

# First record of three species of spider crabs from west coast of India (Crustacea: Decapoda: Brachyura)

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## Abstract

The present study records occurrence of three species of spider crabs: *Hyastenus hilgendorfi* De Man, 1887 (Epialtidae), *Hyastenus spinosus* A. Milne-Edwards, 1872 (Epialtidae) and *Paramaya mulli* Ng, Prema & Ravichandran, 2018 (Majidae) for the first time from the west coast of India. These species were earlier reported from coastal areas of east coast of India. The diagnostic characteristics and some remarks on the taxonomy of each species are given in this paper.

**Keywords:** brachyura, new record, Saurashtra coast, Gujarat

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## 1 Introduction

The coastline of India is around 7516.6 km long, which is endowed with diversely rich marine habitats (Ahmad 1972). The coastline of India can be divided into two major coastal regions: east and west coast. Both coastal regions are quite different in terms of geomorphology and coastal habitat type (Trivedi et al. 2018). Amongst, different crustacean fauna inhabiting Indian coastline, diversity of brachyuran crabs is studied well (Henderson 1893; Alcock 1895; Pillai 1951; Chhapgar 1957a, b; Gravely 1927; Dev Roy 2013, 2015; Trivedi et al. 2018). Trivedi et al. (2018) compiled checklist of marine brachyuran crabs of Indian waters and recorded occurrence of 910 species belonging to 361 genera and 62 families. Trivedi et al. (2018) have also commented that east coast (803 species) is highly diverse in marine brachyuran crabs species as compared to west coast (446 species) of India.

In the present study, we recorded occurrence of three species of spider crabs belonging to family Epialtidae (*Hyastenus hilgendorfi* De Man, 1887; *H. spinosus* A. Milne-Edwards, 1872) and Majidae (*Paramaya mulli* Ng, Prema & Ravichandran, 2018) for the first time from West coast of India. These species were previously recorded from east coast of India.

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## 2 Materials and Methods

The specimens were collected from by-catch discarded by commercial fishing trawlers at Sutrapada fishing harbour located on Saurashtra coast, Gujarat state, India. Hand picking method was adopted for specimen collection. The specimens were cleaned, photographed, preserved in 70% alcohol and deposited in the Zoological Reference Collection (LFSc.ZRC), Department of Life Sciences, Hemchandracharya North Gujarat University, Patan, Gujarat, India. Size of the specimen was recorded in millimetre (mm) for CW: carapace width (at base of spines) and PCL: post-pseudorostral carapace length (from the base of spines to the posterior carapace margin excluding median posterior spines). Classification of the species was adopted from Ng et al. (2008). Following abbreviations was used: coll.: specimen collector.

## 3 Results and Remarks

### Systematics

Family Epialtidae MacLeay, 1838

Sub family Pisinae Dana, 1851

Genus *Hyastenus* White, 1847

#### ***Hyastenus hilgendorfi* De Man, 1887 (Figs. 1A, B)**

*Hyastenus hilgendorfi* De Man, 1887: 14-18, figs. 3, 4.

*Hyastenus hilgendorfi*—Alcock 1895: 209-210; Buitendijk 1939: 242, figs. 9, 10; Griffin 1968: 103, Fig. 1; Ng et al. 2008: 103 (in list); Naderloo 2017: 131, figs. 16.4d, 16.7, 16.8.

**Material examined.** 1 male (CW 21 mm, PCL 29 mm), LFSc.ZRC-28, trawl by-catch, Sutrapada (20°50'15.6"N 70°28'45.5"E), Gujarat state, India, 8 February 2017, coll. J. Trivedi.

**Type locality.** Mergui Archipelago.

**Description (modified from Griffin(1968)).** Carapace pyriform, covered with setae; rostral horns slender, divergent for entire length, horizontal in lateral view; gastric and cardiac regions strongly elevated, gastric region with low blunt apical tubercle; cardiac region with apex bluntly rounded, slightly lower than gastric region; mesogastric region with a low blunt anterior tubercle; protogastric region with a tubercle laterally; urogastric region flat, lacking tubercles; hepatic region with small low tubercle on lateral margin; branchial region inflated; lateral margin with up curved epibranchial spine at level of pereopod 3; dorsal surface with 4 short, conical tubercles in longitudinal row. Cheliped slender, with scattered bulbous setae; merus slightly shorter than propodus; carpus with 2 tubercles on lateral margin; propodus smooth; dactylus tooth bearing, slightly larger than pollex, occlusal margins crenulated, proximal gape moderate. Ambulatory legs slender; sparsely covered with short simple setae and short, club-like setae. Male abdomen with 6 free somites and telson, surface sparsely covered with short bulbous setae; somites 2 and 3 widest; telson triangular, as long as wide, margins straight, apex rounded.

**Remarks.** The present specimen agrees with the description and figures provided by Griffin (1968). *Hyastenus hilgendorfi* shows some similarity with *H. auctus* Rathbun, 1916 but varies from latter species in having tubercles around branchial margin. The species is so far reported from East Africa, Red Sea, Persian Gulf, India, Thailand, Indonesia, Philippines, Australia and Hawaii (Griffin 1968; Naderloo 2017). In India, the species is so far reported from Tamil Nadu (Henderson 1893; Griffin 1974; Dev Roy 2015) and Andaman and Nicobar Islands (Alcock 1895; Griffin 1974; Dev Roy 2008) located on East coast of India. In the present study, it is reported from Gujarat state which is located on West coast of India.

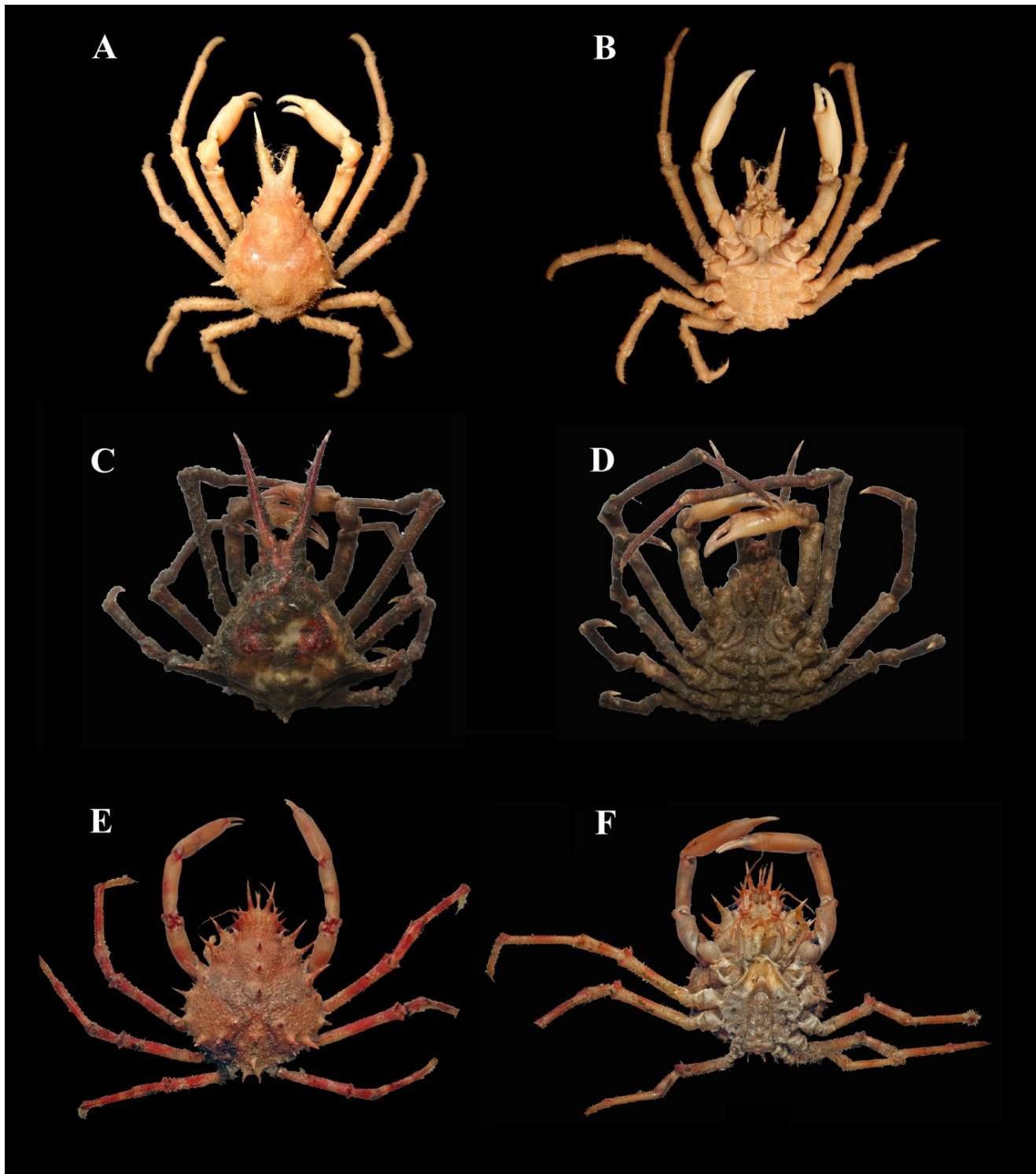


Figure 1. A, B, *Hyastenus hilgendorfi* De Man, 1887, male (LFSc.ZRC-28), CW 21 mm, PCL 29 mm. C, D, *Hyastenus spinosus* A. Milne-Edwards, 1872, male (LFSc.ZRC-27), CW 37 mm, PCL 43 mm. E, F, *Paramaya mulli* Ng, Prema & Ravichandran, 2018, male (LFSc.ZRC-151), CW 48.53 mm, PCL 58.50 mm. A, C, E, dorsal view; B, D, F, Ventral view.

***Hyastenus spinosus* A. Milne-Edwards, 1872 (Figs. 1C, D)**

*Hyastenus spinosus* A. Milne-Edwards, 1872: 250

*Hyastenus spinosus* — Alcock 1895: 211; Barnard 1950:53–54, fig. 11f; Griffin 1974: 16; Griffin

and Tranter 1974: 171; Ng et al. 2008: 103 (in list); Naderloo 2017: 133, figs. 16.8, 16.10.

**Material examined.** 1 male (CW 37 mm, PCL 43 mm); LFSc.ZRC-27, trawl by-catch, Sutrapada (20°49'53"N, 70°29'17"E), Gujarat state, India, 26 April, 2014, coll. J. Trivedi.

**Type locality.** Fiji and Mozambique.

**Description (modified from Barnard, 1950).** Carapace pyriform, covered with setae, rostral horns slender, divergent for entire length, deflected at tips, horizontal in lateral view (distally curving downwards), longer than half of postrostral carapace length; orbital eave moderately expanded; postorbital lobe large, anteriorly cupped; dorsal orbital hiatus keyhole-shaped; gastric and cardiac regions strongly elevated; mesogastric region with a large sharp tubercle at the summit and a spine on the anterior slope; cardiac region with blunt rounded tubercle; urogastric region flat, lacking tubercles; branchial margins without any tubercle; large spine on epibranchial margins of carapace. Cheliped slender, with scattered bulbous setae; dactylus with small tooth proximally, occlusal margins crenulate, proximal gape small. Ambulatory legs slender; sparsely covered with short simple setae and short, club-like setae. Male abdomen with 6 free somites and telson, surface sparsely covered with short bulbous setae; somites 2 and 3 are the widest. Telson triangular, as long as wide, apex rounded.

**Remarks.** The present specimen agrees with the description and figure given by Barnard (1950). *Hyastenus spinosus* is morphologically very similar to *H. aries* but varies from the latter species in having long intestinal and epibranchial spines (Griffin & Tranter 1986). The species is so far reported from UAE, South Africa, Mozambique, Somalia, Gulf of Aden, Red Sea, Gulf of Oman, Pakistan, India, Sri Lanka, Philippines, Singapore, Australia and Fiji (Barnard 1950; Griffin & Tranter 1974; Apel 2001; Naderloo et al. 2015; Naderloo 2017). In India, the species is so far reported from Tamil Nadu (Griffin 1974; Dev Roy 2015); Andaman and Nicobar islands (Griffin 1974) located on East coast of India. In the present study, it is reported from Gujarat state which is located on West coast of India.

Family Majidae Samouelle, 1819

Genus *Paramaya* De Haan, 1837

***Paramaya mulli* Ng, Prema & Ravichandran, 2018 (Figs. 1E, F)**

*Paramaya mulli* Ng, Prema & Ravichandran, 2018: 77–86, figs 1, 2A–C, 3A–C, 4A, B, 5A–D, H, 6, 7.

*Maia spinigera* Alcock, 1895: 239; Alcock and Anderson 1898: pl. 34, fig. 3.

"*Maja spinigera*" Ng and Richer de Forges, 2015: 156, fig. 22B–D.

**Material examined.** 1 male (CW 48.53 mm, PCL 58.50 mm); LFSc.ZRC-151, trawl by-catch, Sutrapada (20°50'15.6"N 70°28'45.5"E), Gujarat state, India, 8 February 2017, coll. J. Trivedi.

**Description (modified from Ng et al. 2018).** Carapace ovate; dorsal surface convex, granular; pseudorostral horns relatively short, diverging; eyes relatively long, slender; intercalated tooth on carapace relatively broad, separated from supraorbital eave and postorbital spine by wide gaps; postorbital spine strong; basal antennal article longer than broad, rectangular; surface with several low tubercles, with 2 spines distally; proximal outer angle acute; outer surface of third maxilliped covered by setae; gastric and branchial regions prominent clearly marked by distinct grooves, median row with 5 spines: 3 gastric, 1 cardiac, 1 intestinal; posterior carapace margin with 2 long median spines; hepatic, lateral and branchial spines long; epistome quadrate; anterior margin lobe prominent with rounded apex, granular; surface of thoracic sternum with less setae, marked with numerous prominent rounded granules. Chela of adult male with distinct carina on dorsal and ventral margins. Ambulatory legs relatively long, slender; covered with long setae, except the corneous tip of dactylus; merus with long dorsal subdistal spine. Male abdomen with

6 free somites and telson.

**Remarks.** The present specimen agrees with the description and figures given by Ng et al. (2018) but few differences were observed in: gastric region is more elevated (versus less elevated in *P. muli*, see Ng et al. 2018, figs. 2A, 3A); base of intercalated tooth is broader (versus less broader in *P. muli*, see Ng et al. 2018, figs. 4A); gaps beside the tooth are wider (versus narrow in *P. muli*, see Ng et al. 2018, figs. 4A); large lobes with rounded apex on anterior margin of epistome (versus small lobes in *P. muli*, see Ng et al. 2018, figs. 5A). The species is so far reported from Pakistan (Alcock 1895; Alcock and Anderson 1898) and India (Ng et al. 2018). In India, the species is recorded from Tamil Nadu (Ng et al. 2018) located on east coast of India and now reported from Gujarat state which is located on west coast of India.

## Conflict of interests

The authors declare that they have no conflicts of interest.

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## References

- Ahmad, E. (1972). Coastal Geomorphology of India. Orient Longman, New Delhi.
- Alcock, A. (1895). Materials for a carcinological fauna of India, 1.The Brachyura Oxyrhyncha. Journal of the Asiatic Society of Bengal, Calcutta, 64, 157–291.
- Alcock, A. & Anderson A.R.S. (1898). Illustrations of the Zoology of the Royal Indian Marine Survey Ship Investigator, under the command of Commander T. H. Heming, R.N. Fishes. Part V, Plates XVIII–XXIV. Crustacea.-Part VI, Plates XXXIII–XXXV. Mollusca. Part H, Plates VII–VIII. Published under the Authority of Captain W. S. Goodridge, R.N., Director of the Royal Indian Marine, Calcutta.
- Barnard, K.H. (1950). Descriptive catalogue of South African decapod Crustacea (crabs and shrimps; mantis shrimps). Annals of the South African Museum, 38, 1–837.
- Buitendijk, A.M. (1939). The Dromiacea, Oxystomata and Oxyrhyncha of the Snellius Expedition. Temminckia, 4, 223–276.
- Chhapgar, B.F. (1957a). On the Marine crabs (Decapoda: Brachyura) of Bombay State, part 1. Journal of Bombay Natural History Society, 54, 399–439.
- Chhapgar, B.F. (1957b). On the Marine crabs (Decapoda: Brachyura) of Bombay State, part 2. Journal of Bombay Natural History Society, 54, 503–549.
- Dev Roy, M.K. (2008). An annotated checklist of mangrove and coral reef inhabiting Brachyuran crabs of India. Records of Zoological Survey of India, Occasional Paper, 289, 1–212.

- Dev Roy, M.K. (2013). Diversity and distribution of marine brachyuran crab communities inhabiting west coast of India. In: Venkatraman, K., Sivaperuman, C. & Raghunathan, C. (Eds.), Ecology and Conservation of Tropical Marine Faunal Communities. Part 1. Springer, Berlin, pp.147–169.
- Dev Roy, M.K. (2013). Conservation concerns on crustacean fauna of India. *Journal of Environment and Sociobiology*, 12, 77–98.
- Gravely, F.H. (1927). Decapoda and Stomatopoda. In: The littoral fauna of Krusadai Island in the Gulf of Manaar. *Bulletin of Madras Government Museum, new series (Natural History)*, 1, 141–155.
- Griffin, D.J.G. (1968). *Hyastenus hilgendorfi* De Man, a majid spider crab new to Australia. *Australian Zoologist*, 15, 103–106.
- Griffin, D.J.G. (1974). Spider crabs (Crustacea: Brachyura: Majidae) from the International Indian Ocean Expedition, 1963-1964. *Smithsonian Contributions to Zoology*, 182, 1–35.
- Griffin, D.J.G & Tranter, H.A. (1974). Spider crabs of the family Majidae (Crustacea: Decapoda: Brachyura) from the Red Sea. *Israel Journal of Zoology*, 23, 162–198.
- Griffin, D.J.G & Tranter, H.A. (1986). The Decapoda Brachyura of the Siboga Expedition. VIII. Majidae. *Siboga Expeditie Monographie*, 39(C4), 1–335.
- Henderson, J.R. (1893). A contribution to Indian carcinology. *Transactions of Linnaean Society London, Series 2. Zoology*, 5, 325– 458.
- Man, J.G. De. (1887–1888). Report on the podophthalmous Crustacea of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. *Journal of the Linnaean Society, Zoology*, 22, 1– 312.
- Naderloo, R. (2017). Atlas of crabs of the Persian Gulf. Springer, Cham, 440 pp.
- Naderloo, R., Ebrahimnejad, S. & Sari A. (2015). Annotated checklist of the decapod crustaceans of the Gulf of Oman, northwestern Indian Ocean. *Zootaxa*, 4028, 397– 412.
- Ng, P.K.L., Guinot, D. & Davie, P.J.F. (2008). Systema Brachyurorum, part I. An annotated checklist of extant brachyuran crabs of the world. *Raffles Bulletin of Zoology Supplement*, 17, 1– 286.
- Ng, P.K.L., Prema, M. & Ravichandran, S. (2018). A New Species of Deep-Water Spider Crab of the Genus *Paramaya* De Haan, 1837 from the Bay of Bengal, India (Crustacea, Brachyura, Majidae). *ZooKeys*, 769, 77– 88.
- Ng, P.K.L. & Richer De Forges, B. (2015). Revision of the spider crab genus *Maja* Lamarck, 1801 (Crustacea: Brachyura: Majoidea: Majidae), with descriptions of Seven new genera and 17 new species from the Atlantic and Indo-West Pacific. *Raffles Bulletin of Zoology*, 63, 110– 225.
- Pillai, N.K. (1951). Decapoda (Brachyura) from Travancore. *Bulletin of Central Research Institute*, C2(1), 1– 46.
- Trivedi, J. N., Trivedi D. J., Vachhrajani, K. D. & Ng, P. K. L. (2018). An annotated checklist of the marine brachyuran crabs (Crustacea: Decapoda: Brachyura) of India. *Zootaxa*, 4502, 1–83.