

Study of Systematic Survey of Aquatic Insects of Mithila, Bihar

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Abstract:- The occurrence and abundance of aquatic insect species is dependent on the complex interactions of ecological factors. But due to enhancing aquatic biodiversity as well as gradual increase of extinction of aquatic insect species, it is necessary to reevaluate the population ecology of Indian aquatic insects. In the present paper the reevaluation of aquatic insects of different ponds of Darbhanga, Madhubani, Samastipur and Begusarai districts of Mithila region during the year 2022.

Keyword:- Aquatic Insects, Ecological Factors, Reevaluation, Mithila.

I. INTRODUCTION

Aquatic insects are one of the major biological components of the aquatic ecosystems. They usually occupy a higher trophic level in food chain. They not only exist in wide variety of forms but also in a vast range of ecological niches. This is the reason that in the recent years, ecologists have shown increasing interest in systematics and ecological studies of aquatic insects. It is noteworthy that the lotic water particularly ponds are store-house of varied type of aquatic insects.

Systematics of aquatic insects involves the arrangement of insects into clearly defined groups enabling a proper understanding of as many insects as possible and also gives an idea of inter-relationships of insect group.

Although the systematics of aquatic insects in various parts of the world have been extensively studied in general. Indian chapter still needs many more editions. Some of the notable Indian reports in this regard are (Roy, 1980; Roy and Sharma, 1982, 1983; Roy *et al.*, 1988; Majumdar *et al.*, 2013; Sharma and Rai, 1991; Muli *et al.*, 2000; Verma and Saxena, 2010; Khan and Ghosh, 2001; Kubendran and Ramesh, 2016; Gupta, 1993; Mathavan and Pandian, 1977; Gopal and Zutshi, 1998; Subramanian and Shivramakrishna, 2005 and Bist and Das, 1988).

II. MATERIALS AND METHODS

The aquatic insects are collected from various ponds of Darbhanga, Mahubani, Samastipur and Begusarai districts of Mithila region in the year 2022, by an insect collecting net made of nylon cloth (mesh size 40 to 80/cm²). These insects were sorted out in the laboratory and identified with the help of standard literature. The insects which could not

be identified here, were sent to Zoological Survey of India, Kolkata for identification. These insects after sorting were killed in 70% alcohol and then transferred to 3% formalin for preservation.

III. RESULTS AND DISCUSSION

The present work is an attempt to update systematics of insects which are either fully aquatic or semi-aquatic, collected from various ponds of Darbhanga, Madhubani, Samastipur and Begusarai of Mithila region during the year 2022. The systematic enumeration of the collected species were as follows:-

A. Systematic Enumeration of the Species

- Order : Ephemeroptera, Super Family : Leptophlebioidea, Family : Leptophlebiidae
 - Leptophlebic species
- Super Family : Caenoidea Family : Caenidae
 - Cuenis species
- Super Family : Ephemeroidea Family : Ephemeridea
 - Ephemera species
- Super Family : Heptagenioidea Family : Haetidae
 - Baetis species
 - Cloen species
- Order : Odonata Sub Order : Anisoptera Family : Gomphidae
 - *Mesogamphus lineatus* (Selys)
- Sub Order : Zygoptera Family : Coenagrilidae
 - *Ischnura deliceta* (Hagen)
- Order : Hemiptera Sub Order : Heteroptera Series : Amphibicorisae
 - Super Family : Gerroidea Family : Hydrometridae
 - *Hydrometra vittata* (Stal)

- Family : Hebridae
 - *Herbus pussilus* (Fallen)
 - Family : Gerridae
 - *Limnometra fluviatorum* (Fabr.)
 - *Metrocoris strangulator* (Bredd.)
 - *Gerris spinolae* (Leth. & Sever.)
 - Gerris species
 - Series : Hydrocorisea Super Family : Notonectoidea
Family : Notonectidae
 - *Notonecta gluaca* (Linn.)
 - *Anisops bouvieri* (Kirkaldy)
 - *Anisops sardea* (Herrich)
 - *Anisops waltirensis*
 - *Anisops breddini* (Kirkaldy)
 - *Anisops hyaline* (Fieber)
 - Nychia species
 - Family : Pleidae
 - *Plea pallula* (Stal.)
 - *Plea pleopea* (Dist.)
 - *Plea frontalis* (Fieber)
 - Family : Nepidae
 - *Ranatra elongate* (Fabr.)
 - *Ranatra filiformis* (Fabr.)
 - *Ranatra digitara* (Hafiz & Pradhan)
 - *Ranatra varipes* (Stal.)
 - *Laccotrephes griseus* (Guer.)
 - *Laccotrephes maculatus* (Fab.)
 - Series : Hydrocorisea Super Family : Notonectoidea
Family : Belostomatidae
 - *Sphaerodema annulatum* (Fab.)
 - *Diplonychus rusticum* (Fab.)
 - *Belostoma indicum* (Lepel. & Serv.)
 - Super Family : Corixoidea Family : Corixidea
 - *Micronecta merope* (Dist.)
 - *Micronecta siva*
 - *Micronecta scutellaris* (Stal.)
 - *Micronecta quadristrigata* (Bredd.)
 - *Micronecta thyesta* (Dist.)
 - *Micronecta albifrons* (Motsch.)
 - *Corixa hicroglyphics*
 - *Corixa distorta* (Dist.)
 - Agraptocorixa species
 - Order : Coleoptera Family : Dytiscidae
 - *Cybister limbatus* (Fabr.)
 - *Cybister confuses* (Sharp.)
 - *Cybister tripunctatus asiaticus* (Sharp.)
 - Cybister species
 - *Agabus nitidus* (Fabr.)
 - *Agabus nitidus* (Fabr.)
 - *Hydaticus vittatus* (Fabr.)
 - *Hydaticus luczonicus* (Aube.)
 - *Hydaticus fabricii* (Mc Leay.)
 - *Laccophilus anticatus* (Sharp.)
 - Hyphoporous species
 - Family : Hydrophilidae
 - *Hydrophilus alivaceous* (Fab.)
 - *Regimbartia attenuate* (Fab.)
 - *Helochares crenatus* (Reg.)
 - Berosus species
 - *Sternolophus rufipes* (Fab.)
 - *Paracymus vulgatus*
 - Coelostoma species
 - Family : Hydraenidae
 - *Hydrena fontata* (d'Orch.)
 - Family : Gyrinidae
 - *Dineutes indicus* (Aube.)
 - Super Family : Curculionoidea Family : Curculonidae
 - *Bagous victinus* (Hustache.)
 - Bagous species
 - Order : Diptera Family : Chironohidae
 - Chironomous species
 - Family : Culicidae
 - Culex species
 - Anopheles species
- Aquatic insects have important ecological roles in both aquatic and terrestrial habitats as primary consumers, detritivores, and predators. Moreover, they dominate in terms of biomass and productivity, representing an important food resource for a vast number of aquatic and terrestrial, both invertebrate and vertebrate, predators.
- In the present studies about 66 species of aquatic insects belonging to orders Ephemeroptera, Odonata, Hemiptera, Coleoptera, and Diptera have been encountered and enlisted from various freshwater bodies of Mithila region of district Darbhanga, Madhubani, Samastipur & Begusarai districts of Mithila, Bihar. In Order Ephemeroptera, Family Leptophlebiidae, Caenidae, Ephemeridea and Haetidae., in Order Odonata, Family Gomphidae and Coenagrilidae, in Order Hemiptera, Family Hydrometridae, Hebridae, Gerridae, Notonectidae, Pleidae, Nepidae, Belostomatidae and Corixidea., in Order

Coleoptera, Family Dytiscidae, Hydrophilidae, Hydraenidae, Curculonidae, Chironomidae and Culicidae have been recorded. The abundance of these insects in the aquatic environment has been found to be correlated with the seasonal growth of floating and submerged vegetations during the studied year.

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