

**ECOLOGICAL STUDY OF RUPA LAKE, POKHARA
VALLEY, KASKI, NEPAL**

A Dissertation Submitted

**For the Partial Fulfillment of the Requirements for the Master of
Science in Botany**

Submitted By

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2008

RECOMMENDATION LETTER

This is to certify that the dissertation work entitled "**Ecological Study of Rupa Lake, Pokhara Valley, Kaski, Nepal**" has been carried out by **Mr. Devendra Kunwar** under my supervision. The result of this research work has not been submitted for any academic degree to the best of my knowledge. I recommend his thesis for partial fulfillment of his Master's Degree in Botany, Tribhuvan University.

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ACKNOWLEDGEMENT

I humbly present my sincere gratitude to my respected supervisor Mrs. Anjana Devkota, Lecturer of Central Department of Botany for her constructive suggestions, considerable guidance and encouragement at every step throughout this dissertation.

I would like to thank Prof. Dr. Krishna Kumar Shrestha, Head, Central Department of Botany and Prof. Dr. Pramod Kumar Jha former head Central Department of Botany for providing laboratory facilities along with valuable suggestions.

I am highly obliged to Mr. Bhart Babu Shrestha and Prof. Dr. Hari Dutta Lekhak for their continuous encouragement and assistance throughout the research work.

I express my sincere gratitude to Dr. T.B. Shrestha, Head, Fisheries Research Centre, Godawari, Lalitpur for his valuable suggestion and kind cooperation.

I would like to acknowledge Mr. Jeevan Thapa, Chairperson, "Rupatal Conservation and Fishery-Committee", and Mr. Manohar Bhandari former chairperson, for their generous gestures and valuable suggestions in planning and execution of field study. I would like to thank Mr. Manharka Adhikari, Lawyer, Lekhnath Municipality, Pokhara and my senior colleague Narayan Pd. Ghimire for their valuable suggestions. I am thankful to Dr. Mohan Siwakoti, Associate Prof. Central Department of Botany and Staffs of National Herbarium and Plant Laboratory Godawari for helping in plant identification. Similarly, I am also thankful to Fisheries Research Centre, Pokhara and Water Engineering and Training Centre (P.) Ltd. Dillibazar, for their help in water analysis.

I would like to take this opportunity to acknowledge all the teaching and non-teaching staff of Central Department of Botany for their kind cooperation during the laboratory and other works.

I am highly indebted to the local of Jamunkuna and Kholako Chheu for their warm hospitality and sharing their knowledge regarding lake conservation and management.

I express my heartfelt thanks to my colleague Dinesh Thapa who has been instrumental and phenomenal during the field study.

Similarly, I would like to remember my colleagues, Deepak Mahat, Bishnu Baral, Bimal Kunwar, Sarmila Ghale, Ram Sharma, Suresh Chand and Khagendra Bhatta for their warm affection, cooperation and encouragement throughout the research work.

I would like to thank Mr. Ram Krishna Maharjan (R.P.M. Computer Centre, Kirtipur) for his lucid typing and Mr. Jhalak Jalahari for helping me in boating

Last but not least, I deeply appreciate the sacrifice made by my parents to bring me up this state and guide in right direction.

Date:

Devendra Kunwar

ABSTRACT

The present study was carried out in subtropical Rupa lake, wetland of Pokhara valley, from an ecological and management perspectives. Vegetation analysis was done by quadrat method. Altogether 43 species of aquatic macrophytes representing 26 family and 40 genera were recorded. By growth form, the emergents and the rooted floating leafed species recorded highest and lowest number of species respectively. *Nelumbo nucifera*, *Trapa quadrispinosa*, *Trapa bispinosa* and *Leersia hexandra* recorded highest IVI value throughout the experimental period. Physico-chemical parameters like: water temperature, DO, pH, total nitrogen and PO₄-P were analyzed. The water temperature varied from 21.29°C to 23.39°C throughout the experimental period. Parameters like pH and DO recorded higher value in post monsoon period, while temperature, total nitrogen and PO₄-P recorded higher value in pre monsoon period. On the basis of PO₄-P, the lake can be categorized as eutrophic. Biomass ranges from 27.25 g/m² to 389.25g/m² throughout the experimental period and the highest dry mass value of 389.25g/m² was observed at the eastern side during the post monsoon period. Comparatively, higher dry mass value was recorded during the post monsoon period ($171.18 \pm 24.03\text{g/m}^2$) than the pre monsoon ($98.35 \pm 1.69\text{g/m}^2$). Among the growth form, the highest and lowest biomass was represented by emergents ($251.16 \pm 95.16\text{g/m}^2$), free floating species ($104.76 \pm 28.02\text{g/m}^2$) and submerged species ($48.39 \pm 7.27\text{g/m}^2$) respectively; which depicts the decrease in productivity with the corresponding increase in depth contour. The reported species possess economic uses and ecological values including their role as a fish food to human food and sheltering habitat to invertebrate and birds. The nuisance of aquatic weeds has thwarted the lake to develop as a major ecotouristic destination by impending recreational and ecological values. The principal threats to the lake include; siltation, eutrophication, agricultural runoff and lake area encroachment. Suggested management approaches include integrated land use planning of the shoreline campaigning awareness among general public, demarcation of lake boundary and conservation through wise utilization of aquatic plant resources.

Key words: Siltation, Eutrophication, Conservation
Biomass Species diversity, Limnology

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB	–	Asian Development Bank
BOD	–	Biological Oxygen demand
BPP	–	Biodiversity Profile Project
CBOS	–	Community Based Organization
CBS	–	Central Bureau of Statistics
DNPWC	–	Department of National Parks & Wildlife Conservation
DDC	–	District Development Committee
DO	–	Dissolved Oxygen
ECOS	–	Ecological Society
EPC	–	Environmental Protection Club
FINIDA	–	Finish International Development Agency
FRC	–	Fisheries Research Center
HMG/N	–	His Majesty Government of Nepal
INGO	–	International Non-Government Organization
IPM	–	Integrated Pest Management
IUCN	–	The World Conservation Union
IVI	–	Importance Value Index
JICA	–	Japan International Cooperative Agency
LI-BRD	–	Local Initiatives for Biodiversity, Research and Development
MOPE	–	Ministry of Population and Environment
NARC	–	National Agricultural Research Centre
NGOs	–	Non-Government Organization
NHDPRG	–	National Herbarium, Department of Plant Resources, Godawari
NHSON	–	Natural History Society of Nepal
NPC	–	National Planning Commission
NTFP	–	Non-Timber Forest Product
PER	–	Potential Evapotranspiration Ratio
PRA	–	Participatory Rural Appraisal
RC	–	Relative Coverage
RD	–	Relative Density
RF	–	Relative Frequency
RONAST	–	Royal Nepal Academy of Science and Technology
SPSS	–	Statistical Programme for Social Science
TUCH	–	Tribhuvan University Central Herbarium
UNEP	–	United Nation Environmental Programme
UNESCO	–	United Nations Educational, Scientific and Cultural Organization
USDA	–	United Status Development Agency
VDC	–	Village Development Committee
WI	–	Warmth Index
WMI	–	Woodland Mountain Institute
WWF	–	World Wildlife Fund

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