SHORT COMMUNICATION

CHECKLIST OF BRACHYURAN MANGROVE CRABS OF KERALA, INDIA

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26 November 2020 | Vol. 12 | No. 15 | Pages: 17153–17160
DOI: 10.11609/jott.4429.12.15.17153-17160
Checklist of brachyuran mangrove crabs of Kerala, India

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Abstract: Checklist of brachyuran mangrove crabs from Kerala, western coast of India is presented in this paper with re-validation of nomenclature since many of the crab species have been renamed so far, and no reports have been published from mangroves of Kerala. A total of 18 true mangrove crabs were identified from different mangroves associated with estuaries along the western coastline of Kerala State, of which four crab genera were renamed and revalidated and all species were photo-documented during the present study. The paper enlists the taxonomic account of the true mangrove crabs known so far from Kerala mangrove ecosystems.

Keywords: Brachyura, checklist, Kerala, mangrove crab, Crustacea, Portunidae, Grapsidae, Sesarmidae, Ocypodidae.

Brachyurans are the most promising and prominent group of crabs, because of their great diversity; comprising of about 6,793 species, 1,721 genera, and 93 families recorded globally (Ng et al. 2008). Brachyuran crabs perform a significant role in the mangrove ecosystems and are commercially valuable with high culture and fattening potential (Tan & Ng 1994). Mangrove ecosystems warrant more attention as it is diminishing day by day, especially along Kerala coastline and its importance protecting the environment from natural catastrophes are increasing. Mangroves are fragile ecosystem having highly variable conditions of life style, which make them profusely rich in biodiversity (Kathiresan & Qasim 2005). The ecosystem value of mangroves overwhelms any other ecosystem as it gives very many services, including biodiversity richness. Distribution studies of brachyuran crabs, especially the mangrove crab in Indian mangroves are scanty (Joel et al. 1985) and the available literature discusses the distribution of both marine and estuarine/mangrove crabs together.

Literature regarding crabs of mangrove ecosystems of Kerala was comparatively meager apart from that of few individual report and citations of each crab species. Kathirvel (2008) reported 990 species of marine brachyuran crabs belonging to 281 genera and 36 families from Indian waters. Thirty-six brachyuran crab species were identified from Pichavaram mangroves by Soundarapandian et al. (2008). A study reveals that 33 mangrove crab species belonging to the family Grapsidae and Ocypodidae were available from the state of Tamil Nadu (Wilson & Ravichandran 2013). A comprehensive approach to document the diversity and abundance of true mangrove crabs were lacking especially from Kerala, which was considered to be one of the crab-rich states (Rajesh et al. 2017). The first publication in this respect was by Pillai (1951), who provided an account of the brachyuran crabs of Travancore. In a report on
mangroves and their faunal associates, Radhakrishnan et al. (2006) provided a list of 25 species of crustaceans, including 20 species of brachyuran crabs associated with marine, estuarine and mangroves of Kerala. Devi et al. (2015) recorded 24 species of crabs belonging to 16 genera and eight families from the Cochin backwaters of Kerala. A preliminary study on true mangrove crabs reported 14 crabs from various mangrove habitats of Kerala (Apreshgi 2014) and Apreshgi & Abraham (2019) observed 12 species from Puthuvype mangrove belt at Ernakulam, Kerala. Recently Ng & Devi (2020) reported a new tree spider crab, Leptarma biju from mangrove area of Chithhari River, Kasargode District, Kerala. The brachyuran diversity of Kerala coastline mangrove ecosystem has not been documented and the present study presents the check list of the brachyuran crabs and photo-documents the diversity along with revalidation of crab nomenclature.

**Materials and Methods**

A survey of crabs of different estuarine mangrove ecosystems along the western coastline of Kerala was carried out from June 2016 to May 2017. Crabs were collected live by handpicking, opening of burrows, bait trap and normal traditional trap kept overnight. Collected specimens were preserved in alcohol (70%) after anaesthetization and ice killing. Crab specimens were collected from a total of 14 mangrove locations from nine districts of Kerala State (Fig. 1). The collected specimens were washed thoroughly in situ and photo-documented without much disturbance to obtain natural colour and morphology. Specimens were brought to the laboratory for further identification and after specimen confirmation, specimens of three species (Austruca annulipes, Austruca perplexa, and Parasesarma bengalense) were submitted in the repositories of Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram, (Voucher numbers DABFUK-AR-BR-52,53; DABFUK-AR-BR-54,55; DABFUK/AR-BR-72, 73 respectively). Identification and classification were done using standard keys and publications (Pillai 1951; Sakai 1976; Sethuramalingam & Khan 1991; Roy & Das 2000; Roy 2008). Ng et al. (2008) was followed for classification and validity of the names of the brachyuran crabs were cross-checked with information from World Register of Marine Species (WoRMS 2020; http://www.marinespecies.org) and conservation status of each species was verified from the IUCN Red List of threatened species (IUCN 2017).

**Results and Discussion**

A total of 18 species of true mangrove crabs under four families (Portunidae, Grapsidae, Sesarmidae, and Ocypodidae) and 11 genera were identified and documented in the present study. Highest number of species was recorded from the family Sesarmidae (seven species) followed by Portunidae and Grapsidae with four species each and Grapsidae with three species (Table 1 & Images 1–18). Scylla serrata, Scylla olivacea, and Thalamita crenata were the economically valuable crab species. Among different species, Parasesarma bengalense was reported for the first time from the western coast of India and Clistoceloema lanatum was reported for the first time from Kerala mangroves. Pseudosesarma glabrum was one of the rare species and was recently reported from Cochin in southwestern India (Ng et al. 2017). Parasesarma plicatum was the common crab species encountered throughout west coastline mangrove ecosystems of Kerala.

Pillai (1951) and Chhapgar (1957) reported the occurrence of crabs from mangrove habitats around Travancore and Bombay respectively without much of its taxonomic identity. After a long gap, Krishnamurthy & Jeyaseelan (1981) reported the presence of 20 species of crabs from Pichavaram mangroves, which includes true mangrove as well as estuarine crabs. There are several taxonomic works on the brachyuran crabs of estuarine and mangrove ecosystems of India (Chakraborty et al. 1986; Mandal & Nandi 1989; Chakraborty & Chaudhury 1992; Roy & Das 2000; Radhakrishnan et al. 2006). A total of 55 species of brachyuran crabs represented under 31 genera have been reported earlier from different mangrove habitats of India (Roy & Das 2000). But none of the above reports exclusively documented mangrove crabs, in fact they included estuarine, marine forms in addition to mangrove crabs. Eighteen species of brachyuran crabs under nine genera and four families were identified exclusively from Sunderban mangrove ecosystems (Chakraborty & Chaudhury 1992). Mangrove fauna of Andaman & Nicobar Islands (Das & Roy 1989) enlisted 31 species of crabs from Andaman mangals and briefly dealt with zonation and annual breeding pattern of some of the crabs.

Even though nomenclature of many crabs has been changed by different taxonomists, genus name of four crabs has been changed or revalidated recently; Perisesarma bengalense has been changed to Parasesarma (WoRMS 2020), genus Uca has been renamed as Austruca for Uca annulipes and Aperplexa and for Uca vocans renamed as Gelasimus vocans (WoRMS 2020). Many taxa belonging to the
Figure 1. The sampling locations of mangrove crabs from Kerala.
Checklist of brachyuran mangrove crabs from Kerala

Table 1. Checklist of mangrove brachyuran crabs from Kerala.

| Family      | Scientific name/Revalidated name | Original name/Synonym | Common name                  | Image no. |
|-------------|----------------------------------|------------------------|-------------------------------|-----------|
| Portunidae  | Scylla olivacea (Herbst, 1796)    | Cancer olivacea Herbst, 1796 | Orange Mud Crab              | Image 1   |
|             | Scylla serrata (Forskål, 1775)    | Cancer serrata Forskål, 1775 | Green Mud Crab               | Image 2   |
|             | Scylla tranquebarica (Fabricius, 1798) | Cancer tranquebarica Fabricius, 1798 | Mangrove Mud Crab          | Image 3   |
|             | Thalamita crenata Rupell, 1830    | Thalamita crenata Rupell, 1830 | Crenate Swimming Crab         | Image 4   |
| Grapsidae   | Metopograpsus latifrons (White, 1847) | Grapus latifrons White, 1847 | Purple-Claw Mudflat Crab     | Image 5   |
|             | Metopograpsus messor (Forskål, 1775) | Cancer messor Forskål, 1775 | Messor’s Shore-Crab          | Image 6   |
|             | Metopograpsus thukuhar (Owen, 1839) | Grapus thukuhar Owen, 1839 | Thukuhar Shore-Crab          | Image 7   |
| Sesarmidae  | Clistoceloma lanatum (Alcock, 1900) | Sesarma lanatum Alcock, 1900 | Far Bodied Mudflat Crab       | Image 8   |
|             | Neosarmatium malabaricum (Henderson, 1893) | Sarmatium malabaricum Henderson, 1893 | Violet Mud Crab      | Image 9   |
|             | Parasesarma bengalense (Davie, 2003)* | Perisesarma bengalense Davie, 2003 | Bengal Mangrove Crab        | Image 10  |
|             | Parasesarma pictum (De Haan, 1835)  | Grapus (Pachy soma) pictum DeHaan, 1835 | Mangrove Mudflat Crab      | Image 11  |
|             | Parasesarma plicatum (Latreille, 1803) | Ocypode plicatum Latreille, 1803 | Orange-claw Marsh Crab       | Image 12  |
|             | Perisesarma dussumieri (Edwards, 1853) | Sesarma dussumieri, Edwards, 1853 | Yellow-claw Mudflat Crab     | Image 13  |
|             | Pseudosesarma glabrum Ng, 2017      | Pseudosesarma glabrum Ng, 2017 | Glabrous Mangrove Crab       | Image 14  |
| Ocyopidae   | Austruca annulipes (Edwards, 1837)* | Gelasimus annulipes Edwards, 1837 | Ring-legged Fiddler Crab     | Image 15  |
|             | Austruca perplexa (Edwards, 1852)* | Gelasimus perplexa H. Edwards, 1837 | Perplexing Fiddler Crab      | Image 16  |
|             | Gelasimus vocans (Linnaeus, 1758)*  | Cancer vocans Linnaeus, 1758 | Calling Fiddler Crab         | Image 17  |
|             | Macrophthalmus (Mareots depressus (Rupell, 1830) | Macrophthalmus depressus Rupell, 1830 | Cream-claw Mud Crab         | Image 18  |

genus *Perisesarma* have been changed to *Parasesarma* (Shahdadi & Schubart 2018), however, *Perisesarma dussumieri*, without any name changes is the type species of the genus *Perisesarma* owing to its original characters of the genus (Shahdadi & Schubart 2018). All the crabs documented in the present study were listed as ‘Least Concern’ status of IUCN Red list of the threatened species (IUCN 2017), which may be due to lack of baseline data about abundance and distribution the true mangrove crabs.

**CONCLUSION**

The present investigation revealed 18 true brachyuran mangrove crab species along estuarine mangroves of western coast of Kerala. Family Sesarmidae constitute the major diversity (seven species) followed by Portunidae (four species) and Ocyopidae (four species), and least in Grapsidae (three species) of mangrove crabs. Among the 18 brachyuran crabs, four crabs have been revalidated by change in genus or species name and provided in a checklist along with photo-documentation of true mangrove crabs of Kerala estuarine systems.

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Image 1. *Scylla olivacea*  

Image 2. *Scylla serrata*  

Image 3. *Scylla tranquebarica*  

Image 4. *Thalamita crenata*  

Image 5. *Metopograpsus latifrons*  

Image 6. *Metopograpsus messor*
Image 13. *Perisesarma dussumieri*

Image 14. *Pseudosesarma glabrum*

Image 15. *Austruca annulipes*

Image 16. *Austruca perplexa*

Image 17. *Gelasimus vocans*

Image 18. *Macrophthalmus (Mareotis) depressus*
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