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New Record of Two Species of False Crabs, *Pisidia gordoni* (Johnson, 1970) and *Porcellanella triloba* White, 1851(Decapoda: Anomura: Porcellanidae) from the Northeastern Coast of India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The present paper reports two species of false crab (Anomura: Porcellanidae) for the first time from the coastal waters of West Bengal, as well as from the entire northern east coast of India. A short diagnosis of these two species, *Pisidia gordoni* (Johnson, 1970) and *Porcellanella triloba* White,

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1851, is incorporated in this present communication with their distribution and habitat. The presence of these two species suggests the paucity of inventorisation and research on this groups of crustacean fauna and there is a need of extensive survey to investigate the proper diversity and distribution of porcelain crabs in the east coast of India.

Keywords: Anomura; Northeastern coast; porcellanid crabs; West Bengal.

1. INTRODUCTION

Porcelain crabs though looking similar with 'true crabs', but the first one easily differs from the latter in having much reduced fifth ambulatory legs, mostly hidden under the carapace and a rather long antennal flagellum. These are often termed 'false crabs' [1]. The family Porcellanidae Haworth, 1825, is diverse worldwide with about 280 species under 30 genera [2].

These are exclusively marine species, common in rocky intertidal shores but they also found inhabiting shallow sub-tidal zones, coral reefs and muddy substratum as well. Some species live commensally with sea pens, soft corals and sea anemones.

The family Porcellanidae is represented by a total of 34 species under 12 genera from Indian waters of which 16 species were recorded from the East coast of India [3]. Interestingly all these 16 species were reported from the coast of Tamil Naduand only 4 are reported from the Waltair coast of Andhra Pradesh [4]. There is no record of the family Porcellanidae from the entire Odisha and West Bengal coast [5,3].

Recently, one of the authors (S. Mitra) collected four specimens of porcelain crabs from the Digha coast of West Bengal. Those specimens were found attached on a bamboo floating in the sea. After careful examination, it was identified as *Pisidia gordoni* [6].

Another species of porcellanid crab, *Porcellanella triloba* White, 1851, was identified from the unnamed collections of the Crustacea division, Zoological Survey of India, Kolkata. This was collected from the 'Sand heads' of the mouth of river Hooghly, West Bengal, in January, 1928.

Both of these false crabs are new addition to the fauna of the West Bengal coast but also the first record from the entire northeastern coast along the political boundaries of Andhra Pradesh to the West Bengal coastal area.

Morphological identification characters with diagrams, photographs and distribution are provided for these species.

2. METHODOLOGY

Four specimens of *Pisidia gordoni* were collected by handpicking from a drifted bamboo on the Digha sea shore, Bay of Bengal; collected samples were preserved in 70% alcohol. Whereas the other specimens (*Porcellanella triloba*) were collected by the investigating ship - P. V. Lady Fraser, from the sub-tidal mud of the Hooghly River mouth, and were preserved in 70% alcohol. Specimens were photographed with Nikon P900 camera, identification was done using Leica EZ4 Stereozoom Binocular Microscope by following the original and subsequent description of those species [1,7,8] and morphometric measurements were taken by Slide calipers in millimeters (mm). Abbreviations used as CL: carapace length, CW: carapace width, ZSIK: Zoological Survey of India, Kolkata. All the specimens were registered and deposited in the National repository at the Crustacea section of the Zoological Survey of India, Kolkata.

3. RESULTS

During a recent survey and from the unnamed backlog collections of the ZSI Crustacea section, two species of porcellanid crab, namely *Pisidia gordoni* and *Porcellanella triloba* revealed as a new record to the Northeastern coast of India.

Systematic account
Phylum: Arthropoda von Siebold, 1848
Subphylum: Crustacea Brünnich, 1772
Class: Malacostraca Latreille, 1802
Order: Decapoda Latreille, 1802
Infraorder: Anomura MacLeay, 1838
Superfamily: Galatheoidea Samouelle, 1819
Family: Porcellanidae Haworth, 1825
Genus: *Pisidia* Leach, 1820

1. *Pisidia gordoni* [6]
(Fig. 1A, 2A-C)

Porcellana (allied to *serratifrons*): Miers, 1884: 277
Porcellana serratifrons: Henderson, 1888: 110 (part); Grant & McCulloch, 1906: 39, 40; Nobili, 1906b: 75; Sankarankutty, 1963: 278, Fig.3; McNeill, 1968: 34;
Porcellana spinulifrons: Gordon, 1931: 530, Figs.4C, 5;
Pisidia spinulifrons: Sankolli, 1966: 307, Fig.7;
Porcellana (*Pisidia*) *gordoni*: Johnson, 1970: 29, Fig.3
Pisidia gordoni: Haig, 1973: 283; Haig, 1978: 707; Haig, 1981: 277; Tirmizi *et al*., 1989: 34, Fig.21; Morgan, 1990: 32; Yang & Sun, 1990: 4, Figs.5, 6; Haig, 1992: 318, Fig.14; Komai, 2000: 366; Siddiqui & Kazmi, 2003: 88

Type locality: Nanas channel, north of PulauUbin, Singapore.

Material examined: Registration no. ZSIK C9997/2; 4 exs; CL: 4.46 mm to 5.12 mm; CW: 4.49 mm to 5. 18 mm; collected from Digha, East Midnapore district, West Bengal; 27/xi/2022; collector name: S. Mitra

Diagnosis: Carapace length is almost equal to its width. The frontal part is distinctly divided into 3 lobes, separated by deep clefts. The median lobe is wide, rounded and serrated distally. The lateral lobes are slightly inwardly curved, ending into a sharp spine-like structure at the tip with few spinules present at the inner margin just below the tip. The antero-lateral margin of the carapace is convex and the postero-lateral margin is almost straight resulting in a sub-ovate structure. Eyes large, orbits well defined with sharp spine at the outer edge. The epibranchial region has 3 to 4 poorly developed sub-equal spines on each side. Dorsal surface is rough, well-marked with numerous, small, transverse lines. Protogastric ridge well defined, branchial ridge serrated. The first basal segment of antennae is granular with a short spine, which is movable. The flagellum is slightly longer than twice the length of the carapace. Left cheliped is longer than the right; merus bears a spiny projection at the antero-distal end; carpal length is twice its breadth, bearing two irregular acute spiny projections inwardly and two outwardly; three longitudinal crests along the length of chelae among which frontal two are serrated. The pereopods are long and slender with hooked tips and scattered setae. Propodus has 2 spinules on the upper part, 1-2 medially and a bunch at the terminal end. Dactylus has 3-4 movable spinules at the inner margin.

Distribution in India: West Coast: Gujarat [9,10,11]; Maharashtra [10,12] and Goa [7]. East coast: Tamil Nadu: Krusadai Island [13] (as *Porcellena serratifrons*), Gulf of Mannar(as *Porcenella spinulifrons*) [14]; West Bengal (Present Record)

Global distribution: It has been reported from Mozambique, Madagascar and Pakistan [7].

Fig. 1. A. Overall Habitus of *Pisidia gordoni* (Johnson, 1870); B-D. *Porcellanella triloba* White, 1851: B. Overall Habitus, C. Third Pereopod, D. Right Cheliped

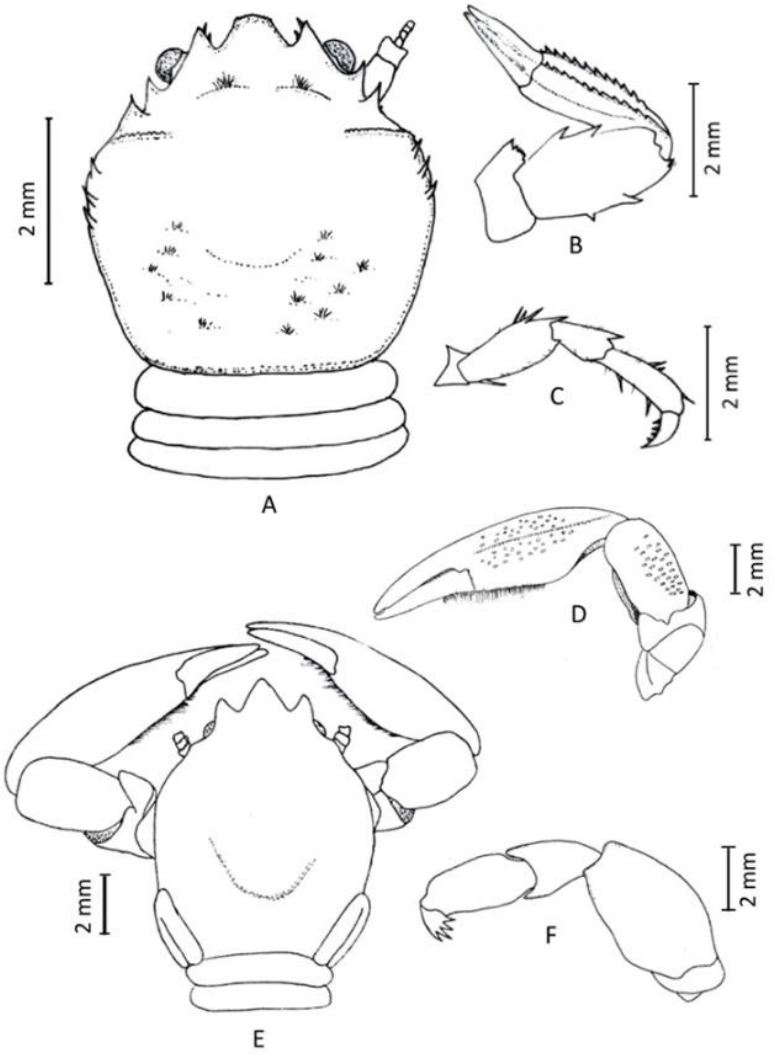

Fig. 2. A-C. *Pisidia gordoni* (Johnson, 1870) A. Carapace B. Right Cheliped, C. Right 3rd Pereopod; D-F. *Porcellanella triloba* White, 1851 D. Right Cheliped, E. Overall Habitus, F. Left 3rd Pereopod

Genus: *Porcellanella* White, 1851

2. *Porcellanella triloba* White, 1851
(Fig. 1, B-D; 2, D-F)

Porcellanella triloba White, 1851: 394, pl. 5–Figs. 2, 2a—Haig, 1965: 111; 1981a: 287; 1992: 323, Fig. 19. —Nakasone &Yu, 1987: 107, Fig.1, pl. 1. —Hsieh *et al*., 1997:347, Figs. 32F, 39.

Porcellanella picta Stimpson, 1858: 243; 1907: 193, pl. 22–Fig. 6—Miyake, 1943: 134, Figs. 54–55.

Type locality: Off Cape Capricorn, Queensland, Australia.

Material examined: Registration no. ZSIK/CR8; 2 exs; CL:10.40 mm -12.21 mm; CW: 7.98 mm - 9.37 mm; collected from 'Sand heads' of Hooghly river mouth, West Bengal; January, 1928; collector: Captain Parks of 'Lady Fraser' investigating ship.

Diagnosis: Carapace distinctly longer than broad, branchial margins somewhat convergent posteriorly. The ratio of carapace length to width is about 1.30. Carapace is widest at the line of cheliped coxae. Dorsally the carapace profile rises just behind the frontal lobes and extends nearly straight backwardly. Carapace with interrupted and uninterrupted transverse ridges on the anterior region.In one specimen,

transverse striation is more obvious; in the other specimen, those striations are not prominent. Front trilobed, the median lobe is longer, broader, and sub-acute than the lateral lobes. Lateral lobes separated from the median lobe by a U-shaped groove, inner margin of the lateral lobe runs obliquely whereas the outer margin is gently convex. Concave carapace margin surrounds the eye peduncle. Chelipeds are sub-equal, the left one being the robust. Cheliped merus with a distinct, bluntly sub-triangular lobe on the dorso flexor margin distally; carpus relatively shorter than merus; palm of cheliped with tufts of dense plumose setae along the midline on the distal half of ventral surface. Ambulatory legs with sparse plumose setae; dactylus with 4 distinct teeth, proximal second tooth strongest.

Distribution in India: East coast: Tamil Nadu [8,14,15], West Bengal (Present record); West Coast: Gujarat(as *Porcellanella picta* Stimpson, 1858) [16].

Global distribution: East coast of Africa and the Persian Gulf across the Indian Ocean to the East Indian archipelago, the coast of tropical Australia and north to Honshu, Japan [1].

4. DISCUSSION

Porcelain crabs have not been studied adequately along the coasts of India. Recent discoveries and records [17,2] suggest this assumption. In the present report the *Pisidia gordoni* (Johnson, 1870) was collected recently.

But, *Porcellanella triloba* White, 1851 was collected from the sand heads of West Bengal in 1928, hence the present status of the second species should be investigated further. However, *Porcellanella triloba* White, 1851 was found to be commensally associated with 'Sea pens', *Pteroeides esperi* Herklots, 1858 in the Gulf of Mannar (Sanakarankutty, 1961)and interestingly that species of sea pen is not very rare in the sub-tidal muddy substratum along the mouth of Hooghly River and adjacent coast of Digha, of West Bengal [18,19,20].

5. CONCLUSION

The present study recorded two species of porcelain crabs from West Bengal; previously those species were restricted only in Tamil Nadu, along the east coast of India. This range-extension of distribution of these species has a great significance in respect to zoo-geographical point of view. The present report also indicates that there's a need of extensive surveys and inventorisation regarding this group of crustaceans along the coast of West Bengal as well as the Northern East coast of India.

There is a scope of study to investigate the present status and habitat ecology of the *Pisidia gordoni* (Johnson, 1870), and *Porcellanella triloba* White, 1851 [21], along the coast of West Bengal as well as entire northeast coast of India. Molecular studies must be encouraged to establish a molecular data base of the coastal biodiversity of India [22].

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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