



Lake Cluster of Pokhara Valley

2 February 2016





Lake Cluster of Pokhara Valley

2 February 2016

Lake Cluster of Pokhara Valley

Prepared by: Sony Baral Gauli, IUCN Maheshwar Dhakal, PhD, DNPWC Baiendra Khanal, IUCN

GIS Map: ©Nawaraj Chapagain

Cover Photo : ©Sony Baral Gauli

The designation of geographical entities and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of Government of Nepal and IUCN concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this publication do not necessarily reflect those of Government of Nepal and IUCN.

Published by:

Department of National Parks and Wildlife Conservation IUCN Nepal

Copyright: © February 2016, Department of National Parks and Wildlife Conservation and International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holders provided the source is fully acknowledged.

Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission of the copyright holders.

Available from:

Department of National Parks and Wildlife Conservation PO Box : 860, Kathmandu Nepal Fax : 977-01-4227675 0977-1-4227926, 4220850 Email: dnpwc@gmail.com

IUCN Nepal

Kupondole, Lalitpur P.O. Box 3923, Kathmandu, Nepal Tel: (977-1) 5528781 Fax: (977-1) 5536786 E-mail: info-np@iucn.org

Table of Contents

Introduction	1
Lake Cluster Maps	2
Biological Significance	4
Social and Cultural Significance	5
Uses	6
Threats	6
Future Priority	7
Local Institutions for Wetland Conservation	7
1. Phewa Lake and Catchment Area	8
2. Kamalpokhari Lake and Catchment Area	10
3. Begnas Lake and Catchment Area	12
4. Rupa Lake and Catchment Area	14
5. Khaste Lake and Catchment Area	16
6. Dipang Lake and Catchment Area	18
7. Maidi Lake and Catchment Area	20
8. Gunde Lake and Catchment Area	22
9. Neurani Lake and Catchment Area	24
10. Pokhara Seti Catchment Area	26
References	28
Lake Conservation Committee	29

Introduction

Pokhara valley situated around 200 km west of the Kathmandu, which is a widening of the Seti Gandaki valley. The Pokhara name itself was derived from "Pokhari", which is meant for Pond in Nepali vernacular- one of the wetland types. The valley itself is one of the most popular tourism destinations in Nepal, where natural

heritages, especially lakes and mountains are main tourist attractions. It is also known as the "City of the Lake". The Lake cluster of the Pokhara Valley has of international importance, as it supports vulnerable, endangered and critically endangered species as well as threatened ecological communities. It is the 10th Ramsar Site of Nepal, declared on 2 February 2016.

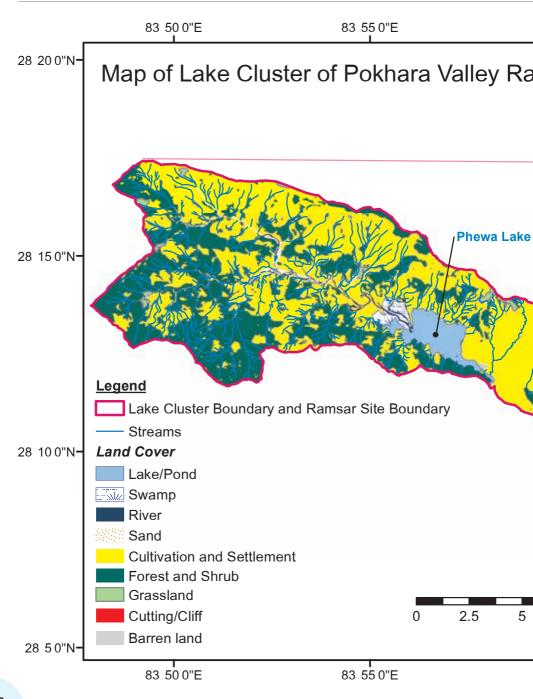


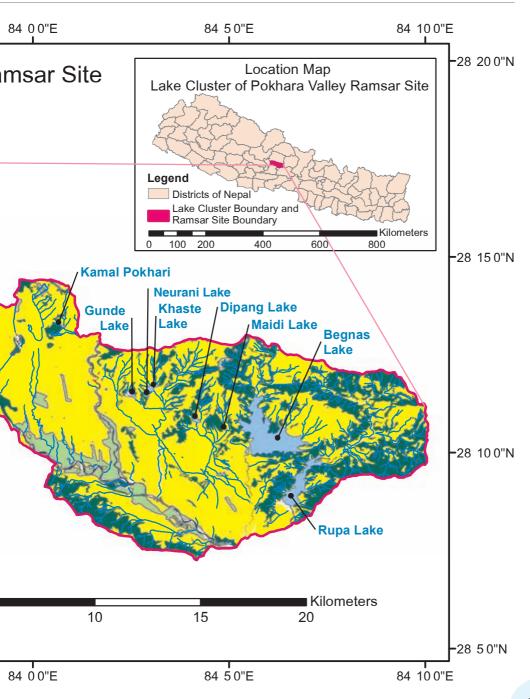
The Lake Cluster of the Pokhara Valley Ramsar Site comprises of the nine lakes, located in the two municipalities of the Kaski district, Western Development region of the Nepal. Out of the nine lakes, two lakes namely Phewa and Kamalpokhari are in Pokhara Sub-Metropolitan city where the rest of the lakes belong to Lekhnath Municipality.

Table 1: Lake Cluster of the Pokhara Valley			
Wetland	Location (Municipality and wards)	Total Catchment Area (sq km)	Water bodies (sq km)
Phewa	Pokhara Municipality	119.0	4.51
Begnas	Lekhnath Municipality, 9 & 11	18.4	3.27
Rupa	Lekhnath Municipality	27.6	1.07
Khaste	Lekhnath Municipality, 3,4 & 6	2.7	0.09
Dipang	Lekhnath Municipality, 6	2.4	0.06
Maidi	Lekhnath Municipality, 9	1.6	0.01
Gunde	Lekhnath Municipality, 4	0.6	0.08
Neurani	Lekhnath Municipality, 6	0.2	0.02
Kamalpokhari	Pokhara Municipality, 13	1.2	0.02
Pokhara Seti Catchment		87.3	0.11
	Total	261.1	9.24

The total area of the catchment comprises of 261.1 sq km, which comprises of water bodies, agriculture land, forests, settlement and other built-up area. Agriculture land dominates the land use in the catchment area followed by forests, and water bodies. Water bodies comprises nearly 3.5% of the total catchment area of the lake cluster.

Lake Cluster Maps





Biological Significance

The lake and catchment area provide home to many globally threatened and endemic plants, birds and wetland dependent mammals. Tamrakar (2008) reported 60 aquatic plants on the Pokhara Lake clusters, which comprises of 16 sub-merged, 4-free floating, 6 rooted floating and rest are emergent plant species. The same study also identified 203 terrestrial plant species with varieties of uses (Tamrakar, 2008). Rare marsh wild rice *Oryza rufipogon* is also found around the lake. Some of the threatened plants found in the lake cluster includes *Alstonia scholaris; Apostasia wallichii* and *Michelia champaca; Asparagus racemosus; Bulbophyllum plyrhiza; Cymbidium iridioides, Dendrobium densiflorum, D. fimbiatum* and *Cyathea spinosa; Dioscorea deltoidea; Oberonia nepalensis; O. iridifolia; Oroxylum indicum* and *Papilionantheteres sp.; Oryza rufipogon* (wild gene pool of cultivated rice); *Tinospora sinensis* and monogeneric species like *Ceratophyllum demersum, Trapa natans* and *Typha angustifolia*.

There are 168 bird species found around the Lake clusters, (Tamrakar, 2008) including endangered, endemic and globally threatened bird species. Out of the 168 bird species, 10 species are included under CITES Appendix while, five species fall under various threat categories of the IUCN. Some of the endemic/threatened birds found in the Lake cluster include Spiny Babbler (*Turdoides nepalensis*), Nepal Wren Babbler (*Pnoepyga immaculate*), Comb duck (*Sarkidiornis melanotos*), Baer's Pochard (*Aythya baeri*), Ferruginous Duck (*Aythya nyroca*) etc.

The lake cluster harbors 28 species of the fishes, 11 species of the frogs, 28 species of the reptiles and 36 species of the mammals (Tamrakar, 2008). The common otter (*Lutra lutra*) is found in the lake, which is included under Appendix I (CITES) and Nearly Extinction (IUCN). Population of otter is declining around the lake cluster.



Social and Cultural Significance

The lake clusters of the Pokhara valley have high socio-cultural significances. There are lot of temples and shrines on the catchment area of the lake city. Each lake has own cultural value or significance, where lakes are used for celebration of festivals, holy baths and worship God and Goddess.



Wetlands Name	Socio-cultural significance
Phewa	Tal Barahi temple is situated in the middle of the lake
Begnas	 Barahi temple in Begnas tal is visited during the full moon, Teej festival (fasting by women for the betterment of their husband) and <i>Sangranti</i> celebration on every month (the first day Nepali Month). Religio-cultural performances are done before and after paddy crop cultivation and harvesting
Rupa	 Rupa is historically a known being a site where famous Rishi called <i>Chewan</i> who practiced Yoga at the bank of lake for long time Barahi temple and Shiva temples are found popular religious destinations in the middle of the lake and people visit during Shivaratri Religio-cultural performances are done before and after paddy crop cultivation and harvesting festival
Khaste	 Tal Barahi is religiously important as people take bath in the 11th day of full moon i.e., <i>Ekadasi</i>, during solar eclipse, Ram Nawami, new year and Dashain
Dipang	 Local people believe lake water is holy for worship of the God and Goddess
Maidi	 Maidi lake is regarded as important religiously and people take bath during new year
Gunde	• Gunde lake is considered as sacred and people take bath towards the exit during women festival <i>Teej, Ekadasi</i> , full moon, during solar eclipse, Ram Nawami, new year and human cremation
Neurani	Neurani lake is important for fishing
Kamalpokhari	 Kamalpokhari (Buddha lake) has small temples in the west and people worship for Snake God during Nagpanchami

Uses

These lakes have greater value in groundwater recharge, flood control and

sediment trapping. Thousands of people are dependent on these lakes for the tourism business, wetland resources, irrigation and fishery. Some uses of the wetland include:

- Irrigation
- Electricity
- Recreation/Tourism
- Commercial fish farming
- Maintaining balance in local hydrology and ecology
- Festival celebration/ worships (Religious)



Threats

Major threats to the lakes are from (a) mass tourism (b) commercial fishing



and (c) land use changes, especially settlement and built-up area expansion. Some of the threats include:

- Eutrophication
- Sedimentation/Siltation
- Encroachment/ Agriculture land expansion
- Pollution (Solid waste)
- Commercial fishing
- Aquatic invasion
- Excessive tourism pressure
- Livestock grazing (fringe area)
- Urbanization/settlement
 expansion
- Infrastructure development

@ Photo Credit: Sonv Bar

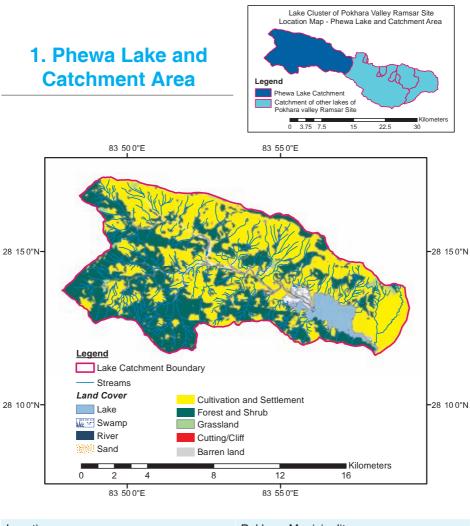
Future Priority

- Wetland restoration focusing on (a) sedimentation control, (b) sustainable land use practices, (c) water quality improvement, and (d) pollution control
- Diversifying livelihoods through (a) community based tourism management,
 (b) good acqua-culture practice promotion, and (c) wise use of wetland resources
- Strengthening wetland governance, especially by (a) strengthening community/stakeholder capacity on wetland management, (b) strengthening/ promoting mult-stakeholders platform for wetland management, and (c) institutionalizing Payment for Ecosystem services

Local Institutions for Wetland Conservation

Pokhara Valley Lake Conservation Committee is established in 2008, which comprises of main lake conservation committee and 9 Lake specific sub-committee.





Pokhara Municipality
83°47'52.8" - 83°59'11.7" E 28°11'37.1" - 28°17'25.7" N
762 – 2,483
119.0 sq. km
4.51 sq. km
Local government (Municipality)
Private & government
Majhi (Fishing people)
Fresh water lake

- · Rare and endangered fish species
- Cultural and religious use (Tal Barahi temple & Buddha Stupa); Tal Barahi temple is situated in the middle of the lake
- Source of livelihoods for Majhi communities (wetland dependent) and Boat users
- · Globally threatened plants

Wetland Uses

- Irrigation
- Commercial fishing
- Boating (Tourism)
- Hydro-power (Electricity) generation

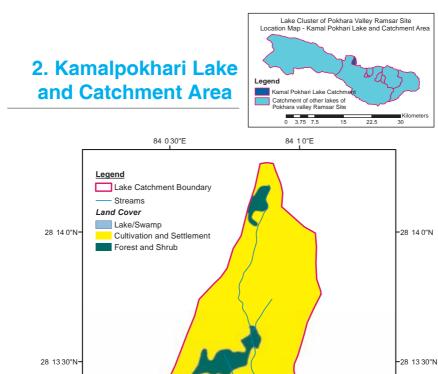
Wetland Threats

- Eutrophication
- Sedimentation/Siltation
- Encroachment/Agriculture land expansion
- Pollution (Solid waste)
- Commercial fishing
- Aquatic invasion
- Excessive tourism pressure
- Livestock grazing (fringe area)
- Urbanization/settlement expansion

Management Priority

- Wetland restoration
- Sustainable financing practices
- Institutional strengthening

- Lake Conservation Committee
- Boating Association
- Fishermen Cooperative



	84 0 30"E	84 1 0"E
Location		Pokhara Municipality, Ward No 13
Coordinate		84°00'28.0" - 84°01'05.0" E 28°13'04.4" - 28°14'16.1" N
Altitude		550 – 1,439 m
Total Catchment area		1.2 sq km
Water bodies		0.02 sq km
Tenure (Water bodies)		Local government (Municipality)
Tenure Catchment area		Private & government
Wetland dependent comr	nunity	Jalahari community (Majhi, Bote, Darai & Podey)
Wetland type		Marsh land with patches of swamp land

0.75

0 0.1250.25

0.5

Kilometers

1

-28 13 0"N

28 13 0"N-

Photo Credit: Sony Baral Gauli



Wetland Values

- Cultural and religious value (Holy place/Annual festival/temple construction)
- Kamalpokhari (Buddha lake) has small temple in the west and people worship for Snake God during *Nagpanchami*
- Lotus species

Wetland Uses

- Paddy cultivation
- Fishing
- Festival celebration (Religious and cultural)

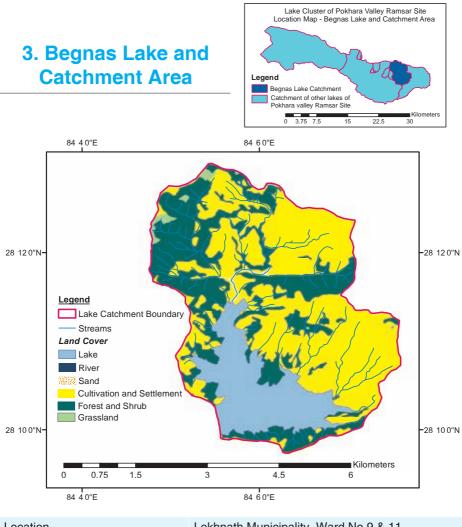
Wetland Threats

- Sedimentation/Siltation
- · Water bodies encroachment/Agriculture land expansion
- Paddy cultivation
- Aquatic invasion
- Livestock grazing (fringe area)
- Encroachment
- Settlement/built-up area expansion
- Extinction of lotus plant

Management Priority

- Wetland Restoration
- Livelihoods improvement/diversification

- Lake Conservation Committee
- Mother group



Location	Lekhnath Municipality, Ward No 9 & 11
Coordinate	84°04'45.3" - 84°07'35.7" E 28°09'44.1" - 28°13'0.4" N
Altitude	637 – 1,439 m
Total Catchment area	18.4 sq. km
Water bodies	3.27 sq. km
Tenure (Water bodies)	Local government (Municipality)
Tenure Catchment area	Private & government
Wetland dependent community	Jahahari communities (Fishing people)
Wetland type	Freshwater Lake





- Rare and endangered fish species
- Cultural and religious value (Holy place)
- Barahi temple is visited during the full moon, Teej festival (fasting by women for the betterment of their husband) and Sangranti celebration on every month (the first day of each Nepali Month)
- Religio-cultural performances are done before and after paddy crop cultivation and harvesting
- Source of livelihoods for fishing communities (Majhi, Bote, Darai & Podey)
- Globally threatened plants found in the catchment area

Wetland Uses

- Irrigation
- Commercial fishing
- Boating (Tourism)

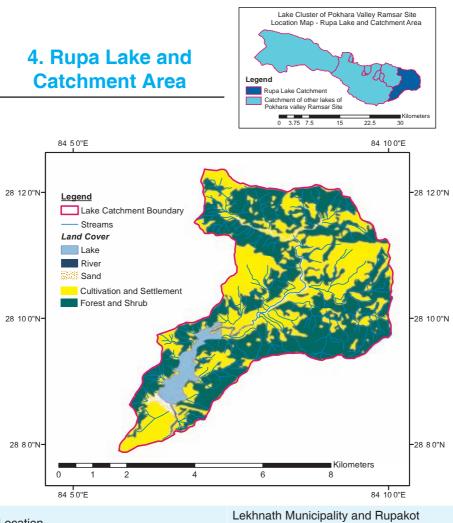
Wetland Threats

- Eutrophication
- Sedimentation/Siltation
- Pollution (Solid waste)
- Commercial fishing
- Aquatic invasion
- Excessive tourism pressure
- Livestock grazing (fringe area)
- Encroachment
- Settlement/built-up area expansion
- Road/tourism related infrastructure development

Management Priority

- Wetland restoration
- Sustainable financing practices
- Institutional strengthening
- Visitors management

- Lake Conservation Committee
- Fishing Cooperative



Location	Village Development Committee
Coordinate	84°05'43.5" - 84°10'04.0" E 28°07'52.4" - 28°12'22.0" N
Altitude	590 – 1,422 m
Total Catchment area	27.6 sq. km
Water bodies	1.07 sq. km
Tenure (Water bodies)	Local government (Municipality)
Tenure Catchment area	Private & government
Wetland dependent community	Majhi (Fish farming)
Wetland type	Freshwater Lake



- Rare and endangered fish species
- · Habitat for 17 species of rare and endangered birds
- · Cultural and religious use
- Rupa is historically known as a site, where famous Rishi called *Chewan* practiced Yoga at the bank of lake for long time
- Barahi temple and Shiva temples are found popular religious destinations in the middle of the lake and people visit during Shivaratri
- Religio-cultural performances are done before and after paddy crop cultivation and harvesting festival
- Source of livelihoods for local fishermen (wetland dependent communities)
- Globally threatened plants found in the catchment area
- Wild rice area

Wetland Uses

- Irrigation
- Fishing

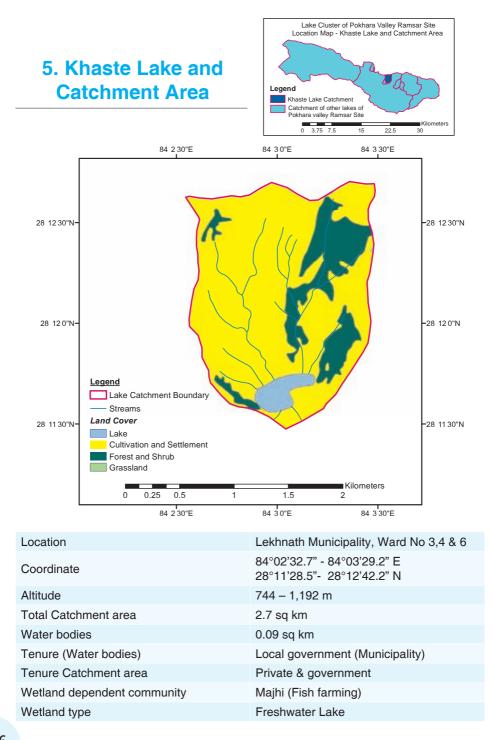
Wetland Threats

- Eutrophication
- Sedimentation/Siltation
- Commercial fishing
- Aquatic invasion
- Livestock grazing (fringe area)
- Encroachment
- Settlement area/built-up area expansion
- Infrastructure development (Road construction)

Management Priority

- Wetland restoration
- Sustainable financing practice
- Institutional strengthening
- Tourism promotion

- Lake Conservation Committee
- Fishing Cooperative





- Farming/Agriculture
- · Cultural and religious value
- Source of livelihoods for Majhi communities (wetland dependent)
- Wild rice

Wetland Uses

- Irrigation
- Fishing

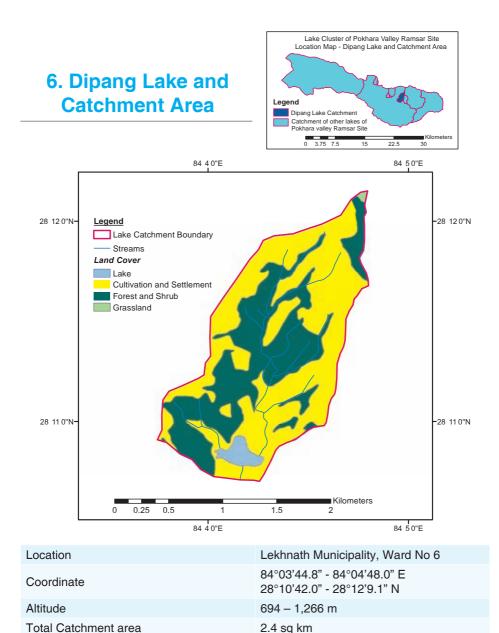
Wetland Threats

- Eutrophication
- Sedimentation/Siltation
- Commercial fishing
- Aquatic invasion
- Encroachment
- Extinction of lotus
- Forest encroachment

Management Priority

- Wetland restoration
- Sustainable financing practices
- Livelihood diversification
- Tourism promotion

- Local Youth Club
- Lake Conservation Committee



0.06 sq km

Magar

Local government (Municipality)

Private & government

Freshwater Lake

Water bodies

Wetland type

Tenure (Water bodies) Tenure Catchment area

Wetland dependent community



- Rare and endangered wetland plants and fishes
- Cultural and religious value (Temple contrusction)
- Tourism value, also known as "Honey moon lake" due to wilderness
- Habitat for birds (Around 15 birds are permanent resident of the area)

Wetland Uses

Irrigation

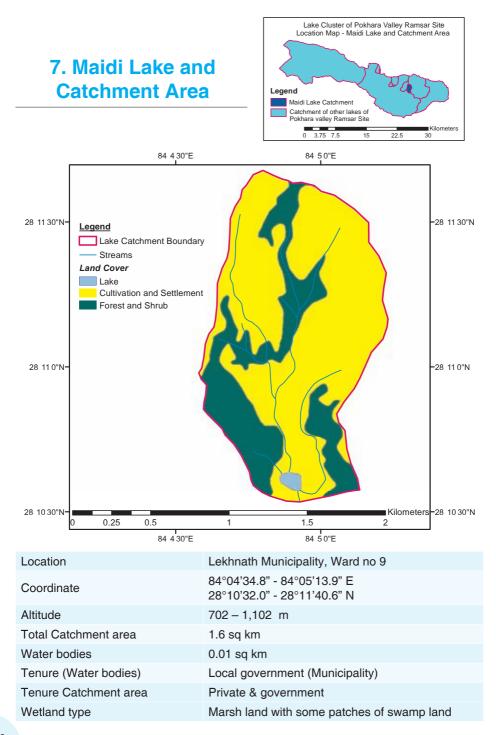
Wetland Threats

- Human encroachment
- Eutrophication
- Sedimentation/Siltation
- Aquatic invasion
- Livestock grazing (fringe area)
- Built-up area expansion/settlement area development

Management Priority

- Wetland restoration
- Tourism promotion
- Institutional strengthening

Institutions





- · Habitat for rare and endangered fish species and wetland dependent plants
- Cultural and religious value/significance
- · Source of livelihoods for Majhi communities (wetland dependent)

Wetland Uses

- Irrigation
- Fishing

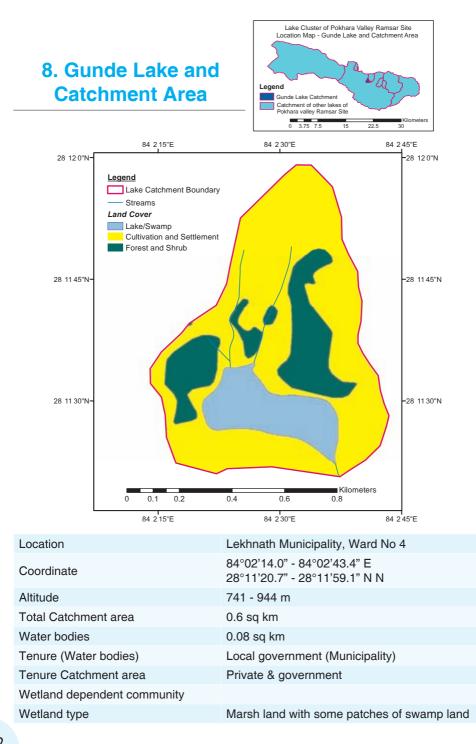
Wetland Threats

- Sedimentation/Siltation
- Human encroachment
- Aquatic invasion
- Livestock grazing (fringe area)
- Settlement/built up area expansion

Management Priority

- Wetland restoration
- Sustainable financing practices
- Tourism development

Institutions





- · Habitat for rare and endangered fish species and wetland dependent plants
- · Cultural and religious significance
- Site of Migratory birds

Wetland Uses

- Irrigation
- Fishing
- Wetland plants for making mat

Wetland Threats

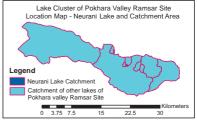
- Sedimentation/Siltation
- Aquatic invasion
- Livestock grazing (fringe area)
- Human encroachment
- Settlement/built up area expansion

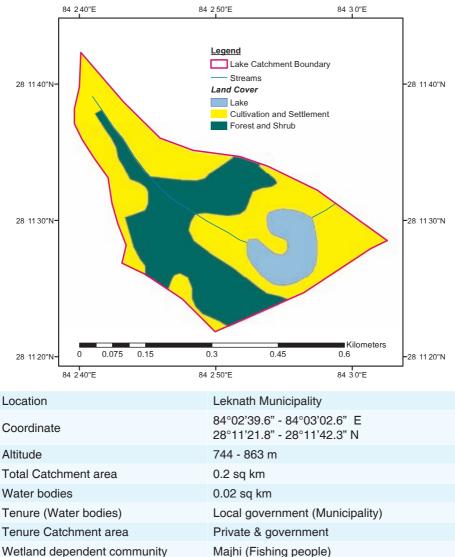
Management Priority

- Wetland Restoration
- Sustainable financing practices
- Tourism development

Institutions

9. Neurani Lake and **Catchment Area**





Wetland dependent community

Wetland type Marsh land with some patches of swamp land



- · Habitat for rare and endangered fish species and wetland dependent plants
- Cultural and religious significance

Wetland Uses

- Irrigation
- Fishing
- Livestock farming

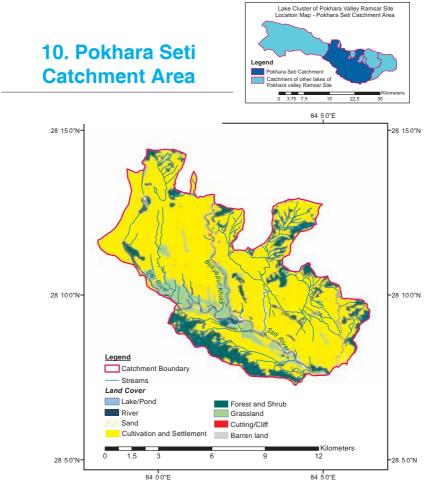
Wetland Threats

- Sedimentation/Siltation
- Aquatic invasion
- Livestock grazing (fringe area)
- Human encroachment
- Settlement/built up area expansion

Management Priority

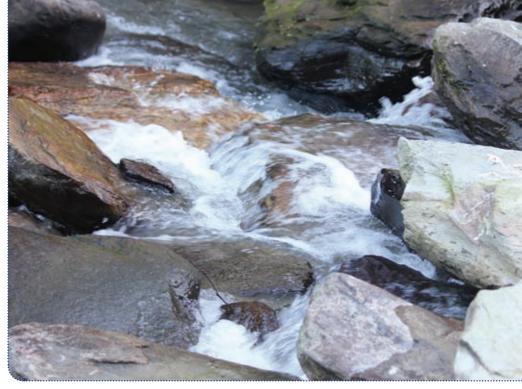
- Wetland restoration
- Sustainable financing practices
- Tourism development

Institutions



Pokhara Seti Catchment area includes other than catchment area of each lake clusters of Pokhara Valley.

Location	Downstream area of Pokhara and Lekhnath municipality
Coordinate	83°47'52.8" - 84°10'04.0" E 28°07'15.6" - 28°17'25.7" N
Altitude	550 – 2,483 m
Total Catchment area	8,727.7 ha
Water bodies	205.0 ha
Tenure (Water bodies)	Local government (Municipality)
Tenure Catchment area	Private & government
Wetland type	River



- Habitat of rare and endangered fish species and wetland dependent plants
- Source of livelihoods, especially for farmers

Wetland Uses

- Irrigation
- Fishing

Wetland Threats

- Sedimentation/Siltation
- Flash floods
- Encroachment
- Livestock grazing (fringe area)
- Settlement/built up area expansion
- Un-planned infrastructure development, especially road
- Pollution/Waste dumping
- Sand extraction

Management Priority

- Water quality improvement
- Soil and water conservation
- Farming system improvement

Tamrakar Rajan. 2008. *Status and Biodiversity of Lakes and Ponds of Lekhnath Municipality*. Thesis for the partial fulfillment of Bachelors Degree, Institute of Forestry. Pokhara, Nepal.

Pokhara Lake Conservation Committee. 2008. *Pokhara Wetland Resources*: Special Edition, 2008. Pokhara Lake Conservation Committee.

Oli, Krishna P. (edited by). 2000. *Conservation and Development of Lekhnath Municipality*. Kathmandu. International Union for Nature Conservation, Kathmandu, Nepal.

DNPWC. 2016. *Information sheet on Lake Cluster of Pokhara Valley*. Unpublished report submitted to the Ramsar Convention Bureau.

Pokhara Valley Lake Conservation Committee

Chair	District Development Committee, Kaski
Member	Pokhara Sub-Metropolitan City, Pokhara
Member	Lekhnath Municipality, Lekhnath
Member	District Soil Conservation Office, Kaski
Member	District Plant Resource Office, Kaski
Member	Urban Development Office, Kaski
Member	Chiairperson of Phewa Lake Conservation Committee
Member	Chiairperson of Begnas Lake Conservation Committee
Member	Chiairperson of Rupa Lake Conservation Committee
Member	Chiairperson of Khaste Lake Conservation Committee
Member	Chiairperson of Dipang Lake Conservation Committee
Member	Chiairperson of Maidi Lake Conservation Committee
Member	Chiairperson of Gunde Lake Conservation Committee
Member	Chiairperson of Neurani Lake Conservation Committee
Member	Chiairperson of Kamalpokhari Lake Conservation Committee
Member Secretary	District Forest Office, Kaski





2 February 2016

