



# Diversity of freshwater prawns (crustacea: decapoda: palaemonidae and atyidae) in the river Cauvery

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## ABSTRACT

The river Cauvery is one of the major perennial river in the peninsular India, which originates at Talakaveri of Brahmagiri Hills of Western Ghat in Coorg District, Karnataka and flows eastwards through Tamil Nadu state and enter into Bay of Bengal. It runs a distance of about 1170 km with many tributaries and distributaries. Which carries a large amount of nutrient and probably promotes species richness both racially and individually. The Grand Anaicut and Lower Anaicut are the main distributaries of Cauvery deltaic regions of Thanjavur, Thiruvavur, Cuddalore and Nagapattinam districts. In view of large volume of nutrients and water availability. The productivity of water is significant and therefore the prawns are diverse. In the present study 12 species of prawns which are commercially and ecologically important have been identified. They are *Macrobrachium malcolmsonii*, *M. aemulum*, *M. nobilii*, *M. australe*, *M. rude*, *M. lamarrei*, *M. scabriculum*, *M. indicum*, *M. dolichodactylus*, *Caridina nilotica*, *C. gracilipes* and *C. gracilirostris*. The present study significant to the presence of commercially important and ecologically important populations available in the Grand Anaicut and Lower Anaicut regions of river Cauvery. The prawns of the river Cauvery are documented.

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## Introduction

The survey, identification and classification of prawns and shrimps have been studied by many investigators (Jayaram *et al.*, 1982; Schoonbe *et al.*, 1989; Mari Bai, 1993; Jasmin and Chandran, 1994; Jasmin and Clark, 2005). Brackishwater and Estuary areas are the place of occurrence of *Macrobrachium* of lower Bengal (De Man, 1908). Many species of prawns have been surveyed in the South Indian river including Cauvery (Mariappan and Balasundaram, 1999; Mariappan *et al.*, 2002; Mariappan and Jasmin (2006) have been made studies on freshwater prawn of family Atyidae and Palaemonidae. Raghunathan and Valarmathy (2005) have been documented a check list of freshwater prawns. Valarmathi (2009); Recently many investigators reported prawn fishery potentials of Indian rivers (Arumugam, 2011; Radhakrishnan *et al.* (2012); Suday Prasad *et al.*, 2012; Ahmed *et al.*, 2013; Ahamed *et al.*, 2014).

## Materials And Method

For the present study the freshwater prawns were collected from the commercial fishing stations of Grand Anaicut and Lower Anaicut from July 2010 to June 2012 and each individual was preserved in 5 per cent neutralized formalin for further identification. The species were identified using the described by earlier workers (Chace and Bruce, 1993; Jayachandran, 2005). The size of the prawn, length of the prawn, standard length width of the carapace, length of carapace, cephalothorax length, rostrum length, antennal size and hepatic species, length of the animal, weight of the animal were considered as identification for taxonomical study.

## Results

In the present study 12 species of commercial important prawns have been identified and described. They are *Macrobrachium malcolmsonii*, *M. aemulum*, *M. nobilii*, *M. australe*, *M. rude*, *M. lamarrei*, *M. scabriculum*, *M. indicum*, *M.*

*dolichodactylus* and atyid species of *Caridina nilotica*, *Caridina gracilipes* and *C. gracilirostris*. The description of the each species as follows:

### Macrobrachium malcolmsonii (Milne Edward, 1882)

This is the largest representative of freshwater prawn. The male attain maximum growth of 23 cm and female attains maximum 20 cm. These are called "Monsoon river prawn." Rostrum with 10-13 dorsal teeth (2 to 3 orbital) and 4-7 ventral teeth, tip of rostrum slightly uparved. In adult male. The carapace looking with spinules anteriorly, second pair of cheleped were looking with pale Sistine blue colour with a short pubescence which is especially distinct on the movable finger. The cheleped subequal in length and the prawns are distributed in South Asia, India and in Sri Lanka (Plate Ia).

### Macrobrachium aemulum (Nobilii, 1906)

This is comes under smaller prawns groups. The male and female attains a maximum growth of 8 and 6 cm respectively. These are called "five toothed prawn" because of its rostrum having five dorsal teeth. The cheleped are either the left or right in male unequal and the distinct gap between the fingers when closed. The gap being narrower in larger cheleped than smaller cheleped. Proximal part of cutting edges of movable finger with denticles, fixed finger with one denticles are the remarkable characters to this prawn. Distributed this species is in India, New Caladonia and Tuamoto Islands (Plate Ib).

### Macrobrachium nobilii (Nobilii and Matthai, 1910)

These are relatively smaller prawns, maximum size of male is 6.4 cm and female 5.45 cm which are looking in pale green colour. Entire cheleped with numerous forwardly directed spinules, prominent or elongated pair of cheleped legs in which carpus is distinctly longer than merus. The length of the Chela have the teeth in the proximal part the cutting edges (Hothuis,

1950) are the characteristics of the prawn. This species is distributed in India (Walajabad, Chengapattu district (Henderson and Matthai, 1910). Mettur Dam (Balasundaram, 1980). In India and South Asian Countries (Plate Ic).

#### **Macrobrachium australe (Guerine-Meneville, 1938)**

These are grouped under smaller prawns. The male attain maximum growth (7.5 cm) and female attain (7.7 cm). These are called as “Kova river prawn” Rostrum moderately long, extending as far as slightly beyond apex of antennal scale. Carapase roughened by minute spinules are their remarkable characteristics feature of the prawn. This is distributed in Indo-Pacific region and Australia (source) (Plate Id).

*Macrobrachium rude* (Heller, 1862)

The prawns come under the group of smaller prawns. The male grows up to 13 cm and female grows upto 12 cm. These are called ‘Hairy river prawn.’ Carapace scabrous due to presence of minute inconspicuous prickles, its length about twice that of rostrum. Both antenna and hepatic spines characteristic feature of the genus. Distributed the prawn in India, Sri Lanka, Juba, Somaliland and Mozambique (Plate Ie).

#### **PLATE I**



(a) *Macrobrachium malcolmsonii*



(b) *Macrobrachium aemulum*



(c) *Macrobrachium nobilii*



(d) *Macrobrachium australe*



(e) *Macrobrachium rude*



(f) *Macrobrachium lamarrei*

#### **Plate II**



(a) *Macrobrachium scabriculum*



(b) *Macrobrachium indicum*



(c) *Macrobrachium dolichodactylus*



(d) *Cardina nilotica*



(e) *Caridina gracilipes*



(f) *Caridina gracilirostris*

#### **Discussion**

In the present study, nine species of *Macrobrachium* and three species of *Caridina* were collected from Grand Anaicut and Lower Anaicut throughout the period. Lower Anaicut hold the maximum catches when compared to Grand Anaicut. There was a slight seasonal variations observed in the species availability. The number of individuals are more in Lower Anaicut region which may be due to the suitability and its populations by migrant freshwater species from upstream region to lower saline areas. Similar observation were reported by earlier workers (Mariappan and Balasundaram, 1999; Mariappan, 2000; Mariappan *et al.*, 2002).

According to De Man (1908) the prawn species of brackish water are the place of occurrence. *Macrobrachium malcolmsonii* and *M. rosenbergii* are predominant species at Cauvery river (Jayaram *et al.*, 1982). Schoonbe *et al.* (1989) recorded five species of riverine prawn belonging to genera *Macrobrachium* such as *Macrobrachium lepidactylus*, *M. rude*, *M. peterssi*, *M. scabriculum* and *M. australe* from Lake Cubbu, Zululand, South Africa. Two species of freshwater prawns such as *Macrobrachium lamarrei*, *M. malcolmsonii* were recorded from Coovam river, Chennai (Mary Bai, 1993). The freshwater prawns of the genus *atyidae* such as *Caridina gracilirostris*, *C. gracilipes* and *C. kunnathurensis* were recorded from Madras (Jasmine and Chandran, 1994). There are five species of *Macrobrachium* such as *M. malcolmsonii*, *M. rude*, *M. nobilii*, *M. lamarrei*, *M. scabriculum* and *M. australe* were recorded in the river Cauvery, Tamil Nadu (Mariappan and Balasundaram, 1999). The small sized species like *Macrobrachium nobilii*, *M. scabriculum*, *M. rude* and *M. lamarrei* are handpicked in the wild by fisher women for sale in the local market (Mariappan, 2000).

According to Mariappan *et al.* (2002) there were six species of *Macrobrachium* in Lower Anaicut, and five species in Grand Anaicut, four species in Muthupet. Three species in Mettur and Jedarpalayam. Raghunathan and Valarmathi (2005) recorded ten species of freshwater prawn such as *Macrobrachium aemulum*, *M. australe*, *M. canarae*, *M. lamarrei*, *M. malcolmsonii*, *M. nobilii*, *M. rosenbergii*, *M. rude*, *M. scabriculum*, *M. indicum* from freshwater bodies in Tamil Nadu.

Four new species of *Caridina* such as *C. bunyonyinsis*, *C. gordnae*, *C. pseudonilotica* and *C. subventralis* were recorded from African freshwater bodies (Jasmine and Clark, 2005). The prawn species of *M. Josephi Jayachandran* is the first record of the species outside its type, locality from a rock pool, Medavakkam, Chennai (Valarmathi and Raghunathan, 2006).

Three species of *Macrobrachium* such as *Macrobrachium lamarrei lamarrei*, *M. canarae* and *M. scabriculum* were recorded from Kanchipuram district, Tamil Nadu (Mariappan and Jasmine, 2006). Raghunathan and Valarmathi (2009) reported 18 species of *Macrobrachium*. In India more than fifty species of *Macrobrachium* have been reported by Jayachandran and Indira (2009). According to Arumugam (2011) there are 24 species of freshwater prawn available in Tamil Nadu. In the Ganga river system two major species of prawns such as *Macrobrachium gangeticum* and *M. malcolmsonii* are available predominantly (Sudayprasad *et al.*, 2012). Radhakrishnan *et al.* (2012) reported a total 437 species of prawn fauna occurring in India. Ahmed *et al.* (2013) reported the impact of climate change on prawn postlarvae fishing in coastal Bangladesh. Ahamed *et al.* (2014) studied on an overview of freshwater prawn fishery in Bangladesh.

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