ZOOPLANKTON ASSEMBLAGES IN KAMALPOKHARI, BHAKTAPUR AND THEIR RESPONSES TO MALATHION EXPOSURE

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In partial fulfillment of the requirements for the award of the degree of Master of Science in Zoology with special paper Fish Biology and Aquaculture.

Submitted To:
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February, 2020

DECLARATION

I hereby declare that the work presented in this thesis has been done by myself, and has not been submitted elsewhere for the award of any degree. All sources of information have been specifically acknowledged by reference to the authors or institutions.

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RECOMMENDATION

This is to recommend that the thesis entitled **"ZOOPLANKTON ASSEMBLAGES IN KAMALPOKHARI, BHAKTAPUR AND THEIR RESPONSES TO MALATHION EXPOSURE"** has been carried out by **Miss Manika Maharjan** for the partial fulfillment of Master's degree of Science in Zoology with special paper Fish Biology and Aquaculture. This is her original work and has been carried out under my supervision. To the best of my knowledge, this thesis work has not been submitted for any other degree in any institutions. I recommend that the thesis be accepted for partial fulfilment of the requirements for the Degree of Master of Science in Zoology with special paper in Fish and Fisheries.

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LETTER OF APPROVAL

On the recommendation of supervisor **"Prof. Dr. Kumar Sapkota"** this dissertation submitted by **Miss Manika Maharjan entitled "ZOOPLANKTON ASSEMBLAGES IN KAMALPOKHARI, BHAKTAPUR AND THEIR RESPONSES TO MALATHION EXPOSURE"** is approved in partial fulfillment of the requirements for Master's degree of science with special paper Fish Biology and Aquaculture.

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CERTIFICATE OF ACCEPTANCE

This thesis work submitted by Miss Manika Maharjan entitled **"ZOOPLANKTON ASSEMBLAGES IN KAMALPOKHARI, BHAKTAPUR AND THEIR RESPONSES TO MALATHION EXPOSURE"** has been approved as a partial fulfillment for the requirements of Master's degree of Science with special paper Fish Biology and Aquaculture.

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LIST OF ABBEREVIATIONS

CDZ	Central Department of Zoology
DO	Dissolved oxygen
pH	Hydrogen Ion Concentration
APHA	American Public Health Association
Fig.	Figure
Spp	Species
BOD	Biochemical Oxygen Demand
Conc.	Concentrated

ABSTRACT

The present study explored the zooplankton assemblages in Kamalpokhari, Bhaktapur and assessed the impact of Malathion exposure in lab. The physico-chemical parameters like water temperature, pH, dissolved oxygen, alkalinity and hardness were analyzed which were found to be 20℃, 8.8, 5.7 mg/l, 112.5 mg/l and 63 mg/l respectively. Water samples were collected from the pond for the qualitative and quantitative analysis. Zooplankton were collected by the help of plankton net (20 diameter) made of bolting silk (no. 30; mesh size 25 micron). Zooplankton were identified by using identification keys. A total of ten different genus of zooplankton i.e. *Cyclops spp, Calanus spp, Daphnia spp, Moina spp, Hemicypris spp, Keratella spp, Brachionus spp, Polyarthra spp, Filinia spp and Paramecium spp* were identified. The most abundant and dominant were *Cyclops spp, Calanus spp, Daphnia spp* and *Moina spp* which belong to two groups of Crustacea- Copepod and Cladocera respectively. Among the ten different genus of zooplankton, the two groups Copepod (*Cyclops spp* and *Calanus spp*) and Cladoceran (*Daphnia spp* and *Moina spp*) were cultured for about 15 days. The cultured species of Copepods and Cladocerans were counted and kept in different beakers of 100 ml and diferent concentrations of Malathion like 0.01 µl/L, 0.05 µl/L and 0.1 µl/L were injected. The number of species were counted every day after interval of every 24 hours for 4 days. The study showed that the number of copepod and cladoceran were affected by Malathion. The survivality rate of both the specimens decreased when 0.01µl/L, 0.05µl/L and 0.1µl/L doses of Malathion were injected with respect to the time period. Among the two species, the mortality of copepod increased slowly while the mortality of cladoceran increased rapidly than copepod. The survivality of copepod and cladoceran decreased upto 70% for both at 0.01µl/L till 96 hours. The survivality of copepod and cladoceran decreased upto 60% and 55% respectively at 0.05µl/L till 96 hours. The survivality rate of copepod and cladoceran decreased upto 35% and 30% respectively till 96 hours at the concentration of 0.1µl/L.