Research Proposal (Final)

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1. Theme : Participatory Monitoring and Evaluation for Quality Assessment of the Protected Areas.

2. Title of Research : Indigenous knowledge of the primary forest users for selecting ecological monitoring indicators: Implication to quality assessment of the of Protected Areas.

3. Location : Teknaf Game Reserve.

4. Introduction :

Management of Protected Areas (PAs) in Bangladesh is almost impossible without involvement of people in and around them (IUCN,1992). Recognizing the need of involving local people, Forest Department (FD) is currently operating a collaborative management or co-management (Borrini-Feyerbund, IUCN 2001) project known as "Nishorgo", which is financially supported by USAID through Nishorgo Support Program (NSP). The primary objective of this program is to conserve the biodiversity of the PAs of Bangladesh through building partnership with the FD and key local and national stakeholders (www.nishorgo.org). NSP has taken some excellent initiatives for PAs quality improvement, nonetheless co-management in a sustainable manner is highly challenging.

Quality assessment of the protected areas in sustainable way is one of the challenging activities of PA management. Participatory Monitoring and Evaluation (PM&E) is getting importance as a useful tool for sustainable quality assessment of the co-managed PA (Hockings and Phillips, 1999). Many of the park mangers in developing countries have been trying to incorporate indigenous knowledge of the forest dwellers with PM&E system for sustainable and effective quality assessment of PA (Hiller *et al.* 1999). Success of PM&E depends on selection of suitable ecological indicators based on the indigenous knowledge of the forest dwellers. Application of indigenous knowledge for selecting ecological indicators not only ensures proactive participation of the forest users in PM&E but also ensure its sustainability (Lawrence and Ambrose-Oji,1999).

Selection of ecological indicators based on indigenous knowledge might be depending on the real interest of the forest dwellers related to their livelihood and other cultural values (Hockings and Phillips 1999). For example, forest dwellers might be more interested to monitor wildlife (Elephant, Boer, Deer, Macaque) that are related to the damage of the crop or any other wildlife that play important role in ecosystem improvement (wild cat, predator birds, snakes). They might also be interested to monitor some valuable trees, which have economic value, religious significance and provide shelter. They also might be interested in some NTFPs, which are directly related to their livelihood, household

consumption. A prerequisite for PM&E is to select ecological indicators in which the local forest users have keen interest and knowledge **(**Danielsen *et al*. 2000).

The NSP has been using various indicators (i.e. Birds, Basal Area, Record of illicit felling, Photograph) to assess the co-management impact on the quality of the five PAs in Bangladesh. A group of scientist from NSP identified a total of 8 indicator birds that are unique to 5 PAs of Bangladesh without considering the indigenous knowledge and interest of the forest dwellers (Aziz, 2006). Although NSP has been trying to involve local dwellers for monitoring the indicators birds for quality assessment, the process seems to be very challenging. NSP has also been keeping records of tree basal area, however selection of trees does not reflect the interest of the forest users. Records of illicit felling from Forest Department (FD) have also been used as monitoring indicator by the NSP, but local people have no access to that information (Aziz, 2006). Hence, M&E system of NSP does not seem to be developed based on the indigenous knowledge and the interest of the forest users. This M&E system used by NSP may have a chance to be ineffective in long run when the project will be terminated, as there is no reflection of indigenous knowledge and interest of the forest users.

This study is intended to verify the monitoring indicators, used by the NSP in the light of indigenous knowledge and interest of the forest users. This study will reveal the indigenous knowledge on identification and ecology of the 8 indicator birds used by NSP. The study will identify some of the trees that have significance to the local people and their ecology in the light of indigenous knowledge. The study will also identify some plant species of NTFP and their ecology that have various significances to the forest users. The indigenous knowledge of the selected Birds, Trees and NTFP may have an implication in participatory monitoring and evaluation for quality assessment of the protected areas.

5. Research Objectives:

The main objectives of the study are as follows:

- To investigate the compatibility of ecological monitoring indicator used by NSP with the indigenous knowledge of forest users.
- To identify ecological indicators for quality assessment of the PA from the indigenous knowledge of the forest users.
- To identify ecological indicators that signifies the interest of the forest dwellers in terms of livelihood and other cultural values.

6. Research Questions:

The following questions will be explored during the study:

Question 1:

What ecological monitoring indicators for quality assessment of the PA are compatible to indigenous knowledge and common interest of the forest users?

Question 2:

Does the ecological monitoring indicators (Birds) used by the NSP based on a scientific knowledge differ from the perception of indicator birds used by the forest users based on their indigenous knowledge?

7. Methodology:

Method for getting answer of Question 1:

Some trees and NTFP plants will be identified for selecting ecological monitoring indicators. Indigenous knowledge of the forest users will be applied in identifying the trees and NTFP. Their knowledge and interest will also be used to know the ecology, economic benefits, religious significance and relationship with other wildlife.

- **Interviewing tools:**
  - **Focused Group Discussion (FGD):** First, FGD will be made to know name of the most useful trees and NTFP plants for forest.
  - **Open-ended question survey method:** Second, Forest users will be interviewed by using Open-ended question survey method to understand the indigenous knowledge of the selected species about their ecology, economic benefits, religious significance and relationship with other wildlife.

Method for getting answer of Question 2

Photograph of indicator birds, used by the NSP by will be shown to primary forest users for identification. The indigenous knowledge about the ecology of the selected birds will be known from the users. Nguyen, M.T. (2003) used photograph of plants to compare the indigenous knowledge. The ideas of using bird's photographs for understanding the indigenous knowledge of the forest users has been taken form the author's idea. The names of the indicator birds, used by NSP are as follows:

1. Greater Racket Tailed Drongo
2. Hill Mayna
3. Oriental Pied Hornbill
4. Red Headed Trogon
5. Red Jungle Fowl
6. White-crested Laughing Thrush
7. Fuff-Throated Babller
8. White Rumped Shama

- **Interviewing tools:**
  - Structured question survey: First, the Primary forest users will be asked to know whether they know the birds shown in the picture. Just yes/no answer will be taken.
  - Open-ended question survey: Second, to know the indigenous knowledge of the ecology of the selected birds, open-ended question will be asked to the users.

Sampling method:

Sampling technique:
If the forest users group is heterogeneous in nature in terms of profession, sex, age, religion, ethnic origin etc. ***Stratified Random sampling*** will be used. Stratification will be made based on the major distinguishing pattern of a user group. Individual person of a stratum will be sampling unit and will be picked randomly for interview.

Sampling Site and sampling Group:

The total area of Teknaf Game Reserve is 11610 ha. TGR is divided in to three Ranges (Teknaf Range, Shil Khali Range, Whaikong Rnage) and 9 forest beats within these ranges. The physiognomy of TGR is hilly, covered with mostly scrub forest and some remnant patches of semi-evergreen forest. The remnants of tropical evergreen and semi-evergreen forest are dominated with distinct forest strata and rich undergrowth. This is a home of some globally significant wildlife.

A total of 100 Forest User Groups (FUG) are already formed by involving primary forest users of different age, occupation, sex, ethnicity and religion at Teknaf Game Reserve for Co-management by the NSP. Each group consists of approximately 20 persons. A total of 36, 30 and 35 Forest User Group is formed in three Ranges of Teknaf Game Reserve such as Shilkhali, Teknaf, and Whaikong respectively. A total of 6 FUG (2 from each Range) will be selected for interview. At least half of the member of each user group will be interviewed to know their knowledge about ecological monitoring indicators. Thus, total number of interviewee will be minimum 60 persons (10 person x 6 FUG). The FUG will be selected from the areas having better forest coverage and rich in forest resources. The group having distinct division, based on age, sex, religion, ethnicity will be selected. Individual person from different categories will be considered as Sampling unit.

Data Analysis:
All the information will be collected by using a set of methodical question based on the following checklist. Each user group will be categorized according to the group profile such as Age, Sex, Occupation, Ethnicity, and religion. Indigenous knowledge about ecological monitoring indicator will be understood studying the group profile. The categorical and numeric variables will be entered in to excel for data analysis. Pie-Chart and Histogram will be used to as simple analytical tools for data presentation.

Checklist for identifying indicators bird and their ecology:

Bird Identification from 8-sample bird used by NSP

- Whether the local people can identify the bird or not?
- What is the name of the bird? (Local name, common name or any other name given by the local people
- What is the salient identifying feature of the bird?

Ecology of the Bird:

- What is the conservation status? (Common or Rare?)
- What is the common habitat of the bird?
- What is their food?
- How is their nesting and roosting pattern?
- What is their breeding season?
- Which bird indicates whether quality of forest is improving or not?
- Which birds are harmful or beneficiaries to the forest dwellers? (Predator pest)
- When did you see the bird last time?
- Whether the birds have any religious value or any local value, or any mith?

Checklist for identifying trees and NTFP:

Selecting trees & NTFP:

- What are the major trees useful for the forest dwellers?
- What is their use?
- Which trees improve the quality of the forest (Wildlife habitat, encourage natural regeneration of other tree, etc.)?
- What are the major NTFP useful for the forest dwellers?
- What is their use?
- Which trees improve the quality of the forest (Wildlife habitat, Natural regeneration etc.)?
- Which tree indicates whether a quality of forest is improving or not?

Ecology of trees & NTFP:

- What is the conservation status of the identified trees and NTFPs (Common/Rare)
- Whether the selected trees and NTFPs are exotic and indigenous?
- Where these trees and NTFPs are generally grown and found? (Habitat, location, aspect.)
- Weather the trees are planted or natural?
- What is the natural regeneration status?
- What are the oldest trees and NTFPs?
- What is the season of harvesting of trees and NTFP?
- Whether the trees and NTFP are useful for wildlife in terms of habitat and food?
- Whether the Trees and NTFP have any religious value or any local value, or any myth?

8. References:

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Hellier A., Newton A.C. and Ochoa G., S (1999) Use of indigenous knowledge for rapidly assessing trends in biodiversity: a case study from Chiapas, Mexico. Biodiversity and Conservation, Vol 8 (7):869-889

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Aziz, N. 2006. Using indicator birds to asses protected area management impact. www.nishorgo.org

9. Time line of activities:

Sl. No.	Research Activities	Working Area	Month
1.	Literature review	Dhaka	January
2.	Hypothesis and methodology development	Dhaka	January
3	Field survey (Field test)	Teknaf Game Reserve	February
5	Field survey (Final data collection)	Teknaf Game Reserve	March
6	Field survey (Final data collection)	Teknaf Game Reserve	April
8	Field survey (Final data collection)	Teknaf Game Reserve	June
9	Data analysis & report writing	Dhaka	July -August