



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

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ABSTRACT

Considering 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 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 2 species of freshwater crabs belonging to 2 genera and 2 families.

Key words: Jammu, Diversity, True freshwater crab

INTRODUCTION

Freshwater crabs are the most advanced members of the Phylum Arthropoda. These macrocrustaceans have an immense ecological and economic importance as they play significant role in nutrient cycle, water quality monitoring and small scale fisheries. These Freshwater crabs 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 are 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, Trichodactylidae, Potamonautidae, Deckenidae, 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 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).

In this context not much information is available about the crab diversity in the freshwater habitats of Jammu province in particular and Jammu and Kashmir Union territory in general in spite of these great ecological and economical role of the macrocrustacean. Some scattered contributions 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.

MATERIAL AND METHODS

The entire jammu region was surveyed for the crab habitations from Nov, 2010 to Oct, 2011. Jammu literally called Duggardesh is Located between the coordinates 32 ° 74' N latitude and 74 ° 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 divide into 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 fisher man. 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. 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. Samples were also sent to Zoological Survey of India, Kolkatta for further confirmation.

RESULTS

The present study recorded 2 species of freshwater crabs (*Maydelliatelphusa masoniana* and *Himalayapotamon atkinsonianum*) belonging to 2

genera (*Maydelliatelphusa* and *Himalayapotamon*) and 2 families (*Gecarcinucidae* and *Potamidae*) in the aquatic habitats of Jammu region Jammu and Kashmir Union territory.

(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.

Systemmatic Position:

Phylum	ARTHROPODA	Latreille, 1829
Subphylum	CRUSTACEA	Brunnich, 1772
Class	MALACOSTRACA	Latreille, 1802
Order	DECAPODA	Latreille, 1802
Sub order	PLEOCYEMATA	Burkenroad, 1963
Infraorder	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 carpus is sharper.

Colouration: Dorsal surface of carapace and chelipede dark brown, ventral surface of carapace light yellowish, abdomen light coloured.



Figure 1: *Himalayapotamon atkinsonianum* (Wood-Mason, 1871) **A:** Male (Dorsal) **B:** Male (Ventral) **C:** Female (Dorsal) **D:** Female (Ventral)

Heterochelous Chela: Heterochelous Chelas equipped with teeth 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. Asiat. Soc. Bengal*, **40**: 205, pl. 14, figs. 12-16.

1975. *Potamon atkinsonianum*: Sharma, *J. Bombay nat. Hist. Soc.*, **72**(1): 223 (Kashmir: Poonch Valley).

Systematic Position:

Phylum	ARTHROPODA	Latreille, 1829
Subphylum	CRUSTACEA	Brunnich, 1772
Class	MALACOSTRACA	Latreille, 1802
Order	DECAPODA	Latreille, 1802
Sub order	PLEOCYEMATA	Burkenroad, 1963
Infraorder	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, carapace of adult 1.5 inches or more in length.

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.

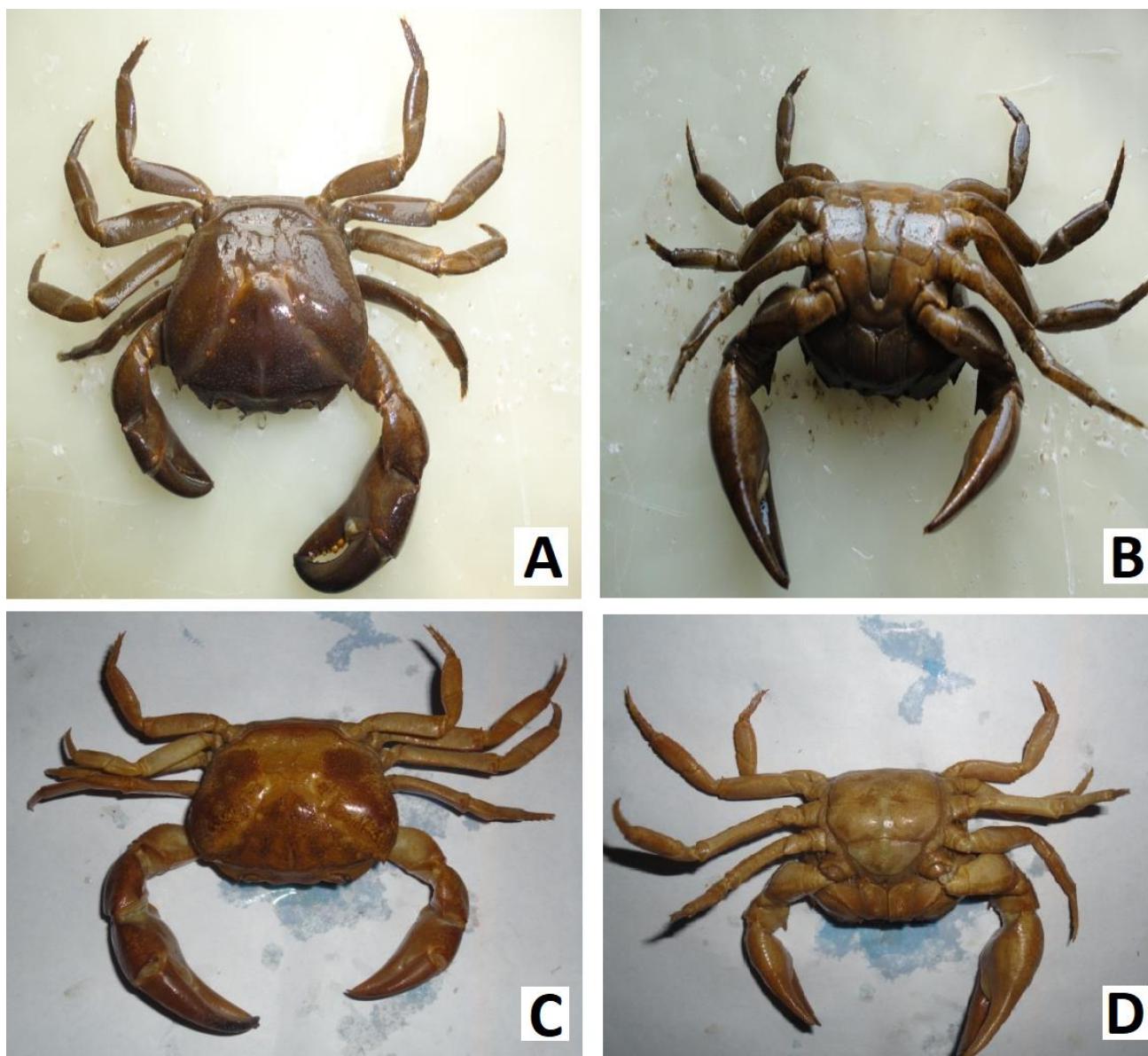


Figure 2: *Maydelliatelphusa masoniana* (Henderson, 1893) **A:** Male (Dorsal) **B:** Male (Ventral) **C:** Female (Dorsal) **D:** Female (Ventral)

DISCUSSIONS

On the basis of present investigation two species of fresh water crab 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 Jhajar 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 Jhajar kotli stream). The present study did not record any habitation for the freshwater crabs in the lentic habitats of Jammu region 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), Bott (1970) and Bandral *et al.* (2014).

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Conflict of Interest

The author declares that there is no conflict of interest.

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