



## ORIGINAL RESEARCH PAPER

## Zoology

### AQUATIC INSECT DIVERSITY OF FRESH WATER BODY AT KATPHAL LAKE, TAL- SANGOLA, DIST- SOLAPUR (M.S.) INDIA.

**KEY WORDS:** Katphal Lake, Aquatic insects, Freshwater body, Insect diversity.

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#### ABSTRACT

The present research paper deals with aquatic insect diversity of Katphal Lake Tal. Sangola, Dist. Solapur, (M.S.) India. The Katphal Lake is one of the minor irrigation project under the management and maintenance of Irrigation Sub-Division of Sangola. In the present investigation reported that presence of 20 species of aquatic insect belonging to 20 genera and 15 families distributed over 5 different orders viz. Hemiptera, Odonata, Coleoptera, Diptera and Ephemeroptera. The Hemiptera is dominant order represents 7 species, the order Odonata includes 6 species, order Coleoptera represents 5 species, order Diptera includes 3 species and order Ephemeroptera represents 2 species.

#### 1. INTRODUCTION:

All over the world about 45,000 species of insects are known to inhabit diverse fresh water ecosystem (Balaram, 2005). Aquatic insect constitute an important part of the aquatic ecosystem. These are involved in nutrient recycling and form an important element of natural food web in aquatic ecosystem. Some are of medical importance as they help in biological control of mosquitoes and a number of aquatic insect are used as a food for fishes and as pollution indicators. They are primary bio- indicator of freshwater bodies such as ponds, lakes, wetlands, streams 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 cycles in water and these comprise about 25,000 to 30,000 species (Cheng, 1976). The ponds, lakes and other stagnant water are homes of two great groups of aquatic insects i.e. the surface hunters and divers. The odonates larva uses the *Anopheles* larva as food and control the mosquito's 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 Ramesha (2002), Thakur (2003), Andrew *et al.*, (2008) etc. The present study was carried out with the objective to identify the commonly occurring insect fauna and work out their abundance in Katphal Lake.

#### 2. MATERIALS AND METHODS:

**2.1. STUDY AREA:** The Katphal Lake located at Katphal village, Tal – Sangola, Dist – Solapur (M.S.) on a major district road Karad - Pandharpur State highway number 76. This lake is situated at 17° 35' latitude and 74°59' longitude. This is an earthen and perennial dam. The average rain fall is 533.40 mm.

#### 2.2. Satellite view of Katphal Lake



**2.3. METHODS:** Insects were collected monthly interval between 7.00 am to 10.00 am at local time. Collections were made by dipping a 40 cm diameter circular net with a mesh size of 60 µm (ACCO made, Ambala, India). Many aquatic beetles and bugs use aquatic vegetation as a shelter. Aquatic vegetation taken out to the shore with pond net and quickly searched for aquatic insects

using a forceps. Adult flying insects of aquatic larvae were collected with the help of sweep net of 30 cm diameter. Hard bodied insect specimens were dried, pinned and preserved in dry condition and soft bodied insects were preserved in 70 % ethyl alcohol. Only one or two specimens of each kind of insects were used for identification in the laboratory and the rests were returned to the respective sampling sites.

**Identification of Insects** Collected samples were examined under a stereo zoom microscope (Carl Zeiss, Stemi DV4) and identified using standard taxonomic literature. Insects were identified up to the lowest taxonomic category using taxonomic keys for that particular group. Following keys are useful for identification: Ephemeroptera (Dudgeon, 1999); Odonata, Plecoptera, Hemiptera, Coleoptera and Diptera (Fraser, 1933-36; Morse *et al.*, 1994)

**3. RESULTS AND DISCUSSION:** Aquatic insects plays important role to preserve the good health of the water body. They are probable indicator of aquatic system and their abundance and diversity provides information about the nature of water body. In the present investigation reported that presence of 20 species of aquatic insect belonging to 20 genera and 15 families distributed in 5 different orders viz. Hemiptera, Odonata, Coleoptera, Diptera and Ephemeroptera. The Hemiptera is dominant order represents 7 species viz. *Corixa* sp., *Gerris* sp., *Limnogonus* sp., *Hydrometra* sp., *Laccotrephes* sp., *Ranatra* sp. and *Notonecta* sp. These 7 species belongs to 5 families viz. Corixidae, Gerridae, Hydrometridae, Nepidae and Notonectidae. The list of aquatic entomofauna of Katphal Lake is indicated in the (Table No. 1). The order Odonata includes 4 species viz. *Anax* sp., *Ischnura* sp., *Orthetrum* sp. and *Pantella* sp. belonging to the 3 families. These families are Aeshnidae, Coenogronidae and Libellulidae. The order Coleoptera represents 4 species viz. *Dytiscus* sp., *Laccophilus* sp., *Hydrous* sp. and *Macrogyrus* sp. belongs to 3 families. These families are Dytiscidae, Hydrophilidae and Gyrinidae. The order Diptera includes 3 species viz. *Chironomus* sp., *Culex* sp. and *Aedes* sp. belongs to 2 families. These families are Chironomidae and Culicidae. The order Ephemeroptera represents 2 species viz. *Ephemer* sp. and *Baetis* sp. belongs to 2 families. These families are Ephemeridae and Baetidae. The orders Hemiptera, Odonata, Coleoptera and Ephemeroptera are bio- indicators of water quality and potential bio- control agents. Similar observations were reported by Majumder *et al.*, (2013) reported 31 species from urban fresh water lake of Tripura belonging to 23 genera, 15 families and 4 orders and recorded the order Hemiptera and Odonata are dominant order. Choudhary and Gupta (2015) studied aquatic insect community of Deepor beel, Assam and reported 31 species belonging to 18 families of 5 orders and noticed that Hemiptera is the dominant order representing 17 species and 8 families. These types of findings are reported in

present study.

Jaiswal (2012) published a preliminary study on water beetles of Ameenpur Lake. Reported 26 species of aquatic beetles and distributed in 4 families represented by Gyrinidae, Dytiscidae, Hydrophilidae and Halipidae. Species belongs to families Gyrinidae, Dytiscidae and Hydrophilidae are noted in present study. Vass et al., (1977) also investigated red Chironomus as pollution detector in Dal Lake. During present investigation Chironomus sp. is observed at water inlet site, where more amount of sewage water enters such site show water pollution. *Culex* sp. and *Aedes* sp. noted from the small pot like holes and back water of present lake. Our results are good in agreements with Majumder et al., (2013), Choudhary and Gupta (2015), Jaiswal (2012) and Vass et al., (1977).

**Table No. 1: Diversity of aquatic entomofauna at Katphal Lake during January 2017 to December 2017.**

Order	Family	Genus	Species
Hemiptera	Corixidae	1. <i>Corixa</i>	sp.
	Gerridae	2. <i>Gerris</i>	sp.
		3. <i>Limnogonus</i>	sp.
	Hydrometridae	4. <i>Hydrometra</i>	sp.
	Nepidae	5. <i>Laccotrephes</i>	sp.
		6. <i>Ranatra</i>	sp.
Odonata	Notonectidae	7. <i>Notonecta</i>	sp.
	Aeshnidae	8. <i>Anax</i>	sp.
	Coenagrionidae	9. <i>Ischnura</i>	sp.
	Libellulidae	10. <i>Orthetrum</i>	sp.
Coleoptera		11. <i>Pantella</i>	sp.
	Dytiscidae	12. <i>Dytiscus</i>	sp.
		13. <i>Laccophilus</i>	sp.
	Hydrophilidae	14. <i>Hydrous</i>	sp.
Diptera	Gyrinidae	15. <i>Macrogyrus</i>	sp.
	Chironomidae	16. <i>Chironomus</i>	sp.
	Culcidae	17. <i>Culex</i>	sp.
Ephemeroptera		18. <i>Aedes</i>	sp.
	Ephemeridae	19. <i>Ephemera</i>	sp.
	Baetidae	20. <i>Baetis</i>	sp.

**4. CONCLUSION:** The present contribution is the result of the extensive and intensive studies on diversity of aquatic entomofauna carried out during (January 2017 to December 2017) which deals with the diversity and abundance of commonly occurring aquatic insect fauna. The study of insect fauna of Katphal Lake is rich in insect diversity. Fluctuations in insect community directly or indirectly affect other components of the lake Ecosystem involving physico-chemical and biological features.

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