

# STUDIES ON ECO-BIOLOGY OF SOME FRESHWATER CRABS IN REWA DISTRICT (M.P.)

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**ABSTRACT:-** A survey was conducted in some fresh water ecosystems of Rewa during the period from Jan. 2021 to Dec. 2021 with a view to assess the status of fresh water crab resources in the area. The study was made on species diversity including its taxonomic position, morphological characteristics, habits, habitat and distribution. Out of various water bodies scanned so far two species of crabs were recorded viz *Maydelliathelphusa masoniana* and *Himalayapotamon emphysetum* of the Rewa region. The present study is first attempt regarding taxonomic revision of the two, at species level from water bodies of Rewa (M.P.) Central India.

**KEYWORDS** :- Diversity, Fresh water crabs, Taxonomy, Rewa (M.P.) Central India.

## INTRODUCTION:-

Fresh water crabs though have remained a neglected component of the world's inland aquatic ecosystem, but because of their characteristics as rapid growth, production of large number of young's, early attainment of sexual maturity, they qualify themselves as culturable candidate.

The crustaceans are highly sensitive to pollution and hence any disturbances in the physicochemical parameters in turn may induce changes in immune status of crustaceans, by stressing them and resulting in a reduction of immune vigour. The environmental parameters of any wetland are very important because the variations in the physicochemical properties such as temperature, salinity, pH, dissolved oxygen, FCO<sub>2</sub>, Ca<sup>++</sup>, Mg<sup>++</sup>, influence the crustacean abundance and life cycles. The correlation between physicochemical parameters and crab population provides information regarding the optimum conditions under which fresh water crabs can reproduce and thus maintain the population.

Information on the population biology of fresh water crabs is very scarce (Gherardi and Micheli, 1989). Studies on population generally focus on description of density, size structure, sex ratio and breeding periods (Branco *et al.*, 2002). Majority of crab species are narrow endemics, occurring in only a small geographical area. This can be attributed to their poor dispersal abilities, low fecundity and habitat destruction caused by human population. Population dynamics of any species can be helpful in chalking out the strategies to verify the factors accounting for the differences among population and to understand the biology of constraints that are shaping the structure of these populations.

Crabs are the basic components of the ecosystem and they are consumed as food in many countries. Edible crustaceans such as crabs, prawns, shrimps, crayfishes and lobsters comprise major sources of nutritious food for humans. The nutritive value of crustaceans depend on their biological constituents such as proteins, carbohydrates, lipids, vitamins and minerals. Crabs have exceptional and scrumptious taste as compared to fish and molluscs and rank third after shrimps and lobsters for their revered delicacy and value of fishery they support (Savad and Raghavan, 2001).

Present investigations therefore, have been carried out with a view to generate information on different biological aspect of freshwater crabs keeping in view the following objectives.

- To prepare an inventory of the crab resources available in various water bodies of the region.
- To correlate the seasonal occurrence and abundance of crabs with the ambient ecological parameters.

## Study Area:-

Bichhiya river is one of the main tributary of Beehar river. It arises from the village Khaira near Kund of

Kaimore range and flowing 58 Km. Its location in Rewa district is 24°10' latitude North and 81°15' longitude last. The river originates from Khaira village of Gurh Tehsil and joins in Bihar river behind Rewa fort. The confluence place is known as Rajghat. At the upstream of the Bichhiya river municipal water treatment station is situated after, which it meets with another river called Beehar of Rajghat. Their flows in township, industrial, domestic and municipal discharge merge into it at different points. The water of the river is used by urban and peripheral rural population directly at many stations for domestic and agriculture uses.

**MATERIAL & METHODS:-**

Field survey was carried out for a period of two years viz. Jan. 2021 to Dec. 2021. Survey was classified on the basis of water bodies of Rewa region. Water bodies of plain scanned so far include, Bichhiya Bihar River. Crabs were randomly collected from the selected sites by netting or hand picking by taking the help of local fisherman. Specimens were collected in plastic containers and carried to Fisheries laboratory, Dept. of

Zoology, Govt. P.G. College Satna (M.P.) to record morphological parameters. Morphological analysis has been carried out by using normal scale and vernier callipers. The crabs were identified following the identification keys Henderson (1893) and Alcock (1909) further authentication was done with the help of checklist of Indian fauna of fresh water crabs Pati, et al (2013) from Zoological Survey of India (ZSI) Kolkatta. Species previously identified as *Paratelpusa masoniana* Henderson (1893) is taxonomically revised as *Maydelliathelpusa masoniana* from plain areas where as second species from hilly areas that has previously been identified as Potamon species Anjuman (2012) is taxonomically confirmed as *Himalayapotamon emphysetum* Alcock (1909).

**RESULTS AND DISCUSSION:-**

Two species of freshwater crabs belonging to different genera have been recorded during present study period. (Tab-1; fig 1)

**Table No.1 - Showing distribution and morphological features of two species of crabs observed in Various water bodies of Rewa region.**

Species	Water Body	River System	Status	Morphological Features				
				Size (CW)		Colour		
				Male	Female	Dorsal	Ventral	Chelas
i) <i>Maydelliathelpusa masoniana</i>	Bichhiya Bihar	Indus	+ +	<7Cm	<5.5	Dark chocolate brown	Greyish White	Brown at tips
ii) <i>Himalayapotamon emphysetum</i>	Bichhiya Bihar	Indus	+ +	<5Cm	< 4 Cm	Reddish orange/	Pale White	Bluish Purple at tips

**Species: I**

Taxonomic position of *Maydelliathelpusa masoniana* (Henderson, 1893)

- Phylum - Arthropoda
- Subphylum - Crustacea
- Class - Malacostraca
- Order - Decapoda
- Sub order - Pleocyemata
- Infra order - Brachyura
- Super family - Gecarcinucoidea
- Family - Gecarcinucidae
- Genus - *Maydelliathelpusa*
- Species - *masoniana*



**Fig.1 (*Maydelliathelpusa masoniana*) (Dorsal View Female)**

**Habits:**

As observed by their random gut content analysis, species is omnivorous, feeding on algae, water plants, detritus, and insect larvae. Maximum crab population is recorded during months of June-July and Dec-Jan, thus exhibiting them as biannual breeders. Mature adults, both male and females are witnessed in collection during advancing summers (April-June) and secondly during approaching winters (Oct-Dec) whereas juveniles were reported in rest of months.

**Habitat:**

Abundant in shallow water bodies such as paddy fields, canals, ponds etc. and prefer to construct burrows closer to water level in clay soil to escape from dry seasons.

**Distribution:** Water bodies of Rewa viz. Bichhiya & Bihar river.

**II- Taxonomic position of *Himalayapotamon emphysetum* (Alcock 1909)**

Phylum	-	Arthropoda
Subphylum	-	Crustacea
Class	-	Malacostracca
Order	-	Decapoda
Sub order	-	Pleocyemata
Infra order	-	Brachyura
Super family	-	Potamoidea
Family	-	Potamidae
Genus	-	<i>Himalayapotamon</i>
Species	-	<i>emphysetum</i>



Fig.2( *Himalayapotamon emphysetum*) (Dorsal view of male)

**Habits:**

Omnivorous, feeding on both plant and animal matter. Crab population of the species records presence of all age groups viz. adult male/females and juveniles all the year round thus exhibiting them as continuous breeders. The species is seen in large numbers wandering around on land particularly soon after rain for food which is abundant at this time on land then in water.

**Habitat :** Abundant in running water condition under stones and boulders present in water bodies of hilly

areas. The species is confined either to high gradient streams or to more or less sluggish rivers.

**Distribution:** Water bodies of Rewa viz. Bichhiya & Bihar River.

**DISCUSSION:-**

During the present investigation, two species of freshwater crabs have been recorded viz *Maydelliathelphusa masoniana* Henderson (1893) and *Himalayapotamon emphysetum* Alcock (1909) from water bodies of Jammu region. (Table 1) The former species *Maydelliathelphusa masoniana* Henderson, (1893) is a taxonomic revision of *Paratelphusa masoniana* Henderson (1893) reported from Gadigarh stream Dutta, (1978), Gho-manhasan stream Gupta, (2012) of Jammu region (J&K).

The taxonomic position of later species *Himalayapotamon emphysetum* Alcock, (1909) reported from the water bodies of hilly areas viz Banganga, Jajarkotli, Sunderbani, Poonch & chenani of Jammu region is a first attempt on record. The Global position showing the diversity of fresh water crabs indicates that fresh water crab taxonomy is regarded as still being in its discovery phase. D.C.J. Yeo, (2007). There are currently total of 238 genera including 1,306 true fresh water crabs species accommodated in six families. The oriental region is taxonomically most diverse part of the world with over 900 species of fresh water crabs in 154 genera & 2 families viz Gecarcinuidac & Potamidae Yeo-etal 2008, Cumberlidge etal (2009).

The taxonomic position and confinement of *Maydelliathelphusa masoniana* under family Gecarcinuidac in water bodies of plain areas and *Himalayapotamon emphysetum* under family Potamida from water bodies of hilly area gets authenticated by work of Neil Cumberlidge (1999). According to him family Potamidae is derived from Greek word ‘Potamon’ meaning river where as family Gecarcinuidac refers to ‘land crabs’. In some parts of tropics, some species have moved out of rivers, streams and lakes and have colonized nearby land.

**CONCLUSION:-**

On the basis of distribution pattern of two species viz *Maydelliathelphusa masoniana* and *Himalayapotamon emphysetum*, it is observed that these two species reported from the water bodies of Rewa region have contrast morphological features as well as their distribution pattern (Table-I). This variation in distribution pattern of the two species clearly indicates

the probability of presence of many more species in the water bodies of different geographical conditions. If the survey is under taken throughout the state it is hope more species can be recorded that will enrich the date on the existing crab resources of the state which will help to formulate management action plan on crabs of Rewa (M.P.) Central India.

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