PEOPLE'S LIVELIHOOD ACTIVITIES IN MAIDI LAKE OF LEKHNATH MUNICIPALITY KASKI DISTRICT, NEPAL

A Dissertation Submitted to Tribhuvan University Department of Anthropology Prithvi Narayan Campus in the Partial Fulfillment of the Requirement for the

Master's Degree in Anthropology

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LETTER OF RECOMMENDATION

This is to certify that **Mr. Bala Ram Tiwari** has completed this dissertation entitled **"People's Livelihood Activities in Maidi Lake of Lekhnath Municipality Kaski District, Nepal"** under my supervision and guidance. I, therefore, recommend and forward this dissertation for final approval and acceptance by the dissertation committee.

Date: 2073 -12-25

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LETTER OF ACCEPTANCE

This dissertation entitled **"People's Livelihood Activities in Maidi Lake of Lekhnath Municipality Kaski District, Nepal"** submitted to the Department of Anthropology, Tribhuvan University, Prithvi Narayan Campus, Bagar, Pokhara by **Mr. Bala Ram Tiwari** has been accepted as the partial fulfillment of the requirements for the Degree of Master of Arts in Anthropology by the undersigned members of the dissertation committee.

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Bala Ram Tiwari

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LIST OF ABBREVIATION

ANRM	:	Anthropology of Natural Resources
BTRT	:	Begnas Tal Rupa Tal
CMSi	:	Conservation Management System
DNPWC	:	Department of National Parks and Wildlife Conservation
FGD	:	Focus Group Discussion
GOVT	:	Government
HMGN	:	His Majesty Government of Nepal
IK	:	Indigenous Knowledge
INGO	:	International Non Government Organization
IUCN	:	International Union for Conservation of Nature
IUCN	:	International Union for Conservation of Nature and Natural Resources
MFSC	:	Ministry of Forest and Soil Conservation
NGO	:	Non Government Organization
NRM	:	Natural Resource Management

ABSTRACT

This thesis entitled "People's livelihood Activities in Maidi Lake of Lekhnath Municipality, Kaski District, Nepal" is mainly focused on the floral – faunal users in Maidi Lake. This study tried to reveal the livelihood activities of local dwellers in Maidi Lake. This study tried to explore how livelihood activities of local dwellers depend on Maidi Lake's grass, fish and Gudh. It aims to study the roles, challenges, opportunities and conservational strategy, common property, subsistence of livelihood of the participants in this lake. The local people of diverse cultures and origin were taken under study with 379 as per convenience sampling method. Primary as we as secondary source of data were used in the study. Direct field observation, key informants, focus group, discussion, interview, case study were used for the collection of primary data. Secondary data and information were extracted from the published and unpublished sources such as journals, books, internet sources, as per the requirement of the research. The data were analyzed by simple statistical tools as software Ms-Excel, table and percentage.

The findings of this study reveals people's livelihood activities on the harnessing species in Maidi Lake, poor conservational strategy, endangered condition of wetland and livelihood support on the local dwellers. The finding reveals that the adaptation strategies by the users community should be promoted and their indigenous knowledge of adaptation should be shaped into the frame of sustainable adaptation and livelihood support with scientific way of conservation of wetland, Maidi Lake.

CHAPTER: ONE
INTRODUCTION

1.1 Background of the Study

Nepal is a small country but it is rich in Natural Resources. These natural resources are the gifts of the nature. Some of the important natural resources of Nepal are: Forest, Water, Soil or Land.

Lakes are also important sources of water. There are many lakes in Nepal. Rara Lake is the largest. It is located in Mugu district. The second largest lake is the Phewa. It is in Pokhara, Kaski. Begnas, Rupa and Maidi lakes are also in Pokhara. Lakes are occupied large areas of water surrounded by land.

Wetlands of Nepal have economic, ecological, aesthetic, socio-cultural and religious values. They provide habitats for several species of wildlife and lie within various ecosystems of high-mountains and lowland plains. These wetlands are important ecosystems and utilized for the benefits of humankind. Rice cultivation, fishing and collection of wetland products are utilized performed by local people.

Likewise rendering ferry service, cattail technology, craft manufacturing and weaving are other such income generating activities of wetland dependent people. However, adverse effects remark in many cases: many rural communities have poor knowledge on sustainable utilization and more often conflicts arise for the use of wetland resources (Shrestha, 2011).

Wetland is defined as “area of marsh, fen, pet land or water, whether natural or artificial, permanent or temporary, with water that is static of flowing fresh, brackish, of salty, including are of marine waters, the depth of which at low tide not exceed “riparian” costal zones adjacent of the wetlands or island of bodies of marine water deeper than six meters at low tide lying within (HMGN/MFSC, 2002). A marsh is a wetland that is dominated by herbaceous rather than woody plant species. Marshes can often be found at the edges of lakes and streams, where they form a transition between the aquatic and terrestrial ecosystems. They are often dominated by grasses, rushes or reeds. If woody plants are present they tend to be low-growing shrubs. This

form of vegetation is what differentiates marshes from other types of wetland such as swamps, which are dominated by trees, and mires, which are wetlands that have accumulated deposits of acidic peat (http://www.epa.gov/emap/html/data/wetlands, 2016).

Biodiversity is the variety of life. It can be studied on many levels. At the highest level, you can look at all the different species on the entire Earth. On a much smaller scale, you can study biodiversity within a pond ecosystem or a neighborhood park. Identifying and understanding the relationships between all the life on Earth are some of the greatest challenges in science (www.esciencecentral.org/journals/ biodiversity, 2016).

Aquatic biodiversity can be defined as the variety of life and the ecosystems that make up the freshwater, tidal, and marine regions of the world and their interactions. Aquatic biodiversity encompasses freshwater ecosystems, including lakes, ponds, reservoirs, rivers, streams, groundwater, and wetlands. It also consists of marine ecosystems, including oceans, estuaries, salt marshes, sea grass beds, coral reefs, kelp beds, and mangrove forests. Aquatic biodiversity includes all unique species, their habitats and interaction between them. It consists of phytoplankton, zooplankton, aquatic plants, insects, fish, birds, mammals, and others (Hendrik and Martens, 2005).

Common property resources, particularly forests and pastures are rapidly decreasing and deteriorating in developing countries like Nepal resulting in many unintended and unanticipated environmental problems. For many particularly neoclassical economists, population growth resulting in poverty has exerted pressure on common resources thereby creating what is known as the tragedy of the commons (Hardin, 1968). They argue that because of growing population pressure, resources held in common are subject to destruction as individuals maximizes individual gains without bearing the costs. They suggest that the proper solution of the overexploitation of common resources, therefore, is to internalize its costs by making the public aspect of resources private (Runge, 1985). With the private property, an individual maximizer will rationally manage resources at its best and highest use and thus remain competitive within the market. They further assume that markets are always best means of allocating public resources and that competition necessarily leads to appropriate management (Vernon, 1988).

1.2 Statement of the Problems

The possible way of utilising the wetlands in a sustainable way has become an extreme necessity to promote the community's welfare in terms of the resource use. In some areas, local communities have already begun to replicate the conservation development program without any external help (Rijal, 2001). Importance of community role in wetland conservation programs should rely on understanding of livelihood resources and management of resources through their own skill and knowledge. Nevertheless, the conservation of wetland requires public support, appropriate government legislation, and conservation programs *(Shrestha, 2011).*

The cultural ecological perspective is major way to examine this research. Even, wetland biodiversity conservation is taken as a major issue of this present day. Osterm's vision on common property with the species, concept and practices of user's is regarded vital. As Garden (1968) insisted "Tragedy of the common" is the central focusing point with the recent condition of Maidi Lake's biodiversity. The efforts of IUCN, Libird, BTRT, WINROCK, Fishery, Municipality, local institution, Lake Conservation committee, and concerned individuals efforts are not sufficient to conserve it. They are too late too little.

Very few research articles on adaptation with focus on agriculture and impact of climate change on Himalayas are appeared in the scientific journals. Several organizations; NGOs, INGOs, Li Bird, NEPSEJ etc. are working is the issue of climate change and agriculture for awareness adaptation, and conservation of biodiversities, but they are only focused in the initial period and then for paper output. Moreover, instead of being social, cultural and environmental justice issue it has been as an ecological colonism (Upadhyay, 2016).

"Biodiversity Conservation" should be a crucial awareness for mankind. It is not only support for livelihood support but also sustainable balance of environment around us to keep floral and faunal balance which is the major role for natural balance. The action and interaction among them are natural phenomenon. Nature has renewable, non-renewable and perpetual resources which are the combined factors to construct culture, according to cultural ecological perspective in *"Techno-environmental Model of J. Steward (1955)"*. But the human activities upon biodiversity conservation may

bring good and bad results. Thus, to be alert in time, to conserve the biodiversity for endanger species is the most important task and should grasp the *Hardin's (1968)* issue of *"Tragedy of the Common"*, even *Ostorm's (1990)* use of common property by the stockholders.

People's activities and involvement with wetland for livelihood is a vital concern. Wetland biodiversity is more important than terrestrial because of the growing population of the current centuries. Culture is the way of living and growing complex societies ought to make their culture more advanced to live longer. Realizing these policy on ocean, desert, mountain, forest, land and the rest common property on this earth are targeted to issue of 'save'. Thousands of researches and the way of conservational strategies are launched to keep on by different institutions, Govt. sectors, individual etc. even national and foreign researchers. Floral-faunal species are going to destroy or eliminate slowly from their existence due to *Hardin (1968) "The Tragedy of the Common"*. Wetland are going to dry and species are in endanger. Thus, recent remedy on biodiversity conservation has to manage as early as possible. Hence, focusing on people activities in Maidi Lake, the following questions are raised in this study.

1. What is the status of wetland in the study area?
2. What are the present activities of users for livelihood on the Lake products?
3. What are the climatic conditions throughout the year in the region?
4. What is the status of common property in the field?
5. What are the efforts made by different institutions NGO, INGO, Govt. Committees, etc?
6. What are the growing population and urbanization effect?
7. What are the best ways of biodiversity conservation and livelihood support for the dwellers by Maidi Lake?

1.3 Objective of the Study

The general objective of this study is to assess people's involvement and activities for livelihood in Maidi Lake, Kaski.

The specific objectives of this study are:

- To study the status of flora-fauna and
- To study livelihood support of Maidi Tal on local dwellers.

1.4 Limitations of the Study

Every thesis, dissertations have limitation according to the situation. In this research have also the limitations which are given below.

- Theoretical limitation:

Theoretically no sufficient techniques have found for finding solution of the same problems.

- Applied limitation: Lack of knowledge to use pattern well. Lack of ignorance on biodiversity conservation.

Financially, technically and lack of veteran knowledge are also in problem. On the other hand marshy field is more difficult to study the species available there. It is an academic attempt. Findings of this type of study is not exactly generalised in the context of other area too. It is the specific case study of a single site.

1.5 Rationale and Justification of the Study

Thousands of researches have been conducted with many issues and solutions but natural resource is everlasting problem up to now. Natural gift (natural resources) is not only the way of surviving but also the progress of mankind .From the beginning stage of human evolution, it has been facing problems on biodiversity conservation .

This study in Maidi Lake is a crucial study that adds knowledge in the field of theoretical approach.Cultural ecological approaches bind its promises on the biodiversity and the human practices, how to conserve biodiversity and get benefit from it in future. On the other hand, policy makers get 'bird eye' (sight)s upon the importance and condition of endangered species as a major issue in the field of research. In this view, this research a rationale one.

The study brings the message of awareness on biodiversity conservation and signifies contributing positive impacts on gender equality, empowerment, poverty reduction,

growth of occupational activities, animal husbandry, cottage industries and helps to preserving environmental degradation, helps to conserve and manage of biodiversity products found In Maidi Lake. It helps in social change and local-international development in researches for further studies.

Conservation of aquatic floral-faunal species and migrant wild lives including birds and other species is one of the active works for new generation. Wetlands are crucial for human existence and economic well-being, for eco-system functioning, life support system providing food, fodder, fuel and watering the lives and industrial purposes. Forests, Lakes, Annapurna Conservation Area, National Parks, Wild Life Conservation Areas, Rivers and dozens of other Commons are under Government Policy but the least focus over wetlands is considerable.

Wetland biodiversity is under threat from encroachment of wetland habitat, pollution and poisoning, agricultural runoff, unsustainable harvesting marsh of wetland issues is also poor. And other concerned articles are also not in well published hitherto. *Ramsar Declaration (2nd Feb. 2016)* has taken newly interest over the Lake of Pokhara Valley. Hence this current study on Maidi lake wetland is necessary and vital.

1.6 Definition of Key Terms

Activities: Local people's performance with floral and faunal species on the sport.

Biodiversity: The variety of plant and animal life in particular habitat.

Conservation: Preservation or restoration of the natural environment and wildlife, carefully use of resource.

Wetland: Swampy or marshy land.

Aquatic: Relating to water, living or near water; an aquatic plant or animal.

Marsh: An area of low-lying land which is flooded in wet seasons or at high tide, and typically remains waterlogged at all time.

Gud : Rush family, grow in wetland. Juncaceae ('Igusa' in Japanese Language. Very useful to make mat, hat, sandal, floor mats and so on .Well use in China and Japan but Nepal has normal use.

Navo: Wild Rice use as grass for cattle, as well for migratory or local birds nestling and feed and shelter for the tiny creatures including insects.

Reed: Reed is a common name for several tall, grass-like plants of wetlands. They are all members of the order Poales (in the modern, expanded circumscription).

Common: Shared by or belonging to two or more people or by the people in a group.

Common Land: Land that belongs to or may be used by the local community.

Natural Resource Management: It deals with culture, society's interaction with natural resources and the resource users

Participation: The term participation means taking part on any activities carried out in the society. Defined Participation is a process of releasing people from being the subject of development and making them agents of modernization and change.

Wetland Species: Relating to water, living or near water, an aquatic plants or animals; eg migratory, exotic and indigenous bird's fish and insects, etc.

Wetland Grass: Relating water or near water the aquatic edible plants of animals including reed, navo (world rice), etc.

Exotic: From or in another country, especially a tropical one; seeming exiting and unusual because it is connected with foreign countries. (eg: exotic flower, plants, birds, fish)

Indigenous: Belonging to a particular place rather than coming to it from somewhere else. It is similar to native.

Migratory Birds: Connected with, or having the habit of, regular or seasonal migration: migratory birds.

Season: Any of the four main periods of the year: spring, summer, autumn and winter.

Flooding: Heavy rain flows with flooding in some area.

Drought: A long period of time when there is little or no rain.

Conservation: Techniques used on archaeological materials to stop or reverse the process for decay.

Cultural Ecology: The analysis of the relationship between a culture and its environment.

Culture: The set of learned behaviors, beliefs, attitude, values, and ideals that is characteristic of a particular society or other social group.

Peasants: Rural people who produce food for their own subsistence but must also contribute or sell their surpluses to others (in town and city) who do not produce their own food.

Livelihood: Means of securing the necessities of life.

1.7 Organization of the Study

The whole research is divided into six chapters. The first chapter is about the introduction that includes background of study, Statement of the problem, objectives of the study, limitation of study, rationale and justification of the study, definition of key terms and the organization of research. The second chapter includes reviews of literature with concept review, theoretical review, review of previous study, theoretical framework and conceptual framework. The third chapter is about research methodology which deals with the selection of the study area, research design, nature and source of data, sampling procedures, reliability and validity of data and method of data analysis.

Chapter four deals with profile of the study area which deals with brief introduction of Kaski district, Lekhnath Municipality, Maidi and its surroundings, age of the respondent, gender status of respondent, family size, educational status of respondents, caste/ethnicity of respondents and religion of respondent. Chapter five deals with Peoples' involvement in Maidi Lake for livelihood regarding people's activities on livelihood support, grass cutting people's ethnic group status, people involved in fishing's caste/ethnicity and Gudh (Juncus Prismatocarpus) collection with case studies. Finally, summary, major findings, conclusion and recommendations are presented in sixth chapter.

CHAPTER TWO

LITERATURE REVIEW

In fact, literature review provides incentive for guiding the study. Deep study is reviewing literature is only the way of getting research successful. Linking with theoretical and conceptual literature to the research topic is better for reliable study.

'Biodiversity conservation' is the issue of everlasting process of mankind. Theoretical and conceptual frameworks are essential elements to draw finding with right way counseling well managed. Regarding people's livelihood activities on biodiversity conservation in any wetlands in the world had been excelled and relevant source to support to this study. It is main attempt in the context of Nepal, the reviews differ from the native and foreign researchers' efforts articles published in various grounds and old documents are more useful to synchronize the objectives of this study. It provides general ideas about the subject matter and methodology. Again it helps the research to achieve to its targeted objectives.

2.1 Concept Review

Biodiversity is the biological diversity which includes the variety of the whole species present on earth. It includes different animals, plants, micro-organisms and their genes, water ecosystems, terrestrial, and marine ecosystems in which they all are present. Human should conserve biodiversity because of its benefit for example services and biological resources which are essential to live our life on earth. However, it also provides spiritual benefits as well as social benefit (Wanjui, 2013).

The concept of Natural resource management spread all over the world to conserve and manage systematically. It established as an important discipline under Anthropological field. The common dilemma is a parable of problem of social order, the problem of tension or contradictions between private interests and the public good that is central to all social science (Bates, 1983).

The destruction of wetlands is a concern because they are some of the most productive habitats on the planet. They often support high concentrations of animals—including mammals, birds, fish and invertebrates-and serve as nurseries for many of these species. Wetlands also support the cultivation of rice, a staple in the diet of half the world's population. And they provide a range of ecosystem services that benefit humanity, including water filtration, storm protection, flood control and recreation (www.worldwildlife.org, 2017).

Natural resource management refers to the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (Worrell & Appleby, 2000).

Natural resource management deals with managing the way in which people and natural landscapes interact. It brings together land use planning, water management, biodiversity conservation, and the future sustainability of industries like agriculture, mining, tourism, fisheries and forestry. It recognizes that people and their livelihoods rely on the health and productivity of our landscapes, and their actions as Stewards (1968) of the land play a critical role in maintaining this health and productivity.

It highlighted practical and theoretical fusion to develop research issues. IK is the way of prevailing practices as NRM uses since long before. Foraging society, hunting and food gathering society, use of Oasis's in desert region, marine use by costal people; Nile, Hangho, Sindha civilization and animal husbandry, cattle rearing practices are main concept for reviewing literature in this context.

Natural resource management refers to the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (Stewardship). Natural resource management deals with managing the way in which people and natural landscapes interact. It brings together land use planning, water management, biodiversity conservation, and the future sustainability of industries. It recognizes that people and their livelihoods rely on the health and productivity of our landscapes, and their actions as stewards of the land play a critical role in maintaining this health and productivity. Natural resource management is also congruent with the concept of

sustainable development. Natural resource management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources. Environmental management is also similar to natural resource management (www.epco.in/pdfs).

2.2 Theoretical Review

Participatory Communication "Participatory communication is the theory and practices of communication used to involve people in the decision-making of the development process. It intends to return to the roots of its meaning, which, similarly to the term community, originate from the Latin word 'communis', i.e. common (Mody, 1991). Therefore, the purpose of communication should be to make something common, or to share...meanings, perceptions, worldviews or knowledge. In this context, sharing implies an equitable division of what is being shared, which is why communication should almost be naturally associated with a balanced, two-way flow of information" *(wikipedia.org, 2014).*

Mainly, this research topic is based on cultural ecological (approach) theory. The theme of this theory is to emphasis the idea that every living organism consistently trying to adjust itself to its surrounding environment. The term environment means topographic climate and other organisms as well. An organism tries to adjust not only to the climate but also to the other organisms. Thus, the study of the relation between organisms and their environment is the subject matter of "Ecology".

Cultural ecology studies and analyses the interaction and interrelationship between ecology or environment and man-made environment (Culture). In fact, it shows clearly the combination of ecology and cultures practicing by man to exist own self. Julian Steward's "Techno environmental Model" play vital role on the theoretical base in this research.

Darwin's (The origin of Species 1859) theory of adaptation and it is going to be a mentionable fact: (i) Adaptation is the evolutionary process whereby an organism becomes better able to live in its habitat or habitats. (ii) Adaptedness is the state of being adapted: the degree to which an organism is able to live and reproduce in a given set of habitats. (ii) An adaptive trait is an aspect of the developmental pattern of

the organism which enables or enhances the probability of that organism surviving and reproducing.

Ostorm's (1990) adds the role of the people as users of the common and strategy of conservation. Even *Hardin's (1968)* depicts and clarifies what's conditions of common occurs and he has concluded *"Tragedy of the Common"*. *Ostorm's (1977)* version clears that common property and user's role on the common is the theme of this study. On the other, *Hardin's (1968) "Tragedy of the Common"* is matched with this study. However, *"Common without Tragedy"* is a hope upon this study because population pressure plays an important role in the process of adaptation with the common. That is why, *Hardin (1968)* focused in the human tendency to overgraze, denude, and abuse the commons, as common property is nobody's property maintained by nobody. Protecting the environment from overpopulation is the fact of *"Common without Tragedy".* The population problem has no technical solution; it requires a fundamental extension morality. *Hardin (1968). "Common without Tragedy"*, denotes protecting the environment from overpopulation (Anderson, (1991).

Those above given suggestion of the theories are the key way of literature linking to justify this research.

2.3 Review of Previous Studies

Many institutions, NGO's, INGO's, Govt. and individual have paid attention not sufficient. IUCN (1996) surveyed Maidi measured 1.17 hectors occupied water mass and the rest lands are covered with marsh that about 53 hectors (GoN/MoFSC, 2009).

IUCN (1996) Libird explained about Community-based Biodiversity Management (CBM) which is an approach to on farm management of agricultural biodiversity through the empowerment of local farmers' institutions. Agricultural biodiversity and traditional knowledge are among the few assets that rural farming households have for their livelihoods. The CBM approach builds the capacities of local institutions (social capital) to manage and leverage agricultural and natural resources to achieve the twin goals of agricultural biodiversity conservation and improved livelihoods. The goal of the CBM in Nepal project is to enhance the biodiversity based livelihood security of local communities. The project is building capacity of village development committee

level farmers' institution called the Biodiversity Conservation and Development Committee. These empowered farmer institutions are responsible for raising awareness of agricultural biodiversity, documenting the status and traditional knowledge of local varieties and developing appropriate conservation and promotional plans. These institutions typically operate a community seed bank, a community biodiversity management fund to provide access to small loans to farmers and provide access to quality seeds of local varieties to farmers (www.libird.org/ 2016).

Annual Report of Fishery Research Station, Pokhara describes the results of different activities conducted during the fiscal year 2071/2072 (2014-15). The major work accomplished were liminoligical and biological survey of lakes of Pokhara valley, enhancement of cage culture productivity with supplementary feeding, survey of suitable new aquaculture sites for trout and carp farming, stock enhancement and assessment of natural stock in lakes, mobilization of women's group for conservation, training on different aspects of fish culture and supporting demand of fry/fingerlings especially for mid-hills.

HMGN/MFSC (2002) noticed that wetland biodiversity is under threat from encroachment of wetland habitat, pollution etc. Lake development committee of Nepal has paid attention to conserve and people awareness program from time to time. Lekhnath Municipality and chamber of commerce has construction of soil dam since 1914 (Municipality Report 2072/73). WINROCK's view on supporting programmes in health, livelihood and environment is most. CMSi is to focus on conservation that helps to support the research. Recently, Lakes of Pokhara has been enlisted in Ramsar site of world heritage record in 2016, 2nd Feb. with the initiation of DNPWC, WINROCK, IUCN, GOVT. of Nepal and so on (Lake cluster of Pokhara Valley 2016).

2.4 Theoretical and Conceptual Framework

The theoretical framework is the bases of foundation upon which the study is established under the framework of cultural Anthropology.

Cultural ecology is one of the pivotal approaches in cultural Anthropology. Different approaches and model in cultural ecology have already justified the combination between culture and ecology (Steward, 1955).

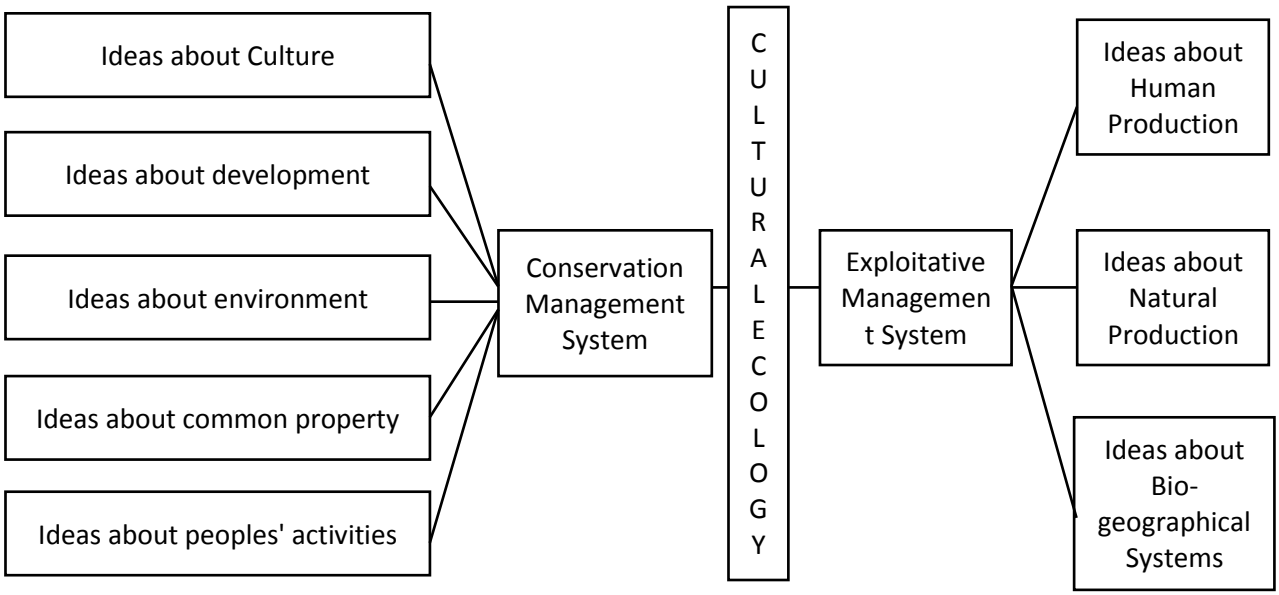
2.4.1 Theoretical Framework

Theoretical Framework in study of people's activities and ecological constraints in Maidi Lake of Kaski is based on the theoretical framework of Julian Steward's *"Cultural Ecology"* and Hardin's *"The Tragedy of Common"*. On the concept of adaptation between culture and environment, *Steward (1968)* said that evolutionary description could be used by three different methods like – unilinear, universal and multilinear evolution. According to Steward "Adoption" process is the major cause of cultural diversity. Population pressure plays an important role in the process of adaptation. The method of Ecological approaches involves the analysis of the interrelationship between environment and exploitative technology and the extent to which behaviour patterns affect other sectors of culture. *Hardin's (1968): "The Tragedy of the Commons"* has focused on "The population problem has no technical solution; it requires a fundamental extension in morality". In this article, Garrett Hardin has pointed major headline keys are about:

1. Tragedy of Freedom in a Common: With example of herdsmen regarding the positive and negative components.
2. Pollution: Pointing human activities on the common.
3. How to Legislate Temperance: Pointing the system sensitive escaped the attention of most codifiers of ethics in the past and let to watch "a government of laws and not men".
4. Freedom To Breed Is Intolerable: giving the principle "dog eat dog" comparing to overpopulation.
5. Conscience Is Self-Eliminating and Recognition of Necessity

Hardin urged and justified both "The Tragedy of the Common" and way of being "Common without Tragedy". It's the most important linking literature to our study.

Figure 2.1: Theoretical Framework of the Study

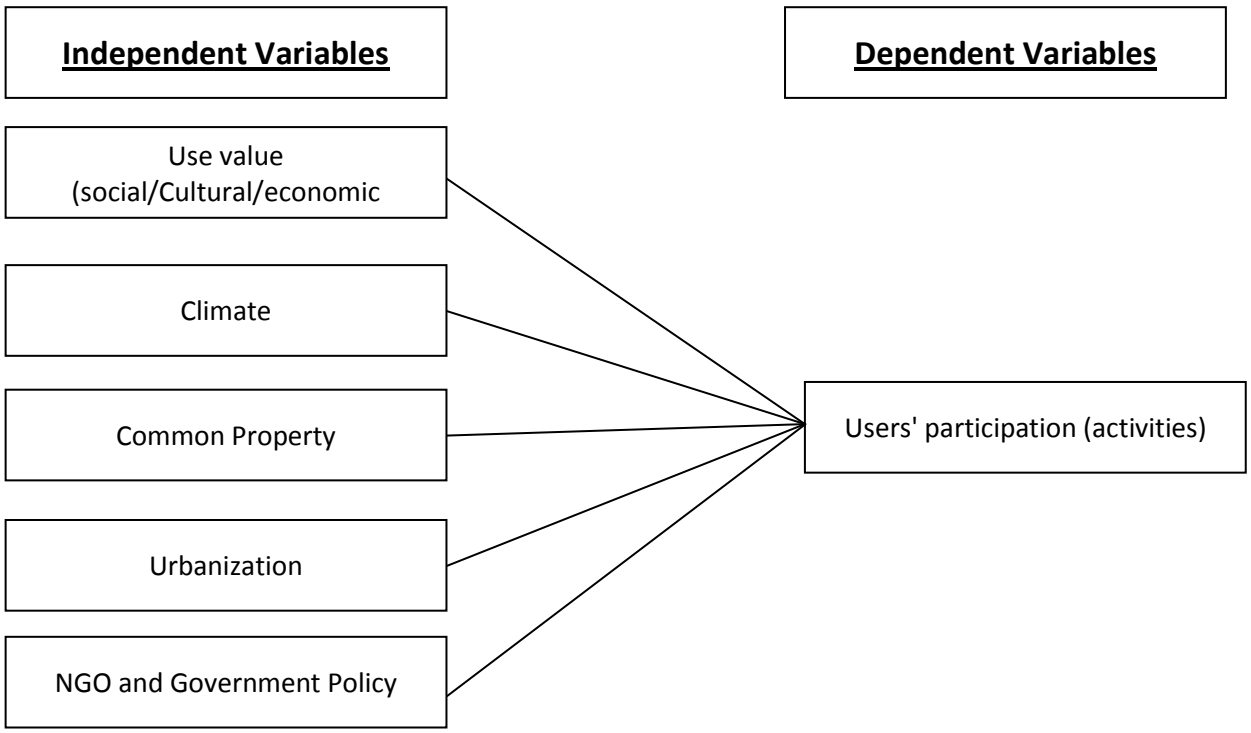


The above diagram shows the linkage and justification about conservation management system and exploitative management system under cultural ecological perspective according to Julian Steward is explained during the study period in details.

2.4.2 Conceptual Framework

It is an idea on how research problem will have to be explored (founded) on theoretical framework. It has managed variables investigated in investigation to describe relationship between variables as under illustrated.

Figure 2.2 : Conceptual Framework of the Study



The above framework shows the relation among of users' activities and their ups and downs role on biodiversity with the relation and interrelation of mentioned variables are explained in brief.

According to *Bennet (1978)*in *Stewardian "Cultural Ecology"*, 'Culture' is broken up into variables with differing causal significance, 'Environment' becomes whatever is defined by the techno-economic 'core' or subsistence system, but it retains some strength as a causal agent.

Molnar, (1981) Economic Strategies and Ecological constrains: case of the Kham Magar of North West Nepal depicts the subsistence economy of Dolporange dwellers linking the cultural ecological approach as the dwellers of Maidi Lake are also developed their culture to sustain their livelihood.

CHAPTER THREE

RESEARCH METHODOLOGY

Research methodology is the systematic method of finding solution to a problem i.e. systematic collection, recording, analysis, interpretation and reporting of information about various facts of a phenomenon under study. It is concerned with research design, population, sampling procedure, sources of data and analysis of data. The task of methodology carefully completed with scientific way that achieved goal of study.

3.1 Selection of the Study Area and Rationale for Site Selection

Biodiversity conservation is the most important for human existence forever in any research agenda. Regarding the research in wetland is so useful to conserve and manage within itself. Biodiversity in wetland is the heart of this research. Maidi lake is selected as study area which is located in Lekhnath Municipality 9, Kaski where endangered species of biodiversity and their conservation are significant. Western part of the lake is located Kalika-Shisuwas community forest; Eastern part is Saunipani-Bareli community forest. South and north is covered with cultivated paddy field. (www.lekhnathmun.govt.np, 2016). Deurali Khola is outing from the lake.

Maidi lake is located in Lekhnath Municipality Ware No 9, Coordinate 84° 04'34.8" - 84°05'13.9"E, 28° 10'32.0" - 28°11′40.6″*N*. Its altitude is about 702- 1,102 mtrs. high from sea level. The catchment area is 1.6 sq. km.; Water bodies are 0.01 sq. km. (Lake Cluster of Pokhara Valley, 2016) having marshy land with some patches of swamp land with different types of biodiversity and charming place for migratory birds. The local and migratory species and plant species are in contact when and when people's activities upon the species are the major finding objectives in this context.

3.2 Research Design

Exploratory as well as descriptive research design has been adopted for this research. For the purpose of biodiversity conservation and floral–faunal condition of consumption and people's activities have been measured in this research. Qualitative

and quantitative research methods are used to find out what types of species are mainly in use and conserving strategy on biodiversity available in this field.

3.3 Nature and Sources of Data

On the basis of nature, both qualitative and quantitative data have agglomerated. The sex, education status, occupation, caste, ethnicity, nominal scale of user, family and land holding size etc. quantitative while why and how they are source of dependent in wetland (Maidi Lake) are the qualitative information collection. On the basis of source, both primary and secondary data were collected during the entire research process.

3.4 Sampling Procedures

There are 379 households belong to this lake biodiversity conservation as users and participants directly and onlookers indirectly. Among of them participants are both male and female for different purposes for harnessing grass, collection of Gudh for knitting mats, and fishing. The participants are from Lekhnath Municipality ward No 8, 9 and some are out of these areas. The major harnessing products of the lake are grass – wild rice, reed and the rest edible species of the grass family – during the full year; collection of Gudh is seasonal as in July to Dec; fishing is on flooding period of rainy season (June and July) mainly but the rest months are also little suitable for fishing.

Altogether there were 379 beneficiaries as users on biodiversity products in Maidi Lake. They are from Lekhnath-9, 8 and outside area (from 3 areas). From different three areas they use grass, Gudh and catch fish. Thus, they are distinguished in three groups as nominal. Three different areas of the groups are Gudh users, grass users, and fish catchers which were collected in different groups as nominal. All 379 respondents were sampled according to convenience sampling and show in table by using Ms-Excel software testing. Then, they are listed and have convenience sampling accordingly. According to nominal scaling, data have been shown categorically in table. At the end, they are shown in percentage and tables.

3.5 Data collection Techniques

Data collection is the process of gathering and measuring information on variables of interest to answer stated. Accurate data collection is essential to maintain the integrity of research whether the idea is qualitative or quantitative. On the other, primary and secondary data are both important to play their role by focusing and seeking answer of the research questions, using different method appropriate instruments that suit for inquiry the fact of related objectives of the study:

3.5.1 Primary Data

3.5.1.1 Observation

It was direct observation by the researcher that is a reliable method for primary data collection. Directly observed the users' activities on biodiversity products and inquired all the performance made by them. It was the way of gathering genuine information about wetland resources. There were the identifications of floral-faunal species of study. It was inspected all the users' trend, livelihood support way, and the way of their conversational strategy. It examined the complete involvement of users in the field with the clear eye. It made me known about the study purposes.

3.5.1.2 Key informant Survey

Key informants are those people who gave us major information. It helped to fulfill the objectives on people's livelihood activities and way of biodiversity conservation in the wetland, Maidi Lake. The persons as the key informants are the twelve members from Lake Conservation Committee, Milk Dairy, Fishery Office, Community Forest, Veterinary, Social workers and nearby Mother Group and experienced old persons of the farmer community. From this source, the valid and reliable and conventional information are gathered in time through pre-designed questionnaire having variables and indicators. And their actions inter-action functions are deeply studied.

3.5.1.3 Focus Group Discussion

It is suggested that FGD is a fairly inexpensive but effective way to get the reaction of a small group of people to a focused issue (Baker, 1999). Its purpose is to collect different visions of different people concerned to wetland and to get their information

relating to agendas of research is the most. All together five focused group discussions were conducted in this study. In each FGD, there were seven participants. The users in and about the lake are organized to discourse focusing the research problem and its solution. The way of using strategy and management planning have been prevailing onwards. The users are both makers and managers. They have faced many problems and collected the way of new ideas according to their experience. They have indigenous Knowledge about the activities and gave information about what is suitable and solution better.

3.5.1.4 Interview

Finding out the perception of respondent is along with open and close–ended question format are drawn to collect genuine information. It is used to face to face question–answer with them; generally, growing intimacy and rapport building that made them kind to persuade our research agenda. I collected information accordingly and thanked them all.

3.5.1.5 Case Study

Case study is the most useful method to collect information's in depth and for micro study. Specially, anthropology depends upon this method to find out the reliable causes of the problem to be solved. It supports to test theory. On the other, it guides to explore in depth for research questions to be justified in no bias whether it is stated in right application.

Thus, knowledgeable persons, institutions and the study area kept in touch according to research methodology. So, case study is one of the most important techniques to collect information. Six cases were studied in this study. It has brought genuine information.

3.5.2 Secondary Data Collection

Some secondary data has collected according to the nature of information required in this study. Information on the biological, socio-economic condition of people, recorded wetland resources, its collection mechanism and conservation strategies are collected through the review of government records, records from NGOs, research

papers, journals and published and non-published sources. Secondary data are collected on the basis of possible sources from IK, practitioners, institutions, reliable records and documents etc. It has given the idea on condition of wetland resources, conservation and its contribution on local livelihood.

3.6 Reliability and Validity of Data

This research has been informally taken as hypothesis before starting actual engagement. It is going to study very carefully for not being bias in repeat or retest. It is valid in its instruments, possible result and size of population in the context of present day. Both reliability and validity of data are secured as foundation for research. Thus, it has been tested and retested in time by myself. It was easy as I am a local researcher in this study area.

3.7 Method of Data Analysis

Qualitative and quantitative collected data were analysed. Simple statistical tools are used as Percentage, Table and Ms-Excel Software in the analysis.

CHAPTER FOUR

PROFILE OF THE STUDY AREA

This chapter deals with the study of Demographic features of targeted community. It includes description of the study area. i.e. Kaski district, Lekhnath Municipality, Maidi Lake and its surrounding community.

4.1 Brief Introduction of Kaski District

The study area is situated in Kaski District which is located in the Gandaki zone of western development region, Nepal. The headquarter of this region is Pokhara, the second largest city of Nepal. This district covers an area of 29,398 Sq/km. Pokhara is the central city and a beautiful valley with 9 lakes and seti river. According to 2011, population census of Kaski is 4,92,098 people major ethnicities of this district are Brahmin, Chhetri, Gurung, Magars and rest indigenous, etc. (CBC 2011).

Kaski is the most important spot of Nepal for tourism. Recent flow of tourists is rapidly growing on. The scenic beauty of (Kaski) Pokhara is mentionable and the heart of development is going to be advanced with many facilities for living here in Pokhara.

4.2 Brief Introduction of Lekhnath Municipality

Lekhnath Municipality is titled after the name of poet Siromani Lekhnath Poudel. It is the combination of four VDCs likewise Lekhnath, Rakhi, Shishuwa and Begnas in 2053 Magh 18. It lies to eastern and southern side of Kaski district. It is 110 km far to west from capital, Kathmandu. Northern part of Lekhnath lies Annapurna panaroma. Seven lakes are in the lap of this municipality. So, it is called the City of Seven Lakes (Rupa, Begnas, Maidi, Dipang, Khaste, Gunde, Neureni) (Annual Report, 2071).

It covers an area of 78.93 sq/km between 28° 12' north latitude and 84° 2' east to 84° 8' east longitude. It lies at the height of 490 to 1217 mtrs. from the sea level, with the 21.60 °C in average. (IUCN conservation and devt. Plan of Lekhnath Municipality).

The population of this municipality is 58,816, female 31,951 and male 26,865 (census 2011). The estimated population after two years will be around 91,000 (Nagar Report 2071/72).

4.3 Maidi and its Surroundings

The study area was Maidi Lake, one of the richest aquatic floral and faunal species available in this marshy place. It is located in Lekhnath municipality ward no-9, Kaski Dist, Nepal. It is one of the seven lakes of the Lekhnath municipality. To its west Shisuwa community forest, to east side is located Saunepani community and Saunepani-Bareli community forest, Northern source of lake with cultivated paddy of sloppy hill-side and south is outlet of water and cultivated paddy field of plain, Dundakomukh are located. At the middle 0.83 hector water mass, 32.88 cultivated, 20.09 Simsar total 53.82 hectors of the land that known Maidi site (www.lekhnathmun.govt.np.)

The lake has got flow of water high in rainy season with the monsoon rainfall and often dries water mass because of water source in summer.

The floral and faunal activities became different in winter and summer. The activities of the users also differ according to seasons and working schedule also differs respectively.

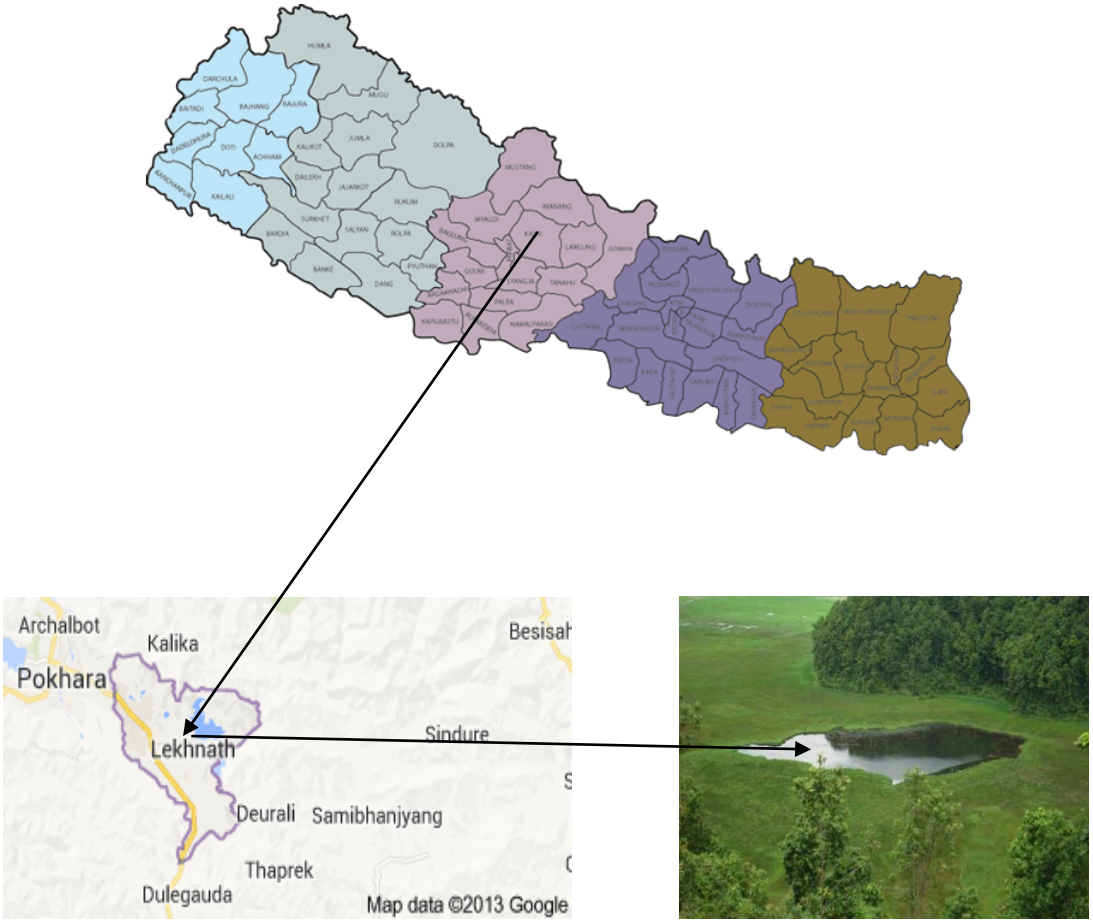
In flooding time, fishing in and about the lake is major task of the people. The people who (pastorals) are busy in gathering grass during the year. But "Gudh" is being taken away from Bhadra to Marga (July to December). Nowadays, reed is used as grass for animals. Some animals use pastoral grass also.

The farmers who use grass all rear animals. They gather grass from their own land, forest and the marsh of Maidi lake to get much more milk. Wild rice, reed and the rest species in marsh are much more delicious feed for the animals.

Fishing is an occupation for a little people from neighboring lakeside dwellers and some are from outside as a hobby. They catch local and alien/exotic species in occasional timing (inquired data from Jestha to Bhadra 2016).

'Gudh' users are mostly the women practitioners who can knit carpet, mat, handicrafts, etc. as their interest from neighboring local area and outside municipality. On lookers have been getting enjoyed when wild migratory ducks and birds cover over the lake in winter days as the coloured birds roam nearby community forests in the spring season. The above given activities of the people on the biodiversity of Maidi lake is mentionable and the major flora fauna is the target study in this research.

Map: Map of Nepal Indicating Kaski district and Maidi Lake



Source: Google Map Neal, 2016.

4.4 Age of the Respondents

Age is the whole duration of a being, whether animal, vegetable or other kind; lifetime. The later part of life an advanced period of life, old, seniority, state of being old, and wisdom doesn't necessarily come with age, sometimes age just shows up all by itself. It means mature age, especially, the time of life at which one attains full

personal rights and capacities. Maturity provides man indigenous knowledge in practical field.

It is apparent that older people have more knowledge about the floral faunal use of the wetland resources so older people are more responsible to harness the species from the lake.

Table 4.1 Respondent by Age group

S.No.	Age Group	No. of Respondent	Percentage
1	15-20	15	3.96
2	21-30	60	15.83
3	31-40	95	25.07
4	41-50	134	35.36
5	51-60	65	17.15
6	>60	10	2.64
	Total	379	100.00

Source: Field survey, 2016

There are 379 member of user in Maidi Lake. They are shown in age wise in the above table. The young aged of 15 – 20 years old members are the helper of their parents and some are going to practice harnessing species. They collect grass and catch fish only. Their number is 15 or 3.96 in percentage. 21 – 30 years old members are 60 or 15.83 in percentage. They work as family head's order. The members of 31 – 40 years old are 95 or 25.07%. They have their duty. They harness the species for their livelihood support. The members of 41 – 50 years old are 134 or 95.36 in percentage. They have duty of domestic division of labour. The member of 51–60 years old are 65 or 17.15 in percentage. They have competition to do the work. The rest old numbers above sixty is 10 or 2.64 are fisherman and grass collectors. But their harnessing ratio is little.

4.5 Gender Status of Respondents

Gender: Gender is the fact of being male or female, especially when considered with reference to social and cultural differences, not differences in biology. According to

patriarchy female is known as housewives as well as light workers. In this regards, perhaps women participation in using wetland products are more.

Gender role in the lake product is very important. The method of controlling flora-fauna is main target of inquiry of this research. Most of the housewives and farmers of animal husbandry are more female than male. Male also participate to harness lake products but little. So, whole population is pointed out through the following figures.

Table: 4.2 Gender Status of Respondents

S.No.	Gender	Number	Percentage
1	Male	105	27.70
2	Female	274	72.30
	Total	379	100.00

Source: Field Survey 2016

The above table shows total 379 number the number numbers of female participants is greater than male. The number of male is 105 or 27.70 in percentage and the number of female is 274 or 72.30 in percentage. That is why, Male goes to harness mostly in morning and evening. They go to other job in day time. Female are housewife. So they often go to lake for cutting grass, Gudh collection everyday. So, the number of male and female is different according to division of labour in farmers' family.

4.6 Family Size

Family is a group consisting of one or two parents and their children and close relation. Small family rears one or two animals at home. They need little labour to live on. Middle family has division of labour. So, they manage little better than small one. Joint family has more than 6 members with their children altogether. They need more work and they have to invest more to feed them all. So, wetland product is also used sufficiently for them.

Family size is one of the important social institutions that has vital role in the process of socialization and performing collective works for wetland resource conservation, utilization and awareness. Family size of local people determines the requirements,

dependent and consumption of wetland resources. Following table shows the family size of the respondents.

Table: 4.3 Family Size of the Respondents

S.No.	Family Members	No. of Respondent	Percent
1	up to 3 (Small)	95	25.07
2	4-6 (Middle)	210	55.41
3	>6 (Joint)	74	19.53
	Total	379	100.00

Source: Field survey 2016

The above table shows family size. It has played vital role. There are 379 users altogether but 95 members or 25.07% harness floral – faunal species because they are from small family. They rear a few number of cattle. There are 4 – 6 members in middle family. They are farmers. They have other jobs also. They rear 2 – 5 cattle. So, they often use wetland species. The joint families are engaged in different jobs to make good livelihood support. Thus, there are 210 numbers or 55.41 % from middle family and 74 numbers or 19.53 % from joint family. The trend of custom is changed. Nowadays, people want to keep one or two child. They want to be happy family. The people are aware of high population and nurturing children. Thus, it is the modern achievement. Modern sized families take part in different occupational activities. The certain number of the family has played the role for harnessing wetland products.

4.7 Educational Status of Respondents

Education means the process or art of imparting knowledge, skill and judgment. Good education is essential for a well-run society

Education plays vital role to determine the capacity of individuals for carrying out different activities related on wetland resources. Higher educational status of the person who are concerned in wetland can propose advance type of plans on conservation of wetland. On the other, persons with general education can be aware of wetland species that they use in their daily life. It makes them more responsible to boost up their livelihood support from the wetland products. They will have multi-dynamic activities to conserve their common property of wetland.

Following table shows the educational status of the respondents.

Table 4.4 Educational Status of the Respondents

S.No.	Level of Education	No. of Respondent	Percentage
1	Illiterate	90	23.75
2	Literate	280	73.88
3	Up to SLC	9	2.37
	Total	379	100.00

Source: Field Survey 2016

The above table shows total 379 users from different level of education. Most of the farmers are above 30 years. At their time, there were no good facilities of education for them in the village. So the number of illiterate is 90 or 23.75 in percentage. The number of literate member is 280 or 73.88%. They got little education. Only 9 member or 2.37% are up to S.L.C. Its cause is that they had no chance to read onwards because of poverty or family problem. Most of them are female.

Before 2007 educational trend in Nepal was poor. In this period, most of the people were engaged in farming completely. Only a less number of people were in different occupation. Thus, the number of illiteracy was high. Then after schooling children flow gradually became high. So, illiteracy rate is seen high. Little schooling and adult literacy classes boost the number of literacy rate even in farmers' family.

4.8 Caste/Ethnicity of Respondents

Caste is any of the hereditary social classes and subclasses of south Asis. Likewise ethnicity is the The common characteristics of a group of people, especially regarding ancestry, culture, language or national experience (Bennett, 1978).

In this research, Brahmin and Chhetri are more land owner thus they use animal husbandry and animal rearing than fishing or Gudh collection. Dalits are mostly the peasants. So, they live on wages, fishing, etc. Thus, the number of Brahmin and Chhetri are involved in grass collection and farming.

Table 4.5 Caste/Ethnicity of the Respondents

S.No.	Caste/Ethnicity	No. of Respondent	Percentage
1	Brahmin/Chhetri	253	66.75
2	Dalit	42	11.08
3	Indigenous	84	22.16
	Total	379	100.00

Source: Field Survey 2016

The above table shows total 379 members of Brahmin/Chhetri. They are 253 or 66.75%, Dalits are 42 or 11.08% and indigenous 84 or 22.16%. The caste/ ethnic status points their involvement in Maidi.

4.9 Religion of Respondents

Religion is the belief in and worship of a supernatural controlling power, especially a supernatural controlling power, especially a personal god or gods. A particular system of faith and worship.

Table 4.6 Religion of the Respondents

S.No.	Religion	No. of Respondent	Percentage
1	Hindu	343	90.50
2	Buddhist	36	9.50
	Total	379	100.00

Source: Field Survey 2016

The above table shows 379 total members of users. There are only Hindus 343 or 90.50% and Buddhists 36 or 9.50% involved. That is why, Hindus are more busy in agriculture and Buddhists (Gurung, Tamang) mostly used to go for service (military). So, the number of Buddhists is lower than Hindus. Both Hindu and Buddhist have the same type of culture to sustain livelihood in this area for many generations and are involved in lake products.

CHAPTER: FIVE

PEOPLE'S PARTICIPATION FOR LIVELIHOOD ACTIVITIES IN MAIDI LAKE

This Chapter deals with peoples' participation of Maidi Lake. Their involvement in different activities of livelihood has been fully elaborated.

Participation means taking part in any activities carried out in the society defined participation as a process of releasing people from being the subject of development and making them agents and defined participation as the process of including beneficiaries in the solution of their own problem. Therefore, people's participation is the process with different activities to get benefit from their labour (Korton (1984).

Activity is the style of performance in any work. Being participated, people demonstrate different activities only for benefit sharing. People's participation in Maidi Lake is to share floral-faunal species. This task of local dwellers is to link to Maidi Lake for benefit and to fulfill their need. Thus, people's daily activity of their lives is their culture. It has sustained local dwellers' livelihood on biodiversity products of Maidi.

Biodiversity refers to biological diversity in the existence of large number of different kinds of animals and plants which make a balanced environment (Oxford Dictionary). Wetland is defined as "area of marsh, fen, pet land and water, whether natural or artificial. (HMGN/MFSC, 2002).

Natural resources are naturally occurring substances that are considered valuable in their relatively unmodified (natural) form. Renewable, non-renewable and perpetual resources are known as natural resources. It is the gift of natural bestowed upon man. Man is survived developing culture with the interact of resources (cultural ecology) – Stewardian theory.

Wetland biodiversity available in Maidi Lake is the culture of local dwellers according to key informants' case study. Maidi Lake products have been using by

local people for many generations. Thus, Steward's cultural ecology excels this inquiry.

5.1 People's activities on livelihood support

People's Participation shows different activities for different goals. In this study, peoples' are participated to share floural-faunal species from Maidi Lake. Some of local people collect grass, some collect gudh and some ones are fishers. Their role on activities is different but monopolized because Maidi Lake is a common property. Hence, Maidi seems every ones property but nobody's property. Somewhere Maidi seems like Osterm's 'Crafting the common ' Somewhere Hadrin's 'Tragedy of The Common'. However, people are supported in their livelihood. If the conservational system will manage, people can get good livelihood support.

Maidi Lake with rich floral faunal species aquatic animals and plants are useful for human beings. It is marshy lake. Many aquatic plants are being used as grass for domestic animals. Indigenous and migrant kinds of fishes are in use. Gudh, the Junacaseace family's plant named Juncus prosmatocarpus (Gudh is Nepali) is fine species to knit mat, hat, sandle, fan, decoration items, etc. Thus, the major items of flora and fauna being used from the lake as common property. It looks like the Hardin's (1968) view of "Tragedy of the Common". That is why, people take things from the lake in no system. No one has paid attention to conserve the species as if it is the matter of fun, profit of labourless.

The major participation of the people for grass, fishing and Gudh is given according to under mentioned table and percentage.

In study of field, we found 379 people 278 for grass cutting, 56 for fishing and 45 for gudh users. Grass is harnessing throughout the year, most of fishing in flooding period and the rest throughout the year but little Gudh is from July to Dec. every year. The figure shows them below.

Table 5.1 People's involvement in different activities

S.No.	Purpose	No of people	Percentage
1	Grass Cutting	278	73.35
2	Fishing	56	14.78
3	Gudh Users	45	11.87
	Total	379	100.00

Source: Field Survey 2016

The above table shows 73.35% of people grass collectors for their domestic cattle and 14.78% of people are fisherman. They catch fish when they get chance for fishing. Gudh collectors have its seasons, 11.87% of people collects Gudh. So, the purpose of the floral-faunal species user have different activities. They are from different area. 12.5 people or 33% of total users are from ward no 8 of Lekhnath Municipality. 175 people or 46% of people are from ward no 9 of Lekhnath and 78 people or 21% are from outside of those 8 and 9 wards.

The goal of users is different. So, their activities seem different.

5.2 Grass Cutting people's Ethnic group

The daily activities of the people assure their role on livelihood support. Herdsmen collect grass. He needs grass every day for his cattle. There are 278 members of grass collection. They often harness grass from Maidi Lake. Maidi is the main source of grass for local dwellers. It is the popular area for cattle rearing because of delicious wetland grass.

Grass Collection it the main task of those people who rear cattle at home. The farmers especially Brahmin, Chhetri rear, more numbers of cattle than Dalit or indigenous because they have cultivable land owning status than land and animals. So, Brahmin and Chhetri collect more grass. Indigenous collects grass, Gudh and Fish too. But their number is in middle position. The lowest number of grass users is Dalit. But Dalits catch fish then grass collection. In this way, they are from different places. 113 numbers of people or 40.65% are from ward no. 8 to collect grass. 146 numbers of people or 52.52% participate from Ward No. 9 for grass collection. The number of

outsider is 19 or 6.83% people for grass. Mostly the grass from the marsh of Maidi is delicious for milky cattle. So, farmers are more benefitted from milk selling.

The participant members are found specially Brahmin, Chhetri, Dalit and indigenous (Gurung, Magar, Tamang, etc.) from different area. Many of them are engaged as we found. It is shown below in the table and percentage.

Table 5.2 Grass Cutting People's Ethnic group status

S.No.	Purpose	No of people	Percentage
1	Brahmin	79	28.42
2	Chhetri	93	33.45
3	Dalit	40	14.39
4	Indigenous	66	23.74
	Total	278	100.00

Source: Field survey, 2016

Total 278 people are involved in grass collection in Maidi. 79 members from Brahmin family and 93 members from Chhetri family are the more grass users because they are landowners as well as farmers too. So, they fulfill their daily needs of grass from the lake. The indigenous people also landowner and farmers. But they own cattle fewer than Brahmin and Chhetri in average. 66 people are indigenous (Gurung, Magar, Tamang, etc.) involved in grass cutting in Maidi. Some Dalits have few land and cattle. So, they consume little number of grasses. Number of Brahmin is 79 or 28.42%, Chhetri 93 or 33.45%, Indigenous 66 or 23.74% and Dalit 40 or 23.74%. The ethnic group's role in activities is unique. It is not similar. Their livelihood activities are found different. The case 5.1 and 5.2 illustrates in detail.

Case 5.1

My name is Yuba Raj Dhakal. I am 70 years old. I am a local people of this ward No. 9, Lamaswara. In the past, I used to read Sanskrit early in the morning. Here were 10- 12 cattle in my home. We had to collect too much grass every day. My father was head of the community. Mother, brothers, sisters and our family (wives) were farmers. We had oxen, buffaloes, cows, goats and a man, as a servant. Five – six members from home would fetch grass from Maidi. We collect about 20 litres of milk every day. There was no market to sell milk. We had to make curd, ghee. Pokhara is about 18 km far. After sometime, some young man from the village became milk men. They began to collect milk in the village and had been selling milk in the market. We got chance to earn money from milk. We began to buy more milky cattle for milk. So, many people attract to collect grass in Maidi. On the other, many cattle would graze in the mudy marsh in Maidi. It was danger of trapping cattle and worse of grass. There were no legal rules of grazing cattle in the grass. Sometime, cattle of other villages were found strange. The cattle could die of trapping in the mud of marsh. Nearby people would rescue the trapped cattle. Some would be victim of vultures. There was no sense to conserve the wetland. It is common property. So, everything was ignored.

Nowadays, people are decreasing in numbers of using grass. They people are changing their jobs, children are schooling. Young's are going for job to foreign countries. Only children and adults are remained in the village. The villagers have one or two cattle at their home. Few farmers' have milk business.

In my opinion, wetland resources are the gift of nature upon man. We don't have to ignore about wetland's flora-fauna. Wetland conservation is the conservation of mankind in this locality. So, people's activities should be well managed forever.

Case 5.2

My name is Thuli Maili Nepali. I am 76 years old farmer. I am a local woman. I married with a boy named Maila Nepali. We lived in this village till now. I am widow. I used to go to Maidi for a long time. I had two buffaloes, three cows and one ox too. Sometime, I had goats also. Other men had many cattles in the village. The villagers would go to Maidi Lake to fetch grass every day. There was better competition to bring grass from the lake. The grass is very delicious for milky cattle because wild rice, reed, Karaule, Ratodanthe, Morue species of grass are favourite for cattle. One of us, me or husband used go to lake every day. We had to keep the work on every day. The grass of Maidi Lake is the main source for grass. Nowadays also, people who rear cattle ought to go to Maidi for grass. The villagers had many cattle in the past. They used to graze cattle near by the lake. It is marshy wetland. So, many cattle would trap in the marsh. Sometime, people would leave the cattle in the marsh and died during night's cold of the marsh. It was our daily activities in marsh of Maidi. But nowadays, people have different jobs than cattle rearing. However, some fetch grass from the lake every day. Now, I am old. I do not go there. But I say others how to collect grass from the lake. I remember, those days of the past was my happy days.

In my opinion, this lake is the support for our living. If it is conserved well, people will be highly profitable in future.

5.3 People involved in Fishing's by caste/ethnicity

Fishing is best way of cash earning and flooding. People nearby the lake are interested to cash fish, especially in flooded period of rainy season when fishes flap everywhere nearby the lake. It is easy to catch, so people rush on the lake during this period. It is an interested for nearby dwellers. Some of the peasants are permanent fish catchers. But they are nominal. As a whole, here we have noticed nominally as given below table and pie chart. Case study 5.3 and 5.4 explains in detail.

Table: 5.3 Fishing involved People caste/ethnicity

S.No.	Caste/Ethnicity	Number	Percentage
1	Indegeneous	17	30.36
2	Kumal	9	16.07
3	Dalits (Peasants)	10	17.86
4	Others	20	35.71
	Total	56	100.00

Source: Field survey, 2016

The number of fishers in Maidi Lake is 56. They are from nearby villages of Lekhnath ward 8, 9 and some are outside. Maidi Lake is not famous spot because it is covered most of its area with grass. It has little open water mass. So, fishing is additional occupation of the local dwellers.

Indigenous people (Gurung, Magar, Tamang, etc.) participated for fishing. They are 17 in number or 30.36 % used to catch fish for their food and sell if got more fishes. Dalits work in wage and move to catch fish. Peasants are 10 in number or 17.86%. They mostly found roaming to seek for fish for a long time, even in winter season. Kumals catch fish in small fishing net. They are 9 in number or 16.07 in percentage. Others (Chhetri, Brahmin, Bhat, Newar, etc.) are 20 in number and 35.71 in percentage. They catch fish in flooding period. The fishers are from Ward No. 8. Their number is 24 and 43 in percentage. 23 numbers or 41% of people come from Ward No. 9. The number of outsider is 9 or 16 in percentage involved in fishing for entertainment and occasional fishers.

Case 5.3

My name is Sher Bahadur Magar. I am 58 years old. I live in Lamaswara. I am a farmer. I have some land with a small house. I have three sons and a wife. I am interested in fishing from my childhood. My fatehr's hobby was fishing and plough land. He guided me how to catch fish in Maidi Lake. Maidi is marshy Lake. A little mass of water is open. Most of area is covered with grass and mud. Many years ago, there were no exotic species of fish (Raghu, Silver Carp, Tilepia, grass, carp, etc.) At that time, only indigenous type of fishes were found. They are Sahar, Bam, Kande, Bhoti, Prowns, Chuchche Bam, etc.

I have tried to knit net. I use net, fish – hooks, trapping rope, stick, basket and sickle also. The main season in Maidi is rainy season. The lake fills up with flooded water in rain. Fishes roam hether and thether. When I use stick, sickle and basket it is too fun while fishes flap on the grass and inside the basket in those days, I used to collect full basket of fishes. But nowadays many people gather to catch fishes. Sometime, they began to quarrel for a big fish they saw. They capture trains. Even in night after rain stop, many fishers with a torch light in hand become mass. There are no any rules for fishing. No one has license for fishing in Maidi. It is common property. So fishers do what they like.

After the rainy season, I catch fish very little. I use net in Lake. I use fish hook into hollow and into grass and catch fishes. Sometime I catch some but sometime I have to return back with no fish only I get tired.

I had caught 63 kg in a day. Sometime good income can be made. I use little at home and sell the excess in the nearby market in good price.

In my opinion, it small outlet of the lake can be made with dam. Water would be in level. Fishers should be in legal conduct. We pay tax. But what to do it is small lake. Nobody tries to conserve it. If possible, try from your side, sir.

Case 5.4

My name is Lal Bahadur Kumal. I am 63 years old. I live in Bhandardhik. I am coming here for fishing. I have one son and wife. I am a farmer. Long ago, many Kumal would catch fish when we got more fish/ nowadays, the number of fishers is decreased because of livelihood support. Thus, I have this net. It is special for prawns and small sized fishes only. The opportunists fishers come in flooding time to catch more fish. They do not collect small fishes and prawn. It is my compulsion. At any cost, I have to catch on – two KG fish or prawn in this lake also I go to another lakes too.

Many years ago, I and my wife would came together for fishing. Nowadays, she is not healthy and my son also works in construction as helper. I collect one – two KG prawn. I sell them and buy little rice to solve hand mouth problem.

I have no idea what to say. We are pottery. Potters also collapsed because of plastic and aluminum utensils. We don't have any support. If someone help us, we will do better for our livelihood.

5.4 Gudh (Juncus Prismatocarpus) Collection

Juncus is a genus of monocotyledonous flowering plants, commonly known as rushes. It is the largest genus in the family Juncaceae, containing around 300 species. (Wikipedia)

Gudh is a species of Rush family of wetland plant. That is Juncus/Juncaceae(Igusa in Japanese Language). It is very useful to knit hat, mat, sandle, floor mat, handicrafts, etc. country like Japan, China are the best manufacturing products of Gudh. But Nepal is backward to produce goods from Gudh because of modern technology.

3 person or 7% people come from Ward No. 8, 6 people or 13% people from Ward No. 9 and outsiders are 36 people means 80% for Gudh collection.

Gudh collection is a hobby for household wives and skilled manpower. Both of them can use gudh to knit their daily useful mats. But skilled ones uses it product to

relatives live in different foreign countries. Its cost also depends upon its skilled knitting design. The participants of this occupation have shown in table.

Table: 5.4 Gudh Collector's caste/ethnicity

S.No.	Purpose	No of people	Percentage
1	Gurung	26	57.78
2	Brahmin/Chhetri	7	15.56
3	Magar	9	20.00
4	Others	3	6.67
	Total	45	100.00

Source: Field survey, 2016

The total members of Gudh collectors are 45 most of them are skillful to knit mats. The people who have little leisure time can do this job. People from Brahmin and Chhetri are mostly land owners so; they pay no attention to collect Gudh because of being busy in farming.

The house wives of Gurung and Tamang are more skillful to knit mats of Gudh collection. Brahmin and Chhetri use the mat of Gudh for their own use at home only. Magars' activity in this job is like Gurung and Tamang. 20% means 9 persons involve in Gudh collection. 7% of the people of different caste including Dalit are being involved in Gudh collection and produce its goods for own use and selling.

They are 7% from Ward No. 8, 13% from Ward No. 9 of Lekhnath and the rest 8% from outside. The case study of one Gudh collector has been presented in case study box 5.5.

Case 5.5

My name is Buddhi Maya Pun. I am 47 years old. I live in Arghun, Lekhnath – 2. There are 4 members in my house (husband, son and daughter). My husband is ex – army. My son and daughter are students. We have migrated from Magdi in 2042. I am housewife. So, my work is easy.

I have experience in knitting mat. I use Gudh and straw to knit mats. The mat of straw is rough. I used to knit it Myagdi but now, I collect Gudh from Maidi Lake in July to Dec. My work is not regular. The Gudh grows on the cover of mud in the Marsh. It is danger to sink down too. The bundle of Gudh home and sometime it should dry. In my leisure time, I make loom for knitting mats. The mat made up of Gudh is soft and portable. If it is coloured it looks very beautiful.

It is used at home and can sell it in good price. I present mats to my neighbours and relatives for festivals.

Collection of Gudh is risky but is good hobby and time pass for housewives. Gudh collection sport is rough. No one save it. No one conserve it.

In my opinion, Gudh is very useful raw materials for mat factory. If there will be a mat factory, it will be better for jobless. So, Gudh should preserve and conserve to our livelihood support.

Case 5.6

My name is Chiranjibee Tiwari. I am 53 years old. I am a farmer and former member of Chakra Devi Dairy, Lekhnath 8. I have 5 members in my family. I have cattle for milk. The number of cattle are 3 to 6 with me. Maidi Lake is my good spot to fetch grass. The grass in Maidi is delicious for milky cattle. Before 2048, there was no dairy. I had to sell milk in the local market or to Pokhara. It was difficult. Thus, we milkmen in the village established a dairy named Chakra Devi Dairy in 2048 Bhadra 18. Thus, the farmers from Lekhnath 8, 9, 12 and Kalika VDC – 1 also temped to rear more cattle. Our dairy became the center of 7 – 8 hundred litters milk collection centre.

We supplied milk to Pokhara Central Dairy. Farmers' involved in Cattle rearing and grass collection from Maidi became main spot. Day by day, grass men compete for grass. There are many types of delicious plants – Wild Rice, Reed, Chatre, Ghode Dubo, Char Chare, Jwane, Karaunte, Kane Jhar, Pani Jhar, Moruwa Suire, about 15 – 20 species of grass – plants are in use.

Maidi Lake is marshy. So, grass is available throughout the year. But Maidi is "Common Property" of local dwellers. All of them participate to harness the grass but no one pay attention for its conservation. Many time we tried not to rough grass to use carefully, but no legal compromise came to existence. The users hurriedly collect grass. However, it becomes "Tragedy of the Common."

In my opinion, some policy of the government or local community should apply to protect, conserve and use. It is the best way for herdsman as well as animal husbandry. Cattle rearing is the main livelihood support for the local dwellers. Conservational agenda of Maidi Lake is only slogan but not in practice. It is tragedy only.

CHAPTER: SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary of the study, importance of NRM, Conclusion, and recommendations to local community.

6.1 Summary

Natural resources are the economic backbone of any community, nation or the world. Where the proper utilization of natural resources is well managed there is high progress. Nepal is one of the least developed countries but having the richest floral-faunal species of nature as gift ignoring the progress of nation. On the one hand terrestrial and aquatic species both play very important role in sustaining culture or the way of living for the members concerned on. On the other, the participant member should conserve their natural resources whether they are private or common property. Highly grasping Harding's (1968) view "Tragedy of the common" and "Common without Tragedy" is the best solution for the motion of "conservation".

Maidi lake is in endangered condition whether it lies Lekhnath Municipality Neither the member of community who concerns to the lake nor the other institutions or Government pay attention to conserve it well. Thus, the wetland is very considerable situation. Waiting no longer, the study points are to be conserved in Maidi Lake at any cost.

Exploring the solution of the problem statement is the "problem of common property of Maidi Lake Kaski" mainly sustaining culture, matter of development, environment, human activities are the theme of problem. To use the floral-faunal species is not only the matter of fact but concerned man, institution and the government policies with the morality is the most as the target of Maidi Lake, the common property.

The general object of this study was to assess on people's involvement and activities for livelihood in Maidi Lake, Kaski. The specific objects of this study are to study the status of flora fauna, and to study livelihood support on local dwellers. There are many aquatic flora and fauna. People use fish, grass and Gudh from lake for their livelihood support.

This study tries to assess and evaluate the involvement of the people in Maidi Lake and to study how many people are the users of flora – fauna of Maidi. It was to find out how they play role on the wetland species.

Because of being an academic study, the research had to be bond with cost of limitation as much time, area, budget, etc. On the one hand, cultural ecological perspective (Julian Stewardian Theory) is tried to link with this study. Based on Osterm's (March 2011) 'Common Property' and Hardin's (1968) 'Tragedy of the Common', the study tried to suggest the way of Hardin's (1968) 'Common Without Tragedy'. In fact mortality should help for the conservation of Maidi Lake.

In this research, Mechodology is tried to suit in this context. Based on field area, marshy land of Maidi Lake, Research designs are as exploratory and descriptive, both qualitative and quantitative research designs were agglomerated. Convenience sampling is applied because of being suitable for 379 numbers of participants for different purposes (Gudh collectors, Grass Collectors and the fishers as the nominal scale) from three areas, (Ward No. 8 and 9 of Lekhnath Municipality and outsiders). Even the involvement of participants are in different periods, time and purposes.

Dependent variable is People's participation (activities) in Maidi Lake and independent variables are use value, climate, common property, urbanization (high population) and legal policy.

Interview to participants as well as key formats, FGD was the way of collection of information. But direct field observation is the real visual experience that supports reliability and validity test in this study. Veteran individuals and institutions are the sources of case study. Percentage, table and Ms-Excel program are the method of data analysis.

It may be a little success that supports for further deep research study.

6.2 Major Findings

- The condition of Lake is careless in conservation because of global warming, poisoning or fertilizers, soil erosion, sedimentation, lack of scientific study, government rules. This lake dries in summer. Farmers use common land for cultivation. They use chemical that ruins life species No sufficient rules of government is applied. People have lack of knowledge of wetland species.
- People use the species in their own monopoly, without morality. Morality is the most important tool to conserve natural resources in common. Common property should be preserved for human welfare.
- Nominal conservational issues are found. Community members, individuals, institutions, government agencies also support to conserve. But it is not seen practically arranged.
- Pressure of population is the cause of invasive and encroachment. Pressure of population made shortage of land. Everybody wants to possess (to have) land. Thus, the people in this are encroach the edge of Maidi for cultivation.
- Endanger of indigenous floral faunal species is major issue. Every living being adopt in the suitable environment by nature. Aquatic species need their suitable place to exist. The cause of invasion and encroachment of the people on Maidi Lake has brought a problem. The indigenous species fish and other insects, leech, snails are found nearly end.
- There are different bird migratory and exotic fish. Many kind of migratory birds are increasing nearby the lake. Exotic fishes are increasing gradually. Most of the indigenous species of flora – faunal are in endanger because of conservation.
- Common property can be conserved if every individuals and institutions may be conscious to preserve and manage well.

6.3 Conclusion

In this region local people are farmers who rear cow, buffaloes for milk. They sell milk is market, dairy and use themselves. They use delicious grass from the lake. It is their main work daily. The number of grass users is 278.

The fishermen catch fish mostly in rainy season, the flooding period. The number of fishing a little in dry seasons. The number of fisherman is only 56. They sell fish in the market if they got more fishes than they eat at home.

Gudh is soft type of grass that use to knit mats. Only 45 members engage in collecting gudh from July to December every year. It is Gudh season.

All the three species have been harnessed randomly. So, those species are not conserve well. The users use according to their own monopoly on the species. Perhaps, they do not care for future use because of common property.

Hence Maidi lake is on the threat of extinction coinciding with Hadrins theory of "Tragedy of Common". As Maidi Lake is a common property, it is under attack from local developers. Hence there may be the Tragedy of Maidi.

Once again, they use only fulfilling their needs. They have somehow supported their livelihood. They do not try to conserve the wetland species but they think to sustain their activities for ever. Some are sad that the number of species decreasing radually. They are looking for support to conserve the wetland species. The poor users are waiting for master plan for conservation according to the inquiry is found.

It is felt in study and focuses upon the peoples' activities on faunal-floral species, they use from the lake. It is only their surface purposes. Only the users fulfil their general needs. The value of species found in the lake is more important to get more benefit from the species, individual, institutions and government ought to give high attention to solve the problem. System, technology and awareness for conservation are very essential. It should be taken according to Hardin's (1968) "Common without Tragedy".

6.4 Recommendations

- The importance of Natural Resource management should be highlighted from schools, institutions and government level.
- Value of wetland species for mankind is essential to understand
- Conservation, sustainable use and management should be in practice.

- Traditional indigenous knowledge and modern technological strategy should be combined to progress of the wetland.
- Experts should be appointed for micro researches and should follow their findings.
- Special legislation and fund should be launched by the government.

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APPENDIX I

PEOPLE'S LIVELIHOOD ACTIVITIES IN MAIDI LAKE OF LEKHNATH MUNICIPALITY, KASKI DISTRICT, NEPAL

QUESTIONNAIRE

RESPONDENT

Name: _____

Address: _____

Caste/Ethnic Group: _____ Age: _____ Sex: _____

Occupation: _____ Education:_____

Language: _____ Religion: _____

FAMILY MEMBERS OF RESPONDENT

S.No.	Name	Age	Sex	Marital Status	Relation	Education	Occupation
1							
2							
3							

Family Type Small Middle Joint

1. Earning Sources: _____
2. Occupational description: _____
3. Sources of wetland resources in use: _____
4. Livelihood support

   Satisfied Not Satisfied
5. Do you continue or divert your occupation in future?

   _____
6. What do you think about your harnessing products from the lake?

   _____
7. How much do you know about this lake? Tell in brief.

   _____

   _____
8. Are there any conservational strategies on Maidi Lake?

   _____

   _____

9. What type of species do you use from the lake?

   Grass Fishing Gudh Others

10. Cattle Rearing

    a. The number of cattle you own?

       (i) _____ (ii) _____ (iii) _____ (iv) _____

    b. Number of milky cattle? _____

    c. How much milk do you collect per day? _____

    d. What type of products do you produce from the milk?

       _____

    e. How much milk do you sell per day?

       _____

    f. Where do you sell?

       _____

    g. Are you Satisfactory Not Satisfactory

11. Gudh Collectors

    a. What do you do with gudh?

       _____

    b. What is the purpose of Gudh?

       _____

    c. Do you earn from the Gudh product you made?

       _____

    d. Does it help little better income?

       _____

12. Fishers

    a. When do you catch fish?

       _____

    b. What types of fishes are there that you can catch?

       _____

    c. How do you catch?

       _____

    d. How much fish do you catch?

       _____

    e. What do you do with those fish?

       Sell Use Own self

f. Does it help financially?

_____

13. Please give your suggestion about the conservation of the lake and your livelihood support.

_____

_____

APPENDIX II

CASE STUDY CHECK – LIST

1. What do you know about the Maidi Lake?
2. What types of flora/fauna are found in Maidi Lake?
3. What types of flora/fauna are in use local dwellers?
4. For what purpose do they use specially?
5. What is floral/faunal status? Do these increasing or decreasing?
6. What should be considerable steps for the sustainable management?
7. Does this wetland have some cultural value?
8. What will be the possible steps to conserve biodiversity in this lake?
9. What will be the possible advantages if it conserve well?
10. What is your personal suggestion to?

Appendix III: List of Floral –Faunal Species

Faunal Species

Fish (Exotic)

Caman Carp (Cyprinus Carpio)

Bighead Carp (Aristichtys noblis)

Silver Carp (Hypoptha/michthys molitrix)

Grass Carp (Ctenopharyngodon idella)

Rahu (Labeo rohita)

Naini (Cirrhinus Mrigala)

Bhakur (Catla Catla)

African Magur (Clarias Garipinus)

Tilapia (Oreochromis Niloticus)

Fish (Indigenous)

Sahar (Tor Putotora)

Gardi (Lebio Dero)

Asian Magur (Charias Batrachus)

Bhoti (Channa Orientalis)

Bam (Monoptcrus Cuchia)

Chuchche Bam (Xenentodom Cancila)

Phayata (Barilitus Tile)

Others

Sankhe Kira: Snail

Bhagula: Frog

Juga: Leech

Odha: Otter

Sarpa: Snake

Birds (Species)

Aashkote Bakulla: Indian Pond Heron (Ardeola Grayii)

Kailotuke Hans: Common Pochard (Aythya Ferina)

Khadkhade Hans: Purple Swamphen (Porphyrio Porphyro)

Khole Tiktike: White Browed Wagtail (Motacilla Aderaspatenis)

Chotakhutte Bakullo: Little Heron (Butorides Striatus)

Jala Apsara: Pheasant Tailed Jacana (Hydrophasianus Chirurgus)

Jaleba: Great Cormorant (Phalacrocorax Carbo)

Thulo Seto Bakullo: Great Egret (Casmemerodius Albus)

Dubulki Charo: Little Grebe (Tachybaptus Ruficollis)

Phusre Bakullo: Grey Heron (Ardea Cinerea)

Bagale Simkukhuro: Common Moorhen (Gallinule Chloropus)

Bijula Gauri: Common Teal (Anas Crecca)

Belchathude Hans: Northern Shoveler (Anas Clypeata)

Besare Tiktike: Citrine Wagtail (Motacilla Citreola)

Majhaula White Bakullo: Intermediate Egret (Mesophoyx)

Marul: Common Coot (Fulica Atra)

Malak Hans: Ferruginous Pachard (Aythya Nyroca)

Lobhipapi Garud: Woolly Naked Stork (Ciconia Episcopus)

Sano Setobakullo: Little Egret (Egretta Garzetta)

Sano Matikore: Common Kingfisher (Alcedo Atthis)

Simkukhura: White Beasted Waterhen (Amaurornis Phoenicurus)

Suiropuchhe: Northern Pintail (Anas Acuta)

Setokanthe Matikore: White Throated Kingfisher (Halcyon Coromanda)

Hariotauke: Mallard (Anas Platyrhynchos)

Hutinang: Red Wattled Lapwing (Venellus Indicus)

Plant Species

Charchave (Pani – Lahara): Tetrastigma serrulatum (Vitaceae)

Chhatre: Rough Elephant's foot, Elephant Scaber (Compositae)

Ghode dubo: Hemarthria Compressa (Poaceae)

Jwane: Eimbristyi miliaceae (Cyperaceae)

Jaluko: Remusatia Pumila (Araceae)

Karaunte Jhar; Southern cut: Leersia Hexandra (Poaceae)

Kane Jhar; Day Flower: Commelia benghalensis (Commelinaceae)

Moruwa, Sweet Morjoram: Oringanum Majorina (Labiatcle)

Navo dhan (Nabo); Wild rice: Oryza rufipogon (Poaceae)

Pani Jhar: Scutellaria Scandens

Pirre, water pepper: Persicaria hydropiper (Polygonaceae)

Rat-dante (यदि रातो पिर्रेदो भने): Persicaria Viscosa (Polygonaceae)

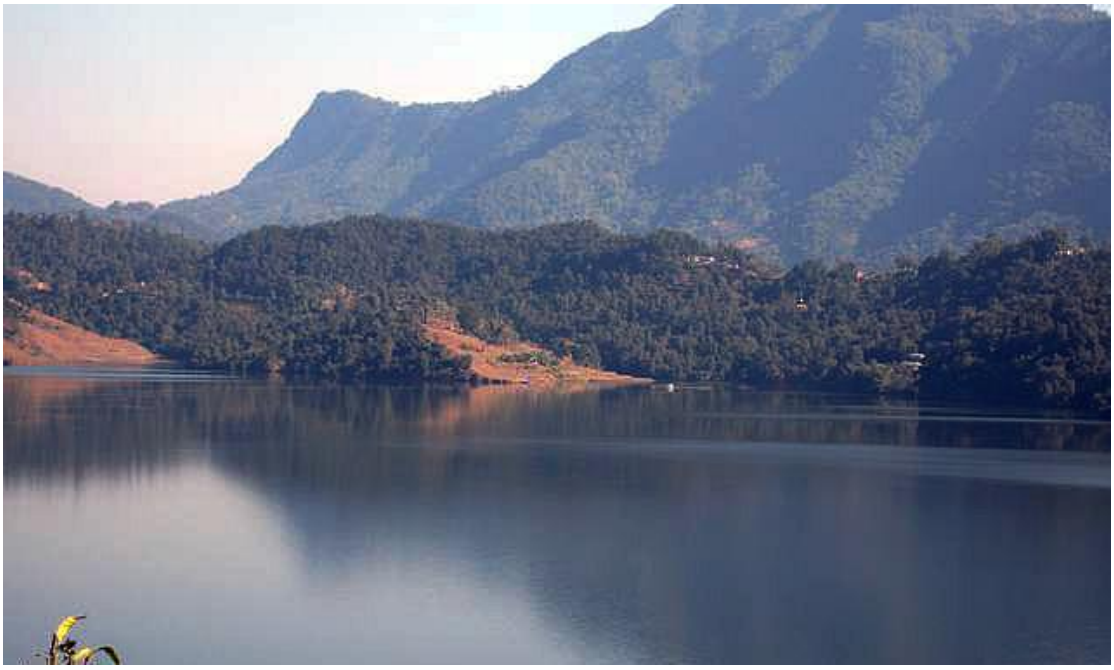
Suire (Panimothe): Schoenoplectus juncoides (Cyperaceae)

Narkat Reed: Arundo donax (Poaceae)

APPENDIX IV

Photo Gallery (Arcade)

Flooded Season of Maidi Lake



Begnas Lake

Rupa Lake

Dipang Lake

Khaste Lake

Nyureni Lake

Gunde Lakes