



First record of *Arcania brevifrons* Chen, 1989 (Decapoda, Brachyura, Leucosiidae) from east coast of India

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Short communication

Abstract

The Leucosiid crabs of the genus *Arcania* has 22 species globally of which 9 species are so far reported from India, 7 of them are known to occur in Tamil Nadu. This study reports *Arcania brevifrons* (Chen, 1989) for the first time from Tamil Nadu, collected from trawl bycatch of Pazhayar (11°21'N; 79°50'E) during July 2017. This first report of *Arcania brevifrons* Chen, 1989 from Tamil Nadu, India recorded one male and two ovigerous females and the details are presented.

Keywords: *Leucosiid*, *Arcania brevifrons*, southeast coast, Bay of Bengal, India

Introduction

India is endowed with a coastal zone of about 7516.6 km which encompasses Andaman and Nicobar Islands and Lakshadweep (Trivedi *et al.*, 2018). Pazhayar (11°21'N; 79°50'E) is one of the important fish landing centers of Tamil Nadu, located in the southeast coast of India and recent research in the area recorded many new deep-sea crabs from the trawl by-catch. Ng *et al.* (2017a) reported a rare parthenopid crab namely *Daldorfia spinosissima* (A. Milne-Edwards, 1862) from southeast coast. The

re-description of *Parilia alcocki* Wood-Mason, in Wood-Mason and Alcock, 1891 (Prema *et al.*, 2017) and the description for three new species *Pleistacantha kannu*, *Paramaya mulli* and *Pulcratis amabilis* (Ng *et al.*, 2017b, 2018; Prema *et al.*, 2019; Mendoza *et al.*, 2020 In-press) were based on the collections from this landing centre. The newly recorded leucosiid crab *Arcania brevifrons* Chen, 1989 is also based on the samples collected from the same fishing port. The genus *Arcania* was established by Leach (1817) for *Cancer erinaceus* Fabricius, 1787. Galil (2001) made a revision of the genus *Arcania* Leach, 1817 from Indo-Pacific; presently 22 species are accommodated under the genus *Arcania* (WoRMS, 2018) of which 9 species are known from India (Trivedi *et al.*, 2018). *Arcania brevifrons* was originally described from Philippines by Chen (1989) and newly recorded from the west coast, Kerala, India by Kumar *et al.* (2013). The present finding of the species is the first record from east coast of India, Tamil Nadu, which is presented herein detail.

Material and methods

The collected specimens were brought to the laboratory and their photographs were taken. The species was identified and described following Galil (2001) and Galil *et al.* (2017) and the specimens were measured using Vernier Caliper (0.01mm

accuracy). They were carefully preserved in 7% formaldehyde and voucher specimens were deposited in National Zoological Collections of Zoological survey of India, (ZSI, MBRC), Chennai and Centre of Advanced Study in Marine biology, Annamalai University (CASAU), Parangipettai, Tamil Nadu, India. Voucher/ Museum ID: ZSI/MBRC Reg. No. D1-518 and CASAUR23.

Results

Systematics

Order : Decapoda Latreille, 1802
 Superfamily : Leucosioidea Samouelle, 1819
 Family : Leucosiidae Samouelle, 1819
 Subfamily : Ebaliinae Stimpson, 1871
 Genus : *Arcania* Leach, 1817

Arcania brevifrons Chen, 1989 (Fig. 1)

Synonymy: *Arcania brevifrons* Chen, 1989: 204, fig. 31f, 32 e-f, pl. 5 fig. 6; Zarenkov, 1994: 111; Galil, 2001: 172, fig1A, 4A. Galil *et al.*, 2017: 249, figs.1-3.

Description

Three specimens comprised of one male and two ovigerous females of *Arcania brevifrons* Chen, 1989 were collected and the morphometric details are given in Table 1.

Carapace globose, longitudinally ovate in male (Fig.1A), nearly rounded in female (Fig.1B) and dorsal surface throughout uniformly covered with columnar small granules. Front divided with two triangular lobes and separated by a wide triangular gap. The margins of carapace possess 11 spines: one spine each on sub hepatic, anterolateral, midlateral, posterolateral

Table 1. Morphometric of *Arcania brevifrons* male and female

Characters	Male (mm)	Ovigerous female (mm)	
Carapace length (CL)	23.04	30.81	27.42
Carapace width (CW)	25.62	32.42	30.84
Abdomen length (Abl)	16.11	20.05	21.32
First gonopod (G1)	11.01	-	-
Second gonopod (G2)	04.08	-	-

and posterior margins. Anterolateral spines smallest, followed by sub hepatic spine and midlateral. The midlateral spine slightly flattened dorso-ventrally and upcurved (Fig. 2A). Postero-lateral, intestinal spines almost equal in size and posterior spines pointed and the region carry shallow grooves. Third maxilliped granulate, outer surface covered by simple setae (Fig. 2B).

Chelipeds are long, slender, well granulate; merus is longer than carapace length and it has a small blended spine, thickly set with conical granules on the dorsal and minute granules on ventral surface; carpus of the ambulatory legs are minutely granulated; propodus- smooth, basally thick, dorso-ventrally flattened; fingers are slender, long with, minute cutting teeth (Fig. 2C). Ambulatory legs are slender, minute granules on surface and dactylus closely setose.

Thoracic sternites covered by rounded granules and Vulva on thoracic suture 5/6 and tadpole shaped (Fig. 2D). Male pleon (abdomen) elongated and slightly tapering at the end (Fig. 2E and 3A); female broad, rounded, having locking system (Fig. 2F and 3B), long curved at the tip and granulated. The second gonopod (G2) is smaller than the first gonopod (G1) (Fig. 3C and D). Carapace pink in colour, with red irregular loops on carapace, margins pale pink in colour, chelipeds and merus orange; granules on upper carapace white in color (Fig. 1).

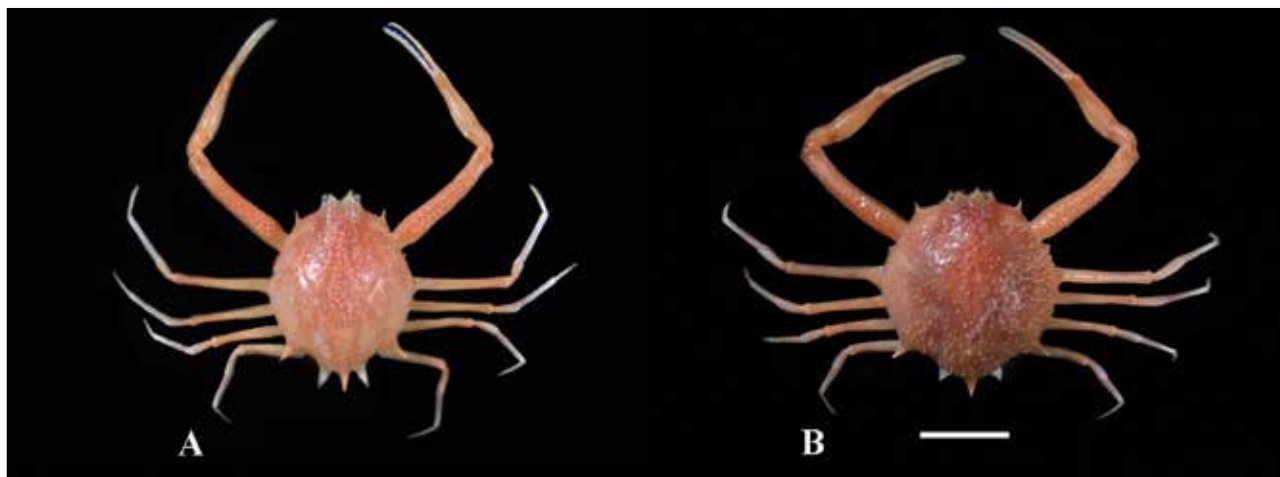


Fig. 1. Overview of *Arcania brevifrons* in fresh colouration. A) male B) female. Scale bar: A, B=1.0 cm.

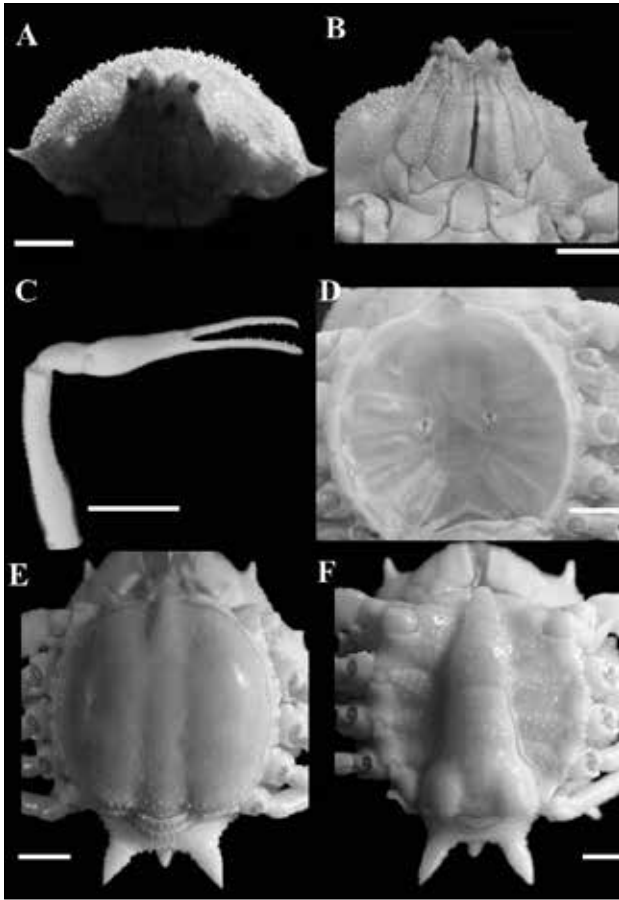


Fig. 2. *Arcania brevifrons* A) frontal view of dome like structure of carapace; B) ventral view of cephalothorax; C) right cheliped; D) sternal view of female; E) abdominal view, female; F) abdominal view, male. Scale bar: all figures in 5.0 mm.

Discussion

Arcania brevifrons is easily separated from closest congener, by their characters like carapace, spines, hepatic margins and chelipeds. *A. brevifrons* is morphologically similar to *A. tropicalis* (Naruse, 2014) and later Galil *et al.* (2017) revealed that it can be easily distinguished by investigating in its first gonopod (G1) distally bent at right angle (sinuously curved in *A. tropicalis*), vulvae and colour pattern. The description of the present specimen of *A. brevifrons* agrees with that of Galil *et al.* (2017). Further, this species has been originally described from Philippines (Chen, 1989), later it was reported from Indonesia, Seychelles, Madagascar, Red sea, Mozambique Channel, Madagascar, Seychelles, Red Sea, Pakistan, Indonesia, Fiji (Galil, 2001), Mediterranean coast of Israel (Galil *et al.*, 2017). In India, this species was known to occur from Kerala in southwest coast (Kumar *et al.*, 2013).

The present study reveals the occurrence of *Arcania brevifrons* Chen, 1989 in Tamil Nadu, which forms the first report of the species to East Coast of India. According to Trivedi *et al.* (2018) a

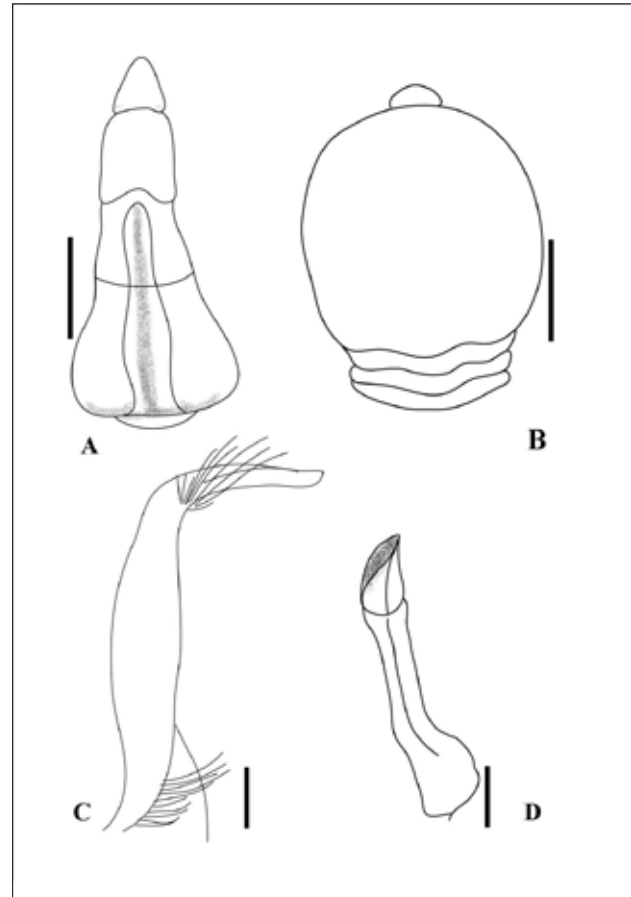


Fig. 3. *Arcania brevifrons* A) dorsal view of male abdomen; B) dorsal view of female abdomen; C) first gonopod (G1); D) second gonopod (G2). Scale bar: A, B=2.0 mm; C, D=1.0 mm.

total of 910 species of marine brachyuran crabs recorded from India, unveiling that east coast is more diverse than west coast, with 803 species, among that contribution of 446 species from Tamil Nadu. The genus *Arcania* is represented by 9 species in India, of which with the recent addition of *A. brevifrons* 8 species namely, *A. cornuta* (MacGilchrist, 1905), *A. erinacea* (Fabricius, 1787), *A. gracilis* Henderson, 1893, *A. heptacantha* (De Haan, 1861), *A. novemspinosa* (Lichtenstein, 1816), *A. septemspinosa* (Fabricius, 1787) and *A. undecimspinosa* De Haan, 1841 are available in Tamil Nadu. *Arcania tuberculata* Bell, 1855 is reported only from Andaman & Nicobar Islands.

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