

Bio indicator of water quality of Morna Reservoir in Western Ghats, (MS) India

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ABSTRACT

Morna reservoir, a small inland reservoir located in Sangli district Maharashtra state, India is constructed over Morna River in the basin of Krishna. This reservoir is a multipurpose used, such as drinking water supply, irrigation, washing of utensil, washing of cloths, washing of cattle and fisheries etc. last few years this reservoir face environmental stress due to human anthropogenic activities therefore study focus on biological monitoring of Morna reservoir by using macro invertebrates especially aquatic insects. Aquatic insects are Ephemeroptera, Coleoptera, Megaloptera, Trichoptera, Lepidoptera, Hemiptera, Plecoptera etc but this study get three orders such as Ephemeroptera, Plecoptera and Trichoptera and seven species. These species are more sensitive to pollution. This study indicates that the environmental health of Morna reservoir is not significantly altered.

Key Words: Bioindicator, Maco invertebrates, Morna reservoir, Sangli, Western Ghats.

INTRODUCTION

Biological assessment of the freshwater habitats helps to understand health of aquatic resources. Some macro organism and micro-organisms like zooplankton, phytoplankton and fishes has been used in the assessment of the water quality. However macro invertebrates are most useful in monitoring freshwater ecosystem (Armitage *et al.*, 1983, 2001, Wright *et al.*, 2007, Uherek *et al.*, 2014). The use of macro invertebrates for monitoring water quality is originated in Europe. Macro invertebrates are small but visible animals. Their presence we indicates water pollution such as appearance of pollution tolerant species or change in the abundance of species. These are sensitive to aquatic environment. Traditional method like physico – chemical analysis of water provides information on water quality but cannot provided historical information on water quality. In physico – chemical analytical method containing parameters are not remaining constant in the same freshwater body. Use of macro invertebrates as bio indicator is best tool, less expensive and simple method. Macro invertebrates are relatively fixed position in the aquatic environment.

METHODOLOGY

Study Area:

Morna, a small man made reservoir with 85.5 Sq.Km² original catchments areas was built over a Morna River in the basin of Krishna River. The reservoir is located 1km South West of Shirala Tahsil in Maharashtra, India. Geographically it lies near 16° 59' 2" (N) latitude and 74° 6' 30" (E) longitudes (Fig.1). This reservoir is a multipurpose tank used for different activities like drinking water supply, irrigation, fisheries etc.

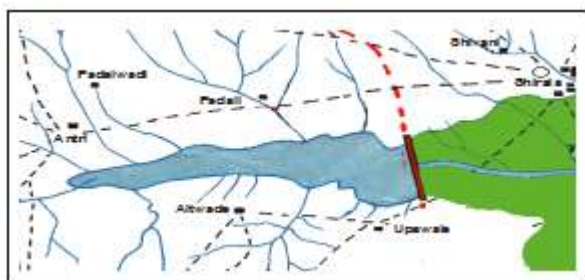


Fig. 1: Study Area The reservoir is location

Sampling procedure:

Samples were collected from all four sampling stations. A pond net having mesh size 900µm. was used for collection of Macro invertebrates after one minute kicking of water. Separate mud and other particles by using sieve. The collected macro invertebrates are then fixed in 5% formalin solution and identified with help of insect key, photographic work is done.

RESULTS AND DISCUSSION

Macro invertebrates are collected in all four sites were fall in to different categories such as Tubellaria, Oligocheta, Molluscan, Crustaceans and Insects. The studies focus on the aquatic insects for assessment of quality of water because some aquatic insects were found unpolluted and clear water (Subramanian *et al.*, 2007). Aquatic insects are fall in to different orders such as Ephemeroptera, Coleoptera, Megaloptera, Trichoptera, Lepidoptera, Hemiptera, Plecoptera etc. This study get 7 species of aquatic insects they belonging to three orders such as Ephemeroptera, Plecoptera and Trichoptera. These groups were prefer clear, unpolluted water and are sensitive to pollution (Subramanian *et al.*, 2007).

Table 1. Classification of aquatic insects according to order and family of Morna reservoir.

Sr. No.	Order	Family	Occurrence
1	Ephemeroptera	Leptophlebitidae	√
		Baetidae	
		Caenidae	
		Ephemerellidae	√
		Heptageniidae	
		Oligoneuridae	√
2	Plecoptera	Perlidae	√
3	Trichoptera	Calamoceratidae	√
		Glossosomatidae	
		Helicopsychidae	
		Hydropsychidae	
		Lepidostomatidae	√
		Limnephilidae	
		Philopotamidae	
		Polycentropodidae	√
		Rhyacophilidae	
		Stenopsychidae	√

CONCLUSION

The study indicate that the health of Morna reservoir is good, not significantly altered.

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