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## ASSESSMENT OF BENTIC INVERTEBRATES OF SIKRAHNA RIVER

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### **ABSTRACT**

The present paper deals with the qualitative and quantitative abundance of benthic fauna of river Sikrahna. Qualitatively it is comprised of oligochaets (5 sp.), insect (7 sp.), ostracoda (3 sp.), pelecypoda (5 sp.) gastropoda (5 sp.), branchiopoda (5 sp.), branchiopoda (2 sp.), leeches (2 sp.). Quantitatively oligochaets, gastropoda, insect and branchiopoda, pelecypoda, mainly constituted the total fauna besides scanty presence of ostracoda, leeches and others.

*Key words : Invertebrates, benthos, qualitative, quantitative, Sikrahna river, physico-chemical parameters*

### **INTRODUCTION**

Biotic factors of an aquatic ecosystem directly reflect the conditions of environment including the living components. India is rich in inland fishery resources endowed with a rich variety. It is self sustained unit where the production, consumption and decomposition are regulated by constant cycling of nutrients and unidirectional flow of energy. This process usually maintains equilibrium within the ecosystem among different parameters. The benthic invertebrates live in or on the sediments, which mostly depend on the decomposition cycle for their basic food supply. The value of benthic macro-invertebrates in biological monitoring studies is well documented (Cowell & Vodopich, 1981). Tropical communities of benthic macro invertebrates are similar to temperate communities (Payne, 1986). In comparison to plankton, knowledge on any dynamics of these bottom living organisms is scanty. Practically no work on benthic communities has been done from lotic water bodies of Indo-Himalayan belt. Some literature is available from lentic water bodies such as of Srivastava (1950) on a fish tank, Michael (1969) on fish ponds of Calcutta, and Ahmad & Singh (1989) at Patna.

### **MATERIALS AND METHODS**

Water samples were collected by Ekman's dredge from the study sites and transferred to suitable container (Enamel bucket). They were sieved with the aid of 40 No. sieve, washed with tap water and transferred the residue (micro-organisms) into a wide mouthed bottle. The materials were preserved in the laboratory for further analysis. All portions of screened materials were transferred into petridishes. The animals were enumerated groupwise and computation for each individual group per square cm was done as follows:

$$N = n/ah$$

Where, N = Number of macroorganism in sqm,

n = Number of macroorganism per sampled area,

a = Area Ekman's dredge in sq/m, and

h = Number of hauls.

**RESULT AND DISCUSSION**

A total of 29 genera of benthic invertebrates were collected consisting of 7 insecta, 5 each of oligochaets, pelecypoda, gastropoda and 3 ostracoda, whereas leeches and branchiopoda were represented only by 2 genera each. The monthly fluctuation of benthic fauna (%) exhibited marked changes (Table 1). Each month insecta, oligochaets and gastropoda constituted the main bulk of collection. The main feature of benthic fauna exhibited no direct relation between the data of oligochaetes and insecta, showing negative correlation between them in terms of month-wise maximum variation. The insect population is at its maximum in January, February & December and minimum from May to September, whereas it was just reverse in oligochaets which were maximum from May to September, While minimum in December, January & February (Fig. 1). The trend of increase in insect population and decrease in oligochaets and vice versa is important. The increase and decrease in abundance were noticed to be sudden, abrupt and simultaneous. Another feature of this study is the absent of ostracoda from May to September. Among the bottom fauna, oligochaets, insect larvae, especially chironomous and molluscs constituted the main bulk of the food of the fish (Table-1).

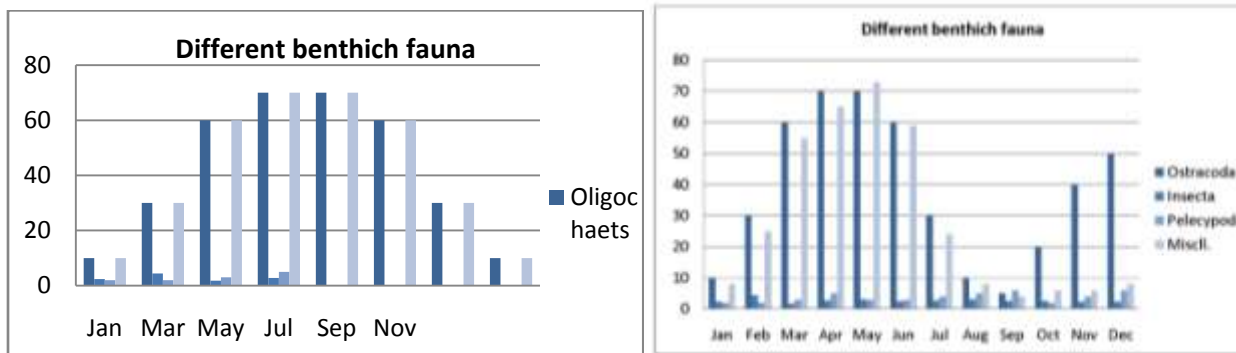


Fig. 1. Monthly variation in the benthic fauna of river Sikrahna 2018.

Table 1. Monthly variations in the composition of bottom fauna (%) of river Sikrahna (per cm<sup>2</sup> of sediments) for the year 2018.

Months	Oligochaets	Leeches	Branchiopoda	Gastropoda	Ostracoda	Insecta	Pelecypoda	Misc.
Jan.	9.8	2.8	0.9	12.8	2.6	74.5	4.8	4.4
Feb.	12.2	2.1	3.7	11.2	2.1	64.5	4.0	1.9
Mar.	28.7	1.6	3.1	10.8	1.2	52.0	2.8	1.5
Apr.	53.9	1.7	1.4	9.5	0.5	30.8	2.6	1.7
May	66.2	1.9	2.1	9.4	Nil	17.5	3.9	2.7
Jun.	73.1	2.0	4.6	4.6	Nil	11.3	3.2	1.4
Jul.	74.5	3.4	5.1	4.2	Nil	11.0	2.5	2.2
Aug.	70.9	3.4	5.6	3.8	Nil	13.4	3.8	4.7
Sep.	62.2	2.1	2.1	8.7	Nil	18.0	4.6	1.2
Oct.	41.2	1.4	1.6	8.2	1.1	45.6	2.2	2.5
Nov.	23.5	0.8	1.1	11.5	1.5	59.5	3.2	2.6
Dec.	10.0	Nil	Nil	12.5	1.9	70.5	3.7	3.2

The data are average of all the four selected ghats taken together (values are expressed in percentage).

Leeches and branchipodods were absent during December. Gastropods were noticed in all months, however, their presence during winter months was much more in comparison to other months. Pelecypoda was represented in all the seasons, being maximum in September and January and minimum in April and October. The presence of miscellaneous groups has been substantiated taking into consideration their indicator value towards pollution.

The abundance of zoobenthos in different months revealed the distinct fluctuation which indicates that the weather conditions and physico-chemical components were responsible for fluctuation. Different workers reported different peaks which amply support the present findings. Barbhvan & Khan (1992) collected maximum in December from an eutrophic pond at Aligarh (U.P), while Jana & Manna (1995) reported seasonal fluctuations in zoobenthos in two tropical fish ponds and recorded unimodal curve having a broad peak occurring from May to September and minimum from February to March. These fluctuations might be due to different nature of water bodies, difference in composition of abiotic factors of water and soil, and the variation in production in different percentages. Lesser number of ostracods during some months and complete absence in others might be due to temperature variation which is regarded as one of the important factors affecting parthenogenesis in ostracods (Anderson & Day, 1986). Depth was another factor regulating the distribution and abundance of ostracods.

Altogether 29 species of benthic fauna were identified during the present study, while Ahmad & Singh (1989) recorded a total of 26 species of benthic macro-invertebrates from river Ganga at Patna, and Jaiswal & Singh (1994) reported 24 species. Sharma & Belsare (1997) worked on benthic organisms of Sirpur lake (Bhopal) and reported as many as 28 species including some sponges like Spongilla, etc. Out of different genera of insecta, chironomus were found throughout the period of study. The same trend was also found by Sinha (1997) and Choudhary & Singh (1999). The molluscan was positively correlated with filamentous algal population in Sikrahna river which is in tune with the findings of Quasim et al. (1994) who also observed the abundance of gastropods associated with the occurrence of filamentous algae.

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