

Freshwater Crab Diversity in the Aquatic Habitats of Jammu, J&K

Sanjay Kotwal and Rahul Kait

Abstract: Considering the ecological and economical values of the crabs and the scarcity of information with respect to Union territory of Jammu and Kashmir, the present study was undertaken to investigate the crab habitations in the Jammu region of the Union territory. The study involved investigation of species diversity along with taxonomic position, morphometric characteristics and distribution. The present communication recorded two species of freshwater crabs belonging to two genera and families each.

Key words: Jammu, Diversity, True freshwater crab.

1. Introduction

Freshwater crabs are the most advanced members of the Phylum Arthropoda. The crabs have a great ecological and economical importance as they play significant role in nutrient cycle, water quality monitoring and small scale fisheries. These macrocrustacean members belong to the suborder Brachyura of order Decapoda under class Malacostraca and subphylum Crustacea. The crabs have been recorded from a wide variety of aquatic and terrestrial habitats in tropical and subtropical parts of the world and exhibit a great adaptive tendency (Srivastava, 2005).

As per current estimates globally there occur about 1476 species of freshwater crabs under 4 super families (Yeo *et al.*, 2008). These include 1306 species of true freshwater crabs belonging to 8 Families Pseudothelphusidae, Potamonautesidae, Deckeriidae, Trichodactylidae, Platythelphusidae, Potamidae, Gecarcinucidae and Parathelphusidae (Martin and Davis, 2001). True freshwater crabs have adopted fresh water, semi terrestrial or terrestrial mode of life, which is not dependent on marine water (Rahman *et al.*, 2008). In this context about 96 truly freshwater crab species belonging to 41 genera and 6 families have been recorded from different parts of India so far (Wood-Mason, 1871; Henderson, 1893; Alcock, 1910; Hora, 1935; Bott, 1970; Dutta, 1989; Ghosh and Ghatak, 2000; Srivastava, 2005 and Ng *et al.*, 2011).

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However, there is hardly any record of the crab diversity from the freshwater habitats of Jammu province in particular and Jammu and Kashmir Union territory in general in spite of the great ecological and economical role of the macrocrustacean. Some scattered contributions in this context include Gupta (2012), Manhas (2012) and Bandral *et al.* (2014). With this objective the present study was undertaken to investigate

the crabs inhabiting the freshwater habitats of Jammu province.

2. Material and Methods

The entire Jammu region was surveyed for the crab habitations. Jammu province literally called Duggardesh is one of the divisions of the Union Territory of Jammu and Kashmir. Located between the coordinates $32^{\circ} 74'$ N latitude and $74^{\circ} 87'$ E longitude Jammu province is bordered by Kashmir in North, Ladakh in East, Himachal Pradesh and Punjab in South and Pakistan in the west. The Pir Panjal range separates it from the Kashmir valley. It is comprised of 10 districts viz., Doda, Jammu, Kathua, Kishtwar, Poonch, Rajouri, Ramban, Reasi, Samba, and Udhampur.

Samples (Decapods) were collected by using a combination of fine mesh (4 mm) cast nets and dipnets with the help of an expert fisherman. The collected samples were fixed in 5- 10% formaldehyde solution in plastic containers and brought to laboratories for the taxonomical studies. All morphometric and meristic measurement were taken by using normal scale and Vernier Slide Calipers as per Henderson (1893) and Alcock (1910). Colour and presence or absence of setae noted in live condition. Samples were also sent to Zoological Survey of India, Kolkatta for further confirmation. The surface of carapace, appendages, carinae, setae, abdomen, mouthparts, antennae, antennules were observed by magnifying glass, and also with the suitable microscope. The biological aspects including habitat, distribution etc. of identified crabs were studied using primary and secondary data from various sources.

3. Results

The present study recorded two species of freshwater crabs (*Maydelliatelphusa masoniana* and *Himalayapotamon atkinsonianum*) belonging to two genera (*Maydelliatelphusa* and *Himalayapotamon*) and two families (Gecarcinucidae and Potamidae) in the aquatic

habitats of Jammu region Jammu and Kashmir.

(1). *Maydelliatelphusa masoniana* (Henderson, 1893) 1910. *Paratelphusa (Barytelphusa) masoniana*: Alcock, Cat. Indian Decapod Crust. Indian Mus., 1(2): 96, pl. 12, fig. 59, 1995. *Paratelphusa (Barytelphusa) masoniana*: Krishnamurthy, Zool. Surv. India Himalayan Ecosystem Series, Part 1, Uttar Pradesh: 23.

Systematic Position:

Phylum ARTHROPODA Latreille, 1829

Subphylum CRUSTACEA Brunnich, 1772

Class MALACOSTRACA Latreille, 1802

Order DECAPODA Latreille, 1802

Sub order PLEOCYEMATA Burkenroad, 1963

Infra order BRACHYURA Linnaeus, 1758

Family GECARCINUCIDAE Rathbun, 1904

Specimen Examined: 15 males and 10 females

Morphometric Measurement:

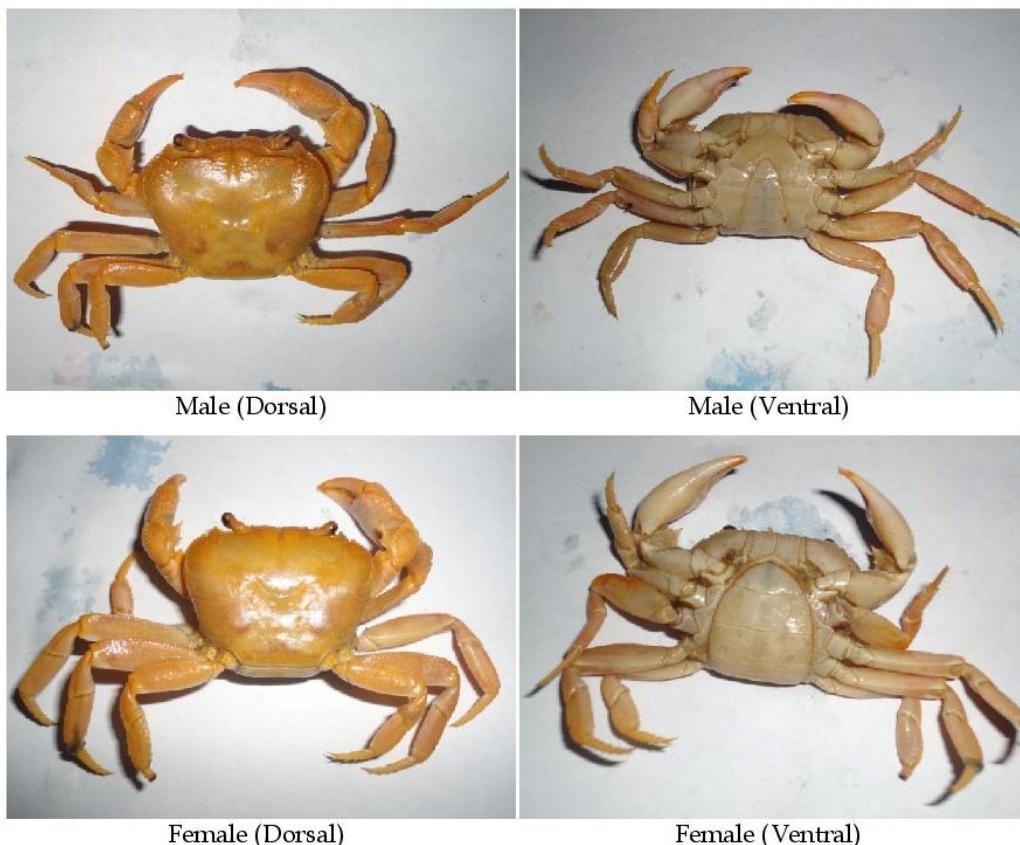
Male: Carapace length (Cl): 21-48mm; Carapace Breadth (Cb): 24-65mm; Chela length (mean): major 75mm and minor 45mm; weight 35-60gm.

Female: Cl: 20-43mm; Cb: 21-57mm; Chela length (mean): major 63mm and minor 34mm; weight: 25-51gms.

Diagnostic Features: Carapace as a whole quite apart from the individual convexity of the several regions and is distinctly tumid; its relative length is little greater. The cervical grooves run rather to the inside than to the outside of the lateral epibranchial tooth on either side, the front is slightly less declivous. The epigastric crests are less oblique. The outer orbital tooth is prominent and acute. Lateral epibranchial tooth large, prominent and acuminate. Anterolateral border of carapace are not so strongly convex. In the chelipeds the spines at the inner angle of the corpus is sharper.

Colouration: Dorsal surface of carapace and chelipede dark brown, ventral surface of

carapace light yellowish, abdomen light coloured.



Himalayapotamon atkinsonianum (Wood-Mason, 1871)

Heterochelous Chela: Heterochelous Chelas equipped with teeth were been observed in both the sexes. The male crabs recorded heavy and bigger size chelipeds as compared to females. Black or Dark brown in colour

Habitat: At the bottom of shallow water bodies like canals, ponds, small streams with abundant macrophyte growth.

Distribution: Sikkim; Meghalaya; Bihar; Himachal Pradesh; Uttarakhand and Jammu and Kashmir.

(2). *Himalayapotamon atkinsonianum* (Wood-Mason, 1871) 1871. *Telphusa atkinsonianum* Wood-Mason, *J. Asiatic Soc. Bengal*, **40**: 205, pl. 14, figs. 12-16. 1975.

Potamon atkinsonianum: Sharma, *J. Bombay nat. Hist. Soc.*, **72**(1): 223 (Kashmir: Poonch Valley).

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Sub order PLEOCYEMATA Burkenroad, 1963
Infra order BRACHYURA Linnaeus, 1758

Family POTAMIDAE Ortmann, 1896

Specimen Examined: 12 males and 9 females

Morphometric Measurement:

Male: Carapace length (Cl): 21-35mm; Carapace Breadth (Cb): 20-52mm; Chela length (mean): major 55mm and minor 34mm; weight 31-55gm.

Female: Cl: 20-34mm; Cb: 21-44mm; Chela length (mean): major 47mm and minor 31mm; weight: 25-45gms.

Diagnostic features: The epigastric crests, though separated from the post-orbital crests by a groove, merely from the convexity of a common curve with latter, front in the adult less than a third of

the greatest breadth of the carapace, propodites of the two middle pair of legs about twice as long as breadth, size large, and carapace of adult 1.5 inches or more in length.



Himalayapotamon atkinsonianum (Wood-Mason, 1871)

Colouration: Dorsal surface of carapace and chelipede reddish-brown, ventral surface of carapace and abdomen light brownish.

Heterochelous chelas: Heterochelous chelas are medium sized, pale or creamish with orange coloration at their tips.

Habitat: Abundantly found at the bottom among macrophytes in small water bodies like ponds, canals and streams.

Distribution: Sikkim, West Bengal, Himachal Pradesh, Jammu and Kashmir.

4. Discussions

On the basis of present investigation two fresh water crab species of have been recorded in the aquatic habitats of Jammu. These include *Maydelliatelphusa masoniana* and *Himalayapotamon atkinsonianum*. Among these *Maydelliatelphusa masoniana* was

recorded from two lotic freshwater systems viz., Gho Manahasa stream (Jammu) and Sumah stream (Akhnoor). Similarly *Himalayapotamon atkinsonianum* was recorded in Jhajhar Kotli stream (Udhampur), Anji Stream and Tikri stream (Reasi). The distribution pattern of the two crab species clearly established *Maydelliatelphusa masoniana* as a species of aquatic habitats plain areas while *Himalayapotamon atkinsonianum* in the hilly streams which confirms their taxonomy. These findings are in conformity with Cumberlidge, (1999) and Bandral *et al.* (2014). Further, during present investigation the crab species were exclusively recorded from the lotic water habitats (gho manhaasa stream, Tikri stream, Banganga, and Jhajhar kotli stream). The present study did not record any habitation for the freshwater

crabs in the aquatic habitats of Jammu regions of Jammu and Kashmir. This can be attributed to rich food availability, refuge/protection from predators and also safe breeding grounds. Similar observations have been made by Cumberlidge (1999), Bolt (1970), and Bandral *et al.* (2014).

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