IMPACTS OF JHIMRUK HYDROPOWER DAM ON FISH AND FISHERIES OF JHIMRUK RIVER, PYUTHAN, NEPAL

By

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A thesis submitted

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RECOMMENDATION

This is to recommend that the dissertation entitled **"Impacts of Jhimruk Hydropower Dam on Fish and Fisheries of Jhimruk River, Pyuthan, Nepal"** has been carried out by **Kiran Poudel** for the partial fulfillment of Master's Degree of Science in Zoology with special paper Fish and Fisheries. This is his 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.

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LETTER OF APPROVAL

On the recommendation of supervisor **Assoc. Prof. Dr. Archana Prasad**, this dissertation submitted by **Kiran Poudel** entitled **"Impacts of Jhimruk Hydropower Dam on Fish and Fisheries of Jhimruk River, Pyuthan, Nepal"** is approved for the examination and submitted to the Tribhuvan University in partial fulfillment of the requirements for Master's Degree of Science in Zoology with special paper Fish and Fisheries.

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CERTIFICATE OF ACCEPTANCE

This thesis work submitted by **Kiran Poudel**, entitled **"Impacts of Jhimruk Hydropower Dam on Fish and Fisheries of Jhimruk River, Pyuthan, Nepal"** has been accepted as a partial fulfillment of the requirements for Master's Degree of Science in Zoology with special paper Fish and Fisheries.

EVALUATION COMMITTEE

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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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ABSTRACT

Dams are artificial designs which interrupt river natural discharge causing many changes to river's characteristic and functions. This work assesses the impacts of dam on Jhimruk River by taking fish and water quality parameters as indicators. The fieldwork was done from May 2016 to February 2017 that included fish sampling by using local methods and fisherman and measurement of water quality parameters at three sites i.e. at dam, upstream and downstream. Altogether 17 fish species under 3 orders, 4 families and 10 genera were collected during the study period. Shanon- weiner diversity index showed highest diversity (2.43) of fish in dam area and lowest (1.63) was found in downstream. The study revealed that majority of fish species belonged to the family cyprinidae. The most common species was *Channa orientalis* followed by *Barilius vagra*, *Puntius ticto***,** *Barilius bendelesis*. Two migratory fishes *Tor tor* and *Neolissochilius hexagonolepis* were found to be confined to downstream only. Various physical and chemical parameters of the water were found to be altered. Temperature (21˚C), water velocity (1.13 m/s), dissolved oxygen (6 mg/l) were found to be mostly altered during dry season. These ultimate changes was due to the less release of water from dam to downstream and also result in the variation of fish composition and fish diversity.

Key words: Fish diversity, Hydropower, Dam, Impact.

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LIST OF ABBREVIATIONS

APHA	-	American Public Health Association
CITES	-	Convention on International Trade in Endangered Species
DFO	-	District Forest Office
DHM	-	Department of Hydrology and Meteorology
DO	-	Dissolved Oxygen
EIA	-	Environmental Impact Assessment
FAO	-	Food and Agriculture Organization
FD	-	Fish density
Fig	-	Figure
GPS	-	Geographic Positioning System
ha	-	Hector
HMG/N	-	His Majesty's Government of Nepal
HPP	-	Hydro Power Plant
IUCN	-	International Union for Conservation of Nature and Natural Resources
Km	-	Kilometer
Km^2	-	Square Kilometer
MW	-	Mega Watt
Max	-	Maximum
Min	-	Minimum
MW	-	Mega Watt
NEA	-	Nepal Electricity Authority
SWDI	-	Shanon- Weiner Diversity Index
VDC	-	Village Development Committee