

# Zooplanktons Density of Rapti River at Nepal in Different Seasons

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**ABSTRACT-** The present study carried out observe zooplankton diversity, density and distribution the Rapti River in different seasons. It is found in the present study that Zooplankton species distribution shows big spatio temporal variations due to the different hydrographical factors on individual species. Consequently, the summer period must be considered as the most important season for pelagic secondary production in the Skagerrak. Thus, the traditional belief that the spring bloom represents the most important season for fuelling higher trophic levels such as fish should be reconsidered.

**Keywords-** Pond Zooplanktons, Density, River, Water

## 1. INTRODUCTION AND REVIEW OF LITERATURE

Rapti or West Rapti is also known as Kuwano drains Rapti Zone in Mid-Western Region, Nepal, then Awadh and Purvanchal regions of Uttar Pradesh state, India before joining the Ghanghara-a major left bank tributary of Ganges known as the Karnali inside Nepal. Zooplanktons are one of the primary consumers of the ocean and grazes on the phytoplankton [7]. They themselves are an important food source for animals an important in the remineralization and transport of nutrients which is important in the conservation of modern oceanic food webs [1, 2].

Therefore biological assessment is a significant alternative for assessing the ecological quality of aquatic ecosystem which influence the biological communities of rivers [3, 4]. Species

diversity indices when correlated with ecological conditions provide one of the best way to evaluate influence of pollution on aquatic communities. The present study was conducted to examine the interaction of zooplanktons density of river Rapti that may be influenced by the season [5].

## 2. MATERIAL AND METHODS

For the estimation of zooplanktons in water samples, collected from two different sites of river Rapti e.g Jhinhari Khola confluence point and Rapti Bridge. Each sampling site was further marked during summer, monsoon and winter season respectively. For plankton estimation the methods followed by Svanback R, Bolnick DI. Intraspecific competition drives increased resource use diversity within a natural population. Proceedings of the Royal Society Biological Science 2007; 274:839-844. (1988) was adopted. For this purpose about 20 litre of water sample was collected and filtered through plankton net of bolting silk No. 25. The samples were preserved in 4% formalin solution. The sample were taken into Sedywick Rafter cell [6]. Now place the cell under microscope and count all the plankton present in cell by moving it horizontally and vertically. Repeat the process several times. Counting of organism will be done by applying the following formula.

$$N = n \times v/V$$

Where N= Total number of organism/litre of water filtered,  
n= Total number of organism counted in 1ml of plankton sample,  
v=Volume of concentrated plankton sample (ml).

**Table 1: Density at two sites in various monsoon season**

	River site	Northern bank	Upstream	Southern bank	Northern bank	Upstream	Southern bank	Northern bank	Upstream	Southern bank
1	Jhinhari Khola Confluence point	75	80	70	79	70	62	60	65	60
2	Rapti Bridge	90	83	88	65	24	18	58	66	55

### 3. RESULT AND DISCUSSION

Ciliates and heterotrophic dinoflagellates are more important grazers of primary production than copepods during spring, early summer and late summer in the Skagerrak. Appendicularians can on some occasions have a grazing impact comparable to that of copepods despite their lower biomass. Other grazers as well as copepods therefore be considered.

In deep water where the presence of an overwintering copepod population has resulted in the assumption that large copepods dominate grazing. The mesozooplankton are, nevertheless, the direct link to higher trophic levels such as fish and it is therefore still important to estimate their production. The potential daily production of mesozooplankton was actually higher in late summer, 80 mg C m<sup>-2</sup>, than during the spring bloom, 25 mg C m<sup>-2</sup>, and early summer, 60 mg C m<sup>-2</sup> assuming a growth efficiency of 36%. The spring bloom occurs over a relatively short period of time (3-4 weeks) and is characterized by a high potential export to the sea floor and a relatively low pelagic, secondary Oikopleura dioica production. In the more prolonged, stratified, summer period, new production is of the same order of magnitude (Richardson et al.) and secondary production considerably higher than that occurring during the spring bloom. They also shows as good indicators of water quality as per the previous studies on zooplankton of Indian coastal environment.

### 4. CONCLUSION

The study was conducted to examine the interaction of zooplanktons density of Rapti River at Nepal influenced by the different season. In present study I have found that Zooplankton species distribution shows big spatio temporal variations due to the different hydrographical factors on individual species. Consequently, the summer period must be considered as the most important season for pelagic secondary production in the Skagerrak.

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