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MORPHOLOGICAL CHARACTERS OF THE INDIAN WATER BOATMEN, *MICRONECTA STRIATA*, FIEB. (CORIXIDAE, HEMIPTERA: HETEROPTERA)

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Abstract

One of the most intriguing and intriguing representatives of the family corixidae (Leach) 1815 is the water boatman, *Micronecta striata* Fieb. In the event that a member of the corixidae family has a head that overlaps the front border of the pronotum, it is easy to tell them apart from other related families. A small rostrum that blends in with the wide tip of the skull and the front legs that insert onto the back of the prostemium. Head as wide as or wider than the thorax; front tarsi one segmented and spatulate; fringed with stiff bristles; body as depressed. Two genera, Corixa (Geaoffs) and Micronecta (Kirk), are found in the family Corixidae in India.

Keywords : Hemiptera, *Micronecta striata*, Indian water boatman, External morphology

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Introduction

The common Indian water boatman belongs to a family of aquatic insects. In the present study an effort is made to explore bionomics of *Micronecta striata* Fieb. to introduce its habitat, habit, food, feeding and morphology. It is very common in ponds of rural area of India. Sound observations were made to ensure the validity of study. These insects are harmless, so that no special management to control them exists today. They are part of aquatic ecosystem as food for other higher trophic level animals. Keeping all these points in view, the present study is undertaken to evaluate bionomics of common Indian water boatman *Micronecta striata* Fieb (Corixidae, Hemiptera: Hetroptera). *Micronecta striata*, the water boatmen, died in February. This insect belongs to the hemiptera order and the corixidae family (Leach, 1815). In 1735, Linnaeus created the order Hemiptera to encompass wingless insects (with or without wing covers). In 1758, he narrowed the order to include the insects commonly believed to be part of it, but he did include the Thysanoptera. This was due to the fact that during that time, there were four distinct orders represented by insects such as Cimex, Notonecta, Gryllus, Lampyreys, and Formica. Eventually, in 1810, the order was split into the still-accepted suborders Heteroptera and Homoptera. Nevertheless, entomologists have not been consistent in their 1821 usage of the terms for orders and suborders. Macleay may have been the first to officially recognize homoptera as a distinct order. Current authorities like Van Duzee 1917, Butler 1923, Parshley 1925, Totard 1923, Riley 1931, etc., utilized the terms Heteroptera and Homoptera for their systematic works.

Insects belonging to the Hemiptera order can range in size from tiny to enormous. They have a variety of body shapes and sizes, including ovals, elongate, and flattened surfaces. Hemiptera feed on plants and animals, and they can change their shape simply. Their mouth parts include piercing and sucking. Their heads are free and either prognathous or hypognathous, and they have two to ten antennae, occasionally with 25 segments. Their eyes are large, and they have ocelli or none at all. Labium modifications include a simple or segmented rostrum, a beak or proboscis, palpi that have atrophied, and wings that are either short or long. Bugs are members of the Hemylaptera order. Their wings, which are typically thickened at the base and covered in membranes at the tip in Heteroptera and completely covered in membranes in Homoptera, are used for walking, running, jumping, swimming, and grabbing prey. Their legs, which can be cylindrical or flattened, have one or two claws and may or may not have arolia or empodia. Their abdomen has few segments, with the first segment especially reduced or nonexistent, and cerei. Stem cell micronecta The indigenous Fieb. 1898 is widespread over India. Evidence of it has been found in countries other than India, including Burma, Ceylon, China, and Canara. Its widespread distribution in India was confirmed during the present examination, which included Himachal Pradesh, Uttar Pradesh, Haryana, Madhya Pradesh, Delhi, Rajasthan, and Uttaranchal.

Material and Methods

For the morphological study, water boatmen (*Micronecta striata* Fieb) were gathered from Mathura's ponds and the Yamuna River between July and November. They floated on the water's surface. They typically inhabit communities. After being fixed in various fixatives, these bugs were killed by chloroform vapours. To make sure they were properly fixed, tiny holes were poked in the belly using microneedles

and then placed in the fixative. It was Zenker's fluid, alcoholic bouin's fluid, and Bouin's fluid that were utilized as fixatives. Once immersed in fixatives for a day or two. Using multiple cycles of 70% alcohol and a few drops of glycerin, they were completely washed.

The specimens were immersed in 5% KOH for around one month or, on occasion, boiled in the solution for approximately twenty minutes to partially remove muscles and bleach the heavily pigmented integument, in order to analyze the exterior anatomy. The specimens were left in glacial acetic acid for about an hour after being treated with KOH solution to neutralize the alkaline effect. The samples were subsequently cleaned, stored in glycerine, and mounted in balsam from Canada. Scaples, forceps, and microneedles were useful for dissecting specimens in a small dish under the high power of the binocular dissecting microscope, which aided in the study of the skeleton.

Results and Discussion

The examination of the morphological characters of the Indian water boatmen, *Micronecta striata*, Fieb. (Corixidae, Hemiptera: Heteroptera), is a crucial aspect of understanding the taxonomy, physiology, and adaptation of this fascinating aquatic insect species. Morphology plays a pivotal role in distinguishing different species within the Corixidae family and provides insights into their ecological roles and evolutionary adaptations. *Micronecta striata* exhibits distinct morphological features that make it easily identifiable within its taxonomic classification. One notable characteristic is its streamlined and elongated body, which is well-suited for life in aquatic environments. The body structure reflects adaptations to its aquatic lifestyle, allowing for efficient swimming and navigating through freshwater habitats.

The most distinctive morphological feature of *Micronecta striata* is its specialized forelegs, which are modified into paddle-like structures known as hemelytra. These hemelytra serve a dual purpose – providing stability during swimming and acting as protective covers for the membranous hindwings when at rest. The presence of hemelytra is a defining characteristic of the Heteroptera order to which water boatmen belong. The head of *Micronecta striata* is equipped with compound eyes, antennae, and mouthparts adapted for its feeding habits. The compound eyes enable the insect to perceive its aquatic surroundings and detect potential prey or predators. The antennae play a role in sensory perception, aiding in the detection of chemical cues in the water. The mouthparts are adapted for piercing and sucking, facilitating the extraction of nutrients from its prey.

Examining the coloration and markings on *Micronecta striata* is another aspect of its morphological characterization. The coloration can vary, but common hues include shades of brown, green, or a combination of these. Such color variations often serve as camouflage, helping the insect blend into its aquatic habitat and avoid predation. The abdomen of *Micronecta striata* is segmented, with each segment serving specific physiological functions. The last abdominal segment typically bears structures related to reproduction, such as genitalia. Studying these reproductive structures provides valuable information on the species' reproductive biology and mechanisms.

The morphological characters of *Micronecta striata* extend to its appendages, including the legs and claws. The legs are adapted for swimming, with specialized setae and spines that aid in propulsion through the water. The claws, located at the tips of the legs, contribute to the insect's ability to cling to substrates in its aquatic environment. One of the challenges in studying the morphological characters of *Micronecta striata* lies in the size of these insects. Being small in size, often measuring a few millimeters, detailed examination requires specialized equipment such as microscopes. Researchers meticulously observe and document the intricate structures of these water boatmen to build a comprehensive understanding of their morphology. Understanding the morphological characters of *Micronecta striata* is not only essential for accurate species identification but also provides valuable insights into its ecological niche and evolutionary adaptations. Morphological studies contribute to the broader field of entomology, helping scientists unravel the diversity and complexity of insect life in freshwater ecosystems.

In conclusion, the morphological characters of the Indian water boatmen, *Micronecta striata*, offer a wealth of information about the species' taxonomy, adaptation to aquatic habitats, and ecological role. From specialized forelegs and coloration to reproductive structures and appendages, each morphological feature contributes to the overall understanding of this fascinating insect. As researchers continue to delve into the intricate details of *Micronecta striata*'s morphology, they unlock not only the secrets of this particular species but also gain broader insights into the complexity of freshwater ecosystems and the diverse life forms that inhabit them

Tanks on the plains often include these insects, which swim aggressively and come back up to the surface and air supply at regular intervals. The body of *Micronecta striata*, known as Fieb, is generally elongate. On average, a male is 10.4 mm long and a female is 10.8 mm long. General colour of the body us dull ochraceous, coarsely and darkly punctate; the head with borders of the central lobe, pronotum with obscure oblique fasciae; scutellum with short case and obscure centeal discal fascial and two marginal observes before apex and conum, with some obscure discal patches, black; apex of scutellum pale, in apical margins pieceous; connexivum simultaneously ochraceous and piecous, membrane Greyish – brown, the veins darker; body beneath as well as legs ochraceous; head beneath and sternum are coarsely and darkly punct6ate, abdomen finely and densely punctate, its lateral margins spotted with piecous, legs finely spotted with piecous; more thickly at apices of femora and tibia, the antennae pieceous, signs of second and third joints and base of fifth joint luteous, antennae with the The three main parts of a human body are the head, the chest, and the belly. The prothorax's anterior collar covers the back of the skull. A beak rests atop the skull and stretches from the ventral surface all the way to the fourth abdominal segment and across the fifth. On the side of the head, facing the back, are two compound eyes that are dark brown in color.

Of the three parts that make up the thorax, the biggest and featuring cannate ventral borders is the prothorax, followed by the mesothorax and finally the metathorax. The prothorax is formed by merging the meso and metathoracic segments; each segment also has two wings on its dorsal side. In repose, the hemelytra or forewings fold crosswise over each other,

overlapping their membranes entirely. There are two claws at the end of each thoracic segment's limb. Ten segments make up the abdomen; the final four are telescopic and hidden, and the terminal segment is totally membraneous. The forewing scutellum completely encases the dorsal aspect of the abdominal cavity. The only parts of the abdomen that are visible are the sides.While the head, thorax, and scutellum are hard chitinous, the terga and sterna of the abdomen are membranous. In the space between the wings is the scutellum, the tip of which extends into the third abdominal segment.

Stem cell micronecta Feb 1898 has a length of 3 to 4 millimeters. Head is a somewhat discolored pale yellow; pronotum has front and rear edges as well as a central transverse line; hemelytra have longitudinal black lines; and the body is less consistently pale yellow underneath. Typically, they have a hefty, smooth, robust exoskeleton with a dismal coloration. Raptorial forelegs feature stiff bristles or one or two rows of spines. They walk and cling with their long middle legs. The long, stiff swimming hairs on the hind legs act like oars, allowing the animal to swim back and forth with a quick, jerky pace. Females have an asymmetrical abdomen while males have a secret genital capsule with stylets and claspers.

The common water boatman, *Micronecta striata* Fieb 1898, inhabits the slow, brackish water of India's rivers, lakes, and ponds. Their structure and form are perfectly suited to living in water. Attached to submerged plants and objects, they scuttle over the water. The adults not only fly around easily but can be quite unpleasant when they're near lighting. They'll even infiltrate open-air pools and bite anyone who gets too close. These pests sift through all manner of organic waste, including sand, plants, and animals. Additionally, they are able to break down the cell walls of many aquatic plants, such as spirogyra, and extract their contents. One of the most voracious predators of aquatic insects, the water boatman (*Micrometa striata* Fieb) eats them as they fall into the water. Additionally, they have been preserved so that they can consume fish eggs. Insects will sometimes work together to catch and devour prey that is too big for a single beetle to handle. Their rostrum is used to pierce prey, allowing them to capture and kill them. Dead bugs have also been found in their stomachs on occasion. Mite infestations have been detected in *Micronecta striata* Fieb.

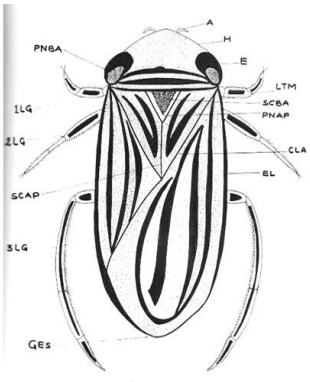

Plate-1

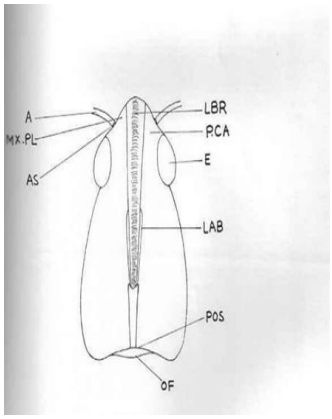

Plate-2

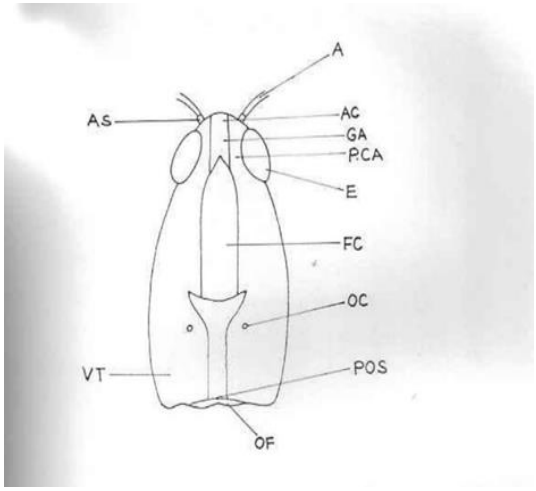

Plate-3

Abbreviations: A- Antenna, Ab.S.- Andominal spiracles, ABD- Abdomen, CLP- Clypeus, CX- Coxa, E- Eye, FE- Femur, G- Genitalia, FR- Frons, GA- Gena, GLA- Gula, LBR- Labrum, PN- Pronotum, RST- rostrum, SCT- Scutellum, TH- Thoracic segment, 1A, SEG- first antennal segment, H- Head, J- Jugam, MS- Metasternum, MES- Mesosternum, MTP- Metapleuron, PP- Propleuron, PS- Prostomium, T- Tylus, C- Corium, CLA- Clavus, HM- Hemilytra, LR- Longitudinal ridge, LTA- Lateral angle, M- Membrane, SCAP- Scutellum apex

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