Identification and classification of some freshwater invertebrates in Anasagar lake of Ajmer

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(Received: March 09, 2010; Accepted: April 15, 2010)

ABSTRACT

"Limnology" a new interdisciplinary science with multifarious dimensions has emerged which deals with the study of structural and functional attributes of the lentic fresh water environment and problems associated with them. Limnology has immense and universal significance for the citizen of today, all around the world. Streams, rivers, wetlands and lakes are home for many small animals called macro invertebrates. The term macro invertebrates describe those animals that have no back bone and can be seen with naked eyes. This study includes analysis of identification of invertebrates in Anasagar Lake in Ajmer (Raj.). The methodology employed involves collection and identification of invertebrates with the help of various equipments and tools. The result has been presented in form of a key of freshwater invertebrates of Anasagar Lake of Ajmer.

Key words: Limnology, lentic freshwater, invertebrates, back bone, Anasagar Lake.

INTRODUCTION

Limnology is the study of hydrology that studies inland water (running and standing water, fresh and saline water), including their biological, physical, chemical, geological and hydrological aspects. This includes study of lake, pond, rivers, streams, wetland and ground water. Limnology: An interdisciplinary science with multifarious dimensions has emerged which deals with the study of structural and functional attributes of the lentic fresh water environment and problems associated with them. The term limnology coined by Franco sis- Alphonse Forel (1841-1912) who established field with his studies of lake Geneva.(A.D. Adoni, 1985). Streams, rivers, wetlands and lakes are home for many small animals called macro invertebrates. These animals generally include insects, crustaceans, mollusks, arachnids and annelids. The term "macro invertebrates" describe those animals that have no back bone and can be seen with naked eyes. Invertebrates that are retained on a 0.25mm mesh net are generally referred to as macro invertebrates. Many are found

only in the sea and some groups living on the land are found world-wide. These are thought to be between 3 million and 15 million species in the world (47 000 species of vertebrates).

They live around living or dead vegetation, on the surface or in the sediments of water bodies. They include many larvae of insects such as mosquitoes, dragonflies and caddis flies that begin their lives in the water before becoming land dwelling insects when they mature. Macro invertebrates can tell us a lot about the conditions within a water body. Many macro invertebrates are sensitive to changes in pH, dissolved oxygen, temperature, salinity, turbidity and other changes in their habitat. (Water and rivers commission October 2001)

According to the U.S. Environmental Protection Agency (EPA), "The presence, condition, and numbers of aquatic life can provide accurate information about the health of a specific water body such as a river, stream, lake, wetland, estuary or coral reef." [Source: U.S. EPA]

S.No.	Invertebrates	Classification	Diagram					
Phylum- A	Phylum- Arthropoda- Class Crustacea							
1.	Östracod	Kingdom – Animalia Phylum – Arthropoda Class - Crustacea Order - Ostracoda Family – Punciidae	(S					
Phylum- A	Arthropoda- Class Insecta		- 11 -					
2.	Stone Fly larva	Kingdom – Animalia Phylum – Arthropoda Class - Insecta Order - Plecoptera Eamily- Perlidae						
3.	Caddisfly larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Trichoptera						
4.	Dragonfly larvae	Family - Uenoidae Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Odonata	AL Y					
5	Damselfly larvae	Family - Aeshnidae Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Odopata	- P Jennices					
6	Water scorpion	Family- Coenagrionidae Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Hemiptera	A A					
7	Riffle beetle/ larvae	Family - Nepidae Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Cleoptera Family- Elminthidae						
8	Blackfly larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family- Simuliidae						
9	Biting midgefly larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family –Ceratopogonidae						

Macro-invertebrates Data Sheet

10	Non biting midge fly larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family- Chironomidae	And a state of the
11	Mosquito larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family- Culicidae	AMAR
12	True bugs	Kingdom – Animalia Phylum –Arthropoda Class – Insecta Order – Hemiptera Family - Belostomidae	Fr C
13	Crane fly larvae	Kingdom – Animalia Phylum – Arthropoda Class - Insecta Order – Diptera Family – Tipulidae	<i>3</i> -
14	True fly larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family - Nycteribiidae	
15	Lesser Water boatman	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Hemiptera Family - Corixidae	787
16	Greater water boatman	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Hemiptera Family - Corixidae	
17	Leaf litter larvae	Kingdom – Animalia Phylum – Arthropoda Class – Insecta Order – Diptera Family - Trichoceridae	
Phylum Arthro	opoda- Class Arachnida	2	
18	Water mite	Kingdom – Animalia	-
		Phylum – Arthropoda Class – Arachnida Order- Acarina Family - Arrenuridae	75
19	Water spider	Kingdom – Animalia Phylum – Arthropoda Class – Arachnida Order- Acarina Family - Cybaeidae	X

139

Phylum Mollus	sca – Class Gastropoda		
20	Viviparous banded snail	Kingdom – Animalia Phylum – Mollusca Class – Gastropoda Order- Prosobranchia Family - Viviparidae	
21	Valvata valve snail	Kingdom –Animalia Phylum – Mollusca Class – Gastropoda Order- Prosobranchia Family – Valvatidae/ Hydrobiidae	6)
Phylum Mollus	sca – Class Bivalvia		
22	Fresh water mussel	Kingdom – Animalia Phylum – Mollusca Class – Bivalvia Order- Prosobranchia Family - Unionidae	Ø

There are several reasons why macro invertebrate is used as a water quality indicator:-

- They are sensitive to change in the ecosystem.
- Many live in an aquatic system for over a year.
- They cannot easily escape change in the water quality.
- They can be collected very easily from the most aquatic system with inexpensive or homemade equipments.
 [Source: U.S. EPA]

Significance of study

In today's time of rapid population explosion coupled with an ever rising industrial and agricultural growth. The consumption of water has increased tremendously. Limnology has immense and universal significance for the citizen of today, all around the world. Limnological research can provide ways of combating problems of contamination, eutrophication, and change in productivity and disturbance in biological balance of water. (A.D. Adoni, 1985). This research was undertaken with the following objective to prepare the data sheet of freshwater invertebrates of the Anasagar Lake of Ajmer.

MATERIAL AND METHODS

For the present study of macro invertebrates, Anasagar lake of Ajmer was selected. The lake serves the human need in various forms. Sampling forms the first and the most important part of any limnological investigation, so much so that the success, achievements and failure largely depends on the strategy and plan of collection of samples. (Lincoln, R.J. and Sheals, J. G. 1979). The samples from surface and bottom were collected with precautions. Four sites were selected as the sampling sites for the present work of identification of invertebrates in Anasagar lake of Ajmer city.

Equipments required

There are various equipments required for the sampling, sorting and identification of aquatic macro invertebrates.

- 1. Plastic bottle
- 2. White tray
- 3. Forceps
- 4. Brush
- 5. Adhesive Plaster
- 6. Gloves
- 7. Formalin solution
- 8. Bottles for preservation
- 9. Polythene bags

- 10. Rubber band
- 11. Dropper bottle
- 12. Buckets
- 13. Identification keys.
- 14. Magnifying glass
- 15. Eckman dredge
- 16. Bamboo float

RESULTS AND DISCUSSION

This study concludes with the identification and classification (Croft, P.S. 1986) up to the family level. 22 appox. no of invertebrates were identified in the Anasagar Lake of Ajmer.

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