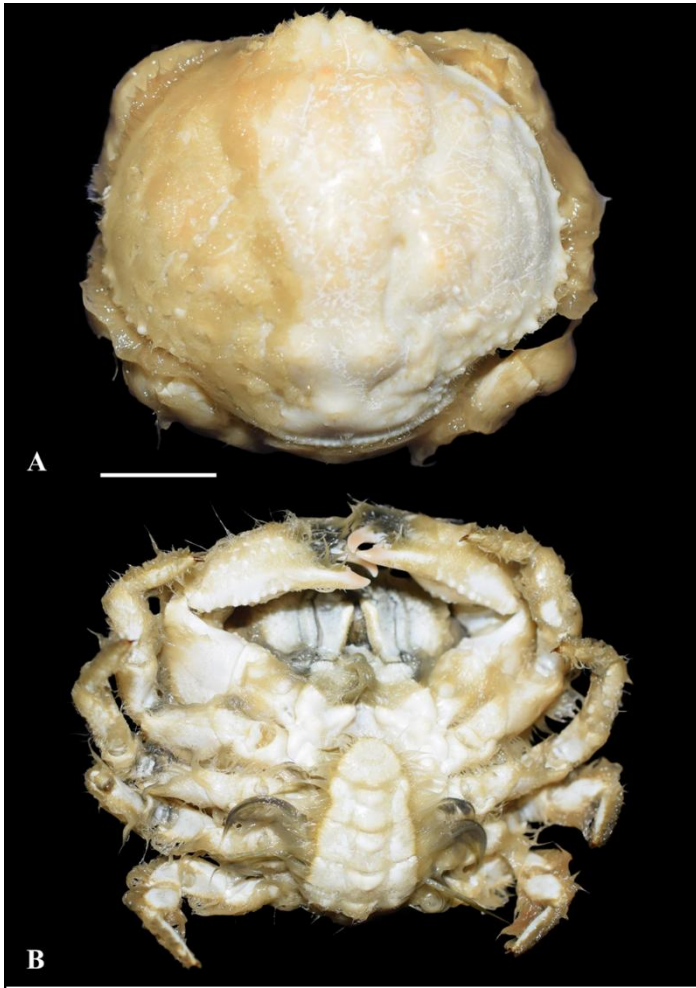


Figure 2. *Trichia indica* (Sankarankutty, 1968), FRSACDB-77, female: (A) dorsal view, and (B) ventral view (scale = 10 mm).

tightly appressed, only small rounded opening visible at upper part of buccal cavity, gap formed by median part of posterior margin of epistome and upper surface of carpus of third maxilliped. Outer surfaces highly pubescent, outer surface of ischium, merus and exopod with scattered rounded granules.

Chelipeds sub-equal in shape and similar in structure, outer surfaces with numerous rounded granules, merus slightly broader than long, tomentose at margin and upper surface with tuberculation; carpus sparsely tomentose with line of tubercle on inner side; propodus broader than long, shorter than movable finger, upper border with three rows of tubercles on inner side. Outer surface of propodus tuberculate, group of tubercles on inner side of propodus at proximal end. Ventral border of propodus with a longitudinal row of about six tubercles and eight

tubercles in left and right chelipeds, respectively. Fingers sharp, pointed with serrated cutting edges, fingers with wide gap when closed. Ambulatory legs (P2-P5) equal in structure, sparsely hairy, second pereopod (P2) longer and P3, P4 and P5 decreasing gradually in length, meri each longer than broad, carpi and propodi each longer than broad, dactyli each thin and long, ending with hook like claw. Sternal segment of cheliped (carpus) with three enlarged tubercles arranged in a triangle, two on outer and one on inner side; a deep groove between inner tubercles of either side through which project out long pleopods. Female abdomen with seven separate segments with a median broad convex ridge along entire length, except in last segment. Fourth segment broadest from where abdomen narrows distally, last segment conical, broader than long. Dorsal surface has a conspicuous absence of coarse granulation.

Colouration: The carapace is predominantly cream to light yellowish, appearing slightly pale orange toward the centre. The chelipeds (claws) cream to pale yellowish, tip of claw brownish. Dactyli of each pereopod whitish, ending in a dark brown to blackish tip.

Habitat: Previously, this species was captured using a tangle net on a muddy substrate in Ranong, Thailand (Paterson et al., 2004). In the present study, it was caught in a fisherman's lobster net operated at a depth of approximately 20 to 25 meters near the coral reefs adjacent to Goose Reef.

Distribution in India: Gujarat (Present study).

Distribution in world: Sri Lanka (Sankarankutty, 1968; Guinot, 1976; Ng and Chia, 1995); Thailand (Paterson et al., 2004; Crab Database, 2025).

Remarks: Taxonomical characters of the present specimen examined agree well with the detailed description given by Sankarankutty (1968) and Guinot (1976). De Haan (1839) described the new brachyuran crab genus *Trichia* (broader group of Brachygnathis decapods called short-jawed crustaceans), which included a single new species, *T. dromiaeformis*, in the fifth fascicle of the crustacean volume of von Siebold's Fauna Japonica. The genus *Trichia* was widely used in crustacean taxonomy until around

1930. Rathbun (1897) proposed the replacement name *Zalasius*, believing that *Trichia* De Haan, 1839 was preoccupied by the scarabaeid beetle genus *Trichius* Fabricius, 1775. However, her proposed change was largely disregarded by the scientific community at that time. Iredale (1930) regarded *Trichia* De Haan, 1839 as a junior homonym of *Trichia* Hartmann, 1840, based on the mistaken belief that De Haan's genus was published in 1841. As a result, he proposed *Macneillena* Iredale, 1930 as a replacement name. That same year, McNeill and Ward (1930) pointed out that *Zalasius* Rathbun, 1897 was a senior objective synonym of *Macneillena* Iredale, 1930, and accordingly adopted *Zalasius* as the valid name for the genus. Other carcinologists quickly followed their decision, and all four species described between 1938 and 1969 were placed under the genus *Zalasius* Rathbun, 1897. This name remained widely used until Guinot (1976) in her review of the genus clarified that *Trichia* De Haan had been published in 1839, preceding *Trichia* Hartmann, 1840. Consequently, she reinstated De Haan's original name, *Trichia* De Haan, 1839, as the valid one.

In Mollusca, the name *Trichia* Hartmann, 1840 is currently widely used for a group of European species within the family Hygromiidae Tryon, 1866. To preserve the usage of *Trichia* Hartmann, 1840 for mollusks, Prof. Dr. E. Gittenberger of the National Museum of Natural History in Leiden and Holthuis applied to the International Commission on Zoological Nomenclature, requesting that this name be given precedence over *Trichia* De Haan, 1839 (Holthuis 1996). As a result of these developments, the correct nomenclature in crustacean taxonomy now requires the use of the name *Zalasius* Rathbun, 1897 in place of *Trichia* De Haan, 1839 (Holthuis 1996). According to WoRMS (World Register of Marine Species), the proposed replacement of *Trichia* De Haan, 1839 is unnecessary, as *Trichia* De Haan has been recognized as a valid genus name since its original publication in 1839 (WoRMS, 2025).

Sankarankutty (1968) originally collected a single female specimen from Devipatnam, Palk Bay, India, and described it as a new species, naming it *Zalasius*

indica (now *Trichia indica*). However, the reported type locality must be considered erroneous, as Palk Bay lies between India and Sri Lanka. It is now understood that Sankarankutty's specimen was collected from the Palk Bay area in north-western Sri Lanka. Therefore, the corrected type locality of *Trichia indica* should be cited as Palk Bay, northwest Sri Lanka. This species closely resembles *T. dromiaeformis* De Haan, 1839, *T. horii* (Miyake, 1940), and *T. sakaii* (Balss, 1938) but can be clearly distinguished by the conspicuous absence of coarse granulation on the carapace (Sankarankutty, 1968).

Conclusion

In this study, two rare brachyuran crab species, *N. plicata* and *T. indica*, have been recorded for the first time from the coasts of Gujarat, India, respectively. They are significantly extending their known distributional range within India. *Nursia plicata* marks its first report from Gujarat waters, adding to earlier records from Maharashtra, Tamil Nadu, and Orissa, while *T. indica* represents only the third global record and the first confirmed occurrence from the Indian coastline. These findings not only contribute valuable new records to the marine biodiversity of Gujarat but also enhance the understanding of the biogeographic distribution of these two rare crab species.

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