

World Wetland Day 2008

Final Report



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Program: National Seminar on '*Healthy Wetlands, Healthy People*'

Venue: Seminar Hall, Hotel Sunshine, Nagarkot, Bhaktapur, Nepal.

Organizer: Hindu Kush Himalayan Benthological Society, Bhaktapur, Nepal.

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Mr. Ukesh Raj Bhujju, Nepal National Committee of IUCN Members

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Vice Chairman: Ms. Ram Devi Tachamo

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CONTENTS

1. HKH BENSO ORGANIZATION: BRIEF DESCRIPTION.....	4
1.1 BRIEFS	4
1.2 MISSION	4
2. WORLD WETLAND DAY 2008.....	5
3. PREPARATION	5
4. THE PROGRAM.....	6
4.1 ART AND ESSAY COMPETITION.....	6
4.2 BANNER DISPLAY	6
4.3 NATIONAL SEMINAR	6
<i>Inaugural Session.....</i>	<i>7</i>
5. REMARKS.....	11
5. FEEDBACK	11
6. CONCLUSION	11
ANNEXES	12
ANNEX 1.....	13
ANNEX 2.....	14
ANNEX- 3	16



1. HKH BENSO ORGANIZATION: Brief description

1.1 BRIEFS

The environment of the world is gradually being deteriorating which has challenged the sustainability of the economic development and human progress. The freshwater resources, an important component of the nature and human survival, are at the apex of severe deterioration. Human pressures on freshwater resources are intense and will increase in the coming decades. About 10,000 species of freshwater invertebrates around the world are already extinct or imperilled. Hindu Kush-Himalayan region extending over 3500 km length over eight countries including Nepal, India, Bangladesh, Pakistan, Bhutan, China and Myanmar and constituting the world's highest mountain is the freshwater tower. In this region, human pressures are more intense as it composes one of the most dense population in the world which has posed risk to freshwater species extinction. In addition, the scientific knowledge about the freshwater invertebrates is limited and is far less than vertebrates for which contemporary conservation biology was designed. This lacuna gave the birth of Hindu Kush-Himalayan Benthological Society.

Hindu Kush Himalayan Benthological Society (HKH BENSO) is non-profit, nonpolitical and non-governmental research oriented scientific organization. It is founded by an enthusiastic scientific community including international and national scientists. It conducts and promotes research on freshwater resources and environment building excellence in freshwater conservation.

1. HKH BENSO was established in 2006 as a non profit, non political, non government organization.
2. HKH BENSO is registered with CDO office, Bhaktapur and affiliated with Social Welfare Council.
3. HKH BENSO Constitution enables trained members to vote for a policy making body of 11 members.
4. HKH BENSO now has a network with Bhutan, India, Pakistan and Bangladesh

1.2 MISSION

1. HKH BENSO will be a Model Professional Research Organization (PRO) dedicated towards wetland conservation management
2. HKH BENSO will organize programs so as to built up mechanism of networking between various stakeholders
3. HKH BENSO will enhance community awareness for wetland conservation and management



2. World Wetland Day 2008

The Ramsar Convention defines wetlands as: "areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters." Wetlands are the most productive ecosystem on the earth. They have been described as the "Kidneys of the Landscape" because of their function in the hydrological and chemical cycles. Wetlands are recognized as "Biological Supermarkets" because of their extensive food webs and rich biodiversity they support (Barbier et al., 1997). Wetlands store excess water in the rainy season acting as sponges for flood abatements and provide irrigation water for agricultural production. Wetlands are the cradle of aquatic biodiversity upon which countless species of macrophytes, macro-invertebrates and several plants and animals depends for survival. Most of the wetlands are facing anthropogenic disturbances thus they are becoming shallow and eutrophic with luxuriant growth of aquatic vegetation. Among several components, wetland vegetation performs important role to freshwater wetland functions. World Wetlands Day is celebrated in the 2nd February each year. It marks the date of the adoption of the Convention on Wetlands on 2 February 1971, in the Iranian city of Ramsar on the shores of the Caspian Sea. Each year since 1997, government agencies, non-governmental organizations, people of all levels of the community have taken advantage of the opportunity to undertake actions aimed at raising public awareness of wetland values and benefits in general and the Ramsar Convention in particular. Accepting the importance of wetlands, our organization named Hindu Kush-Himalayan Benthological Society (HKH BENSO) in cooperation with Department of National Parks and Wildlife Conservation (DNPWC) celebrated WETLAND DAY 2008 by organizing different programs with the following objectives.

- To share knowledge, understandings and experiences on wetlands and issues of wetlands from experts and conservationists of Nepal and to disseminate their knowledge and understandings to the students and teachers of schools and students of Bachelor and Master Level of the valley.

3. Preparation

There were a bunch of enthusiastic volunteers come together from different colleges to quote the world wetland day. Orientation on the world wetland day program was conducted for the volunteers before the preliminary preparation. Once the tasks were given to the group, several meetings were held in group and work load has divided among the group. According the task the group has done their responsibility in time by completely it in the given time. Some of the work done in the preparation stage were: distribution of invitation letters to the schools, preparing the conformation list of the participants, preparing organizer cards, registration sheet, water supply, etc.



4. The Program

4.1 Art and Essay Competition

Objective

The objective of the program was to create awareness among all the concerned community and students regarding the importance of wetlands. Major objective of the programs were:

- To bring out the pearls of knowledge & understanding of students of secondary level towards WETLAND
- To publish a document which includes the best drawings & essays for awareness generation
- To distribute the document in all the schools of the valley

The object of art is to crystallize emotion into thought, & then fix it in form. Art does not lie in copying nature.-Nature furnishes the material by means of which to express a beauty still unexpressed in nature.-The artist beholds in nature more than she herself is conscious of. So, HKH BENSO has thought to bring up the crystals from the heart of the students to materialize the concept & understanding of students of secondary level towards WETLAND. For it, HKH BENSO has organized a drawing & essay competition among the students of secondary level schools of the valley. The participant schools were from Bhaktapur, Kathmandu, Kritipur and Madhapur Thimi of Kathmandu valley.

4.2 Banner Display

On the same day, various banners, posters and photos related to wetlands were exhibited in the corridor of Bhaktapur Durbar Square, Bhaktapur. The main objectives of exhibition were:

- To show it's important.
- To aware the general people about the present scenario of wetlands.
- To show the anthropogenic causes for the degradation of wetlands and
- To show the new Ramsar sites of Nepal.

The banners, posters and photos were exhibited for the whole day. Many visitors gained the information form the exhibition. It shows clearly in the visitors face that they were very excited and interested to know about it.

4.3 National Seminar

The one day national seminar on ***“Healthy Wetlands, Healthy People”*** was held on 1 Feburary 2008 for celebration of world wetland day. The seminar was focused on the following topics.

Main Topic - “Healthy Wetlands, Healthy People”

Sub Topic:

1. Wetland and livelihood
2. Wetland and Environmental Investigations
3. Wetland Management, Conservation and Sustainability
4. Wetland Policy, Implementation and Effectiveness



With the objective of disseminating an in-depth understandings of wetlands through interaction of several counterparts and identification of issues that is needed to pronounce for development, we included presentation from

1. National Academy of Science and Technology (NAST), Lalitpur
2. Department of National Park and Wildlife Conservation, Kathmandu,
3. Kathmandu University (KU), Dhulikhel, Kavre, Nepal
4. CDES, Tribhuvan University (TU), Kirtipur, Nepal
5. Janpriya College, Pokhara
6. Environmental Camps for Conservation Awareness – Nepal (ECCA)
7. IOM, Tribhuvan University (TU), Maharajgunj, Kathmandu
8. Hindu Kush Himalayan Benthological Society (HKH BENSO)

Program

The program was held in four sessions; Inaugural session, Technical Session-I, Technical Session II and the Concluding session.

Inaugural Session

Hosting the inauguration ceremony Mr. Kamal Raj Gosai (Program Coordinator), threw light on the Program. The program was inaugurated by the chief guest Prof. Dr. Bishal Nath Upreti (Dean, Institute of Science and Technology, Tribhuvan University). Mr. Ukesh Raj Bhuj, Nepal National Committee of IUCN Members – delivered the keynote speech. He highlighted the history of conservation of wetlands in the world and in the country. He explained the hidden close relationship between science and culture. He added that water is a holy substance and we should maintain its sanctity. Land is a basis of life so we should improve its productivity. Every life, even fossil, has its soul. Respect it. He furthermore concluded that Scientific Interpretation and Analysis of Traditions and Rituals for Cultural Renaissance is very necessary. Cultural Amalgamation of Scientific Facts and Findings is of prime need for Social Acceptance and Sustainability. He gave detail information about Baraha Kshetra (Koshi region), Pashupat Kshetra (Bagmati region), Mukti Kshetra (Gandaki region) and Baijnath Kshetra (Karnali region). Dr. Siddartha Bajra Bajracharya and Dr. Rajan Suwal delivered their speech. At the end of the inauguration session, prizes were distributed by the chief guest to the winners of Art/Essay Competition entitled '*Healthy Wetlands, Healthy People*'. Ms. Ram Devi Tachamo welcomed the invited participants, presenters and the guests. Chairing the Session the President of the Society, Mr. Deep Narayan Shah closed the inauguration ceremony.



Technical Session-I

The session was chaired by respected **Dr. Siddartha Bajra Bajracharya** (National Trust for Nature Conservation) and the Rapporteurs were Manju Sapkota, HKH BENSO and Ramesh Raj Pant, Janapriya Multiple College.

The session highlighted on General studies of Wetlands including the SEMINAR SUB TOPICS: *Wetland Management, Conservation and Sustainability; Wetland Policy, Implementation and Effectiveness; and Wetlands and Livelihoods.*

The Session was initiated by the paper presentation entitled '**WETLANDS IN THE DRY FOOT HILLS OF NEPAL HIMALAYAS**' by Dr. Dinesh Raj BHUJU, Nepal Academy of Science and Technology (NAST), Lalitpur, Nepal. Dr Bhuju emphasized that the wetlands of foothills of Nepal Himalayas should be equally emphasized and conserved as that of the Himalayas and the terai belts.

Mr. Gyan Kumar Chhipi SHRESTHA, from Hindu Kush Himalayan Benthological Society (HKH BENSO) representing his group presented the second paper entitled '**RAMSAR SITES OF NEPAL: CHALLENGES AND OPPORTUNITIES FOR CONSERVATION**'. Mr. Chhipi Shrestha described the present status of wetlands its importance and highlighted on the challenges and opportunities for conservation.

On behalf of the Department of National Parks and Wildlife Conservation/Ministry of Forests and Soil Conservation (DNPWC/MoFSC), Mr. Buddi Sagar POUDEL presented a paper entitled '**POLICY AND LEGAL FRAMEWORK FOR WETLAND CONSERVATION AND MANAGEMENT IN NEPAL: A NATIONAL PERSPECTIVE**'. He threw light on the present policy and legal frameworks of Nepal. Also he pointed about the loopholes in them.

Mr. Ram Charitra SAH, Environmental Scientist, Kathmandu, Nepal presented paper entitled '**IMPORTANCE, PROBLEMS AND LEGAL PROVISION OF WETLAND IN NEPAL**'. Mr. Sah highlighted the importance, problem and legal provision of the wetland's conservation and management in related laws through the comprehensive review of the existing programs, projects and legal analysis of related laws. He concluded that the fast rate of population growth, unplanned urbanization, irregular industrial operations and development of different infrastructural works as well as human activities have resulted destruction and damage of the wetland with different degree and to the different extent.

Dr. Siddartha Bajra Bajracharya (NTNC) concluded and declared the session ending.



POSTER PRESENTATION

During the lunch break poster session was held on title **‘WATER QUALITY, ECOLOGICAL STATUS AND BATHYMETRY OF PHEWA LAKE, POKHARA’**. The research was presented by Mr. Pramod Bhagat, student of Central Department of Environmental Science, Tribhuvan University, Nepal, representing the group Uttam PAUDEL, Anju PANDIT, Suchita SHRESTHA, Madhu Sudan BHATTARAI, Anita SHRESTHA, Krishna LAMSAL, Pramod BHAGAT, Gyan Kumar Chhipi SHRESTHA, Ananta MS PRADHAN.

In the same time **ART AND ESSAY EXHIBITION** on *‘HEALTHY WETLANDS, HEALTHY PEOPLE’* and **BOOK EXHIBITION** related to wetland was done. This Art/Essay competition was held on January 5, 2008 by HKH BENSO to create awareness among school students.

Technical Session-II

The technical session-II chaired by **Mr. Narendra Bahadur Khadka**, Trichandra Multiple Campus and the Rapporteurs were Mr. Bhupendra Sharma and Mr. Pabitra Dahal, HKH BENSO.

The session highlighted on specific studies of Wetlands including the SEMINAR SUB TOPIC: *Wetland and Environmental Investigations*.

Dr. Bandana PRADHAN, Associate Professor, Institute of Medicine, Tribhuvan University, Nepal, presented paper entitled **‘DISTRIBUTION OF HEMIPTERA (AQUATIC BUG) WITH SPECIAL REFERENCE TO TWO NEW SPECIES OF GENUS APHELOCHEIRU IN THE BAGMATI RIVER SYSTEM, NEPAL’**.

Miss Ram Devi TACHAMO, HKH BENSO, Bhaktapur, presented the paper entitled **‘BENTHIC MACROINVERTEBRATES’ DIVERSITY AND TAXA RICHNESS IN PHEWA WATERSHED**. Ms. Tachamo attempted to develop the inventory of benthic faunas of Phewa watershed. She highlighted the importance of macroinvertebrates as biological indicator of pollution.

Dr. Bibhuti Ranjan JHA, Kathmandu University, Nepal presented the paper on **‘APPLICATION OF FISH BASE INFORMATION IN RIVER CLASSIFICATION OF NEPAL AND ITS VALIDITY’**. Dr. Jha studied the seasonal changes in the species composition, number and abundance of fish species in nine rivers in Nepal from 2003 to 2006. The main aim of this work is to give the quantitative account of all the fishes present in these rivers in all the seasons and to see if the river classification in this basis corresponds



with the established geographical and geological classification. The result showed that the fish base classification clearly corresponds with the classification of the rivers based on region and geology. This information has a various application such as the habitat assessment, conservation, monitoring and restoration of the river ecosystem.

Mr. Sushil Anu SHRESTHA, Environmental Camps for Conservation Awareness (ECCA), Nepal, presented a paper entitled '**KATHMANDU PARTICIPATORY RIVER MONITORING – A MODEL FOR SOUTH ASIA RIVER CONSERVATION – FIRST STEP TOWARDS RIVER RESTORATION**'. Mr. Shrestha described the activities and results of project *Kathmandu Participatory River Monitoring (KAPRIMO)* co-funded by *European Commission*, initiated in coordination of *Adelphi Research – Germany, ECCA – Nepal* and *ITC – The Netherlands* in February 2006.

Mr. Ramesh Raj PANT, Janapriya Multiple Campus, Pokhara, Nepal presented the paper entitled '**MANAGEMENT OF WETLANDS AND SUSTAINABLE LIVELIHOODS IN POKHARA VALLEY, NEPAL**'. Mr. Panth showed that the sedimentation and eutrofication are two major problems of Phewa lake. He concluded that the living standard and the quality of people of surrounding areas depend on the ecological and economic sound management of the wetland areas, this was lacking in case of Phewa lake.

Concluding Session

The concluding session was chaired by Dr. Madan Koirala (Central Department of Environmental Science, Tribhuvan University, Kirtipur, Nepal). The program hosting was done by Mr. Kamal Gosai (Program Coordinator)

Mr. Gyan Kumar Chhipi Shrestha (Secretary, HKH BENSO, Bhaktapur) presented the summary of all the presentations done in the National Seminar on '*Healthy Wetlands, Healthy People*'.

The conclusions are:

1. Wetlands are resources that have ecological, economic, cultural and religious values.
2. National Wetlands Policy 2003 needs legislation and its strict implementation for the effective implementation of the policy. In addition, co-ordination between different Governmental sectors and also with Non-governmental organizations is necessary.
3. Wetlands should be managed by making Wetland Management Plan with the involvement of local people through training.
4. Ramsar sites and other important wetlands outside Protected Areas should be declared as "Environmentally sensitive areas" or "Special Protected Areas" for its conservation.
5. In Nepal, many lakes and wetlands are still unexplored especially in hilly and high mountain region indicating high opportunities for research.
6. Aquatic organisms such as macroinvertebrates and fishes can be used to assess pollution and classify the rivers.

The concluding remark was given by **Dr. Madan Koirala**. After the remarks, the concluding session was ended by the chairperson.



5. Remarks

The Seminar Organizing Committee would like to show sincere gratitude to the chief guest Prof. Dr. Bishal Nath Upreti (Dean, Institute of Science and Technology, Tribhuvan University). Also we would like to thank Mr. Ukesh Raj Bhujju, Nepal National Committee of IUCN Members for the Key Note speech. Thanks to the guests Dr. Siddartha Bajra Bajracharya (National Trust for Nature Conservation) and Dr. Rajan Suwal (Principal, Khwopa College, Bhaktapur)

Sincere thanks to the supporters; WWF Nepal Program, National Trust for Nature Conservation (NTNC), Resources Himalaya Foundation, Kathmandu Metropolitan City, Lalitpur Sub-Metropolitan City and DNPWC. Supports were also gathered from the college, different governmental and non-governmental organizations.

The total expenditure for the seminar program was NRs.1,40,000/- (proceedings NRS. 50,000).

The Seminar Organizing Committee bears sincerest thanks to all the supporters. The Committee is thankful to all those participants and friends, including those who have contributed for the success of the program directly and indirectly.

5. Feedback

Feed back is one of the main components for the judgment of the program. So, the comments were documented. Some major comments and suggestions from the participants were compiled below;

- We are very happy to be the part of world wetland day program.
- The program helped to built awareness among us
- Wetlands are religiously significant to us, so it must be conserved.

6. Conclusion

From the received feedback, it was seen that the program was success to achieve its objectives. All the participants enjoyed during art/essay competition program. The huge mass of participants on seminar shows the interest and dedication towards the wetlands conservation and preservation awareness. HKH BENSO thanks all of them for their time and effort to make the program success and looking in future too.

The program was success to gather the targeted number of participants from local level, environmental science colleges, governmental bodies, NGOs and INGOs and bring attention on the present issues related to wetlands. The event was successful to raise awareness and achieve its defined objectives.



Annexes



Annex 1

Schedule of Program

**World Wetland Day 2008
Art/Essay Competition
5th January 2008, Saturday**

Program schedule

Time	Activities
9:30 - 10:30	Registration
10:30 - 10:45	Program briefing
11:00 - 1:00	Art Competition
10:00 – 1:00	Submission of Essay
10:00 – 2:00	Poster Exhibition/Interaction Program
1:15	Closing / Refreshment



Annex 2

PROGRAMME

February 1, 2008

08:00 REGISTRATION

08:30 INTRODUCTORY KEYNOTES / INAUGURATION

Ms. Ram Devi TACHAMO, Vice- President, HKH BENSO – Welcome Remarks

Inauguration: Chief guest: Prof. Dr. Bishal Nath UPRETY, Dean, Institute of Science and Technology, Tribhuvan University

Mr. Kamal Raj GOSAI, Programme Coordinator – Programme Highlights

Mr. Saniv CHAUDHARY, WWF Nepal, - Best wishes for seminar

Dr. Ukesh Raj BHUJU, Nepal National Committee of IUCN Members – Keynote speech

Prize Distribution to the winners of Art/Essay Competition on Healthy Wetlands, Healthy People

Remarks: Chief Guest: Prof. Dr. Bishal Nath UPRETY, Dean, Institute of Science and Technology, Tribhuvan University

Mr. Deep Narayan SHAH, President, HKH BENSO – Thank you Remarks

09:30 Coffee / Tea Break / Photo session

10:00 Technical Session I:

Chairperson: Dr. Siddhartha Bajracharya, National Trust Trust for Nature Conservation (NTNC)

Rapporteurs: Manju Sapkota, HKH BENSO and Ramesh Raj Pant, Janapriya Multiple College

General studies of Wetlands

SEMINAR SUB TOPICS:

A. Wetland Management, Conservation and Sustainability

B. Wetland Policy, Implementation and Effectiveness

C. Wetlands and Livelihoods

WETLANDS IN THE DRY FOOT HILLS OF NEPAL HIMALAYAS

Dinesh Raj BHUJU

Nepal Academy of Science and Technology NAST

RAMSAR SITES OF NEPAL: CHALLENGES AND OPPORTUNITIES FOR CONSERVATION

Gyan Kumar Chhipi SHRESTHA, Bhupendra SHARMA, Deep Narayan SHAH, Ram Devi TACHAMO, Pabitra DAHAL, Pramod BHAGAT, Kamal Raj GOSAI and Manju SAPKOTA

Hindu Kush Himalayan Benthological Society HKH BENSO

POLICY AND LEGAL FRAMEWORK FOR WETLAND CONSERVATION AND MANAGEMENT IN NEPAL: A NATIONAL PERSPECTIVE

Buddi Sagar POUDEL

Department of National Parks and Wildlife Conservation/Ministry of Forests and Soil Conservation DNPWC/MoFSC

IMPORTANCE, PROBLEMS AND LEGAL PROVISION OF WETLAND IN NEPAL

Ram Charitra SAH

Environmental Scientist, Kathmandu, Nepal



PLENARY DISCUSSION

12:15 Lunch break / POSTER PRESENTATION

WATER QUALITY, ECOLOGICAL STATUS AND BATHYMETRY OF PHEWA LAKE, POKHARA

Uttam PAUDEL, Anju PANDIT, Suchita SHRESTHA, Madhu Sudan BHATTARAI, Anita SHRESTHA, Krishna LAMSAL, Pramod BHAGAT, Gyan Kumar Chhipi SHRESTHA, Ananta MS PRADHAN

Central Department of Environmental Science, Tribhuvan University, Nepal

ART AND ESSAY EXHIBITION ON HEALTHY WETLANDS, HEALTHY PEOPLE

Participants of Art/Essay Competition, organized on January 5, 2008 by HKH BENSO

13:30 Technical Session II:

Chairperson: Mr. Narendra Bahadur Khadka, Trichandra Multiple Campus

Rapporteurs: Pabitra Dahal, HKH BENSO and Bhupendra Sharma, HKH BENSO

Specific studies of Wetlands

SEMINAR SUB TOPIC:

Wetland and Environmental Investigations

DISTRIBUTION OF HEMIPTERA (AQUATIC BUG) WITH SPECIAL REFERENCE TO TWO NEW SPECIES OF GENUS APHELOCHEIRU IN THE BAGMATI RIVER SYSTEM, NEPAL

Bandana PRADHAN, H. ZETTEL and Otto MOOG

Institute of Medicine, Tribhuvan University, Nepal

BENTHIC MACROINVERTEBRATES' DIVERSITY AND TAXA RICHNESS IN PHEWA WATERSHED

Hasko NESEMANN, Deep Narayan SHAH, Ram Devi TACHAMO and Subodh SHARMA

Aquatic Ecology Centre, Kathmandu University, Nepal

APPLICATION OF FISH BASE INFORMATION IN RIVER CLASSIFICATION OF NEPAL AND ITS VALIDITY

Bibhuti Ranjan JHA, Herwig WAIDBACHER, Subodh SHARMA and Michael STRAIF

Kathmandu University, Nepal

KATHMANDU PARTICIPATORY RIVER MONITORING – A MODEL FOR SOUTH ASIA RIVER CONSERVATION – FIRST STEP TOWARDS RIVER RESTORATION

Sushil Anu SHRESTHA, Ram MAHARJAN, Prachet SHRESTHA, Yogendra CHITRAKAR, Rainer MUTSCHLER-BURGHARD, Indra Kumari MANANDHAR

Environmental Camps for Conservation Awareness ECCA, Nepal

MANAGEMENT OF WETLANDS AND SUSTAINABLE LIVELIHOODS IN POKHARA VALLEY, NEPAL

Ramesh Raj PANT, Laxmi POUDEL, Sulochana BHANDARI

Janapriya Multiple Campus, Pokhara, Nepal

PLENARY DISCUSSION

16:15 Coffee / Tea Break

16:30 CLOSING OF SEMINAR

Dr. Madan KOIRALA, Central Department of Environmental Science, Tribhuvan University – Feedback of the Programme

Mr. Gyan Kumar Chhipi SHRESTHA, Secretary, HKH BENSO – Outcome of the seminar

17:00 END OF SEMINAR



Annex- 3

Summary:

Paper I: WETLANDS IN THE DRY FOOT HILLS OF NEPAL HIMALAYAS

Presenter/ Author: Dr. Dinesh Raj BHUJU, Nepal Academy of Science and Technology
NAST

Paper II: RAMSAR SITES OF NEPAL: CHALLENGES AND OPPORTUNITIES FOR CONSERVATION

Gyan Kumar Chhipi SHRESTHA, Bhupendra SHARMA, Deep Narayan SHAH, Ram Devi TACHAMO, Pabitra DAHAL, Pramod BHAGAT, Kamal Raj GOSAI and Manju SAPKOTA

Presenter/Author: Mr. Gyan Kumar Chhipi SHRESTHA (HKH BENSO, Bhaktapur)

Summary:

Wetland is the interface between terrestrial and aquatic communities which is the most productive ecosystem on the earth. They are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by shallow water. The Ramsar Convention takes a broad approach in determining the wetlands which come under its aegis. Under the text of the Convention (Article 1.1), wetlands are defined as: “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”. In addition, for the purpose of protecting coherent sites, the Article 2.1 provides that wetlands to be included in the Ramsar List of internationally important wetlands: “may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands”. On the other hand, National Wetlands Policy 2003 of Nepal defines ‘wetlands denote perennial water bodies that originate from underground sources of water or rains. It means swampy areas with flowing or stagnant fresh or salt water that natural or man-made or permanent or temporary. Wetlands also mean marshy lands, riverine floodplains, lakes, ponds, water storage areas and agricultural lands.’

Paper-III: POLICY AND LEGAL FRAMEWORK FOR WETLAND CONSERVATION AND MANAGEMENT IN NEPAL: A NATIONAL PERSPECTIVE

Presenter/Author: Buddi Sagar POUDEL, Department of National Parks and Wildlife Conservation/Ministry of Forests and Soil Conservation DNPWC/MoFSC



Paper-IV: IMPORTANCE, PROBLEMS AND LEGAL PROVISION OF WETLAND IN NEPAL

Presenter/Author: Mr. Ram Charitra SAH, Environmental Scientist, Kathmandu, Nepal

Summary:

The paper will highlight the importance, problem and legal provision of the wetland's conservation and management in related laws through the comprehensive review of the existing programs, projects and legal analysis of related laws.

Nepal gifted with natural beauty and rich biodiversity including all kind of wetland including lakes, water reservoirs, and river. There are a total of 7,43,563 ha of wetland which is 5.06 percent of total country's land surface. Numerically, Terai constitute highest numbers of wetland (163 out of 242 totals) and geographically Far Western Development Region constitutes the most wetlands (64 out of 242 totals).

By virtue of its nature, wetland has great environmental, ecological and socio-economic importance need to be harnessed wisely and judiciously. Worldwide, there is an increased pressured on wetland from increased population growth as well as anthropogenic activities in a manner so as to bring changes in the ecosystem as also had been seen in Nepal aimed to be assessed and highlighted.

Thus there is a need to advocate for comprehensive wetland policy incorporating provision of setting up required infrastructures and institutions incorporating wetland conservation related provisions and programs in line with the international wetland laws through enacting new acts, rules and/or amending the existing related laws. Awareness raising about wetland, identification and inventorying and recognition of national level wetland, environmental impact assessments on project in and around the wetland area etc. need to be included in the management plan and its effective implementation, monitoring and evaluation.

The result of thorough review of programs, projects, policy and laws related to wetland with reference to its importance, problems and important legal provisions will provide insight thought to all and will act as the basis for rooted advocacy, increased awareness as well as provide the broader perspective for its better conservation and management.

POSTER PRESENTATION

Technical Paper: WATER QUALITY, ECOLOGICAL STATUS AND BATHYMETRY OF PHEWA LAKE, POKHARA

Uttam PAUDEL, Anju PANDIT, Suchita SHRESTHA, Madhu Sudan BHATTARAI, Anita SHRESTHA, Krishna LAMSAL, Pramod BHAGAT, Gyan Kumar Chhipi SHRESTHA, Ananta MS PRADHAN

Presenter: Mr. Pramod Bhagat, Central Department of Environmental Science, T.U., Nepal



Summary:

The Phewa Lake covering an area of about 439 hectares is one of the prominent tourist attractions of Pokhara close to Annapurna Mountain Range. This paper is based on the research done by the students of M. Sc. in Environmental Science (Ist yr, 2007/08 batch) of Central Department of Environmental Science from September 22 to October 10, 2007. We collected 48 water samples using Van Dorn Water Sampler and 119 benthic samples using Grab Sampler from 17 sites. For the preparation of Bathymetric map of the Lake, depths were measured manually by dipping Heavy Grab sampler at 112 sites of the lake which were located on the digital map using GPS and Brunton Compass location. By using ArcView 3.3 software, bathymetric map of Phewa Lake was prepared. Benthic macroinvertebrates found in the Phewa Lake during the investigation was used as bio-indicator to assess the water quality and the ecological status of the lake using Ganga River System (GRS) index. The dissolved oxygen of surface water is almost above 5 mg/L indicating suitable for aquatic life whereas the middle and bottom layer water had dissolved oxygen below 5 mg/L indicating less suitable for aquatic life including fishes. There was significant positive correlation between dissolved oxygen and density of macroinvertebrates ($r = 0.5382$) indicating high abundance of macroinvertebrates where the dissolved oxygen is higher. The benthic diversity is medium with the total of 29 taxa. The Saprobic Water Quality Class was II (b-mesosaprobic level) for the lake indicating 'moderate pollution' with good nutrient conditions in the lake. The bathymetric map of the Phewa lake shows the maximum depth of 22.75 metres. Similarly, the estimated water volume of the lake is 30,358,882 m³. It shows that the lake volume is highly decreased in the present investigation probably due to sedimentation. Therefore, there is urgent need to control sedimentation in order to save the existence of the lake that in turn promotes tourism.

Paper-V: DISTRIBUTION OF HEMIPTERA (AQUATIC BUG) WITH SPECIAL REFERENCE TO TWO NEW SPECIES OF GENUS APHELOCHEIRU IN THE BAGMATI RIVER SYSTEM, NEPAL

Bandana PRADHAN, H. ZETTEL and Otto MOOG
Institute of Medicine, Tribhuvan University, Nepal

Presenter: **Dr. Bandana Pradhan** (Associate Professor, IOM, T.U.)

Paper-VI: BENTHIC MACROINVERTEBRATES' DIVERSITY AND TAXA RICHNESS IN PHEWA WATERSHED

Hasko NESEMANN, Deep Narayan SHAH, Ram Devi TACHAMO and Subodh SHARMA
Aquatic Ecology Centre, Kathmandu University, Nepal

Presenter: **Ms. Ram Devi Tachamo** (Vice Chairman, HKH BENSO)



Summary:

The research was carried out in Phewa watershed from November 1993 to September 2007 including inlets and outlets with an aim to fulfill the gap between researches based on composition and taxa richness of benthic faunas. Twenty seven sampling points were selected in Phewa watershed including Phewa taal, Orlan, Sedi, Phirke, Baskot, Tora and Harpan kholas as main inlets and Pardi as the outlet. Qualitative sampling was done by using nets of different mesh size (1mm, 0.5 mm and 250µm). Altogether 42 taxa based on family level identification and 54 genera have been identified. Saprobic water quality classes of inlets, outlets and Phewa itself have been identified as critically polluted (III) except Phirke khola inlet. The results on biodiversity provide an overview of the subtropical ecosystem. Phewa Taal is a thermal waterbody due to the presence of numerous warm springs with 21 to 24° celsius. Macro-invertebrate diversity is high due to presence of numerous warm-water species.

Paper-VII: APPLICATION OF FISH BASE INFORMATION IN RIVER CLASSIFICATION OF NEPAL AND ITS VALIDITY

Bibhuti Ranjan JHA, Herwig WAIDBACHER, Subodh SHARMA and Michael STRAIF
Kathmandu University, Nepal

Presenter: **Dr. Bibhuti Ranjan JHA**(Kathmandu University)

Summary:

Seasonal changes in the species composition, number and abundance of fish species in nine rivers in Nepal were studied in this work from 2002 to 2006. Fish sampling was done using electrofishing gear by standard wading method in all four major seasons. The main aim of this work is to give the quantitative account of all the fishes present in these rivers in all the seasons and to see if the river classification in this basis corresponds with the established geographical and geological classification. Altogether 27588 fishes of 47 species were recorded during this work with average abundance of 79.23 (CPUE). The cluster analysis of the rivers were done using the species richness and the abundance of fish as variables and the result showed that the fish base classification clearly corresponds with the classification of the rivers based on region and geology. This information has a various application such as the habitat assessment, conservation, monitoring and restoration of the river ecosystem.

Paper-VIII: KATHMANDU PARTICIPATORY RIVER MONITORING – A MODEL FOR SOUTH ASIA RIVER CONSERVATION – FIRST STEP TOWARDS RIVER RESTORATION

Sushil Anu SHRESTHA, Ram MAHARJAN, Prachet SHRESTHA, Yogendra CHITRAKAR, Rainer MUTSCHLER-BURGHARD, Indra Kumari MANANDHAR
Environmental Camps for Conservation Awareness ECCA, Nepal

Presenter: **Mr. Sushil Anu SHRESTHA** (ECCA, Nepal)



Summary:

Ever increasing industrialization and haphazard urbanization in the Kathmandu valley has threatened the river environment. To foster the common interest in reviving the lost beauty of the holy River Bagmati, the project Kathmandu Participatory River Monitoring (KAPRIMO) co-funded by European Commission was initiated in coordination of Adelphi Research – Germany, ECCA – Nepal and ITC – The Netherlands in February 2006. Since then in every activities of KAPRIMO, there is a participation of students, local communities, clubs, non-governmental organizations (NGO) and governmental organizations (GO).

Teams of students, local community representatives, clubs, NGO's and staffs from Kathmandu Metropolitan City (KMC), Lalitpur Sub-metropolitan City (LSMC) and Department of Hydrology and Meteorology (DHM) were formed and trained that was capable of creating awareness through different medium. Youths in KAPRIMO organized photo exhibition in different places, art competition to the school students, unravelled the lost heritages along the river bank and was able to bring the huge mass of population to the common thought; the Bagmati river conservation. In this joint effort with technical and laboratory support from DHM, a scientific analysis for the river monitoring was done. As a result, KAPRIMO now has a one year monthly data of river monitoring that is helpful in planning for river rehabilitation. This data is made easily accessible to the general public through the KAPRIMO website; www.kaprimeo.org. Further more KAPRIMO now has the huge network of GO's, I/NGO's and International organizations to support in technical advices. KAPRIMO has assured its sustainability in Standard River monitoring system with the lab facility in the DHM with joint funding from KMC and LSMC.

Paper-IX: MANAGEMENT OF WETLANDS AND SUSTAINABLE LIVELIHOODS IN POKHARA VALLEY, NEPAL

Ramesh Raj PANT, Laxmi POUDEL, Sulochana BHANDARI

Janapriya Multiple Campus, Pokhara, Nepal

Presenter: Mr. Ramesh Raj PANT (Janapriya Multiple Campus, Pokhara, Nepal)



Summary:

Wetlands comprise 5% total land area of Nepal. It directly supports the 11% livelihoods of Population in Nepal. Majority of them are landless, poor and illiterate without any alternative options except wetland resources. Pokhara is a beautiful valley of natural paradise situated in western Nepal, which is also called lake valley of Nepal because with in the area of 200 sq. km it consists of 9 lakes, rivers, and rivulets streams, terraces, deep gorges, paddy fields etc. Many resources found in wetlands have been directly used by human society for both consumptive and non consumptive processes since very earlier periods. Survival of human civilization is intimately linked with wetlands. Unfortunately, most of the lakes and other water bodies are facing several threats due to the growing demand of population and unsustainable use of them. The major threats in the wetlands ecosystem of Pokhara valley are siltation, eutrophication, overexploitation, overfishing, overgrazing, water pollution, development activities in the adjoining areas of wetlands, introduction of invasive species, flooding etc. These activities adversely affect the ecological and economic status of the wetlands ecosystem. Therefore, the sustainable management of wetlands ecosystem are the necessities for the environmentally sustainable and socio-economically beneficial management of wetlands for the improvement of the livelihood of people in Pokhara valley.



Annex 4

Photographs



