



Larvae of aquatic Insects Diversity in Tedhi Nadi near Katahaghat of District Gonda, Uttar Pradesh, India

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Abstract

The work was carried out for the period of one year that is December 2019 to November 2020. In the present work larvae of aquatic insects diversity in Tedhi Nadi near Katahaghat of district Gonda reported that presence of 14 genera viz. order- Coleoptera contains six genera and order- Diptera contains eight genera. In the Tedhi Nadi near Katahaghat water body, larvae of Dipteran aquatic insects have been found to be dominant among larvae of Coleopteran aquatic insects. Generally Anopheles larvae, Culex larvae, Chironomus larvae, Eristalis larvae and Ptychoptera larvae present in Tedhi Nadi near Katahaghat which indicate the polluted nature of the water body. Thus keeping in view the importance of study steps, should be taken for conservation and maintenance of Tedhi Nadi. It is the necessarily step which have to be followed for the safety of water body of Tedhi Nadi.

Keywords: Larvae of aquatic insects, Tedhi Nadi, Katahaghat, Gonda.

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Introduction

All over the world about 45000 species of Insects are known to inhabit diverse freshwater ecosystem (Balram, 2005). Aquatic insects constitute an important part of the aquatic ecosystem. These are involved in nutrient recycling and form an important elements of natural food web in aquatic ecosystem. Some are of medical importance as they help in biological control of Mosquitoes and a number of larvae of aquatic

insects are used as food for fishes and as pollution indicator. They are primary bio-indicator of freshwater bodies such as ponds, lakes, wetlands and rivers due to their different environmental disturbances tolerant levels (Arimoro and Ikomi, 2008). It is estimated that about 3% of total insects are aquatic spending at least a part of their life cycle in water and these comprise about 25000 to 30000 species (Cheng, 1976). Order- Coleoptera, family Hydrophilidae are water scavengers beetles and generally occur in shallower regions of the wetland, with abundant macrophytes particularly emergent ones and feed mainly on detritus, algae and decaying vegetative matter (Khan and Ghosh, 2001). The ponds, lakes and other stagnant water are homes of two great groups of aquatic insects that is the surface hunters and divers. The odonate nymph uses the Anopheles larvae as food and control the Mosquitoes' population, which itself are responsible for spreading of the epidemic illness

like malaria (Mitra, 2000). Information is also available on aquatic entomofauna studied by Tonapi (1980), Vijay Kumar and Ramesh (2002), Thakur (2003), Andrew et.al. (2008). The present research paper deals with the larvae of aquatic insects diversity in Tedhi Nadi near Katahaghat of district Gonda, Uttar Pradesh, India.

Materials and Methods

A: Location of study area: Tedhi Nadi near Kathaghat is one of the important sites of the district Gonda, Uttar Pradesh. It is situated 5 km from the district head quarter. The district Gonda lies between 26°47' and 27°20' north latitude and 81°30', 82°46' east longitude (Map-1, 2 & 3). Tedhi Nadi originated from Chittaura Jheel and Join river Ghaghara. Flows in the range about 269 km from Chittaura Jheel to river Ghaghara (Fig.1).

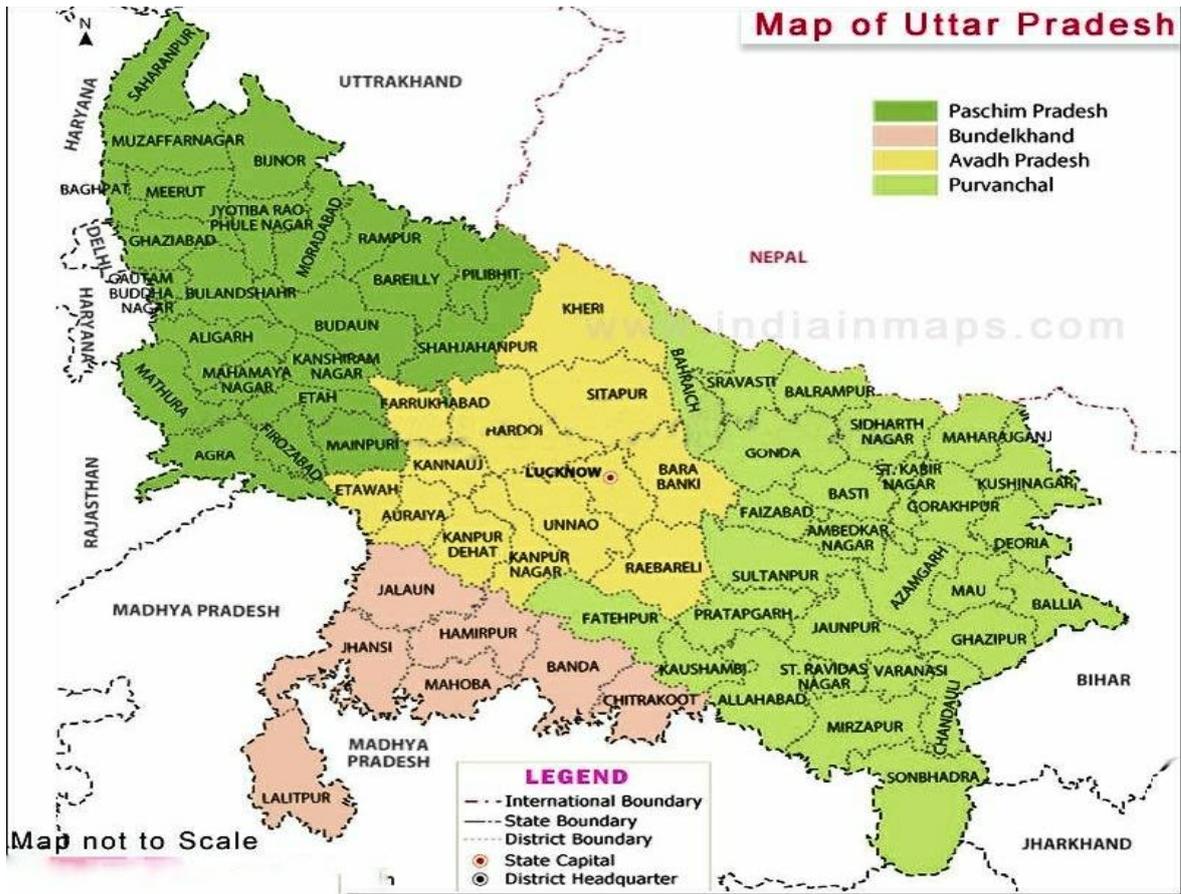
B: Sampling and preservation: Larvae of aquatic Insects samples were collected during 1st week of each month between 9.00 AM to 11.30AM. They were taken from different sampling station fixed up in littoral, pelagic and polluted region were transported to the laboratory of P.G. Department of Zoology, M.L.K.P.G. College Balrampur, Uttar Pradesh, India.

Larvae of aquatic Insects were randomly collected using Surber nets with a size of 0.3m×0.3 m at several microhabitat in Tedhi Nadi near Katahaghat intakes. The samples transferred in to a plastic Zipper bag with 75% of ethanol as preservation and brought back to the laboratory for identification process.

Collected samples were examined under stereo Zoom microscope (Carl Zeiss, Stemi DV4) and identified using standard taxonomic literatures. Larvae of aquatic insects were identified up to the lowest taxonomic category using taxonomic keys for the particular groups according to Fraser 1933-1936 and Hoell et.al., (1998).



Map-1: Location of study area in India



Map-2: Location of study area in Uttar Pradesh state



Map-3: Location of study area in district Gonda



Fig.-Tedhi Nadi near Katahaghat: larvae of aquatic insects collection for identification by investigator

Results and Discussion

Tedhi Nadi near Katahaghat district Gonda, Uttar Pradesh, represents a special type of habitat and supports a rich larvae of aquatic insects which plays important role to preserve the good health of water body. They are probable indicator of aquatic ecosystem, their abundance and diversity provides information about the nature of water body. In the present work reported that presence of 14 genera of larvae of aquatic insects belonging two order viz. Order-Coleoptera contains *Cybister* larvae, *Dytiscus* larvae, *Hydroporus* larvae and *Gyrinus* larvae, Order-Diptera contains *Anopheles* larvae, *Culex* larvae, *Chironomus* larvae, *Dixa* larvae, *Psychoda* larvae, *Ptychoptera* larvae, *Eristalis* larvae and *Tabanus* larvae were identified and recorded in Tedhi Nadi near Katahaghat water body (Table-1 & 2).

Larvae of dipteran aquatic insects have been found to be dominant among larvae of aquatic insects. Generally *Anopheles* larvae, *Culex* larvae, *Chironomus* larvae, *Eristalis* larvae and *Ptychoptera* larvae present in the water body which indicate the polluted nature of the Tedhi Nadi. Similar observation

were reported by Majumder et.al.(2013) reported 31 species from Urban freshwater lake of Tripura belonging to 23 genera, 15 families, 4 order and recorded Hemiptera and Odonata are dominant order. Choudhary and Gupta (2015) studied aquatic insects community of Deepor beel Assam which reported 31 species belonging to 18 families of 5 orders and noticed that hemiptera is the dominant order representing 17 species and 18 families. These type of findings are reported in the present study. Vass et.al. (1977) also investigated red *Chironomus* as pollution detector in Dal lake. During present work *Chironomus* larvae is observed at water inlet site where more amount of sewage water enter such site show water pollution, *Culex* larvae and *Anopheles* larvae noted from the small spot like holes and back water of present in Tedhi Nadi near Katahaghat. Our results are good in agreements with Vass et.al. (1977), Khan and Ghosh (2001), Jaiswal (2012), Majumder et.al. (2013), Choudhary and Gupta (2015), Tripathi and Pandey (2020), Tripathi (2020).

Table: 1-Larvae of aquatic insects population in Tedhi Nadi near Katahaghat of district Gonda, Uttar Pradesh, India (Data of December 2019 to November 2020)

S.No.	Class	Order	Family	Genera
1	Insecta	Coleoptera	Dytiscidae	Coptotomus larvae
2	Insecta	Coleoptera	Dytiscidae	Cybister larvae
3	Insecta	Coleoptera	Dytiscidae	Dytiscus larvae
4	Insecta	Coleoptera	Dytiscidae	Hydroporus larvae
5	Insecta	Coleoptera	Gyrinidae	Dineutes larvae
6	Insecta	Coleoptera	Gyrinidae	Gyrinus larvae
7	Insecta	Diptera	Culicidae	Anopheles larvae
8	Insecta	Diptera	Culicidae	Culex larvae
9	Insecta	Diptera	Chironomidae	Chironomus larvae
10	Insecta	Diptera	Dixidae	Dixa larvae
11	Insecta	Diptera	Psychodidae	Psychoda larvae
12	Insecta	Diptera	Ptychopteridae	Ptychoptera larvae
13	Insecta	Diptera	Syrphidae	Eristalis larvae
14	Insecta	Diptera	Tabanidae	Tabanus larvae

Table: 2-Monthly variation in larvae of aquatic insects in Tedhi Nadi near Katahaghat of district Gonda, Uttar Pradesh, India.

(Data of December 2019 to November 2020)

S. No	Larvae of aquatic Insects (Genera)	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
	Order-Coleoptera												
1	Coptotomus larvae	-	-	-	+	+	+	+	-	+	-	+	-
2	Cybister larvae	+	+	-	+	+	+	+	+	+	-	+	-
3	Dytiscus larvae	+	+	-	-	+	+	+	+	+	+	+	+
4	Hydroporus larvae	-	-	+	-	-	+	+	+	+	+	+	+
5	Dineutes larvae	-	-	+	+	-	+	+	+	+	+	+	+
6	Gyrinus larvae	-	-	+	+	-	+	+	+	+	+	+	+
	Order-Diptera												
7	Anopheles larvae	+	+	-	+	+	+	+	+	+	-	+	-
8	Culex larvae	+	+	+	+	+	+	+	+	+	+	+	+
9	Chironomus larvae	+	+	-	+	+	+	+	+	+	-	+	+
10	Dixa larvae	+	+	-	+	+	+	+	+	+	-	+	+
11	Psychoda larvae	+	-	+	-	+	+	+	+	+	+	+	+
12	Ptychoptera larvae	+	+	+	+	+	+	+	+	+	+	+	+
13	Eristalis larvae	+	+	+	-	+	+	+	+	+	+	+	-
14	Tabanus larvae	-	+	-	+	+	+	+	+	+	+	-	+

Note: +=Present; - = Absent

Conclusion

The present contribution is the result of the extensive and intensive studies on larvae of aquatic Insect diversity carried out during December 2019 to November 2020. During present investigation in Tedhi Nadi near Katahaghat larvae of dipteran aquatic insects have been found to be dominant among larvae

of aquatic insects, in Tedhi Nadi generally Anopheles larvae, Culex larvae, Eristalis larvae and Ptychoptera larvae present which indicate the polluted nature of the water body. Thus keeping in view the importance of study steps should be taken for conservation and maintenance of Tedhi Nadi. It is the necessarily step which have to be followed for the safety of Tedhi Nadi water body.

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