

MANGROVE, SEAGRASS, & CORALS

HABITAT ASSESSMENT METHOD

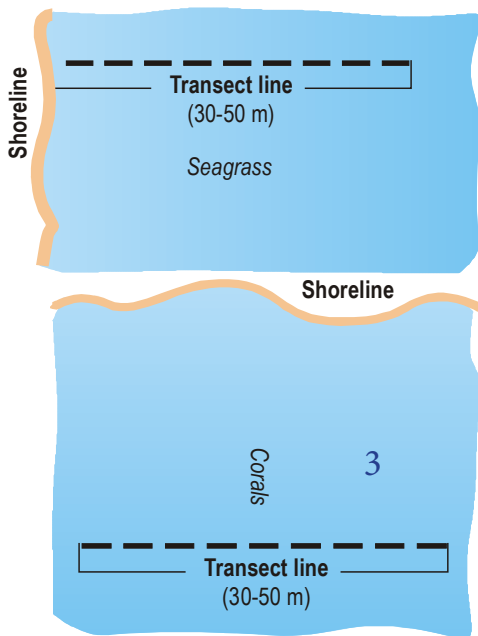


KEY CONTENT POINTS:

- Habitat assessment is a process designed to evaluate the condition and structure of environmental habitats such as coral reefs, mangrove forests, and seagrass beds.
- The Participatory Coastal Resource Assessment (PCRA) looks into the current conditions and relative abundance of these coastal resources/ecosystems using a simplified scientific method that involves the use of transect lines and/or quadrats in the assessment process.
- In all 3 habitats, a transect will be utilized.
- Quadrats are effective tools to determine abundance/condition of the assessed habitat in terms of percentage cover observed.
- Percentage cover of the assessed habitat is determined through actual observations using the habitat rating criteria.

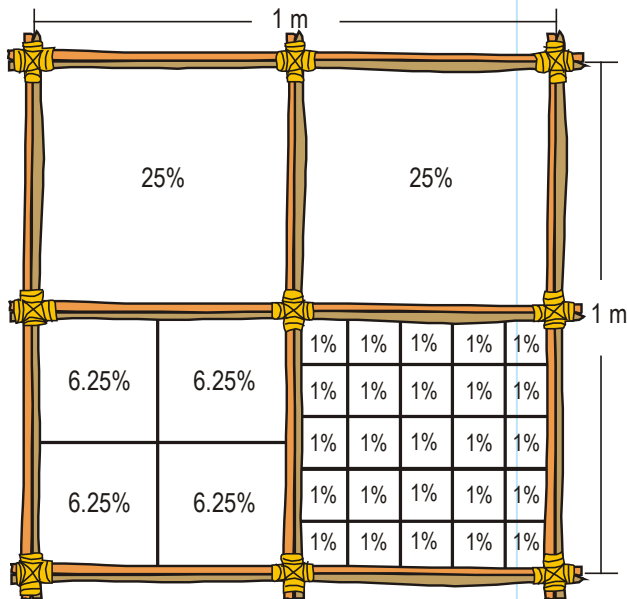
USE OF TRANSECT LINES

- The line may be an abaca rope, a nylon string or a fancy transect made of fiberglass. If it's not the commercial kind, calibrate the lines beforehand with one meter intervals.
- If the habitat starts beyond the shoreline, take note of the distance between the shoreline and where the habitat begins and start laying the transect line perpendicular to the shoreline in the case of seagrasses, and parallel to the shoreline in case of corals.
- To ensure that the transect will be straight, utilize landmarks as a guide or use the triangulation methods, a compass or even a Global Positioning System (GPS).

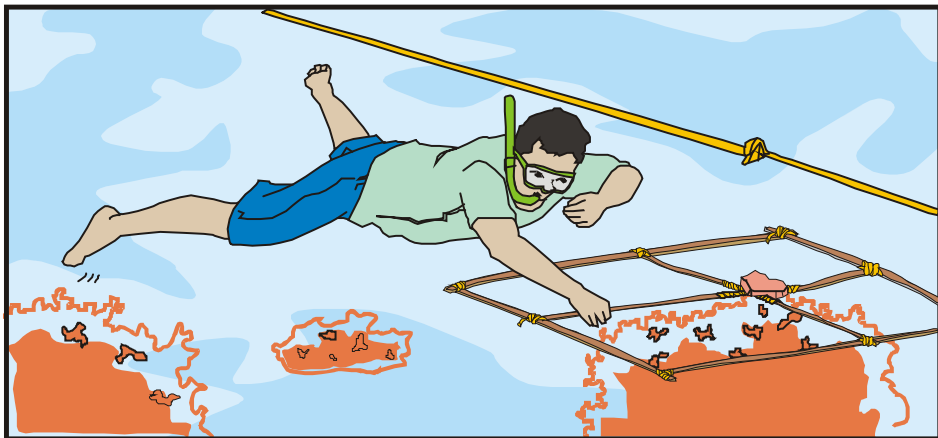


USE OF QUADRATS

- A quadrat generally measures 1 m x 1 m. It may be made of aluminum or PVC pipes with smaller grids inside or simply of small tree branches or bamboo poles tied together.
- Placement of the quadrat follows the transect line and is laid down in pre-determined specific intervals.
- Quadrats are established every 10 meters along the transect line to serve as the representative samples of the assessed habitat.
- A 1 m x 1 m quadrat is divided into 4 subsquares for easy percentage cover estimation of the assessed coral or seagrass habitat.
- It is recommended that a suitable number of transect lines and quadrats be used to serve as samples of the assessed habitats.

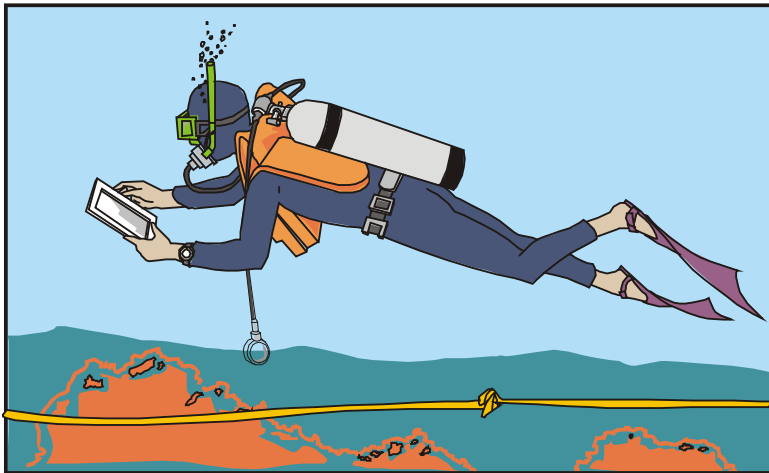


1. SNORKEL SURVEY



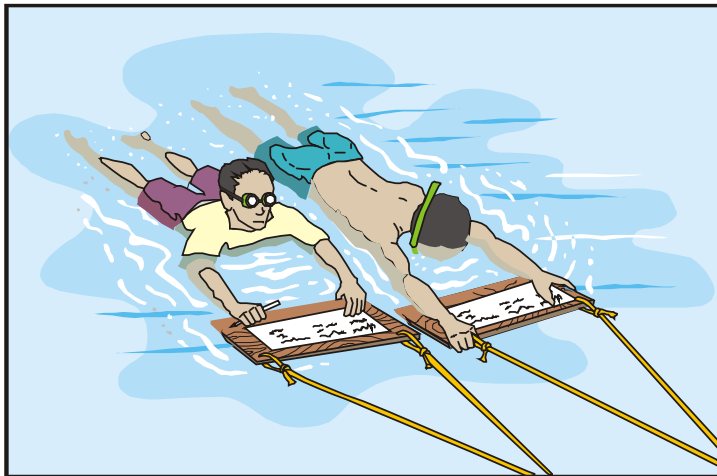
- Using snorkeling equipment or goggles, PCRA participants lay a transect line on the bottom part of the assessed area and record its depth.
- The snorkeler swims over the transect and estimates the percentage cover of the assessed habitat within 1 m on either side of the transect.
- May employ the use of quadrats which are laid down on the sea floor at specific intervals following the transect line.

2.POINT INTERCEPT METHOD



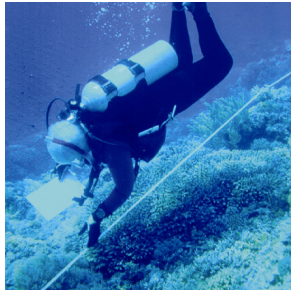
- Used by more experienced researchers to precisely estimate and record the relative abundance of living and non-living things on the reef bottom observed within a defined area.
- A 50 m transect line is laid parallel to the shoreline and should be kept at the same depth.
- When using scuba, a 6-7 m depth is standard. Readings are taken every 25 cm along the line and entered into data sheets. Observations and recordings are taken from one end of the line to the other.

3. MANTA TOW METHOD

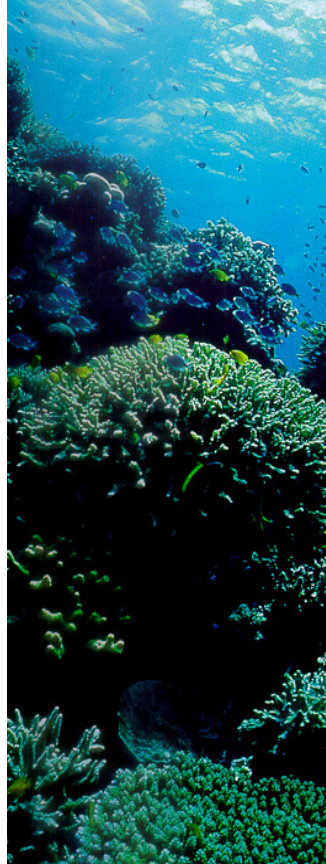


- A manta tow survey is the observation of an underwater area of good visibility by a snorkeler who is being pulled by a small boat.
- Manta tow participants note their observations on the condition/abundance of the assessed habitat at specific intervals.
- Useful in generating a “big picture” of the area as the use of a boat allows the snorkeler to cover longer distances.

CORAL HABITAT ASSESSMENT

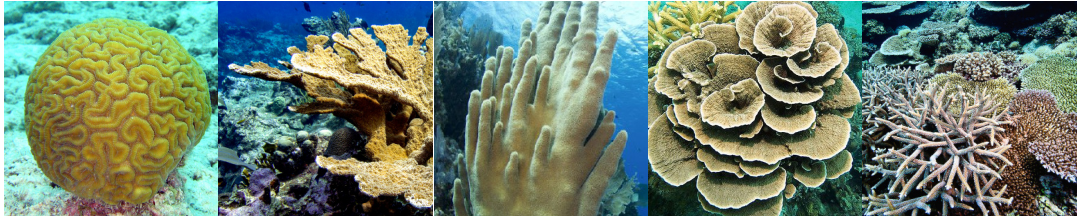


The goal of the assessment is to measure the coral cover percentages within the assessed area through observation and rational estimations of each habitat component. Percentage cover will not only refer to the living corals (hard and soft corals) but also the substrate (dead standing corals, coral rubble, hard rocky surface, sand). All data are then entered into a transect data form.



CORAL REEF HABITAT COMPONENTS / SUBSTRATES

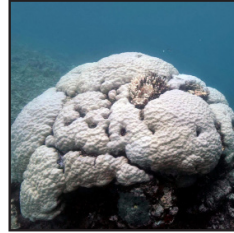
- Live Hard Coral (LHC) – coverage of stony or hard corals on the bottom or part of the bottom



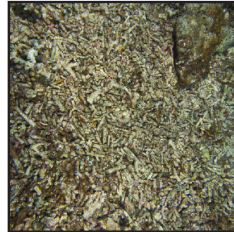
- Live Soft Coral (LSC) – coverage of soft corals attached to the bottom



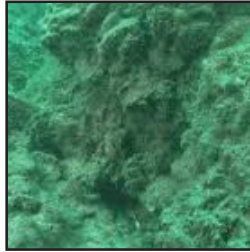
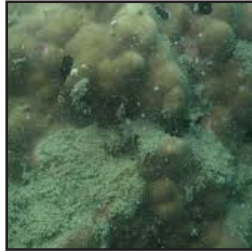
- Dead Standing Coral (DSC) – recently killed coral still attached and recognizable at the bottom in original upright position



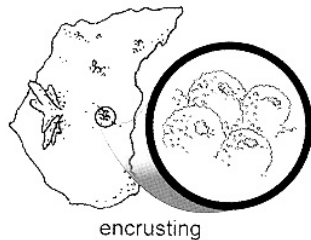
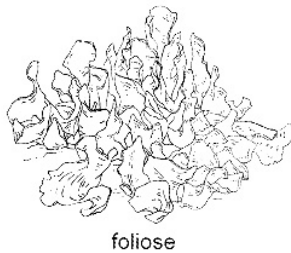
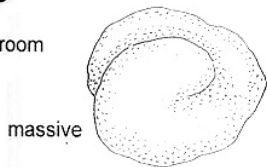
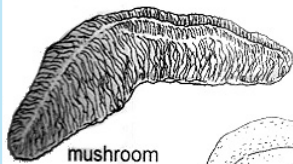
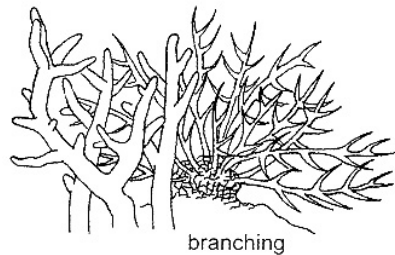
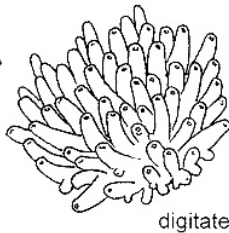
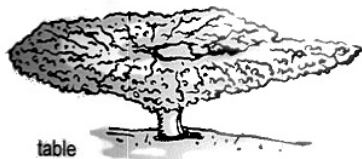
- Coral Rubble (CR) – coverage of loose broken fragments of stony corals or coralline algae on the bottom, with a diameter greater than 1 cm



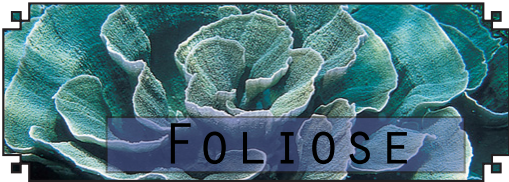
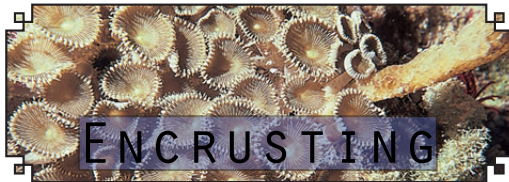
- Hard Rocky Surface (HRS) – consolidated hard bottom or large blocks of hard reef material not attached to bottom or easily moved around
- Sand/Silt (S)



CORAL LIFE FORMS



- Branching – at least two degrees branch
- Encrusting – major portion attached to substratum as a laminar plate
- Foliose – coral attached at one or more points, leaf-like or plate-like appearance
- Massive – solid boulder or mound
- Sub-massive – tends to form small columns, knobs or wedgesplate
- Mushroom – solitary, unattached or free-living corals



CORAL REEF HABITAT ASSESSMENT FORMS

CORAL REEF HABITAT ASSESSMENT TRANSECT DATA									
Date: _____					Location: _____				
Transect No.	Quadrat No.	LHC	LSC	DSC	CR	HRS	S	Total	Other Observations

MANTA TOW DATA FORM								
Site name: _____				Date: _____				
Tow No.	Location	Hard Coral	Soft Coral	Dead Standing Coral	Coral Rubble	Hard Rock Surface	Sand	Total

POINT INTERCEPT METHOD DATA FORM

Site Name: _____

Municipality/Province: _____

Date: _____

Observer: _____

Transect No. _____

Depth: _____

Benthic lifeforms/Coral reef components	Number of sampling points found	Estimated percentage cover
Live Hard Coral		
Live Soft Coral		
White Dead Coral		
Dead Coral with Algae		
Turf Algae		
Fleshy microalgae		
Coralline algae		
Sponges		
Other animals		
Seagrass		
Rubble		
Rock		
Sand/silt		

SEAGRASS HABITAT ASSESSMENT



Seagrass habitat assessment is highly similar to coral reef assessment and the quadrat size used is 1 x 1 m. The transects and quadrats are laid where the seagrass habitat begins and end where the observed habitat ends. Int ervals between transects and between quadrats are determined by the size and expanse of the habitat.

PCRA for seagrass generally employs the snorkel method. Participants must be familiar with the various seagrass species as species identification is an important component of the PCRA.

The Philippine has 16 known species of seagrass, the second highest in the world to Australia's 23.



SEAGRASS HABITAT ASSESSMENT FORM

SEAGRASS HABITAT ASSESSMENT TRANSECT DATA

Date: _____

Location/Area covered: _____

Transect No.	Quadrat No.	Species	% cover	Substrate	Other Observations



SPOON SEAGRASS

Halophila ovalis

Family: Hydrocharitaceae

BECCARI'S SEAGRASS

Halophila beccarii

Family: Hydrocharitaceae



FERN SEAGRASS

Halophila spinulosa

Family: Hydrocharitaceae



SICKLE SEAGRASS

Thalassia hemprichii

Family: Hydrocharitaceae

NEEDLE SEAGRASS

Halodule uninervis

Family: Hydrocharitaceae



NEEDLE SEAGRASS

Halodule uninervis

Family: Cymodoceae



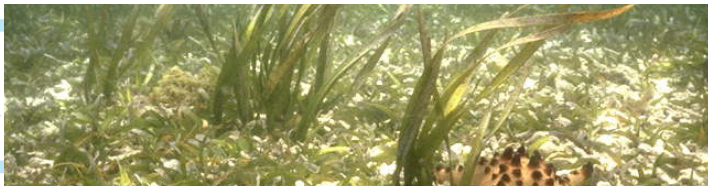
RIBBON SEAGRASS

Cymodocea rotundata

Family: Cymodoceaceae

EEL SEAGRASS

Enhalus acoroides



NOODLE SEAGRASS

Syringodium isoetifolium

Family: Cymodoceaceae



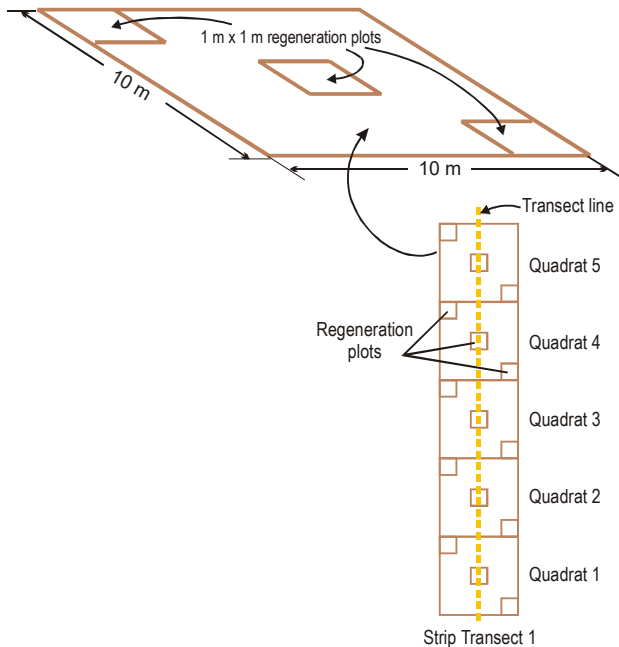
MANGROVE HABITAT ASSESSMENT

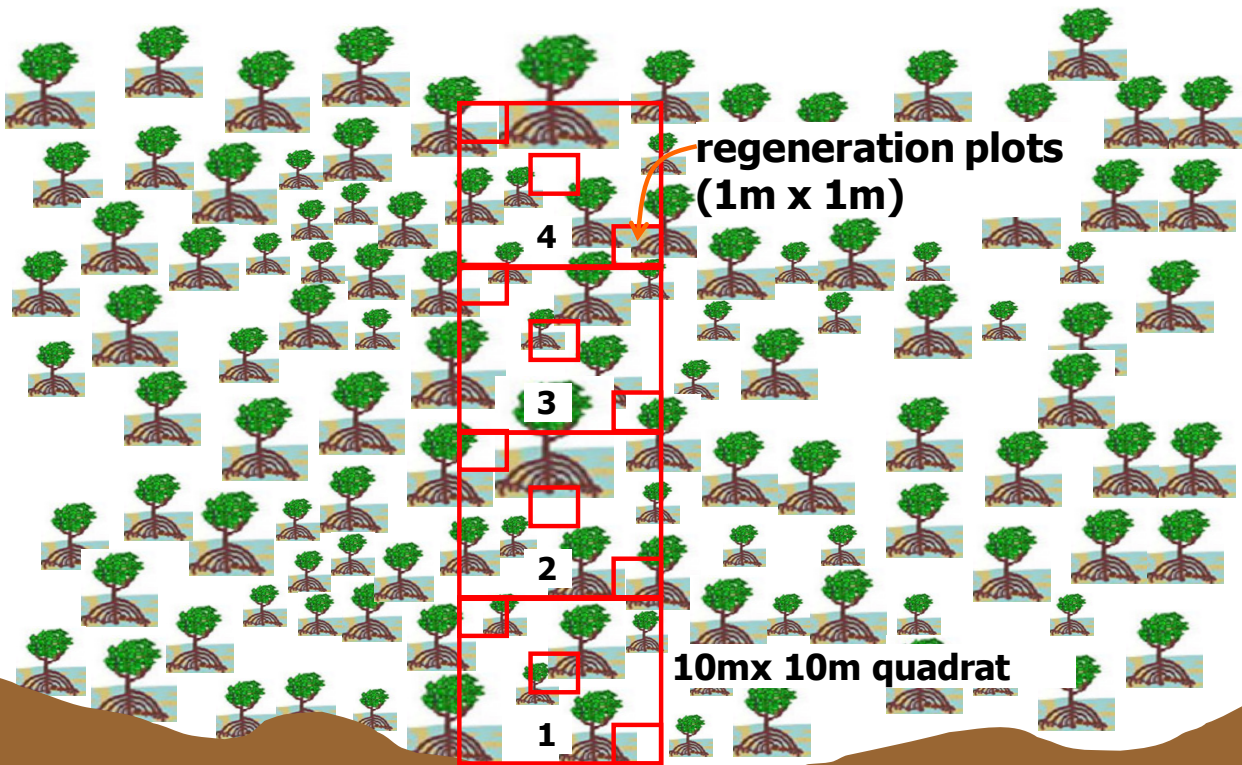


In mangroves, the area of investigation is 10% of the total mangrove forest. Transect lines and quadrats will be used.

In mangrove assessment, the percent crown cover, number of regeneration per square meter, average height of trees and number of species observed are calculated/estimated.

- Longer transects and larger quadrats are called for. Transect lines may run from 20-100 m, depending on the size or expanse of the mangrove habitat. Quadrats measuring 10 x 10 meters are also called for.
- Each transect should extend seaward or perpendicular to the shoreline and should start where the mangrove habitat starts, and ends, where the habitat ends.
- A series of 10 m x 10 m quadrats are established along the transect line. The position of the quadrats should be consistent throughout the survey. The position of the quadrats should be consistent throughout the survey.
- There will be no interval between the quadrats.
- Within the 10 m x 10 m quadrats, establish 3 smaller quadrats of 1 m x 1 m equally distributed as regeneration plots.
- With the strip transect and quadrats established, the PCRA participants count the number, estimate the height and crown diameter of mature trees per species in each quadrat.
- Each kind of mangrove located within the quadrat will be counted according to the stage of its life cycle or age: seedling, sapling, and mature trees.
- Data recorded on waterproof slates are later transcribed onto a data sheet for better organization.





SEEDLING – up to 1 m height and a trunk size less than 4 cm in diameter



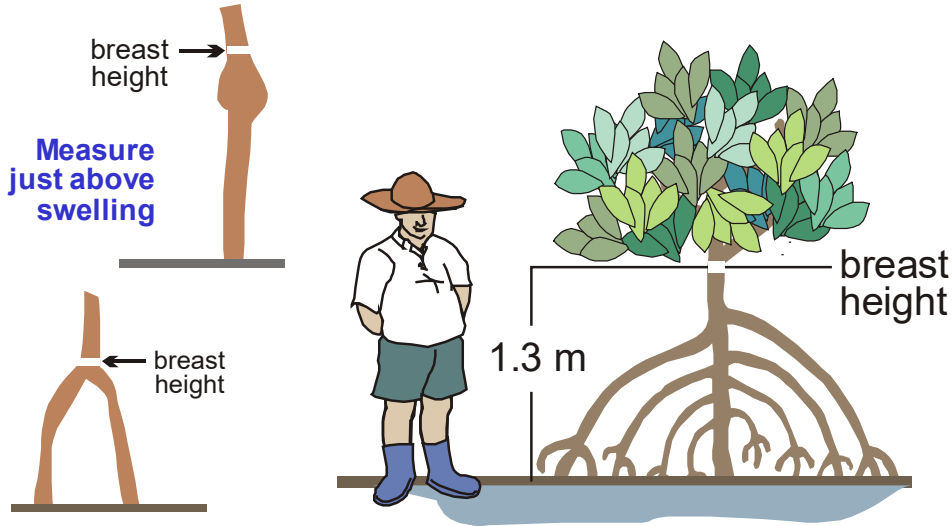
SAPLING – greater than 1m height and a trunk size of 4cm in diameter



MATURE TREE – greater than 1 m height and a trunk size greater than 4cm in diameter



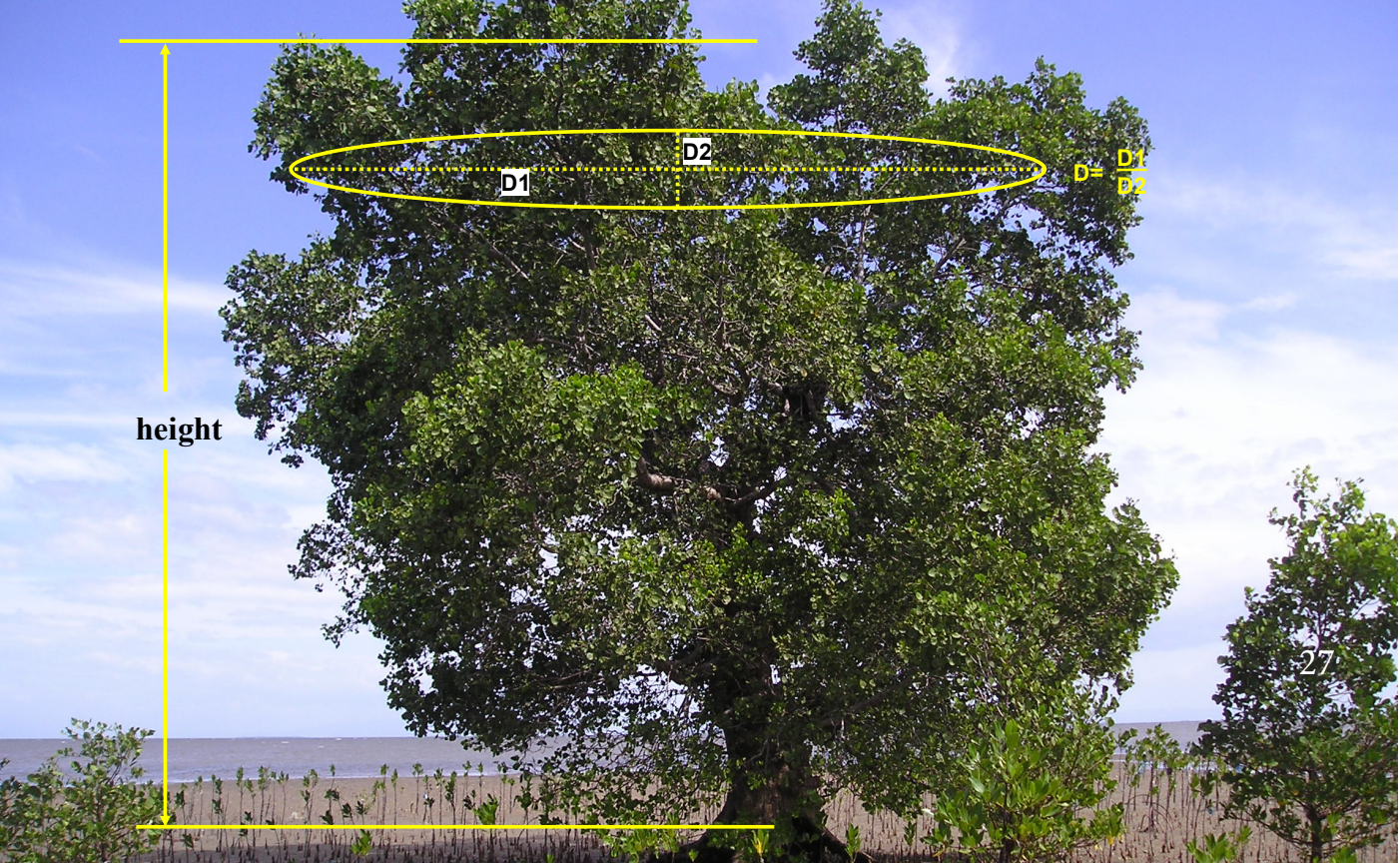
IF THE GROWTH OF MANGROVES IS IRREGULAR,
DETERMINE BREAST HEIGHT BY ANY OF THE FOLLOWING:



MANGROVE HABITAT ASSESSMENT AND REGENERATION DATA SHEETS

DATA SHEET FOR MANGROVE ASSESSMENT						
Transect No. _____			Location _____			
Recorder: _____			Site _____		Barangay _____	
Date _____			Municipality _____		Province _____	
Quadrat No.	Tree No.	Substrate	SPECIES	Total Ht. (m)	Crown diameter (2 readings)	OBSERVATIONS (disturbance, threats, uses, cuttings, garbage, fauna)

DATA SHEET FOR MANGROVE REGENERATION				
Transect No. _____			Location _____	
Recorder: _____			Site _____ Barangay _____	
Date _____			Municipality _____ Province _____	
Quadrat No.	Plot No.	SPECIES	Count	REMARKS (ave. height, status, etc.)
1	1			
	2			
	3			
2	1			
	2			
	3			



height

D1

D2

$$D = \frac{D1}{D2}$$

FISH VISUAL CENSUS



Fish visual census is the identification and counting of fishes observed within a defined area.

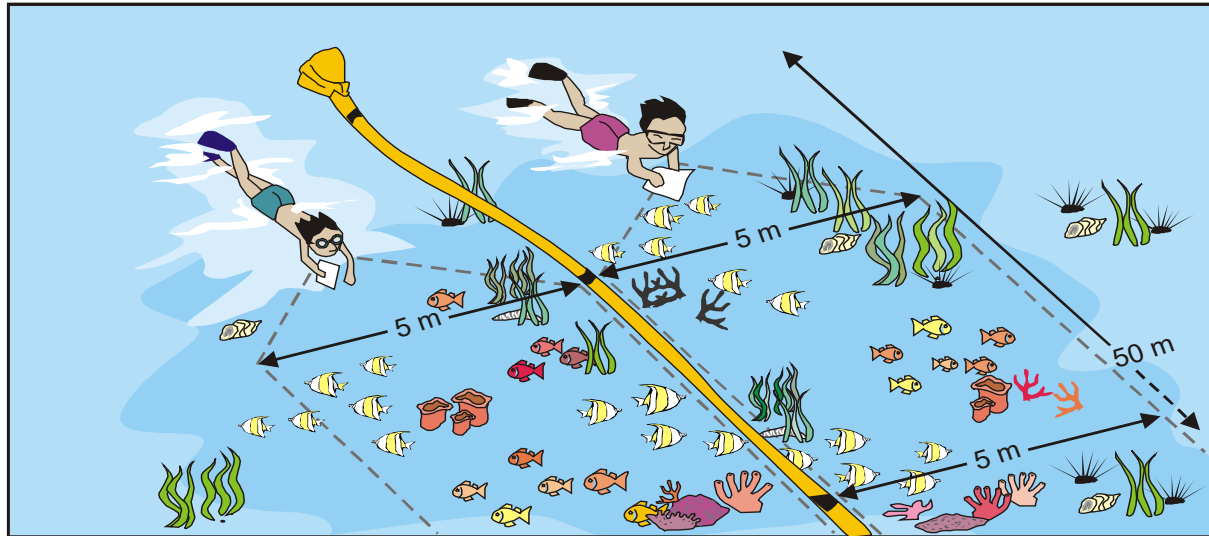
It is used to estimate the variety, numbers and even sizes of common, easily-seen, and easily-identified fishes in areas of good visibility. This information may reflect the health of the fish stocks within the surveyed area.

Participants must be familiar with the various reef fishes. If possible, a laminated fish identification guide should be prepared for participants' reference during the conduct of the fish visual census.

Faster moving fishes are counted before the slower moving fishes. Each transect covers an area of 500 m².

Starting at one end of the line, each observer floats on each side of the transect line while observing 5 m to his/her side of the transect and forward to the next 5-m mark. Both observers swim to and stop every 5 m along the line to record the counts of fish per size class until the transect is completed.

Total counts are then transcribed onto the data form.





Laminated fish identification guide sample

FISH ABUNDANCE DATA FORM

[illegible]

Sources:
Walters, J.S., J. Maragos, S. Siar and A.T. White. 1998. Participatory Coastal Resource Assessment: A Handbook for Community Workers and Coastal Resource Managers. Coastal Resource Management Project and Silliman University, Cebu City, Philippines

Lecture/Discussion # 9:
Habitat Assessment Methods.ppt
USAID, the FISH Project and DA BFAR



Investing in rural people

