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### FIRST RECORD OF TWO RARE BRACHYURAN CRABS:

### *DRACHIELLA MORUM* ALCOCK, 1896 AND *QUADRELLA MACULOSA* ALCOCK, 1898 ALONG THE TAMIL NADU COAST, INDIA

Chinnathambi Viswanathan, Sampath Goutham, Vijay Kumar Deepak Samuel, Pandian Krishnan, Ramachandran Purvaja & Ramachandran Ramesh

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## FIRST RECORD OF TWO RARE BRACHYURAN CRABS: *DRACHIELLA MORUM* ALCOCK, 1896 AND *QUADRELLA MACULOSA* ALCOCK, 1898 ALONG THE TAMIL NADU COAST, INDIA

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**Abstract:** The present report describes the first record of two brachyuran crabs, *Drachiella morum* Alcock, 1896 and *Quadrella maculosa* Alcock, 1898 along the coast of Tamil Nadu, India. The morphological characters of the specimens are described and discussed. Among the two crabs, *Q. maculosa* was previously recorded only in the Andaman & Nicobar Islands.

**Keywords:** Crab, *Drachiella morum*, morphological characters, *Quadrella maculosa*.

In recent years, biodiversity research has gained significant momentum owing to the decline of flora and fauna worldwide. Reporting the occurrence of a rare species is, thus, very important in order to update the country's biodiversity database. The brachyuran crabs of the family Aethridae Dana, 1851 is a small group with 37 species under seven genera worldwide (Davie & Fransen 2015). Some members of the Aethridae (*Actaeomorpha* and *Drachiella*) have long been associated with the family

Leucosiidae (Ng et al. 2008). The family Trapeziidae Miers, 1886 are known as obligate commensals of corals throughout the Indo-Pacific and eastern Pacific regions (Castro et al. 2004). Trapeziidae has 43 species belonging to three subfamilies and seven genera (Davie & Türkay 2009). Both Aethridae and Trapeziidae are least studied from Indian waters since only three species of aethrids and nine species of trapezids are known from India. Previously, aethrids were reported in 1896 and 1934 (Alcock, 1896; Chopra, 1934); thereafter, no additional observation from the Indian coast has been made in the scientific reports, whereas a few trapezids were reported from Rameshwaram and Andaman Islands (Alcock 1898; Sankarankutty 1961, 1962, 1966; ZSI 2012).

In the present study, we report an Aethridae crab, *Drachiella morum* and a Trapeziidae crab *Quadrella maculosa* for the first time from Tamil Nadu, southeastern coast of India. The former was previously recorded in

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**Competing interests:** The authors declare no competing interests.

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Odisha (Alcock 1896) and West Bengal (Chopra 1934) and the latter was reported only in the Andaman Islands (Alcock 1898; ZSI 2012).

#### MATERIALS AND METHODS

During the field survey, one crab belonging to the species, *D. morum* (female) from Kasimedu fishing harbour and two crab individuals belonging to the species, *Q. maculosa* (male, female) from Kottivakkam fish landing centre of Tamil Nadu, southeastern coast of India, were collected. The former was collected from a trawl bycatch while the latter was collected from a gill net. Species identification of the collected specimens was made by following the descriptions of Alcock (1896, 1898) and Galil (1986). The collected specimens were deposited in the Marine Biological Regional Centre (MBRC), Zoological Survey of India (ZSI), Chennai.

Order Decapoda Latreille, 1802

Family Aethridae Dana, 1851

Genus *Drachiella* Guinot, in Serène & Soh, 1976

#### *Drachiella morum* Alcock, 1896 (Image 1)

Synonyms: Holotype. *Actaeomorpha morum* Alcock 1896: 172–173. pl. VIII, fig. 3; Ihle, 1918: 308.

*Actaeomorpha morum* Chopra 1934: 480–481; Edmonson 1935: 20; Sakai 1937: 116, text-fig. 13, 1965: 35, pl. 15, fig. 3; Serene 1954: 458, pl. 7 and text-fig. 1,2; Zarenkov 1969: 16, fig. 1(1); Takeda & Miyake 1970: 218.

"Aff. *Oreophorus*" *morum*, Guinot 1966: 757.



Image 1. Dorsal view of *Drachiella morum*.

*Oreophorus rugosus* Yokoya 1933, not *O. rugosus* Stimpson 1858; *vide* Takeda & Miyake (1970).

Type locality: Ganjam coast, India (Alcock 1896).

Materials examined: MBRC/Reg No: D1-511, 07 September 2015, 1 female, from trawl net hauled at a depth of 20–30 m, and landed at Chennai Kasimedu fishing harbor, Bay of Bengal, Tamil Nadu, India, coll. Goutham Sampath.

Measurements: Carapace width 10.7mm; carapace length 8.6mm (details in Table 1).

Description: Carapace broader than long, quite oval. The entire surface of the body and appendages are closely covered with vesiculous granules. The carapace as a whole is segmented and isolated into regions from a broad marginal ring by sculptured grooves; a narrow bridge alone connecting the front to the gastric regions. The segmented regions are elegantly isolated from each other by a) two obliquely-longitudinal channels that cut off the acutely triangular gastro-cardiac region from the reniform branchial regions, and b) a transverse channel that cuts off the semi-oval intestinal region – the channels being all connected to the marginal ring. The orbits are spherical and are entirely closed out from the antennulary fossettes, the infra-orbital lobe being in close contact with the frontal lobes. The basal antennal segment is fused with the infra-orbital lobe, but the antennal flagellum is distinct. The chelipeds and legs are closely crowded with large granules. The carpus and propodus are covered with spiniform granules. Merus in the last pair of legs is also spiniform on the posterior region.

Colour: Orange brown colour in fresh specimen.

Distribution: India: Odisha and West Bengal (Alcock 1896), Tamil Nadu, India (present study); Japan (Yokoya 1933): Misaki (Sakai 1937), Sagami Bay (Sakai 1965), Kii Nagashima and Tosa Bay (Sakai 1976); East China Sea (Takeda & Miyake 1970a); South China Sea (Dai & Yang 1991); Vietnam, Thailand and Philippines (Serène & Vadon 1981; Chen 1989).

Remarks: *Drachiella morum* was first reported as *Actaeomorpha morum* by Alcock (1896). Later, Guinot (1966) removed the species from *Actaeomorpha* and classified it under *Oreophorus*. Serene & Sow (1976) however, included the species under *Drachiella* with clear illustrations. *Drachiella* was long associated with the family Leucosiidae (Ng et al. 2008).

Order Decapoda Latreille, 1802

Family Trapeziidae Miers, 1886

Genus *Quadrella* Dana, 1851

***Quadrella maculosa* Alcock, 1898 (Image 2)**

Synonyms: Holotype. *Quadrella coronata* var. *maculosa* Alcock, 1898: 226

*Quadrella coronata* var. *maculosa* Alcock & Anderson, 1899, figures 2, plate 38.

*Quadrella maculosa* Rathbun, 1911: 235; Guinot 1967: 285; Serene 1968: 89; Garth 1969: 188; Serene 1973a: 204, figures 4, 9, 20–22, plate 3; 1975: 513; Serene et al. 1974: 24; Serene 1984: 288, figure 194, plate 41, figure E; Galil 1986c: 285, figures 5 C–F; Galil and Clark 1990: 372; Allen & Steene 1994: 162; Colin & Arneson 1995: 214, figure 1007.

*Quadrella cyrenae* Ward 1942: 45, figures 5,6, plate 3; Michel 1964: 30; Guinot 1967: 275.

Type locality: The Andaman Islands, India (Alcock 1898).

Materials examined: MBRC/Reg No: D1-512, 04 January 2016, 1 male, and 1 female gill net, Kottivakkam fish landing centre, Bay of Bengal, Tamil Nadu, India, coll. Goutham Sampath.

Measurements: Carapace width 4.8mm (male), 4.5mm (female); carapace length 3.8mm (male), 3.9mm (female) (details in Table 1).

Description: Carapace hexagonal, slightly wider than long; anterior margin with conspicuous triangular, teeth-like lobes. Polygonal markings in carapace and propodus of chelipeds. Epibranchial spine prominent, projecting outward. Chelipeds are massive. Merus little shorter than the carapace, and strongly granulate



Image 2. Dorsal view of *Quadrella maculosa*.

Table 1. Morphometric characters of the identified crabs (mm).

| Characters                  | <i>Drachiella morum</i><br>(n = 1) | <i>Quadrella maculosa</i><br>(n = 2) |
|-----------------------------|------------------------------------|--------------------------------------|
| Carapace length             | 8.6                                | 3.8, 3.9                             |
| Carapace width              | 10.7                               | 4.8, 4.5                             |
| Frontal width               | 1                                  | 2.1, 2.2                             |
| Posterior width of carapace | 2.5                                | 2.7, 2.9                             |
| Merus length                | 2.3                                | 2.9, 2.8                             |
| Merus width                 | 1.2                                | 1.1, 1.3                             |
| Carpus length               | 1.1                                | 0.8, 0.8                             |
| Carpus width                | 0.9                                | 0.5, 0.5                             |
| Propodus length             | 2.8                                | 5.4, 5.3                             |
| Propodus width              | 1.3                                | 1.4, 1.5                             |
| Dactylus length             | 1.2                                | 1.3, 1.3                             |

on anterior margin; with eight lateral spines on each cheliped. Carpus short, rounded, prominent anterior spine on interior margin. Chelipeds 1.5x longer than carapace length, distended, tuberculate, tubercles increasing in size posteriorly, giving the posterior margin a serrate appearance. First ambulatory leg more than twice carapace's length. Fourth ambulatory dactyl with 16 triangular teeth on posterior margin, proximally diminishing in size. Propodus and dactylus are hairy on each walking leg.

Colour: Light brown in fresh specimen.

Distribution: Red Sea; Gulf of Aden; Kenya; Madagascar-Tuléar and south coast; Nosy Bé and Tuléar; Seychelles; Amirante Islands; Réunion; Mauritius; Cargados Carajos Islands; Maldives; Sri Lanka - Gulf of Mannar; Andaman Islands; Japan - Kuroshima, Yaeyama-retto; Taiwan; Philippines - Golo Island; Palau; Indonesia - Kepulauan Aru and Kai, Kepulauan Kai, Kepulauan Aru and Geelvinck Bay, New, Makassar Strait and Auri Island, Irian Jaya; Papua New Guinea - Madang; New Caledonia; Vanuatu; Marquesas Islands - Fatu Hiva (MSIP 2016).

Remarks: *Quadrella maculosa* can be differentiated from other species of *Quadrella* by a) having slender and long walking legs b) having a clear epibranchial spine that projects from each side of the carapace and c) merus of a cheliped that is armed with acute tubercles (Castro 1997).

## DISCUSSION

The brachyuran crab, *Drachiella morum*, was first reported as *Actaeomorpha morum* by Alcock (1896). He recorded two females (10mm CW, 12mm CL) at 28 to 30 fathoms off the Ganjam coast, Bay of Bengal, India during the "Investigator" expedition. Later, a single

female (12.5mm CW, 10mm CL) specimen was recorded in the mouth of the Hoogly River, West Bengal, India at >20 fathoms (Chopra 1934). Thereafter, no additional observations from the Indian coast were made in any scientific reports. Like *D. morum*, *Q. maculosa* was also first reported by Alcock (1896) from the Andaman Islands. Later, in the 1980s, scientists from the Zoological Survey of India reported its presence from the same region (ZSI 2012). Until now, there are no records from the coasts of mainland India. The specimens collected in the present study agree well with the original descriptions and illustrations of both *D. morum* and *Q. maculosa*.

The present study reports *D. morum* for the first time on the Tamil Nadu coast, and its presence revealed that it has been reported after eight decades from the Indian coast. The crabs belonging to the genus *Quadrella* Dana, 1851 are commensal with anthozoans and were collected at a depth range between 20–150 m. They are mostly obtained by bottom trawling or dredging (Shih & Mok 1996). The present specimen, *Q. maculosa*, was taken from the trash of gill net hauled at 30m depth, and the specimens (a male and a female) were collected attached to gorgonians. The report of *Q. maculosa* from Tamil Nadu coast reveals that its distribution range extends from the Andaman Islands to the mainland coast of India.

Though these species do not contribute towards commercial fishery, they might serve as food for other organisms and their larvae might also be consumed in the food web (Viswanathan et al. 2013). Moreover, *Quadrella* species have a commensal relation with soft corals where they feed on the lipid-rich coral mucus, and the crab reciprocates by cleaning and protecting the coral polyp from predators. Rediscoveries and extension of species distribution help in the biodiversity documentation for future monitoring and management practices.

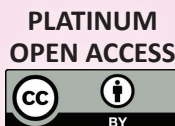
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