

## Expansion of occurrence of two bat crabs (Crustacea: Decapoda: Brachyura: Parthenopidae) from the West to the Southeast Coast of India

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### Resumo

**Expansão da ocorrência de caranguejos da costa oeste para a costa sudeste da Índia.** Duas espécies de caranguejos foram registradas pela primeira vez na costa sudeste da Índia, *Cryptopodia fornicata* and *Cryptopodia angulata* (Crustacea, Brachyura, Parthenopidae). Os exemplares estavam sexualmente maduros e amplia-se a ocorrência das espécies do Mar Arábico (costa oeste) para a Baía de Bengala (costa leste).

**Unitermos:** Brachyura, Índia, novo registro, Parthenopidae

### Abstract

Studies of distribution of any marine organism are very important to know the span of expansion in the oceans and to find out the factors behind that occurrence. In the present study two species of crabs, *Cryptopodia fornicata* and *Cryptopodia angulata* (Crustacea, Brachyura, Parthenopidae) were reported for the first time in the Point Calimere coastal region, Southeast Coast of India. All the specimens were found to be sexually mature. This is the rare occurrence of these two bat crabs in Indian Coast which expands in its known range. In the present observation records a second distributional area of the species and significantly extends the range from the West coast to the Southeast coast of India.

**Key words:** bat crabs, Brachyura, Índia, new occurrence, Parthenopidae

The present study provides taxonomic and distributional information as well as selected synonymies for the newly recorded Cryptopodinae crab species from Point Calimere, Southeast coast of India. The family Parthenopidae currently contains four subfamilies,

viz. Parthenopinae MacLeay 1838, Daldorfiinae Ng & Rodriguez 1986, Cryptopodinae Stimpson 1871a, and Lambrachaeinae Stevcic 1994 (see Ng et al. 2001). The Cryptopodinae, however, can only be reliably separated from the Parthenopinae by its members possessing

an expanded lateral carapace margin that hide the ambulatory legs.

Measurements, given in millimeters (mm), are of the greatest carapace length (including the posterior lobe) and width, respectively. Pereiopods are measured along the outer margin from ischium to dactylus. Animals were measured using a Vernier caliper to the nearest 0.1mm. The specimens used are deposited in the Faculty of Marine Science, Annamalai University.

### Study area

In the present observations specimens were collected from Point Calimere and it lies along the Coromandal coast of India (Figure 1). Point Calimere (10°18'N; 79°51'E) is a low headland on the Coromandel Coast, in the Tamil Nadu, Southeast Coast of India. It is the apex of the Cauvery River delta, and marks a nearly right-angle turn in the coastline. It is the tip of the Cauvery River delta, and marks a right-angle turn in the coastline, which supports the Wildlife and Bird Sanctuary here. These include a cape and three natural habitat vegetations, namely the dry evergreen forests, Mangrove forests, and wetlands.

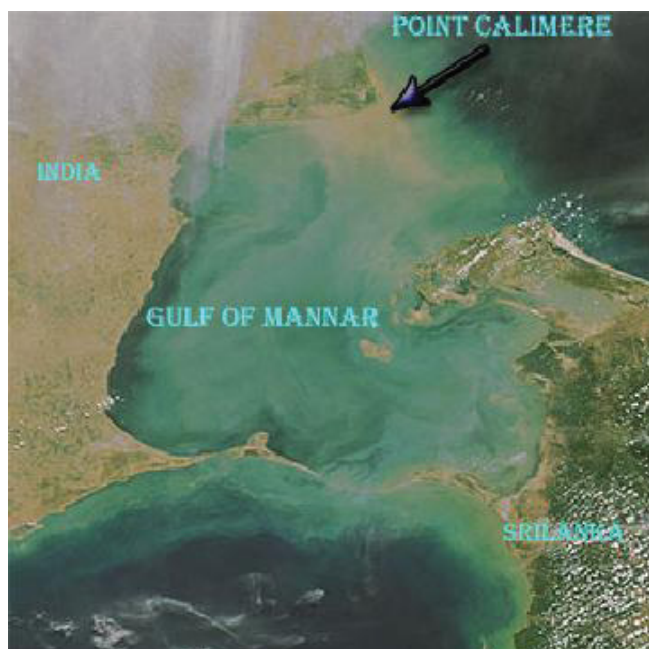


FIGURE 1: Map showing the location of the study area in the Southeast coast of India. The arrow indicates the collection site (10°18'N; 79°51'E)

### Taxonomy

Parthenopidae Macleay. 1838

Subfamily Cryptopodiinae Stimpson, 1871

Genus *Cryptopodia*

*Cryptopodia fornicata* (Fabricius, 1781)

### Material examined

Two males, Point Calimere, India, (10°18'N; 79°51'E), 15 January 2010.

### Measurements (mm) (Width-Length)

Length (width); male 34.8-26.7, 33.6-21.2.

### Description

Carapace 1.6 times broader than long, pentagonal, with large lateral expansions completely concealing ambulatory legs, prolonged posteriorly beyond the abdomen. Posterolateral margins convex, crenulated, posterolateral angles truncated; dorsal and ventral surfaces smooth to rough; branchial, cardiac and gastric regions elevated; deep triangular depression in centre of carapace; margins surrounding depression granulated, ridge of granules running from mesobranchial to metabranchial regions. Post rostral region depressed. Carapace with well developed lateroventral concavity into which ambulatory legs fit. External surface of the third maxiliped smooth, pitted or granulated. Posterior expansion of cheliped palm dilated towards distal extremity; anterior and posterior margins of dorsal facet of palm denticulated with prominent teeth; merus flat with winglike expansion at distal end, upper and lower margins of meri having 1-2 rows of longitudinal carinae; dactylus without setae (Figure 2).

### Synonymy

*Cancer fornicata* Fabricius, 1781:502 (Tranquebar: India); Herbst, 1790: 204, pl. 13, Figs. 79-80 (list only). *Parthenope (Cryptopodia) fornicata*- de Haan, 1893: 90, pl. 20, Fig. 2, 2a (Japan). *Cryptopodia fornicata*- H. Milne Edwards, 1834: 362 (Indian Ocean); Walker, 1887: 109 (list only); Stimpson, 1907: 31 (Hong Kong); Zimsen, 1964: 646 (list only); Sakai, 1976: 292, Fig. 163

(Japan); Yang, 1979: 11 (India, Singapore, Indonesia, Mirs Bay: Hong Kong); Tirzimi and Kazmi, 1988: 210 (list only); Dai and Yang, 1991: 175, Pl. 21(7). Fig. 90 (Southern China); Chen and Xu, 1991: 81, Fig. 25 (Nansha Islands = Spratly Islands: South China Sea). *Cryptopodia fornicata* (sic)- Dai et al., 1986: 159, Pl. 21(7), Fig. 90 (Southern China).



FIGURE 2: Dorsal view (left) and ventral view (right) of male crab *Cryptopodia fornicata*.

### Distribution and habitat

Indo-West Pacific. For most species, the preferred substrate is one of mud and sand, often with broken shell and/or coral, between 10-30m in depth (Chiong and Ng, 1998). In the present specimens were also collected from 15m depth and it is enriched with broken shells.

### Remarks

This species does not appear to be common in Indian waters. Earlier it was recorded in the coastal environment of Chennai. It was 365 km away from the present study area (Point Calimere) but it was recorded only one time in the study area.

### Taxonomy

Parthenopidae Macleay, 1838

Subfamily Cryptopodiinae Stimpson, 1871

Genus *Cryptopodia*

*Cryptopodia angulata* (H. Milne Edwards & Lucas, 1841)

### Material examined

Four males, one female, Point Calimere (10°18'N; 79°51'E), 12 December 2009.

### Measurements (mm) (Width-Length)

#### Male

45.1 – 29.2, 44.2-27.6, 30.5-20.6, 23.2-15.1.

#### Female

46.4-30.7.

### Description

The carapace of the species is convex, sharply pentagonal with all the edges deeply dentated and all the angles produced to form curved spines; in addition there is a second spine in front of the spine of either antero-lateral angle, and the part of the posterior border that is co-extensive with the abdomen is demarcated on either side by strong spine. The rostrum ends in a sharp point. The triangular depression of the carapace is very deep, and the lines which bound it are granular. There

is an irregular patch of granules on either branchial region, and there is a line of granules passing forwards from the apex of the triangular depression to the base of the rostrum on either side. The carpus of chelipeds are semi-globular, and that the inner and outer margins both of the hand and arm are armed with sharply laciniate spines. The ambulatory legs have the merus simply carinate above, spinate-carinate below, the carpus and propodite carinate, and the dactylus strongly carinate on both edges so as to form a swimming blade (Figure 3).



FIGURE 3: Dorsal view (left) and ventral view (right) of female crab *Cryptopodia angulata*.

### Synonymy

Edwards and Lucas 1841, *Archiv. du. Mus.*, vol. 2, p. 481, pl. 28, fig. 16-19.

Alcock 1895, *J. Asiatic Soc. Bengal*, vol. 64(2), p. 282.

Chopra 1935, *Rec. Ind. Mus.*, vol. 37, p. 473.

Chhapgar, 1957, *Marine Crabs of Bombay State*, p. 17, pl. 4.

### Distribution and habitat

India, Maldives, Sri Lanka, Singapore, Australia, Gulf of Thailand. Inhabits the bottoms of sand or broken shells, depth 25 to 30m (Chhapgar, 1957). The present specimens were collected from 25m depth of Point Calimere and it is habitat with sandy substratum.

### Remarks

This species does not appear to be common in Indian waters.

### Conclusion

The diversity of brachyuran crabs in world oceans is very high, with about more than 4,500 species known from world coastal waters (Jayabaskaran et al., 2000) and a total of 995 species of brachyuran crabs have been recorded from the Indian waters (Lakshmi Pillai and Thirumily, 2008). Moreover, 404 species belonging to 26 families and 152 genera from the Tamil Nadu, Southeastern coast reported by Kathirvel (2008). Even though the diversity and range of distribution of species like *C. angulata* and *C. fornicata* are not clearly recognized. The reason for why this crab to be caught in our coastal area may be due to the changes in the drifting of ocean currents where by the eggs and larvae of the crabs may be drifted from the West coast to east coast. The summer monsoon current, located between 10 and 15 North latitude in the Arabian Sea, bends around India and Sri Lanka, and enters the Bay of Bengal. The Great Whirl is a gyre located around 10N and 55E, and is only present during the summer season (Andrey, 2008). This water current – the summer monsoon current (coming from the Arabian Sea) – improves the invasion of species

in the Bay of Bengal. A new record often ensures the distribution of a species in a known range and helps us to understand the history of its population dispersal. It is necessary to know the distribution of a species when we want to preserve it. In that sense, the present study is very important by recording two crab species from an extremely important to environment.

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