TRAINING ON

BIODIVERSITY MONITORING AND EVALUATION (BIOME) SYSTEM FOR MT. HAMIGUITAN RANGE WILDLIFE SANCTUARY STAKEHOLDERS

Researched, Consolidated and Conducted by the

CENTRAL MINDANAO UNIVERSITY (CMU)

BUKIDNON RESOURCES MANAGEMENT FOUNDATION, INC. (BRMFI)

PHILIPPINE EAGLE FOUNDATION (PEF)

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TRAINING GUIDE MODULES

A. Module 1 – Rationale for the Training
B. Module 2 – Why Do We Monitor Biodiversity?
C. Module 3 – Roles, Responsibilities and Functions of NGO/PO Partners, Other Groups and Organizations in Biodiversity Monitoring and Evaluation
D. Module 4 – Field Diary Method
E. Module 5 – Photo Documentation
F. Module 6 – Transect Walk Method
G. Module 7 – Focus Group Discussion
H. Module 8 – Actual Site Identification and Establishment of Biodiversity Monitoring and Evaluation Tools
L. Module 9 – Organization, Analysis, Interpretation of Results and Storing Data
M. Module 10 – Presentation of Data
N. Module 11 – Formulation of Biodiversity Monitoring and Evaluation (BIOME) Action Plan (One Year)

MODULE 1

RATIONALE FOR THE TRAINING

Duration: 1 Hour

Objective:

At the end of the session, the participants will be able to:

1. Be familiar with the background and mandate of partners organizations and CEPF.
2. Have a brief overview of the site (biophysical and socio-cultural importance).
3. Understand the context and objectives of BIOME training objectives.

Expected Output:

1. Participants improved knowledge and understanding about:
   a. Program partners' mandate/programs/services
   b. Mt. Hamiguitan Wildlife Sanctuary
   c. BIOME tools and installation framework.

2. Participants,and implementing partners leveled off on the BIOME training objectives, as follows:

General Objectives:

a. The project aims to build the capabilities of NGOs/POs and the communities in determining changes in the biological resources of the areas that they manage and administer including the socio-economic, cultural and political issues that affect their initiatives on biodiversity conservation.
b. Provide mechanisms for the NGOs and POs to identify and formulate timely and appropriate conservation management interventions in their areas in view of the biophysical, socio-economic and cultural data gathered.
c. Encourage the participation of the local communities, local government and other stakeholders in biodiversity monitoring, management and protection.
d. Gather importation information on biodiversity in Mt. Hamiguitan Wildlife Sanctuary..

Specific Objectives:

a. Train the NGO/PO partners and communities on the use of the biodiversity monitoring tool that seeks to determine changes in the biophysical, socio-cultural, economic and political environments that impact biodiversity.
b. Provide functional level understanding on ecology and biodiversity including the socio-cultural dimensions of biodiversity and its conservation.
c. Install the biodiversity monitoring tool by identifying monitoring sites and routes through participatory modes including conduct of dry-runs.
d. Provide the skills training on the use and care of monitoring equipment, data collation and management and data analysis and interpretation.

MODULE 2

WHY DO WE HAVE TO MONITOR BIODIVERSITY?

Duration: 1 Hour

Introduction:

Biodiversity conservation program contains strategies for coastal/forest protection committee formation, marine sanctuary and/or protected areas establishment, capability-building among stewards, networking and linkaging. These necessitate setting up of structure(s) and systems for program planning, implementation, monitoring and evaluation. However, such functions involve an understanding of program component definition, framework, indicators , process analyses and documentation. It is also important to have skills on conduct of various methodologies or tools for objective information gathering and analyses. The results of the analyzes will enable program implementers to refine approaches or revise design for more effective conservation efforts or management.

Objective:

At the end of the session, the participants are able to review and gain more knowledge on the definition of biodiversity, concept or parameters of biodiversity monitoring and evaluation and its relation to conservation and protection.

Process:

A. Definition of "*biodiversity".*

1. "The variety and variability among living organisms and the ecological complexes in which they occur." (NORDECO and DENR 2001. BMS Manual for PA. 2nd ed.)

B. Objectives of biodiversity monitoring and evaluation.

1. To measure changes (increase or decline) in the quality and quantity of variety, variability among living organisms and its ecological complexes.
2. To take on clear and concrete measures for conservation and/or protection.

C. Framework or parameters of biodiversity monitoring and evaluation

1. An integral tool in adaptive management in conservation.

Monitoring should no be done just for monitoring sake, but as an integral component of the entire range of activities in a conservation initiative. Monitoring is a crucial tool in the adaptive management of resources.

Adaptive management means that the utilization of results should be factored in very quickly and translated into modifications in the project implementation

scheme in a timely and responsive manner. Monitoring or evaluative research must be used to enrich, modify and strengthen an ongoing implementation scheme in a responsive, timely manner.

2. Focus not only on biological resources but also on people (the communities), their structures, dynamics and processes.

Monitoring of biodiversity loss should not address proximate drivers alone, but should also address direct or ultimate drivers such as population dynamics, trend structure of the economy, changes in administrative arrangements or policy frameworks and the like. For instance, it is not really the soil that is eroding or water that is not conserved that bear on the biodiversity status, but the activities, processes and patterns that we see at the level of the communities that are the ultimate causes of biodiversity loss. Improved practices as concrete translations of increasing levels of conservation awareness, knowledge and skill provide good indicators of accomplishment of important conservation objectives.

3. Benefits the community in a manner that is sustainable, culturally responsive, empowering and economically viable (i.e. should generate benefits for the holistic development of the community).

Conservation is grounded on sustainable development. It is contrary to economic welfare or the striving for food security. While it is often perceived as protection of floral and faunal species from destruction and extinction, conservation is as much as a social justice and human rights issue. It similarly targets the economic welfare and sustainability of human society. So that civil society groups and the government sectors are addressing conservation increasingly in more integrated and holistic projects. ***Agri-biodiversity,*** still often neglected, is one of important conservation domains in the pursuit of food security.

4. Well-balanced conservation and resource use for enterprise/livelihood component.

Focus should be on the beneficial balance between requirements of a sound environment as a support base for an economically and culturally viable community, in a sustainable way. Ecologically sound and economically rewarding conservation investments must be technologically appropriate and efficient, while financial and market incentives need to be ensured to effectively promote conservation.

5. Shared responsibility and accountability through strategic partnerships with other groups/organizations.

Fundamentally, a biodiversity monitoring and evaluation system must be a capability building tool lodged with the community. The community and other stakeholders in the area have a claim on conservation. There area people's organizations that, although they are not locally based, can provide support or

can therefore have important participation so that they should also be recognized as stakeholders.

But the monitoring and evaluation system must show where the locus of control over the resources is emanating from. The risk of the upper and lower levels of management differing when it comes to interpreting policies and laws is a reality. The community therefore, because they are the ones using the resources, should be involved from the start of any conservation project. The policy should be generated from the community, and be made to work upwards to the barangay level in a bottom-up approach.

6. Existing, emerging or transitional access arrangements as part of conservation strategy.

The conservation framework should include existing, emerging or transitional access arrangements as a basis for use and management, while also acknowledging the impact of stakeholders interests. There area varied access arrangements with regard to natural resources. Settlers and migrants create as much impacts as the locals do on the resources, conservation efforts, and results of the biodiversity monitoring system. Changing conditions should be considered, e.g. there is more commercialization now than in the previous years.

D. Steps in implementing biodiversity monitoring.

1. Compile the basic information on the site.
2. Identify priorities for biodiversity monitoring.

    a. *Criteria for selecting resources uses and priority species to be monitored*:
        - Easy to identify and collect data on
        - Meaningful, important for the local communities
        - Commonly used by local communities
        - Threatened species in need of conservation action
        - Resources uses for which permits are granted by extraction

3. Training.
4. Establish the Biodiversity Monitoring System.

    a. Who shall do the actual monitoring?
    b. What shall be the roles and/or jurisdictional mandate for biodiversity monitoring of various stakeholders?
    c. What shall be the institutional arrangements?
    d. How will the monitoring information be used?
    e. How should the field implementation be organized?

5. Compile the data using the field methods.

    a. Focus Group Discussion
    b. Field Diary
    c. Photo Documentation
    d. Transect Walk
    e. Additional Methods, such as:
        - Secondary data collection and analysis
        - Key informant interviews
        - Observational techniques
        - Measurement and documentation needed

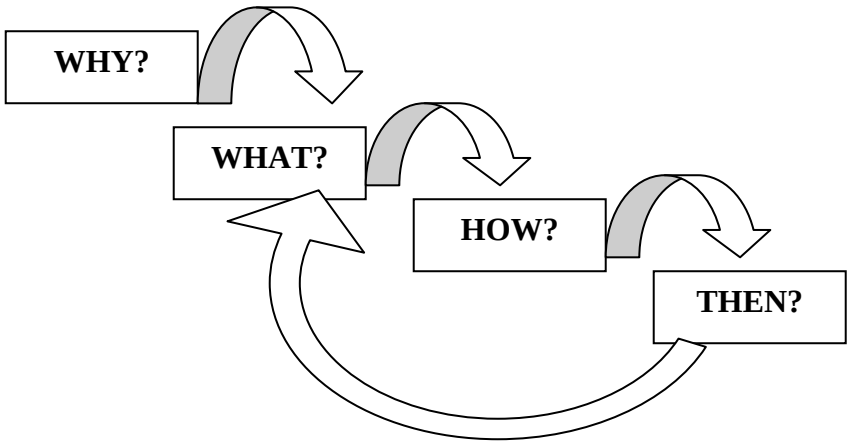
6. Analyze data and identify trends.
7. Validate results with the communities.
8. Present the findings and recommended actions to the appropriate jurisdictional bodies.
9. Make decisions to improve critical area management.
10. Revise and strengthen the monitoring system.

E. Questions biodiversity monitoring and evaluation hope to answer.

1. Are the natural habitats and ecosystems being degraded?
2. Are the populations of threatened species declining? What are the issues?
3. What are the threats to biodiversity resulting from human activities?
4. What is the local ecological knowledge? How do the communities perceive their environment and ecological endowments?
5. Who are the end users of the natural resources?
6. How do communities use the natural resources in the areas?
7. What are the efforts for the communities to conserve their resources?
8. Has the management intervention achieved its intended impacts on the ecosystems?
9. Are the increased benefits to the local communities from sustainable management?

F. Summary concept of biodiversity monitoring and evaluation.

Leon Bennum of Birdlife International's Monitoring for Conservation.



MODULE 3

ROLES, RESPONSIBILITIES AND FUNCTIONS OF NGO/PO PARTNERS, OTHER GROUPS AND ORGANIZATIONS IN BIODIVERSITY MONITORING AND EVALUATION

Duration: 1 Hour

Objective:

At the end of the session, the participants will be able to gain common understanding on the roles, responsibilities and functions of partner organizations, community monitoring team and other line agencies/organizations who are stakeholders in the area.

Process:

1. Identification of stakeholders in the area.
2. Determination of involvement of the stakeholders in biodiversity conservation in the area.
3. Composition of the ***Community Monitoring Team (CoMTeam).***
4. Support (resources, fund, services) to the ***CoMTeam.***
5. Formulation of Responsibility Matrix:

Stakeholder (Name of Group, Organization, Agencies)	**Location (Sitio, Barangay, Municipality, Province)**	**Conservation activities and support program in the area**	**Committed roles, responsibilities and functions in biodiversity monitoring and evaluation**

6. Presentation of recommended or existing structure.
7. Identification of members and its regular meeting schedule.

MODULE 4

FIELD DIARY METHOD

Duration: **1 hour**

Introduction

Field Diary Method is the simplest form of field data gathering which is undertaken by recording observations on resource use, habitat and wildlife in a pocket notebook or data sheet. A query is made in the form determining what is the present state of the environment or what are the activities currently present in a certain area. In this method, no study area need to be selected and general field observations and data gathering would be conducted.

Use of Field Diary Method

Field diary is an important method to determine a.) changes in the use of the resources and abundance of species in a particular area; b.)useful in assessing the type and relative quantity of resources extracted by the area communities; c.)relative frequency, and seasonal patterns of resource extraction; and d.) reliable indicators of presence of wildlife, their status, habitat association, and distribution in the area.

Objective:

At the end of the session, the participants will be able to acquire knowledge and skills in BIOME using the Field Diary Method, especially, the participants will be able to:

a. Learn how and what to write in a Field Diary.
b. Acquire some tips on how to care and maintain the materials for Field Diary Method.
c. Store, manage and analyze the data using Field Diary Method.

Materials:

Notebook	GPS	Binoculars
Pen with fade-proof ink/ pencil	camera	Topographic map
Identification guide		

Methods:

<u>How and what to write in a Field Diary</u>

1. **Use a new sheet for every new date or locality.** Indicate on each sheet: your name, the date, the locality (sitio, barangay, municipality).
2. **When recording wildlife** note estimated number of individuals, note habitat and location.

3. **For unfamiliar species**, it is desirable that a sketch of the animal or plant be made emphasizing distinguishing features as such as color, shape of beak, relative size (length or height), etc.

4. **When recording people encountered and their activities** (reason why they are in the area). Note the following types of forest products gathered (orchids, rattan, fruits, leaves, etc.) and wildlife in their possession, their quantities, uses, and when possible, market price (if for selling).

5. **When recording signs of people's presence** in the area, note the type of disturbance, such as foot prints in restricted areas, cut/sawn logs, garbage, discarded remains of hunted wildlife such as bird feathers and bat skins (count heads if possible), sound of chainsaw (hoe many) or chopping of trees, forest fires, smoke from kaingin, recent forest clearings (area, size or quantity, and exact location). If immediate management interpretation is needed, take a photograph to document your observations.

6. **When recording physical changes** (natural or man-made) on the landscape such as eroded banks, landslides, new log-roads, and excavations, note the exact location of observed disturbance. Take photographs of the most important observations.

7. **Second hand information** (what you are told, but have not seen yourself) may also be noted in the field diary. Note always who gave the information. Below is a list of some species from the FPE CBRM Sites for which second hand information was given.

8. At the end of the day or after completion of each routine patrol round, a separate page in the field diary is alloted for a tally of all observations.

Sometimes you will not write anything because you did not see anything. That is fine. Sometimes you might not write anything because you saw too much to note everything. For instance, you can not note every person you see on a very busy trail. In such cases you have to note that this was the case.

Care and Maintenance of Materials For Field Diary and Some Tips

*To achieve the purpose of Field Diary Method, it is important to***:**

1. Use good quality paper (sheets or note book), preferably acid-free and water-proof.
2. Use water and fade-proof ink, preferably india ink. Ink of ball-point pens tend to fade easily when the paper it is written on gets wet with water, alcohol, and other liquids. A pencil can also be made.
3. Protect the field dairy from water. Store your field diary (field notes) in a plastic bag while travelling.
4. Write in short, legible, and concise sentences.
5. It is useful to be able to locate the exact place where human activities (e.g. kaingin, recent forest clearings, etc.) or rare wildlife were recorded, again. Note the exact location (elevation, coordinates, distance from nearest community center or from

prominent features of the landscape).

The data must be summarized every quarter and reported to the Community Monitoring Team (CMT) and Project Team. Interpretation must always include an assessment of whether there has been any change in patrol routines compared to previous quarters. Every year the head of the CMT will summarize the quarterly reports and present them to the Project Team.

Data Storage and Management:

Store your notebook carefully. File them in a ring-binder and do not bring any notebook or use sheets as Field Diary back into the field**.** You may therefore use loose sheets or operate with two different books.

Example of a Field Diary

Recorded by: Henry Binahon
Date: 18 June 2003
Locality: Bgy., Talahiran, Upper Pulangi, Bukidnon

10:25 AM
Met Rea Neri at Sumbocan 3 km from Barangay proper, with:2 bundles of rattans consisting of a total of 50 poles, with an average diameter of 3 cm, and an average length of 5 m.1 bunch of wild banana, ca. 1 kg 1 bundle of pako
2:10 PM
Encountered fresh wild pig tracks along the trail, ca. 125 masl, Three adult individuals are indicated
3:15 PM
I saw a Little Slaty Flycatcher in canopy of large tree together with a flock of smaller birds. I saw a bird of sizebetween a bulbul and an oriole. It was mostly black, but had white wing patch, white belly and white tail tip. I already know this species as I have seen it twice before.

DATA SHEET - FIELD DIARY

Recorded by : _____
Date : _____
Locality : _____

Time: _____

Time: _____

Time : _____

Time : _____

MODULE 5

PHOTO DOCUMENTATION

Duration: 1 hour

Introduction:

Photo documentation is a simple but very objective method in bio-monitoring especially for monitoring habitats and land-uses. Simple since it requires no extensive and high-cost training; objective since it prevents any observer-related biases. It can tell if the size of important habitats is declining, and why such decline is occurring. The ultimate objective of this method is to obtain repeated photographs over time at the same site. Any changes occurring over a certain period of time in a designated site are best shown in photographs. However, for a locally protected area with limited budget, this method is limited only to ground-based photographs. Ground-based photos, therefore, cannot show major changes in larger areas.

This method is applicable in land and aquatic habitats, in undulating terrain such as hills, river valleys and along the shoreline of lakes, swamps and coasts. It is recommended that this method will be done by persons with knowledge on the site as well as on the basic operations of the camera.

Objectives:

At the end of the module, the participants should be able to acquire knowledge and skills in using photo documentation as a method of monitoring and evaluating biodiversity.

Materials:

Zoomed-lens camera with tripod
Film (Kodak or Fuji ISO 100 is recommended)
Battery for camera
Topographic map of the area
Data sheets for photo documentation
Pencil
GPS
Compass
Paint for marking permanent sites

Methods:

I. Ground-Based Photography

A. Frequency

Take photos every quarter of a year. However, this is reduced to once a year if no changes in land use and habitats are noticeable.

B. Location of photo documentation sites

Sites should be at view-points along patrol routes and trails in seriously threatened areas as well as in areas without human use. View-points are large places where large parts of the surrounding landscape can be seen.

a. For terrestrial habitat, this must include areas with forest cover and areas with borders between forest and open land.
b. For aquatic habitat, this must include the sidebanks or inshores especially in areas where vegetation is prominent. Dams, outfalls, tributaries, bridges, plantations and other land uses must also be taken note.
c. Areas where there are signs of human activity must also be considered in selecting sites. However, a few sites should be established in areas without human use.

C. Steps in establishing photo documentation sites

1. Obtain a topographical map of the area. If possible, get hold also of vegetation/forest cover and land-use maps of the area.
2. On the map, mark, the most seriously threatened areas (e.g. occurrence of logging, widening or other disturbances)
3. Draw those patrol routes and trails on the map that pass through the seriously threatened areas.
4. Mark view-points in seriously threatened areas along the patrol routes and trails as possible photo documentation sites.
5. Select 5 of those view-points, which are accessible and from where you can overlook areas where activities may occur the next half year (e.g. logging, kaingin, mining, quarrying, etc) or where disturbance has recently occurred (e.g. quarrying, etc). Take note also of the agreed land use of the area.
6. Visit the selected view-points and bring all the needed materials.
7. Obtain the coordinates and altitude reading from the GPS. In the absence of a GPS, mark the appropriate location of the site on the topographic map. Enter this data on the data sheet.
8. With the aid of a compass, take a degree reading of the camera angle or the direction for each photo. Note reading on the data sheet.
9. Take two identical photos for each camera angle.
10. Enter relevant information in the data sheet for the establishment of photo documentation site.

11. Mark the exact site of the camera location with a permanent marker (e.g. paint on big stone or rock) for easy relocation.
12. Draw the location of all your photo documentation sites on a topographic map.

D. Other subjects to be documented

1. Flora – Take photographs of plants that are deemed important (e.g. with medicinal values; rare new; etc.)
2. Fauna – Take every opportunity to photograph all animals in the area. If possible, include tracks and trails of animals.
3. Signs – Take photographs also of any sign of activities in the area that are considered threats to biodiversity (e.g. Kaingin, harvesting of resources, traps)

E. Use and care of the camera for photo documentation

1. Remove the camera from its casing and set it on the tripod.
2. Check the following details:
   - If shutter speed is set to 125 (1/125 of a second)
   - If film speed is set to 100 (if ISO 100 film is used)
   - If battery has been replaced.
   - If film has been loaded
3. Look into the viewfinder and point-focus on the object that you want to photograph.
4. Adjust the lens aperture until "0" is indicated on the light meter. This means that the correct amount of light has been achieved. A negative sign indicates insufficient light while a positive sign indicates over exposure to light.
5. Determine the view angle by using the compass.
6. Turn on the film shutter.
7. Press on and take pictures. Take two photos of the same view.
8. Fill up necessary information in the data sheet for photo documentation.
9. Have the film developed and prints made available as soon as possible. Otherwise, mark the film in reference to the data sheet.
10. Assign reference numbers to negative films and prints and the corresponding data sheets.
11. After using the camera, wipe outside surfaces with a clean piece of cloth. Wipe lens with a lens paper.
12. Replace it on its casing and keep the camera in a dust-free and moist-free area.

F. Some tips to remember:

1. It is recommended to take photos between 8-10AM or 2-3 PM on a good weather day. Early and late hours bring you insufficient light while noontime light tends to give you overexposure.
2. Do not take photos against the light or when the sun is behind the object you want to photograph.
3. Take photos where you can see the landscape but can still distinguish many single trees in your photos.
4. Do not take photos where you can see less than 100-500 trees. You are too close.
5. Do not take photos of landscapes where the forest is far away that you cannot distinguish single trees.
6. Be consistent with your magnification by using the same enlargement in the zoom every quarter.

A. DATA SHEET – ESTABLISHMENT OF PHOTO DOCUMENTATION SITE

Location : _____
_____
_____

Position : _____ N _____ E

Date of First Photo : _____

Sketch Map of Camera Location

Map Insert showing Photo Angles

B. DATA SHEET – ESTABLISHMENT OF PHOTO DOCUMENTATION SITE

View Angle:

Description:

View Angle:

Description:

View Angle:

Description:

View Angle:

Description:

View Angle:

Description:

DATA SHEET – PHOTO DOCUMENTATION

Location (site name): Date: Photographer: Remarks:	Position (coordinates):
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	

Data Sheet 5A Establishment of Photo Documentation Site (Terrestrial Photography)

Location: Region: Province: City/Municipality: Barangay: Sitio/Purok	Description of the Site:
Position/Grid Coordinates:	How to get to the site:
Code name of the site:	Remarks: (note any sign of human activity)
Date of establishment of the site:	Date of first photo taken:
Your full name:	Name of photographer:
Number of photo angles used in this site:	Type of lens used: (35mm etc)
Sketch map of camera location:	

Data Sheet 5B Establishment of Photo Documentation Site (Ground-Based Photography)

Location (code name of the site):	Position/Grid Coordinates:
Date:	Time:
Your full name:	
Remarks:	

Sketches of the Photos:

	Photo name code: View angle: Description:
	Photo name code: View angle: Description:
	Photo name code: View angle: Description:
	Photo name code: View angle: Description:

Data Sheet 5C Photo Documentation (Ground-Based Photography)

Location (code name of the site; the same name used when the site was established):	Position/Grid Coordinates:
Date:	Time (indicate weather conditions):
Photographer's full name:	
Remarks (any signs of human activities or other aspects you would like to remember):	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment): Photo number (as indicated on camera): Photo number (as indicated on negative): Comments:	
Viewing angle for photo: Film number: Photo name code (as given at site establishment) Photo number (as indicated on camera) Photo number (as indicated on negative) Comments:	

MODULE 6 A

TRANSECT WALK METHOD

Duration: 1 hour

Introduction

Transect Walk is somewhat similar to routine patrolling using the Field Diary. However, transects are permanent, demarcated routes where there are precise prescriptions on where to walk, when to walk, what to note, etc. The prescriptions are there to make sure that new and earlier data sets always are comparable. This method is useful in land areas and in drier sections of freshwater and marine areas (such as inter-tidal areas, open lake shores, and wetland meadows. In areas where it is impossible to walk, you can use a boat. This method is not suitable in very small areas (less than 10 ha.).

The Transect Method is a very important method in monitoring biodiversity because the effort used to compile data is the same every time a transect is surveyed. If properly executed, other forms of data can be obtained aside from monitoring trends such as indices of diversity and species richness.

Objective:

At the end of the session, the participants will be able to acquire knowledge and skills in BIOME using Transect walk/cruise/swim as a methodology/tool. Specifically the participants will be able to:

a. learn how to select and establish transect routes.
b. acquire some tips on how to care and maintain the materials for Transect Walk/Swim Method; and
c. Store, manage and analyze the data using Transect Walk/Swim Method.

Materials:

Binoculars	Identification Guide	Watch
Transect Data Sheet	Pencil	Drinking water and snacks
GPS	Compass	Long string (50 or 100 m)
Topographic map	Permanent marker (paint)	Bolo

Methods:

A. Transect Walk

Selection of Transect Routes

1. Get hold of topographical maps and, if possible, vegetation and land-use maps of the particular area.

2. Draw the patrol routes and other trails into the maps.
3. Are any patrolling routes passing through primary (old growth) forest? If so, they might be useful for transect surveys. Select several routes of 2-3 kilometers in different parts of the area (preferably at different altitudes) and passing through primary (old growth) or good secondary forest. Use a small trail through closed forest (not a road with edge habitats). Avoid open areas with tall grass or bushes, and areas, which are not safe to travel, is when you are alone.

4. Do a reconnaissance of the proposed routes to check that they are possible to walk (e.g. not to steep) and they are located inside the area

Establishment of Transect Route

1. Visit the proposed routes. Make sure that a 2-3 kilometers transect route can be established on each patrol route so that it passes through primary forest or old secondary forest within priority areas for conservation. If not, another site has to be selected.
2. For each selected transect route, mark the starting point of the transect with a permanent marker (e.g. paint on rock, big stone or tree, not on grass or loose soil)
3. Use a GPS to obtain the geographical coordinates for the transect starting point.
4. Use an altimeter or a GPS to obtain the altitude for the transect starting point.
5. From the starting point, measure (using the string) and mark (using paint) every 250 m (5 x 50 m) distance to the end of the route.
6. Note habitats (e.g. lowland forest) within each 250 meter section and the condition of the forest (e.g. primary forest, logged forest, forest with kaingin, second growth forest, scrub, grassland, or cultivated area). Such broad categories must be noted even if a more precise description is also given.
7. Mark the end point of the transect with a permanent marker. The transect should be at least 2 kilometers and not more than 3 kilometers and it should end at a 250 meter mark.
8. Use a GPS to obtain the geographical coordinates for the transect end point.
9. Use an altimeter or a GPS to obtain the altitude for the transect end point.
10. Sketch maps of routes must be prepared as well as precise descriptions of where the end points of transects are. The transect routes must also be plotted into topographic maps of 1:50,000 scale or more detailed
11. Data to be noted when establishing a Transect Walk route is listed below:

Write on one sheet:

a. Name given to the transect (e.g. name of nearest sitio, mountain or river system)
b. Transect location (province, municipality, barangay, sitio)
c. Geographical coordinates for start point and end point.
d. Altitude for starting point and end point and land marks along the routes
e. Altitude for starting point and end point
f. Total length of transects (meters).
g. Major habitat type and modification level for each 250 meters section.

h. Date of the establishment.
i. Full Name
j. Fill out every field on the Transect Walk Field Data Sheet (Write a line "-----" in fields you can not answer to show that you have tried)

When Walking the Transect

1. You must walk the Transect Walk route with a rather slow speed. The distance between two 250 meter markers has to be walked in precisely 15 minutes (that is one kilometer covered every hour). Only short stops are permitted when identifying and noting. Otherwise the survey should not be disrupted, it should be undertaken again a few days later.
2. You must always begin Transect Walks between 6 and 7 am and finish before 11 am.
3. You should walk the transect alone. Different observers have different identification skills and different estimates of numbers. A less experienced observer records less and data will show false decline in biodiversity and resource use. Be quiet as possible so as not top scare away wildlife.
4. Try to keep track of individuals or flocks of wildlife species. If there are many individuals or flocks of a species there is a risk of double counting because of confusion from animals appearing in all directions. Species that move quietly between places where they sing or call might also cause confusion.

Care and maintenance of Materials for Transect Walk and Some Tips

1. Use a good quality pencil of medium point, no.2 or 3. Never use ball-point pen as this ink tend to fade or run when wet.
2. Always store field notes/data sheets in a waterproof container such as a plastic bag.
3. Make sure to bring water and snacks with you on the Transect Walk.
4. Don not walk transects in heavy rain or typhoons. However, be prepared for a few drops of rain. It is time to cancel the walk when there is so much rain that you cannot use your binoculars.
5. When you survey the transect route wear clothes with dark colors. Do not wear white or bright colored clothes since this would scare away wildlife.
6. It is difficult to estimate numbers in groups of Long-tailed Macaque (Unggoy). When you encounter this species, write your best estimate of the group size as well as the minimum and maximum number. Example: Unggoy 4 (min.3, max.5)

Observer

This method can best be undertaken by a person with skills in identifying species. Each transect route should be surveyed by the same person every quarter. The person coordinating the conduct of Transect Walks should also remain the same if possible.

Frequency

Each Transect Walk route should be walked once every quarter within a defined two-week period.

Location of Transect Routes

Transect routes should be established in areas seriously threatened and important for conservation and resource use by local people. It is advisable only to establish Transect routes where the species you need to monitor are present. Transect routes are best located along patrol routes in old growth (or old secondary) forest. Some should pass through areas with human use, others through areas with no or minimal use.

Do it the same way every time.

Transect walk has to be carried out in the same way (if possible) every time you walk the transect:

1. the same amount of time to walk (1 km per hour)
2. the same number of kilometers (2-3 kms) on
3. the same routes in
4. the same weather (if possible) at
5. the same time of the day (beginning between 6 and 7 a. m.) at
6. the same time of the year recording
7. the same species and uses in
8. the same way by
9. the same observer (or another with the same identification skills, if at all possible) and using
10. the same way to estimate numbers

Why are such rules needed?

1. Imagine what would happen if you tried to compare morning transects with mid-day transects: Most animals (and people) show little activity in mid-day. Mid-day data would show a false decline in biodiversity and human activity.
2. Imagine what would happen if you tried to compare data collected by an experienced and a less experienced observer: A less experienced observer records less and data might show a false decline in biodiversity and resource use.

Data Storage and Management

After each Transect Walk, the observations written in the Transect Walk data sheet must be tallied by the BMS observer. The filled out form should be turned over to the BMS Coordinator and filed in a ring-binder and stored in the fling system at the CMT office. A copy should be submitted to the Project Team for safe storage.

WHAT TO RECORD DURING TRANSECT WALK

List of what always have to be noted every time it is recorded during Transect Walk.

Philippine Deer **(seen, heard or signs as tracks or droppings)**
Philippine Pig **(seen, heard or signs as tracks or droppings)**
Philippine Macaque **(seen, heard or signs as tracks or droppings)**
Pigeon **(seen, heard or signs as feathers). Note which species if you know.**
Hornbill **(seen, heard or signs as feathers). Note which species if you know.**
Red Junglefowl **(seen, heard or signs as feathers).**
Racquet-tail Parrot **(seen, heard or signs as feathers).**
Stumps **(number of)**
Piece of timber **(estimate volume)**
Person **(number of people meet and for what purpose they are visiting the area)**
Sound of chain saw **(number of chain saws heard)**
Priority Species (see previous list) **(estimate number, seen, heard)**

EXAMPLE OF FIELD DATA SHEET FOR TRANSECT WALK

Observer: Pedro Reyes

Location: The Forest Transect on the Trail from X to Y

Length of transect: 3 km.

Date: June 18, 2003

Starting time (must be between 6:00 and 7:00): 6:05 am

Comments (e.g. on weather): No wind or rain

Species/use recorded	Number	Time (or distance From transect start	Remarks on what was recorded
Phil. Deer	1	6:10	Tracks (one or two individuals)
Pigeon	1	6:15	I could see them up in the canopy. Perhaps there were more
Red Junglefowl	1	6:25	Heard
Person	2	6:40	Tourist with binoculars
Chainsaw	1	7:20	Heard far away .Perhaps from outside the study area
Stumps	10	7:50	The same number I counted here last time (March)

DATA SHEET 6A-1 Transect Walk (Flora)

Observer : _____ Name of Transect/Location: _____ Plant Group: _____

Length of Transect : _____ Date: _____ Time: _____

Aspect/Coordinates:_____ Altitudinal Range: _____

Habi-tat/ Ecosys tem*	Spe-cies	Local Name	Dis-tance from Tran-sect Start	No. of Indi-viduals (stand)	Stage of Growth **	Trunk Dia-meter (cm)	Height (m)	Eco-nomic Use ***	Cultu ral Value	Conser vation Status* ***	Other Remarks (girdled, dying, etc.)

*Primary forest (PF)
Second growth forest (SF)
Logged forest (LF)
Forest with Kaingin (FK)
Grassland (G)
Cultivated areas (CA)

***Food (F)
Medicinal (M)
Ornamental (O)
Lumber (L)

**Sapling (Sa)
Seedling (S)
Mature Stand (MS)
Flowering (Fl)
Fruiting (Fr)

**** Endangered (En)
Endemic (End)
Rare (-10) (R)
Abundant (+10) (A)

DATA SHEET 6A –2 Transect Walk (Fauna)

Observer : _____Name of Transect/Location: _____

Altitude: _____ Coordinates:_____Altitudinal Location: _____

Length of Transect : _____ Date: _____ Starting time: _____

Species	Local name	Habitat Type*	Number	Time	Distance from Transect Start	Conser-vation Status**	Remarks on what was recorded (heard, tracks, seen, droppings, signs of droppings, etc)

* Primary forest (PF) Forest with Kaingin FK) **Threatened Rare
Secondary Forest (SF) Grassland (G) Endemic
Logged forest (LF) Cultivated area (CA) Declining Cultural value

MODULE 7

FOCUS GROUP DISCUSSION

Duration: **1** Hour

Objective:

At the end of the session, the participants will be able to acquire knowledge and skills in biodiversity monitoring and evaluation using Focus Group Discussion (FGD) as a methodology.

Materials Needed:

Identification guide, large sheets of paper, markers and snacks

Use of Focus Group Discussion (FGD)

The method comprised the establishment of volunteer Community Monitoring Groups of local people who are encouraged to collect information on a regular basis between quarterly FGD with other stakeholders ***with jurisdictional mandate*** in the area.

The method is useful on land and in freshwater and marine areas. In fresh water and marine areas, the methods can be used to monitor fishery , as well as, status of wetland habitats (e.g. through discussion of trends in use of explosion.

Personnel

The method should be undertaken by person(s) who are **NOT involved in enforcement activities in the same area** (so as to encourage open discussion with local people). **TWO (2)** persons are needed, one to facilitate discussions and one to record the minutes. One of the persons should be a permanent program worker in the area. Two (2) persons can be responsible for 4 - 6 Community Monitoring Groups.

Steps in establishing FGD.

Please see (Annex 1) on Focus Group Discussion to Monitor Biodiversity.

Steps in conducting FGD

1. Make sure that you know the objective of the meeting and how you want to conduct it.
2. Start the meeting by agreeing on the duration. Then agree on the order in which issues should be addressed. Use possible waiting time before all participants arrive for informal discussion and for taking a look in the member's notebooks. Show a strong interest in the member's notebook.
3. Show the report you made from the last meeting and discuss it.

4. Go through the resource uses (that already have decided to monitor) one by one:

    a. let the members present t heir notes on the specific resource use,
    b. Agree on the combined number/quantities they have noted,
    c. Discuss the perceived trends in the resources,
    d. Discuss the trends at the level of extraction,
    e. Discuss significant changes,
    f. Discuss reasons for changes,
    g. Discuss problems and solutions.

During (a) and (b) use the Format 2 Matrix for resources uses. During (c) - (g) use the Format 1 on main issues discussed. Repeat the steps for the other main resource uses.

5. Let the members present the list of priority species observed following Format 3 Matrix for species observed. Discuss the changes in the observations, if any.
6. Discuss any other relevant matters with the Group that you or they think important.
7. Evaluate the session. See if anything needs to be improved.
8. Agree on the time and place of the next meeting. Draw a meeting to a close.

Tips in conducting FGD

1. Ensure that the discussion is a ***dialogue.*** You should encourage everyone to participate, including indigenous people. Make sure the direct resource users are given priority as members in the monitoring group. Try to establish and maintain an atmosphere of trust. Focus on fruitful co-operation with people (not laying down the law) and on listening to people (not teaching them).
2. Do not use leading questions ("is the river water drinkable?') but use open-ended questions ("How is the river water?'). Let the group make their own conclusions of the discussions.
3. If a resource use plan or a development plan is available for the barangay you should know it and include in your discussion the relevant areas of overlap between the plan and the monitoring (such as regulations/actions on fishing/hunting/other lad use). Regularly share the outcomes of the FGD with the barangay officials.
4. Do not shy away from reporting the obvious and continue to do this. At some point this may lead to important discoveries that can be used for management purposes. Remember that no changes are also important information.

DATA SHEETS for FOCUS GROUP DISCUSSION

1. Summary Report

Location:	
Dates:	
Main issues discussed 1. List of resources uses chosen for monitoring 2. other concerns	
Observations or findings:	
Recommendations or conclusions	

2. Format Matrix for Resource Use

Resource Name/ kind	Use	Place Extrac-ted	Method of Extrac-tion	Quantity Extracted by CMG Members	Quantity Extracted by other barangay	Total # of days/hours spent in extraction by CMT members	Use and other remarks

3. Format Matrix for Species Observed

Species	Place	Number	How Observed	Date	Name of Observer	Remarks

4. Format Matrix for Social Issues (Socio-cultural, political, economic)

Nature	Status	Location	Persons Involved	Action Taken

DATA SHEET 7A- FOCUS GROUP DISCUSSION
(Matrix for Resource Use)

Date: _____
Place/ Venue:_____

Reso-urce name/ kind	Use	Place Extrac-ted	Method of Extrac-tion	Quan-tity Extrac-ted by CMG mem-bers	Quan-tity Extrac-ted by other Baran-gay	Total No. of days/hours spent in extraction by CMG members	Use and other Re-marks

Name & Signature of Facilitator:

_____

DATA SHEET 7B – FOCUS GROUP DISCUSSION
(Matrix for Species Observed)

Date:_____
Place/Venue: _____

Species	Place	Number	How Observed	Date	Name of Observer	Remarks

Name & Signature of Facilitator:

_____

DATA SHEET 7C – FOCUS GROUP DISCUSSION
(Matrix for Social Issues)

Date:_____
Place/Venue: _____

Nature	Status	Location	Persons Involved	Action Taken

Name & Signature of Facilitator:

_____

MODULE 8

ACTUAL IDENTIFICATION AND ESTABLISHMENT OF BIODIVERSITY MONITORING AND EVALUATION SITE

Duration: 16 Hours

Objectives:
At the end of the session, the participants will be able to locate and establish the BIOME sites(s) for the area through the use of knowledge and skills gained from lectures and exercises on biodiversity monitoring and evaluation.

Process:

1. Participatory discussion on relevant information and formulation of criteria for the selection of the appropriate BIOME site in the area.
1. Actual site visit to locate and establish the sites for photo documentation, transect walk/cruise/swim and field diary.
2. Actual site visit to inform and gather participants to conduct the focus group discussion session or meeting.
3. Locate, pinpoint or mark the BIOME site(s) on the topographical map of the area for reference.
4. Discuss, summarize and present data or information gathered from photo documentation, transect walk/cruise/swim, field diary and focus group discussion.
5. Store data.

BIOME Site Description Summary

Information	Focus Group Discussion	Field Diary	Photo Documentation	Transect Walk/ Cruise/Swim
Location				
Indicator Species				
Habitat Description				
Community Profile				
Threats				
Significance of the Area				
Current capabilities or capacities				
Other Remarks				

MODULE 9

ORGANIZATION , ANALYSES, INTERPRETIATION OF RESULTS AND STORING DATA

Introduction

All collected data from the different biomonitoring methods are considered raw until these data are organized and analyzed. Organization of data involves arranging and ranking. But this alone would not give much information unless these data are analyzed. Analyzed data would enable one to interpret or give meaning to his collected data, which may provide bases for management interventions, for formulating new management policies, and other actions related to biodiversity conservation.

Objectives:

Using the data gathered during the BIOME identification and establishment, the participants will be able to:

1. To learn how to organize biomonitoring data;
2. To learn some methods of analyzing biomonitoring data;
3. To learn how to interpret biomonitoring data; and
4. To learn how to store biomonitoring data.

Materials:

Data sheets
Writing paper and pen

Methods:

A. Organization of data

1. Alphabetical arrangement

Data such as observed species at certain habitat can be arranged in alphabetical order. Or they can be grouped first before arranging alphabetically. Example, species may be grouped either as flora and fauna. Floral species may then be arranged alphabetically as well as the faunal species. Or one may subgroup each group. For example, under the fauna group, species may further be grouped as mammal, birds, reptiles, amphibians or fishes before presenting the species alphabetically.

2. Chronological arrangement

It is also important to arrange data based on the order of their occurrence or period of their observation.

3. Ranked form

Quantitative data may be ranked in ascending or descending order of their values. This will give us a picture on the position of a monitored species in relation to the other species being monitored.

Example: The following species were observed during a transect cruise on July 31, 2002 at Lake Mainit:

Pedianga - 5
Buguan - 7
Tilapia - 3
Bangus - 4
Kasili - 3
Carpa - 2
water lily - 1
kangkong - 5
water hyacinth - 6

- They can be arranged alphabetically as follows:

Bangus - 4
Buguan - 7
Carpa - 2
kangkong - 5
Kasili - 3
Pedianga - 5
Tilapia - 3
water hyacinth - 6
water lily - 1

- Or they can be grouped first and arranged as follows:

Flora		Fauna	
Local name	Sightings	Local Name	Sightings
Kangkong	5	Bangus	4
Water hyacinth	6	Buguan	7
Water lily	1	Carpa	2
		Kasili	3
		Pedianga	5
		Tilapia	3

- Or maybe ranked as follows:

Flora		Fauna	
Local name	Sightings	Local Name	Sightings
Water lily	1	Carpa	2
Kangkong	5	Kasili	3
Water hyacinth	6	Tilapia	3
		Bangus	4

B. Data Analyses

The data that has been organized already can now be transformed into a more meaningful information by transforming it through analyses. For example, the number of sightings of the species can be transformed into a frequency by dividing the sightings with the corresponding length of the transect, which for discussion purposes, is 1 km.

The table above can now be presented as follows:

Flora		Fauna	
Local name	Frequency (individuals/km)	Local Name	Frequency (individuals/km)
Water lily	1	Carpa	2
Kangkong	5	Kasili	3
Water hyacinth	6	Tilapia	3
		Bangus	4
		Pedianga	5
		Buguan	7

C. Interpretation of results

1. In a regular monitoring that takes several years, it is important to analyze quarterly results every year.
2. Biases are possible to occur. Consider possible sources of biases in interpreting our results. Possible sources are weather, availability of fruiting trees, mating season, local migration, absence of predators, sampling effort, timing of sampling, etc.
3. Consider the following when interpreting results:

    a) Absence of observation does not necessarily mean absence of the species. Example, if eel has not been recorded in the transect, it does not mean eel has becoming extinct in the said aquatic habitat.
    b) A decrease in the frequency of observation does not necessarily mean that the species is actually declining or that hunting and collecting pressures had increased.
    c) An increase in the frequency of observation, does not necessarily mean that the animals being monitored are increasing or that hunting or collection pressures had decreased.
    d) Absence of uniform trend or pattern in your data does not imply errors in your monitoring. It could be due to seasonal fluctuation in the population of the species you are monitoring or you might have too few records to show real trends.

D. Storing data

1. Photocopy, at least in triplicate, all forms or data sheets in all monitoring methods Deposit these to appropriate agencies.
2. Photographs must be printed in at least 3 copies and organized in an photo album.
3. Store film negatives in plastic jackets.
4. Maintain a photo catalog for easy reference as suggested below:

Photo number	Frame number	Film number	Subject	Date taken	Taken by	Locality

5. Classify all data sheets according to methods, place and date monitoring.
6. Ring-bind them.
7. Deposit these files in appropriate agencies.

E. Specific approach for each bio monitoring method

Focus Group Discussion Method

Data Organization

1. Draw up a report using the specified data sheets for FGD method after each focus group discussion. This report must include the following:

    - Main issues discussed, a narrative and detailed description of the discussion of perceived changes, problems and solutions related to key resource uses and issues.
    - A matrix for resource uses
    - A matrix for species observed
2. Take all reports from the last quarters. List all the monitoring themes. Divide them into those that indicate change and those that do not.

Analysis and Interpretation

- Do the findings correspond to your expectations?
- Compare the findings with the results of monitoring in previous quarters.
- Have several Community Monitoring Team reported the same problems?
- Are there perceived trends that are common to several groups?
- Are the changes caused by a change in monitoring routines (e.g. when a member of the group begins farming instead of fishing)

Field Diary Method

Data Organization:

1. Take your notebook with your field diary.
2. Arrange all resource uses and species within a certain area and a certain period in alphabetical order.

Analysis:

1. Calculate the number of records of each. Example: fern 1+1+1 = 3 records
2. Calculate the number of individuals or bundles or bunches (or any unit). Example: ferns 2+3+2 = 7bundles
3. If you have a map, plot those records you find particularly interesting (threats, resource use, threatened species etc.)

Interpretation:

1. Are there indications of over-harvesting situations, or consistent resource use problems that need to be discussed with the villagers at a community meeting?
2. Are there any observations that are so serious that they need immediate attention? (e.g. large number of narra flitches)
3. Do the findings correspond to your expectations?
4. Compare the results of monitoring in previous quarters. Are there major changes in numbers or distribution of records of resource uses and species?
5. Are the changes not caused by a change in patrol routines (change in sites visited, duration of time on each site, etc.) Compare with the results of other methods.
6. If there are changes not caused by a change in patrol routines or natural background conditions, then assess the reason for the change, the importance of the change and whether any management intervention is appropriate.

Photo Documentation Method

Organization of the Photos:

1. Take the photo album with the photos.
2. Look at all photos taken from the same view-point.
3. Begin with the oldest photo.
4. Have any changes occurred over the months?
5. Continue with photos from the other view-points.

Analysis and Interpretation:

1. If there are major differences between the photos, you should carefully analyze whether they are caused by a change in the natural background conditions. Perhaps the light, the cloud cover or the weather were different at the time when the photos were taken. Or maybe a difference is merely the result of the photos being taken in different seasons.

2. F there are differences that are not caused by changes in the natural background conditions, then assess the importance of the differences. For instance, check whether the same differences occur in photos from other view-points.
3. If you consider the differences are important, then try to identify the reason for the differences. Example, differences may be caused by landslides, logging, etc.
4. If differences are caused by a change in land-use or size of vegetation type blocks, you should compare this with the results of the other methods and assess whether any management intervention is appropriate.
5. See whether selected photos can serve as a basis for discussing management initiatives and for demonstration purposes.
6. Quantify the differences by calculating how many photos show significant differences in land-use or vegetation, or even by estimating for each photo the proportion of the photographed land that has been subject to change.
7. After having looked at the photos, return them to the photo album.

Transect Walk

Data Organization:

1. Take your transect walk field data sheets.
2. For each transect walk, score the observations in your data sheet according to species and resource uses.

   Example:

Species	**Score**	**Sum**
Deer	1	1
Pigeon	1111	4

Resource use	**Score**	**Sum**
Persons	11	2
Rattan gatherer	111	3

Analysis:

1. For each species or resource use, divide the sum by the length of your transect in kilometers to give you the frequency of your observations per kilometer. After a few years, a graph can be made showing the relative abundance of a species or resource use per quarter or per year.

Example:

Species	Sum	Individuals/km	Conservation Status
Deer	1	0.5	Critically endangered
Pigeon	4	3.5	common

Resource use	Sum	Individuals/km	Conservation Status
Persons	2	1.0	
Rattan gatherer	3	2.0	

2. Compare the results with results from the same transect in previous quarters (do not compare between different species or resource uses, or between different transect routes).
3. Do the findings correspond to your expectations? Are there major changes in the relative abundance of any species or resource use?
4. If there are major changes, assess if the data is sufficiently extensive or if these changes have been caused by a change in monitoring routines (e.g. timing of transect walk) or by seasonal or annual change in the ability to record wildlife.
5. When analyzing data based on foot prints only, record number of signs of organism instead of number of individuals.
6. Conservation status is based on IUCN status for flora and fauna.

DATA ANALYSIS - Form 1

TRANSECT WALK
SPECIES Tally Sheet Data

Species	Tally	Total

DATA ANALYSIS - Form 2

TRANSECT WALK
RESOURCE USE Tally Sheet Data

Types of Resource Use	Incidence/Frequency	Total

DATA ANALYSIS – Form 3

TRANSECT WALK
TOTAL SPECIES/DISTANCE

Species	Total	Individuals / km	Conservation Status

MODULE 10
PRESENTATION OF DATA

Duration: 1 Hour

Introduction:

After the data has been organized and analyzed, they are ready for presentation to the stakeholders in the area. The purpose of presenting data is to effectively *communicate the results of the monitoring and evaluation activity to the community and other stakeholders and to derive possible management interventions.*

The main aim of the data presentation is to *give the community and other stakeholders a clearer picture of what is happening in the area based on the monitoring and evaluation activities that have been conducted.* The presentation of data should therefore facilitate easy understanding of the important features of the data*. It should enable them to analyze trends and relationships and compare differences between and among parameters of what* are being monitored.

Objective:

Using the data and/or information analyzed and organized, the participants will be able;
1. To acquire knowledge and skills on various ways to present biodiversity monitoring and evaluation data and/or information to the community and other stakeholders.
2. To present biodiversity monitoring and evaluation sites organized data/information.

Ways of data presentation:

1. Textual presentation

This method of presenting results of monitoring relies solely on the discussion of the results, using words and numbers. It is delivered either in written or oral forms and is used together with tabular or graphical presentations. This method of data presentation has several weak features compared with either the tabular or graphical presentation. Words are often insufficient to illustrate or communicate to the participants the patterns, trends and relationships that the results imply.

2. Tabular presentation

A more convenient way of presenting the data is by use of ***tables***. Raw and analyzed data are first organized according to some convenient categories, classes or sub-classes and then arranged systematically in rows and columns of a table. Each table should present only a single set of related data rather than a mixture of unrelated data sets, to avoid confusion to the audience. A well-made table should have minimal use of text except in the title, to describe the content of the table. When carefully done, this type

of data presentation allows the audience to readily make comparison between and among subjects being monitored.

3. Graphical presentation

Commonly used methods of graphical presentation include **pictograph, bar graph and pie chart.** Graphical illustration helps the audience to visualize the trends in the monitoring data being presented. The use of different colors and shapes can further enhance the differences and similarities in the monitoring data. When done properly, this method of data presentation is even more effective than tables in communicating the important features of the monitoring data.

Important steps in the presentation of biodiversity and evaluation results or analyzes to the community and other stakeholders.

1. Decide who will make the presentation of the biodiversity monitoring and evaluation results to the community and other stakeholders.
2. Schedule the presentation with maximum availability of expected l participants.
3. Prepare the necessary materials, audio-visuals, venue and other facilities for the presentation. Conduct a dry run of the presentation to make any needed adjustment.
4. Make the presentation in a way that ensures active participation of the community members, community monitoring team and other stakeholders. Summarize the most important message. Leave time for open forum.

MODULE 11

FORMULATION OF BIODIVERSITY MONITORING AND EVALUATION (BIOME) ACTION PLAN (One Year)

Duration: 3 Hour

Objective:

At the end of the session, the participants will be able to characterize the appropriate biodiversity monitoring and evaluation action plan in their area.

Process:

1. Review or assess and discuss the baseline information or study results, monitoring and evaluation studies findings and recommendations, biodiversity threats and significance of the area, available resources and capability of the community and other stakeholders.
2. Formulate the appropriate, clear and doable conservation goals and objectives for the area.
3. Identify the most efficient tools, strategies and activities for biodiversity monitoring and evaluation to address threats, improve current capabilities and maintain conservation status or efforts of the community.
4. Determine the functional decision-making structure, capable and qualified CoMTeam for biodiversity conservation management and/or implementation.

BIOME Action Plan Matrix

Baseline Situation (based on PRA, RRA, secondary data and TRA)	Biodiversity Conservation Goals and Objectives (based on CBRM plan/site)	Biodiversity Monitoring and Evaluation		Expected Output	Assumptions
		Strategies	Activities		