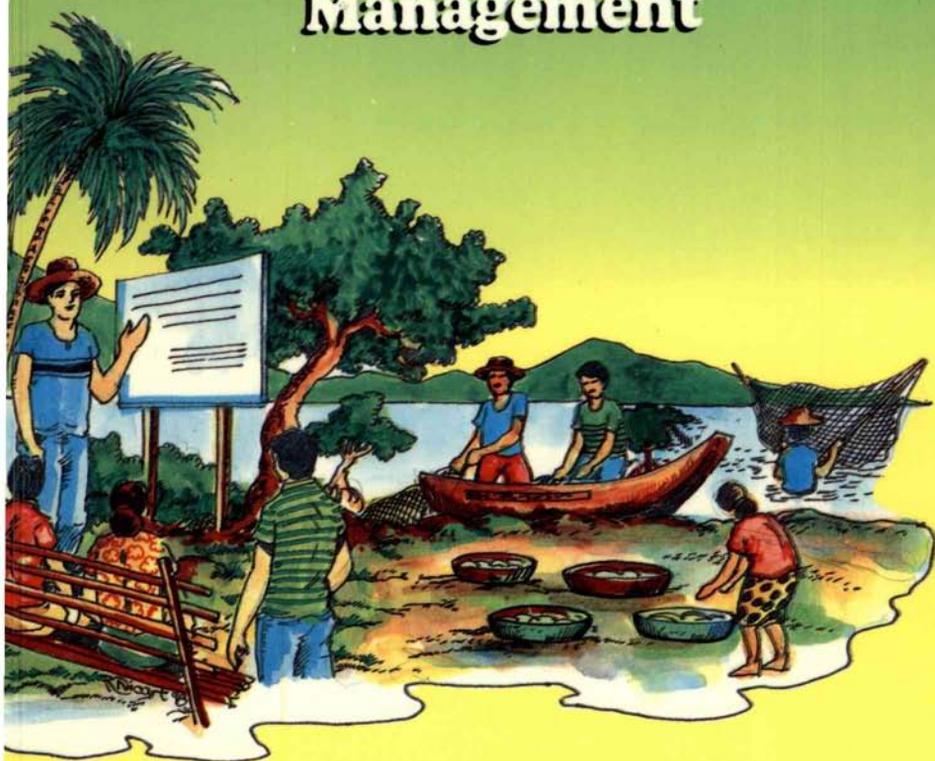


Volume 2

Tools and Methods



Participatory Methods in Community-based Coastal Resource Management



Participatory Methods in Community-based Coastal Resource Management

VOLUME 2 Tools and methods

1998

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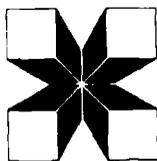
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Funding partners



Canadian International
Development Agency

IDRC



C A N A D A

International Development
Research Centre



Royal Netherlands Embassy

and



Small Islands Agricultural Support
Services Program



Western Samar Agricultural Resources
Development Programme

Collaborating organizations



IIRR

International Institute of
Rural Reconstruction

IDRC



International Development
Research Centre

IICLARM

International Center for Living
Aquatic Resource Management



Voluntary Service Overseas



SEAMEO Regional Center for
Graduate Study and Research in
Agriculture



Small Islands Agricultural
Support Services Programme



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Agricultural Support Services Programme (SMISLE)

Alan White, Coastal Resource Management Project (CRMP)

Acknowledgement

Publications such as the “Participatory Methods in Community-based Coastal Resource Management” are products based on knowledge acquired from direct field experience of individuals and institutions operating at the community level. IIRR relied heavily on the experience of partners and peers engaged in the field of community-based natural resource management. These supporters include a large number of people who have contributed in various capacities over time.

First on the scene were Ken Mackay, International Development and Research Centre of Canada (IDRC); Julian Gonsalves, International Institute of Rural Reconstruction (IIRR); and Gary Newkirk, Dalhousie University’s Coastal Resources Research Network (IDRC/CoRR). Together they recognized the need for a publication that documents participatory methods used specifically for coastal settings. At that time, it was felt that IIRR’s experience with participatory methods for rural development would play an important role in the overall project. Similarly, it was felt that the wealth and depth of experience in community-based coastal resource management in the Philippines warranted its selection as the venue for the participatory workshop.

An organizing committee was initiated including (in addition to those above) Gregory Ira and Joy Rivaca-Caminade (IIRR); Bob Pomeroy, International Center for Living Aquatic Resource Management (ICLARM); Francisco

Fellizar, SEAMEO Regional Center for Graduate Study and Research in Agriculture (SEARCA); Rathin Roy, Bay of Bengal Programme (BoBP); Rebecca Rivera, Tambuyog Development Center (TDC); Annette Junio-Menez, University of the Philippines at Diliman, Marine Sciences Institute (UP-MSI); Elmer Ferrer, University of the Philippines at Diliman, College of Welfare and Social Work and Community Development (UP-CWSWCD), Geoff Brown, Voluntary Service Overseas (VSO); Marie Grace Madamba-Nuñez, Philippine Partnership for the Development of Human Resources in Rural Areas (PhilDHRRA); Alan White, Coastal Resource Management Project (CRMP); Herman Ongkiko, Small Islands Agricultural Support Services Programme (SMISLE); and Minerva Gonzales, Community Extension and Research for Development (CERD).

The documentation of the experiences of these committed individuals and each of the contributing authors into the final sourcebook could not have taken place without the financial support of donors. We are grateful to the following organizations and their representatives for recognizing the value of the sourcebook and having confidence in our capacity to produce it. Initial financial support came from Ken Mackay of IDRC. Additional financial support came from Mr. Paul Huddleston and Zenaida Cuenca-Forbes of the Canadian International Development Agency (Environment Development Fund), Ambassador Eric T.J.T. Kwint of the Royal Netherlands Embassy (Small Embassy Projects Programme), Herman Ongkiko of SMISLE and David J. Moles of the Western Samar Agricultural Development Programme (WESAMAR).

IIRR also remains appreciative of the support it has received (over the years) from the United States Agency for International Development (USAID) and the Ford Foundation (FF). Such institutional support allows IIRR to leverage resources and foster partnerships with other institutions.

The entire list of participants is provided in this sourcebook. Their contributions go well beyond their respective papers. Each participant added value to the work of their colleagues.

There are, however, certain individuals that deserve special mention for the special effort they provided. First, we would like to thank the VSO volunteers who provided editorial support during the workshop: Arlene Brooks, Cathy Rosario, Sarah Jane Curran, Maeve Nightingale, Stuart James Green and John Purvis. Arlene Brooks and Cathy Rosario extended their stay with us to help integrate third round revisions into the papers. Their voluntary support was characteristic of the commitment of VSO to assist local organizations in the pursuit of CBCRM.

Marie Grace Madamba-Nunez provided IIRR staff with critical technical support in the post-workshop editing of the papers. Dr. Gary Newkirk provided extremely valuable comments to the various drafts.

The International Institute of Rural Reconstruction would like to thank these individuals and each of the authors and support staff for contributing their time and experience toward the successful completion of this publication.

Mabuhay!

Introduction

The need for a sourcebook on participatory methods for community-based coastal resource management (CBCRM) arose from the absence of practical field-tested reference materials that merge the participatory nature of CBCRM with the unique conditions of the coastal zone. Field workers from government, non-government, community-based and even research organizations are increasingly applying participatory and community-based approaches (developed primarily in terrestrial settings) to work in the coastal zone.

While the general principles of participatory methods for conservation and development apply equally well to coastal conditions, the specific tools and their applications will differ. Practitioners of CBCRM have been developing and adapting participatory tools to their unique environments for many years now.



There is no one way to do community-based coastal resource management. Its concepts and processes continue to evolve as field practitioners relentlessly explore, innovate and generate new ideas and techniques in managing the coastal environment. This sourcebook is an attempt to document the various tools and methods developed in the course of doing CBCRM as actually and effectively employed by field practitioners in countries like the Philippines, Indonesia, India and other Asian countries.

The sourcebook is heavily biased towards participatory methods because the authors believe that such processes not only intend to empower, but *do* empower. Participatory approaches also generate relevant information from local and indigenous knowledge that is crucial to community-based coastal resource management.

The sourcebook is designed for use by people working directly with coastal communities to help strengthen their capability to manage, protect and develop their local resources. These include community organizers, community leaders, researchers, other field workers who may come from NGOs, GOs or research and training institutions. The tools are meant to guide users and not to be taken as rigid formulas. The tools can generally be applied or adapted to all types of coastal settings with a little resourcefulness and creativity.



The first booklet

The first section of the sourcebook zooms in on the coastal zone, the principles and components of community-based coastal resource management, community organizing as an underlying and integrating component to CBCRM and an overview of participation. This section differs from the rest of the sourcebook because it is more of a “reader” with basic background information; a foundation for the rest of the sourcebook.

The paper on the coastal zone emphasizes the challenges of the terrestrial and marine interface including the following characteristics: the prevalence of open access conditions; predominance of common pool resources; the mobile nature of many of the resources; the unique influence of temporal (e.g., lunar) cycles; the frequently strong gender differentiation in productive roles; and the dual (i.e., terrestrial and marine) nature of coastal livelihoods.

The paper on community-based natural resource management presents the evolution, principles, stages and strategies of CBCRM. CBCRM is presented as a framework for coastal conservation and development in partnership with community based organizations, local governments, non-governmental organizations and others.

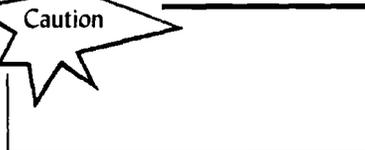
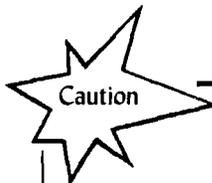
Community organizing (CO) is covered in the introduction because of its central role in integrating CBCRM activities. Participants recognized the diversity in CO approaches and the political and administrative obstacles in some countries. Nevertheless, the depth of experience and central role of CO in the Philippines (a recognized leader in CBCRM) supported its inclusion in the introduction.

Finally, the issue of participation itself is presented. The rationale for participation, the forms of participation, the obstacles to participation and the relationship between participatory approaches and non-participatory approaches are discussed. General guidelines for using participatory methods are also included.

The types of participatory methods presented in the sourcebook and the degree to which they promote participation varied greatly. The methods range from survey type questionnaires (less participatory) to locally designed wealth ranking tools (more participatory). A common sentiment was that the only “correct” level of participation is that which is acceptable to the local community members.

The second booklet

The main section of the sourcebook is the step by step description of various participatory methods field-tested by the authors and their organizations. A simple outline was devised for most of the topics in this section and include the following headings: definition, purpose, materials, suggested approach, outputs, strengths, weaknesses and variations. Examples were commonly used to illustrate key points. In most cases, the examples were based on actual experiences. Cautions highlight areas where potential problems are likely to occur. Icons were also used for these special considerations.



The methods can be categorized in a number of ways: 1) the type of tool employed (e.g., matrix, diagram, timeline); 2) the purpose of the tool (e.g., temporal analysis, spatial analysis, comparison); and 3) the stage in the project cycle when it is applied (e.g., analysis, planning, implementation). Eventually, the final groupings adopted for the sourcebook emphasize the type of tool and its purpose. The judicious use of cross-referencing was used to address any weakness in the categorization of the topics.



The sourcebook is not intended to be read from cover-to-cover. The organization of the book does not imply a sequential order for using the tools or any relative importance of particular tools.

The third booklet

While the primary focus of the book is on methods for analysis, planning, monitoring and evaluation, the authors felt strongly that a description of a few critical “implementation interventions” was warranted. Hence, the topics on mangrove reforestation and establishment of marine protected areas. The sourcebook also recognizes the importance of gender and indigenous knowledge as cross cutting themes, thus their inclusion.

In addition, appendices including a list of relevant equipment and a matrix of livelihood options for CBCRM are included.

A distillation of practical field experiences

The sourcebook – like most of IIRR publications – is a distillation of practical field experiences of a committed group of conservation and development practitioners. There

is no cutting edge science or even new knowledge. The strength of the sourcebook is its ability to simplify and communicate ideas clearly to a particular audience.

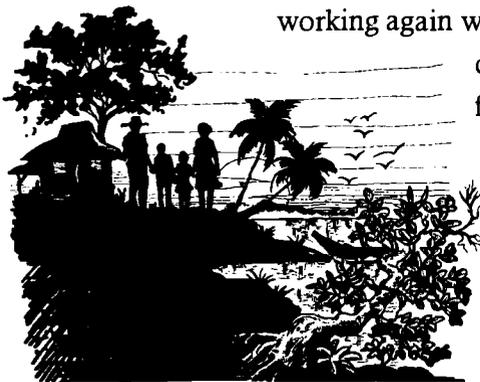
There is, however, an inherent contradiction in such undertakings. It is often difficult to balance the site-specific nature of field-tested experiences with the need to provide useful information to a wider audience. Authors were encouraged to be specific in describing the tools and methods they used. At the same time, they were reminded to avoid or explain local terms, norms or institutions. In general, the steps or the suggested approaches are written in generic terms and selected examples are used to illustrate the specific experiences from which the method was derived. Ultimately, it is the reader that will determine the local relevance of the methods.

The success of the publication will be measured by the creases on the binding and the amount of salt spray that forms on its cover as practitioners regularly turn to it in the field.

The creativity and ingenuity of the users will determine the life-span of the sourcebook. Improvements and adaptations are welcome and expected. Indeed, we look forward to

working again with the original

contributors as well as future users of the sourcebook to continually provide relevant and practical materials in support of CBCRM.



How this sourcebook was produced

This sourcebook is the final output of the workshop conducted at the International Institute of Rural Reconstruction (IIRR) in Silang, Cavite, Philippines on 28 July - 08 August 1997. The workshop, organized by IIRR, brought together about 35 community-based coastal resource management (CBCRM) practitioners in Asia. They worked closely with a production team of editors, artists and desktop publishing staff.

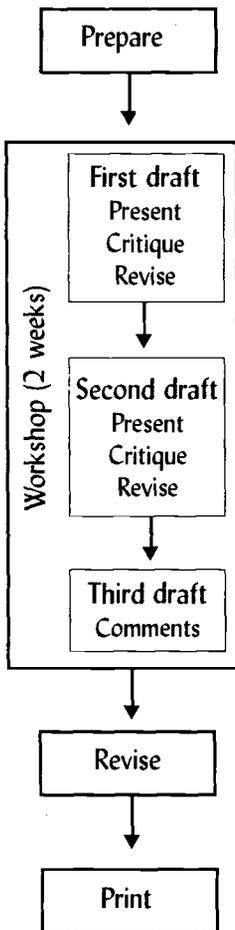
It is during the workshop that these participatory tools in CBCRM were compiled and participatorily edited. This publication is aimed at community workers, researchers, community leaders, extension agents and field teams of various government, non-government and community-based organizations.



Workshop objectives

Process, participation and product were the **3Ps** stressed in the workshop which recognized the following objectives:

1. To compile participatory field methodologies, tools and approaches used in coastal communities into a sourcebook for use, testing and adaptation by other practitioners and organizations involved in CBCRM.
2. To produce a sourcebook based on successful practices.



Workshop process

Planning and preparation for the production of the sourcebook started long before the workshop. With the members of the steering committee (representing various organizations in Asia), the focus of the publication was decided on. The steering committee also assisted IIRR in the identification of topics and resource persons for the workshop.

The workshop used a process developed and pioneered by IIRR. This process had been used to produce information kits on a range of topics related to agriculture and natural resources management, including agroforestry technologies in the Philippines, integrated agriculture-aquaculture in Asia, ethnoveterinary medicine in Asia and environmental concepts and actions.

During the workshop, each participant presented his or her draft paper, using overhead transparencies of each page. Copies of each draft were also provided to all other participants who critiqued the draft and suggested revisions.

After the first presentation, an editor-artist team helped the author revise and edit the draft and draw illustrations to accompany the text. The edited draft and artwork were then desktop published to produce a second draft.

Each participant then presented his or her revised draft to the group for the second time, also using transparencies.



Again, the audience critiqued it and suggested revisions. After the presentation, the editors, artists and desktop publishing staff again helped the author revise it and develop the third draft. Toward the end of the workshop, the third draft was made available to the participants for final comments and revisions.

The workshop allowed inputs from all participants to be incorporated, taking advantage of the diverse experience and expertise of all present. The concentration of resource persons, editors, artists and desktop publishing staff at one time and place enabled materials to be produced more quickly than is typical for similar publications. And the sharing of experiences among participants allowed the development of networks that would continue to be fruitful long into the future and would lead to concrete follow-up activities.

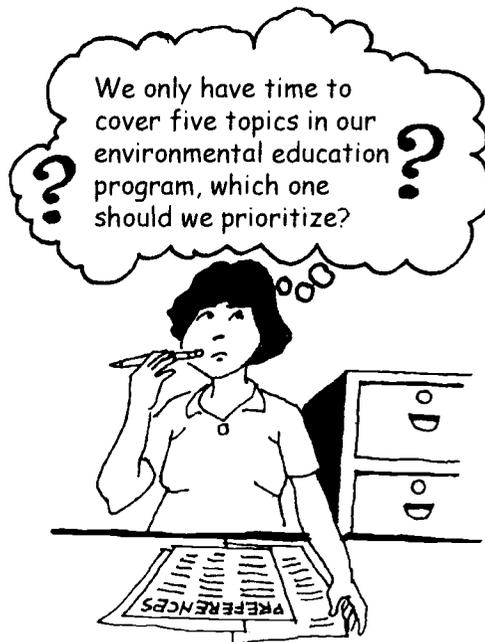


Matrices

Preference ranking

Definition

Preference ranking is a tool that helps a community prioritize a number of available options according to a set of established criteria or individual preferences. Preference ranking is usually used after an area of interest or set of options has been identified through some other process, e.g., using semi-structured interviews or focus group discussions.



Purpose

Almost every activity related to CBCRM involves deciding between options. Choosing between a number of options can be done arbitrarily or systematically. Preference ranking helps groups to systematically choose between options. Some of the more important reasons for preference ranking are limited availability of resources or the need to ensure participation in decision-making (either through consensus or majority decision making).

Requirements

Materials

- ✓ chalkboard, flipchart paper or other material for producing a matrix and recording data
- ✓ pentel pens
- ✓ list of options (if already determined)

Suggested approach

1. Select and clarify the topic. (e.g., most appropriate fishing gear for a particular area; most serious problem affecting the group; most preferred product for a micro-enterprise project. Write this topic on the materials used for documentation.
2. Gather a relevant group of stakeholders (refer to topic on stakeholder analysis)
3. List the options that are relevant to the topic.

Ask the participants to add additional options that they feel exist but have not been covered. Write these on a large sheet of paper.

4. Ask community members to think of criteria that can be used to analyze the potential value of each option. Write the criteria on a large sheet of paper.

5. Ask each participant to give a score to each of the options based on the criteria set with the most preferred option receiving the highest score. Use a scale to do this.



It is important to always clearly define the scale to be used. Make sure the scale is recorded on the final document.

5: very best option

4: very good but not best option

3: reasonably good option

2: marginal option

1: poor option

6. Repeat the steps for each different person and tabulate their responses (see table below).



Be consistent in scoring options. Clarify if the participants must use each score only once, or if the same score can be repeated.

7. Add up the scores given to each option. The highest score should be given the highest rank and the least score should be given the lowest rank.
8. Build consensus based on the results of the preference ranking.

Output

★ Ranking of available options: individual ranking

Example

A group of coral reef stakeholders (fishers, local NGO, tourism operator, fish trader) are discussing the merits of various fishing gears, and whether the use of some gears should be restricted. They decide to evaluate existing options on the basis of potential daily catch rate, risk of damaging the reef and market quality of fish caught.

Options	Respondents						Total Score	Rank
	NGO Rep.	Tourism Rep.	Fish seller	Young fisher	Old fisher	Gillnet fisher		
Fish trap	2	3	3	2	3	2	15	4
Handline	5	4	5	3	5	3	25	1
Gillnet	4	4	2	5	4	5	24	2
Beach seine	4	2	3	3	2	2	16	3
Baby trawl	1	1	1	1	2	2	8	5

Results: The handline received the highest score which indicates it was the most preferred gear. The baby trawl received the lowest score.

Strength

- Allows every participant to share his/her view of the preferred option. Dominant personalities cannot control the outcome.

Limitation

- It takes time to go through documenting each person's input. Consensus-building on the outcome may also take a lot of time.

Variation

Instead of single respondents, ask groups of stakeholders (divided by age, sex, economic sector, education level, work experience, etc.) to rank the options. Record the score given to each option by each group, then tabulate as above. When discussing the results with community members, look at both the average community score as well as the differences among groups.

Alternative approach

This method can also be used with individuals or with groups of any size, either multi-stakeholder or divided by sector, sex, etc. .

1. Follow the first four steps of the previous approach.
2. Once criteria for judging the options have been identified, list these across the top of the matrix . List the options vertically in the matrix. Ask the group to assign relative values to each option based on their criteria (see example).

Example: group ranking

In an exercise ranking options for craft business expansion, participants list the following criteria to be considered: access to raw materials, level of skill (i.e., training effort) required, number of potential jobs, number of markets and selling price. They give each option a relative score (one to four Xs) for each criterion (see criteria chart). With this in mind, the group then proceeds to rank each option to determine the most preferred (highest ranking) option. The results (see final table below) show that the preferred option is to increase production of straw hats, with wood bowls also being considered a good option (i.e., ranked second).

Ranking tool

	Materials	Skills	Jobs	Market	Price	Score	Rank
Basket 	XXX	XXX	XXX	XX	XXX	14	3
Hat 	XXXX	XX	XXXX	XXX	XXX	16	1
Wooden bowl 	XX	XXXX	XX	XXX	XXX	15	2
Mat 	XXX	X	XXXX	XX	X	12	4

- To make the process easier and quicker, ask the group to choose between each pair of options in turn, using a two-way choice matrix (see example below). The option that “wins” the two-way choice most often is given the highest rank.

Output

★ Two-way choice matrix

Topic: Handicraft options

Purpose: Identify the most preferred handicraft product among four feasible options.

	 Basket	 Hat	 Wooden bowl	 Mat	Score	Rank
 Basket	X	Hat	Wooden bowl	Mat	0	4
 Hat	X	X	Hat	Hat	3	1
 Wooden bowl	X	X	X	Wooden bowl	2	2
 Mat	X	X	X	X	1	3

Results: The hat handicraft option was most preferred.

Strengths

- If participants are strongly divided, options are very close in degree of preference. If there are lots of options, the tool makes the process of decision-making easier.
- It involves an extra step that displays criteria more clearly than in the first method.
- Dealing with options a pair at a time is easier than trying to rank a large number all at once.

Limitations

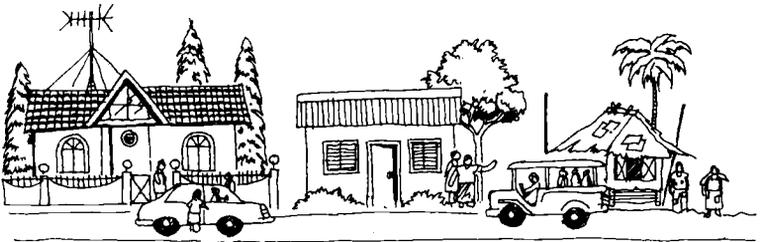
- The extra steps take more time. However, time may be saved in terms of avoiding lengthy arguments among participants.
- The specific criteria that individuals use to choose their preference may vary and they may not be applied consistently.

Compiled by Ricky Palyama

Socio-economic ranking

Definition

Socio-economic ranking is a tool used to assess and rank village families in terms of relative socio-economic status, in this case, through the perception of a number of key informants drawn from the community. The informants determine the criteria for describing socio-economic classes, decide how many different classes exist in the village, and then assign village families to each defined class.



Purpose

- To identify and prioritize potential participants in a prospective project or program.

- To obtain a numerical index allowing comparisons to be made among villages in a project area to assist project or program planning.
- To determine the level of socio-economic inequality in the village, which could have an impact on project/program planning.
- To monitor whether or not a project creates an impact on the socio-economic life of a community using an identified set of indicators. In this case, a socio-economic assessment should be conducted prior to the implementation of the program, to establish baseline data for monitoring purposes in the course of program implementation.
- To investigate relationships between socio-economic factors such as type of work, level of education, family size, family health indicators, etc.

Requirements

Materials

- ✓ cartolina or paperboards cut into 3 x 5 inches cards (one for each household in the village.)
- ✓ paper cut into larger pieces (6 x 10 inches)
- ✓ cleared area (table, floor or ground)
- ✓ felt marker (fine tip), pencil or pen

Suggested approach

1. Get a list of village residents from the village government office, census list or through a social mapping exercise.
2. Write the name of each family on a card (one card for one family). In some cases a nickname will be more appropriate than the formal family name.



3. Identify and list key informants.
4. Schedule a meeting with each informant. Explain that the purpose of the activity is to gather information on the socio-economic status of village families.
5. Invite each informant to suggest criteria that could be used to describe a socio-economic class. Typical variables include: income level and sources of income; assets such as land, housing, boats, other vehicles; educational attainment; ability to send children to school; quantity and quality of daily food.

6. Ask the informants to identify the different socio-economic classes in their community. Define each socio-economic class by using indicators such as income bracket (e.g., rich-with incomes ranging from P15,000-25,000 a month; poor - with incomes of P3,000 and below a month) and type of boats (motorized and non-motorized.)

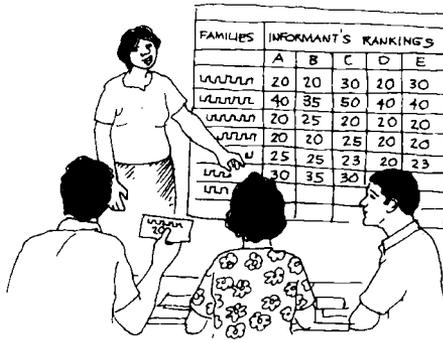
Use these as categories. Note down the criteria used by the participants to define each category.

7. Write the name of each category on a large card and display them all on the table/or floor.
8. Give the informants the cards on which each family's name is written. Ask each participant to identify under which category each family belongs. Place the cards next to the appropriate category. If there is hesitation, remind the participants of the criteria.



Analyzing the data from key informants

1. If different informants have used different numbers of categories, their information must be standardized. If most or all informants have distinguished five categories, assign a score to each family as follows: very poor: 20; poor: 40; average: 60; rich: 80; very rich: 100. If standardization is required, then the informants will have to do it all over again.



2. Compile the results of the ranking, showing the scores given to each family by each informant.
3. Calculate the average score for each family.
4. Group the average scores into brackets or ranges, e.g., for a five category system:

very rich (90-100)
 rich (70-89)
 average (50-69)
 poor (30-49)
 very poor (less than 30)

5. Calculate the percentage of families in each category and present this using a pie chart (see example). This will give an overall view of the perceived socio-economic status of families in a particular community.

Output

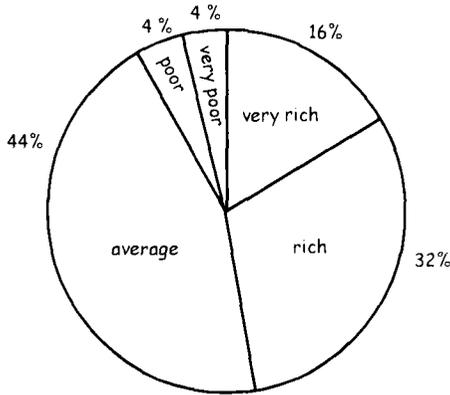
- ★ An assessment of the socio-economic status of the village residents.

Example: Socio economic ranking

Family	Respondent				Average
	A	B	C	D	
Description of categories					
VERY RICH					
Sahertian	100	100	100	100	100
Sopacua	100	100	100	100	100
Pattipawae	100	100	80	100	95
Loupatty	100	100	100	80	95
RICH					
Patty	80	100	80	80	85
Silawane	80	80	80	80	80
Tuhumena	80	80	80	80	80
Adam	80	60	80	80	75
Latumaerissa	80	80	60	80	75
Manupassa	80	80	80	60	75
Wattimena	80	60	60	80	75
Soukotta	80	60	60	80	70
AVERAGE					
Barends	60	80	60	60	65
Saija	80	60	60	60	65
Sangaji	60	80	60	60	65
Matita	60	60	60	60	60
Musila	60	60	60	60	60
Riupassa	60	60	60	60	60
Mailoa	40	60	60	60	55
Manuputty	40	60	60	60	55
Marantika	40	60	60	60	55
Siahaya	40	60	60	60	55
Telussa	40	40	60	60	50
POOR					
Tehuayo	40	20	40	40	35
VERY POOR					
La muri	20	20	20	40	25

Example

Representation of the socio-economic ranking of the village.



Strengths

- The process is private and confidential and prevents the embarrassment of any particular family or group of families.
- Each set of informant data can be compared with other data sets and checked for obvious biases.
- The data can be analyzed to see how the perception of socio-economic position varies with the type of respondent.

Limitations

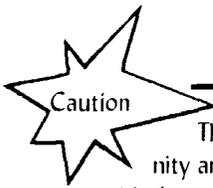
- Interviewing many individuals may take more time compared to a group interview.
- Categorization is based on perception and may not be very accurate. Validation can be done using actual surveys.
- One or more informants may not be familiar with everyone in the village, especially if the village is large. Information may be biased.

- Key informants may not reflect the general thinking of the population. This risk can be minimized by increasing the number of informants.

Variation: Socio-economic ranking by large group consensus approach (the ABC method)

Definition

Socio-economic ranking by large group consensus approach is a variation of the previous method by which a large group of informants, e.g., the entire community, assesses and ranks the socio-economic status of village families.



Caution

The facilitator must be very familiar with the community and must have established a certain level of rapport with the community. The community members must be comfortable working with the facilitator.

Suggested approach

1. Lead a discussion on the concept of socio-economic condition and ask the participants to form three socio-economic categories of households (i.e., A = better off, B = medium and C = poor).

2. Invite community members to define what is meant by each category.



3. Give each person one card - not their own - and ask them to place it in one of three piles according to the wealth category they think that family belongs. If participants have trouble deciding, remind them of the criteria they have identified.
4. Once the cards have been placed, read each card placed in each category and ask the group as a whole whether they agree with how that family has been ranked. Take note of the important points raised during the discussion.
5. Document how each family has been categorized and count the number of families in each category.
6. Present each category as a proportion of the total population using a pie chart. Show this to the participants and invite their comments.

Strengths

- The ABC method is rapid, enjoyable and easy.
- Provides insights into the extent of poverty incidence in a particular community.

Limitations

- There is always the risk of causing embarrassment to the various members of the community who are being publicly classified by their peers. The first method is preferred in areas where this is a sensitive issue.
- There may be manipulation of the ranking for the perceived benefit of some families. This may be a particular problem where the objective is to identify potential participants for a project.

Prepared by Ricky Palyama

Problem ranking

Definition

Problem ranking is a tool used by a community to identify and rank problems in order of priority by assessing their relative importance using a set of criteria. Problem ranking is often followed by an analysis using either a problem tree or a web chart.



Purpose

- To help the people in the community prioritize their problems so that they can focus their energies and resources to the most important problems.

Requirements

Human resources

- ✓ facilitator
- ✓ record keeper
- ✓ participants

Materials

- ✓ small cards/pieces of paper
- ✓ flip chart
- ✓ marker pens
- ✓ masking tape

Suggested approach

1. Ask the community to brainstorm and list down identified problems or issues. Ask them to write these on small pieces of paper and place these in a vertical column on the floor or board.



This activity often takes two to three hours. However, time should not be limited if discussion is not yet complete after this time.

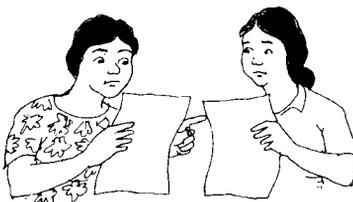




The facilitator should be able to distinguish between core (or underlying) problems and symptoms/effects.

2. Suggest and explain possible criteria for ranking the problems:
 - extent or scope (number of people or areas affected by the problem)
 - degree of impact on a particular resource (how serious are the effects of the problem on the resource) e.g., destruction of reefs, decline in fish stocks
 - occurrence or regularity (how frequent does the problem occur, during what season, etc.)

The participants may suggest other criteria in addition to those mentioned above.

3. Let the participants analyze each problem according to the criteria set.
4. Ask the participants to compare each problem. Score each problem using a predetermined scale (e.g., 1-5 with 5 representing the highest number, severity or frequency). Use drawings, seeds or other local materials to record each score.
5. Add the total score for each problem and place the sum in the second to the last column. The sum reveals the relative importance of the problem across all criteria and determines how it ranks compared to the other problems.

- Use the last column to rank the problems based on their respective score.

The problem with the highest number of total marks is considered the number one problem. If two problems have the same number of marks, they are considered to be of equal importance.

- Some of the descriptions may be qualitative, e.g., degree of impact and occurrence. In this case, ask participants to explain and clarify the meaning of the marks made. The documentor should note down the key points mentioned.
- Copy the entire matrix. If time permits, present it to a larger group for further discussion and analysis.



The priorities may change over time. Depending on their needs and objectives, the community may determine how often they should conduct this activity.

Sample output

Problems	Extent (no of people/ areas affected)	Degree of impact or effect (how severe)	Occurrence (how frequent)	Score	Rank
Low fish catch	○○○○	○○○	○○○	11	1
Dynamite fishing	○○○	○○○	○○○	9	3
Over fishing due to fine mesh nets	○○○	○○○	○○○	10	2
Mangrove deforestation	○○○	○○	○○	7	4
Environmental pollution	○○	○○	—	4	5

Variation: Paired ranking variation

1. Prepare a matrix on craft paper with 10 rows, 10 columns. Place an “x” or shade the first box in upper left and continue diagonally to bottom right.



This variation can help identify areas where there may be some ambiguity in the ranking or where two problems may be of similar importance.

2. Let the participants list down problems related to a particular topic or theme (e.g., fisheries or fish stock depletion).
3. When the list of problems is completed, list them across the top row and left most column in the same order.
4. Start with the problem listed in the first column second row. Compare this problem with each problem listed in the second row. Then ask each participant which one is more important (i.e., which is a more serious problem).
5. Write the name of the more important problem in the box where two problems being compared intersect. If two problems are considered to be equally important, press the group to examine the problems more closely to determine one that is more serious.
6. Continue this process until all the boxes are filled up.
7. Add the number of occurrences of each problem. Write the sum in the column under SCORE.
8. Based on the frequency of occurrence, rank the problems. The greater the number of occurrences, the more important the problem. That is, the number 1 problem is the one with the highest score, the number 2 problem the second highest score and so on.

9. Copy the entire matrix. If time permits, present it to a larger group for further discussion and analysis.

Output

★ A matrix of problems ranked from highest to lowest in terms of importance according to a specific set of criteria.

	Overfishing due to fine mesh size	Low fish catch	Dynamite fishing	Mangrove deforestation	Environmental pollution	Score	Rank
Overfishing due to fine mesh size		Low fish catch	Dynamite fishing	Overfishing due to fine mesh size	Overfishing due to fine mesh size	2	3
Low fish catch	Low fish catch		Low fish catch	Low fish catch	Low fish catch	4	1
Dynamite fishing	Dynamite fishing	Low fish catch		Dynamite fishing	Dynamite fishing	3	2
Mangrove deforestation	Overfishing due to fine mesh size	Low fish catch	Dynamite fishing		Mangrove deforestation	1	4
Environmental pollution	Overfishing due to fine mesh size	Low fish catch	Dynamite fishing	Mangrove deforestation		0	5

Strengths

- Helps the community focus on the most important problems.
- Provides a systematic way of prioritizing community problems.
- Increases the community's awareness of the breadth and depth of certain problems that significantly affect them.



Tip

Problem ranking is best followed by an analysis of the problems using problem trees and webs. Because it creates a sense of urgency among members of the community, it should also be followed by planning and implementing a course of action to address the identified problem.

Prepared by Dipankar Saha

SWOT analysis

Definition

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. Strengths and weaknesses focus on the internal factors, while opportunities and threats reflect the influences of the external environment affecting the organization, community or activity. These may include socio-cultural, political, economic, environmental, technical and other dimensions. The SWOT analysis can complement other tools including institutional analysis and stakeholder analysis.



- Strengths - positive attributes of the group, activity or site
- Weaknesses - negative attributes of the group, activity or site
- Opportunities - favorable factors in the environment
- Threats - negative factors in the environment

Purpose

- To identify strengths and opportunities and consider how to optimize these, and to identify weaknesses and threats and how these can be overcome.

- To analyze the capability of community-based organizations to carry out a particular project (e.g., conservation or livelihood) and to consider options on how they can be more effective.
- To assess a particular organization, activity or site in relation to a desired use such as the following:
 - assessing the capability of an organization to undertake community organization activities;
 - assessing potential sites for activities such as mangrove reforestation; and
 - evaluating a particular program or activity for its relevance to community needs.
- A tool used as part of strategic planning processes.

Requirements

Materials

- ✓ board (whiteboard, blackboard, corkboard)
- ✓ craft paper
- ✓ blank cards (4"x 8")
- ✓ masking tape

Possible approach

1. Clarify with the participants the specific item to be assessed using SWOT analysis, and write it on the board.

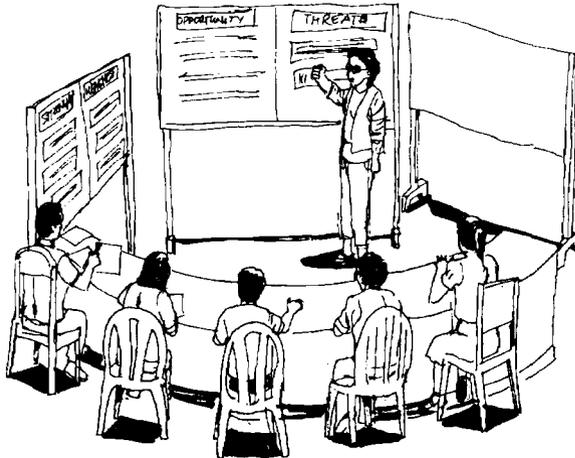
Example: To do a SWOT analysis on the group's ability to carry out a mangrove reforestation program. (An example of a possible output of this topic is given at the end of this section)

2. Define terms, (i.e., strengths, weaknesses, opportunities, threats) in the context of the internal and external environments of the organization, activity or site.

Emphasize that strengths and weaknesses refer to the internal aspects of the organization, site or activity. Similarly, explain that opportunities and threats refer to the external influences affecting the site, activity or organization.

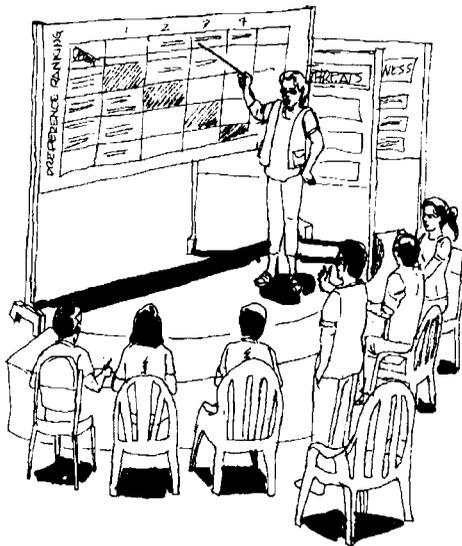
3. Ask the participants to list strengths and post these under a column labelled strengths. Clarify and discuss the items listed. Group or cluster similar items.

Repeat the same process for weaknesses, opportunities and threats.



4. Analyze the results. Use the following questions to lead the discussion.
 - How can strengths be employed to take advantage of development opportunities or counteract threats?

- How can weaknesses be overcome?
 - How can the organization or activity maximize opportunities?
 - How can threats be avoided?
5. Record responses and summarize major points. This will be the basis for identifying various actions and/or options.



6. Develop strategies and/or courses of action based on the responses.

Output

- ★ A matrix that summarizes the key internal and external factors that influence a project, organization or site. Analysis of this information can generate various courses of action.

Example: SWOT analysis of a Mangrove Reforestation Project

<p>Activity/Organization/ Site</p> <p>The capacity of a community-based organization to implement a mangrove reforestation project</p>	<p>Strengths</p> <ul style="list-style-type: none"> • We have a youth group that is willing to work on the replanting • Rico has plenty of bamboo offcuts that could be used as stakes 	<p>Weaknesses</p> <ul style="list-style-type: none"> • We do not know how to do the transplantation • We have no money for the project • Most community members are more interested in their own activities
<p>Opportunities</p> <ul style="list-style-type: none"> • We do not need to buy propagules because we can collect them for free • We have the abandoned fish pond which we could use for the project • The new Mayor supports environmental projects • The university has people who know about mangrove reforestation • An NGO is providing livelihood assistance in the area 	<p>Strategies/Actions</p> <ul style="list-style-type: none"> • Contact the university to ask assistance in training and environmental education • Discuss the problem about the fish pond owners with the Mayor • Hold a meeting with the youth group and other members of the community • Design an incentive scheme for those who would be planting and maintaining the plantation • Link with NGOs for possible assistance in livelihood program 	
<p>Threats</p> <ul style="list-style-type: none"> • Fish pond operators want to clear more of the mangroves • Some community members cut mangroves for firewood 		

Strengths

- It is a simple, systematic and participatory tool that can be applied to a wide range of situations.
- It encourages participants to consider often neglected external factors that influence CBCRM activities.

Reference

IIRR. 1996. Recording and using indigenous knowledge: A manual. International Institute for Rural Reconstruction, Silang, Cavite, Philippines.

Compiled by William Jatulan

Stakeholder analysis

Definition

Stakeholder analysis is a method by which people generate insights into the characteristics of individuals and/or groups, and their respective relationship to a particular resource or project. Stakeholder analysis goes beyond the simple identification of stakeholders. It examines the interests of stakeholders vis a vis a particular resource or project and the impact of the activity on the stakeholder.

Stakeholder analysis also tries to identify coping strategies to minimize or eliminate negative impacts of activities on stakeholders.



Who are stakeholders?

Stakeholders are individuals, groups or organizations of men and women who are in one way or another interested, involved or affected (positively or negatively) by a particular conservation or development project. They are motivated to take action on the basis of their interests or values.

Stakeholders are important because they can support and sustain a particular resource. They could be potential partners or threats in managing and developing coastal resources.

The fisher community or organization is considered a primary stakeholder of coastal resources. Other examples of stakeholders include government agencies, private/business organizations, non-academic organizations, academic or research institutions, religious/cultural groups and donors.



Stakeholder groups can be divided into smaller and smaller sub-groups depending on the particular purpose for stakeholder analysis. Ultimately, every individual is a stakeholder, but that level of detail is rarely required.

Purpose

- To identify potential partners in managing a particular resource or project.
- To explore possible approaches in relating to a particular person or groups who can be supportive or potentially hostile to a particular undertaking.
- To provide valuable insights into the dynamics and relationships of individuals and groups with various interests in a particular resource or project.

The stakeholder analysis is usually done by key informants from primary stakeholders (i.e., members of the fisher community). The facilitator should be a trained community leader or a person from a non-government organization working in the community.

Requirements

Human resources

- ✓ facilitator
- ✓ key informants

Materials

- ✓ manila paper or black board
- ✓ colored paper or cartolina
- ✓ pens
- ✓ metacards
- ✓ masking tape
- ✓ paper circles
- ✓ scissors or cutting blade

Suggested approach



Note

This exercise can be done with participants from a single stakeholder group or with members of various stakeholder groups. It is important to recognize and document the composition of the participants in order to objectively analyze the results.

1. Identify resource, project or activity to be analyzed. The project or activity may be on-going or proposed.
2. Identify and list stakeholders. Write their names on paper circles. Use larger circles for stakeholders with greater influence or power (refer also to topic on venn diagram).



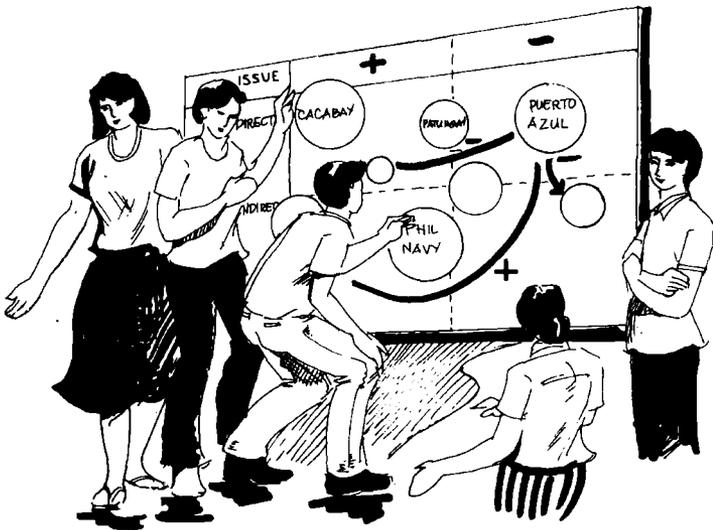
3. Prepare a stakeholder analysis matrix on the board or on a piece of manila paper.

Stakeholder analysis matrix

Proposed action: Enterprise project in national park	Positively affected (+)	Negatively affected (-)
Directly affected		
Indirectly affected		

4. Place the circles in the appropriate square on the stakeholder analysis matrix. There are four possible locations based on the matrix:
 - a. stakeholders that are directly affected in a positive way [direct and (+)];
 - b. stakeholders that are directly affected in a negative way [direct and (-)];
 - c. stakeholders that are indirectly affected in a positive way [indirect and +]
 - d. stakeholders that are indirectly affected in a negative way [indirect and -]

5. Draw lines between the stakeholders to indicate the existence of some form of relationship. Use plus or minus symbols to indicate the nature of the relationship.



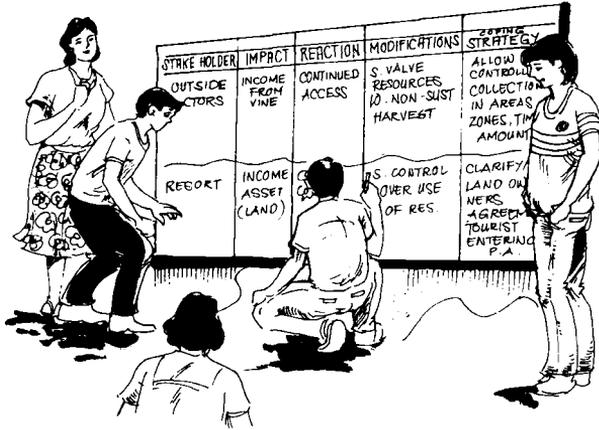
6. Prepare a stakeholder analysis and coping matrix.

Stakeholder group	Describe the impact of the proposed action on the stakeholder group	Describe the potential reaction of the group and the implications for the proposed action	Can the proposed action be modified to reduce or mitigate the negative impact on the stakeholder group?	Describe the recommended course of action (coping strategy)

7. Begin with the stakeholders identified as being directly and negatively affected, then move on to those indirectly and negatively affected. For each of these stakeholder groups, examine the questions found in the analysis and coping matrix:

- Describe the potential impact of the proposed action on the stakeholder group.
- Describe the potential reaction of the affected group and the implications for the proposed action.
- Can the proposed action be modified to reduce or mitigate the negative impact? If so, how?
- Describe the recommended course of action (coping strategy).

8. Write the information for each column on the metacards (or directly on the board) and place metacards on the appropriate columns.



9. After the participants have filled up the matrices and tables with information, discuss observations, issues/problems and insights.
10. Formulate strategies or courses of action for addressing various stakeholder interests especially for those negatively affected.
11. Discuss other possible uses of the information derived from the exercise.

Factors affecting the values and characteristics of stakeholders

- Age and sex
- Gender
- Religion
- Political affiliation
- Occupation
- Education
- Familial relationships
- Geographic location
- Length of residency
- Income and social status



Toolbox

The following tools also described in this sourcebook may be of particular relevance to stakeholder analysis: venn diagram, institutional analysis, resource use mapping, key informants.

Outputs

- ★ Data/information on various stakeholders (especially those negatively affected).
- ★ Coping strategies/courses of action which could be used as input into an overall plan of action.

Sample output: Stakeholder analysis and coping matrix

Proposed action: Implementation of a community-based herbal medicine collection and processing enterprise in Coastal National Park

Stakeholder group	Describe the impact of the proposed action on the stakeholder group	Describe the potential reaction of the group and the implications for the proposed action	Can or should the proposed action be modified to reduce or mitigate the negative impact on the stakeholder group?	Describe the recommended course of action (i.e., coping strategy)
Resort owners	<ul style="list-style-type: none"> • Possible increase in number of people collecting plants within resort property. • The proposed action may weaken the resorts' claim to land in the park. 	<ul style="list-style-type: none"> • The resort owners may use private guards to arrest or intimidate collectors. • The resort owners may take legal action to claim ownership of the park lands. 	<ul style="list-style-type: none"> • Because the land claim of the resort area is questionable, the proposed action should not be modified. However, precautions may be necessary. 	<ul style="list-style-type: none"> • Ensure that plant collectors have the necessary permits for collection. • Ensure collection takes place only in designated zones.

Strengths

- Provides useful background information on different stakeholders.
- Gives the community or organization ideas on how to relate to particular stakeholders.
- Provides insight into the dynamics and relationships of different stakeholders.

Limitation

- Some information/data about the stakeholders may not be readily available and, therefore, based solely on the perceptions of participants.



Tips

- Participants must be discreet and tactful in handling or using information derived from the exercise.
- This exercise can be done before initiating a partnership or joint activity (e.g., participatory coastal zoning, marine sanctuary establishment).
- This exercise should be repeated at key points in the project or program cycle to check on possible changes in the number and characteristics of the stakeholders.

Prepared by Marie Grace Madamba-Nuñez and Gregory C. Ira

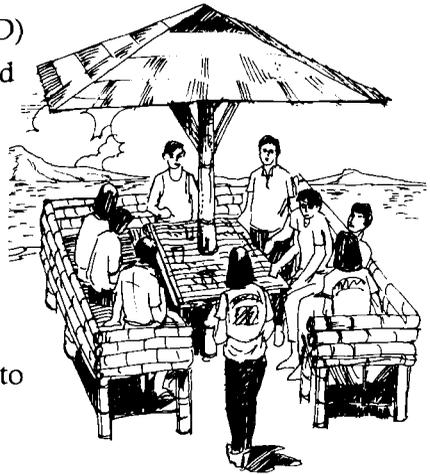


Group methods

Focus group discussion

Definition

Focus group discussion (FGD) is a discussion with a selected group of four to eight community members (chosen for their background or knowledge relevant to the objectives of the study) following a set of detailed guidelines designed to generate discussion on a particular set of topics.



Purpose

- To generate information, build consensus, clarify information in documents lacking details or gather different opinions on certain issue.
- To gather information on certain issues in fishing, farming and other livelihood practices, leadership structures and decision-making patterns, health practices and delivery systems, labor sharing arrangements, local indicators of poverty and socio-economic standing, indigenous taxonomies (e.g., how people group or categorize fish, seaweed, etc.) and other information.

Requirements

Human resources

- ✓ trained facilitator/moderator
- ✓ note taker

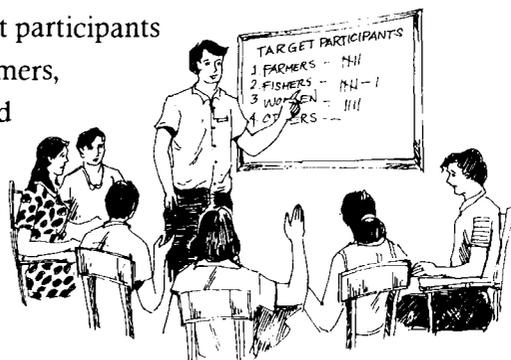
Materials

- ✓ note pad
- ✓ pencil or pen
- ✓ chalk/markings pens
- ✓ poster paper/chalk board/white board
- ✓ guide questions or guidelines for the focus group discussion (FGD)
- ✓ attendance sheet
- ✓ cassette recorder and blank tapes (optional)

Possible approach

Preparation

1. Set and discuss with the community the objectives of the discussion.
2. Determine target participants (e.g., fishers, farmers, women, etc.) and discuss with community leaders and various sectors of the community, the



criteria for group selection. Ideally, group members come from various walks of life and socio-economic categories, representing formal and informal community organizations.

3. Let the community leaders identify people in the community who fit the criteria. Be on the lookout for biases (refer to topic on key informants).



Possible criteria in selecting target participants

- age
- educational level
- ethnicity/race
- language
- world views
- marital status
- socio-economic status
- religion
- work experience
- sex
- residency (urban/rural)
- length of local residence

4. Plan the time frame and schedule of the session.
5. Design the focus group guidelines.

Designing the FGD guidelines (refer to semi-structured interviews)

1. Guidelines are open-ended questions used by the facilitator to initiate discussion of a particular topic. The objective is to encourage FGD participants to discuss target concepts and express their opinions, experiences and memories. Open-ended questions are those that require information other than a simple "yes" or "no" for an answer. Avoid these types of questions because they do not lead to new ideas.
2. Phrase questions in a way that seeks to discover prevailing attitudes and practices, not just those of group participants, e.g., use "In general..." as a starting phrase.
3. Guidelines should be brief.
4. Guidelines should provide only the opening questions for key topics and a reminder to probe certain aspects.

Example of guidelines for a session in introducing a marine sanctuary:

1. Coral reef – What are they? How are they used?
Why are they used in that manner?
2. Fishery laws – What laws are you familiar with?
How are they implemented?
How are they useful to the community?
3. Marine sanctuary – What is it?
Is it useful/important?

6. Train the facilitators and the note taker.

During the session

Guide for the facilitator

1. After the introductions, start with a warm-up topic (non-controversial but related).
2. Request permission to record the discussion.

3. Go through prepared guidelines. Feel free to jump back and forth, be flexible.
4. Keep track of every topic by putting check mark next to each topic as it is discussed.
5. At the end of the discussion, give a brief summary of the topics that have been discussed by the group.

Guide for the note taker

1. Write down key words in the statement or question. If possible, enough should be written to get the essential meaning.
2. Furnish participants a copy of the highlights of the discussion after the FGD.

Outputs

- ★ Information that can be used for planning, strategizing or completing the profile of a community or resource.
- ★ Consensus or agreement on controversial issues.
- ★ General perception of community members on important matters, e.g., projects, plans and activities.

Strengths

- Allows discussion of sensitive issues in the community, leading to further clarification of such issues.
- Generates desired information if facilitated effectively.

Limitations

- Because of the limited number of participants, responses cannot be taken as representing the views of the whole community.
- Not all sensitive issues that arise can be processed and resolved through FGD. There might be other more appropriate venues to resolve these. It is therefore important for the facilitator to keep the discussion focused on the agreed topic and simply note down other critical issues raised.

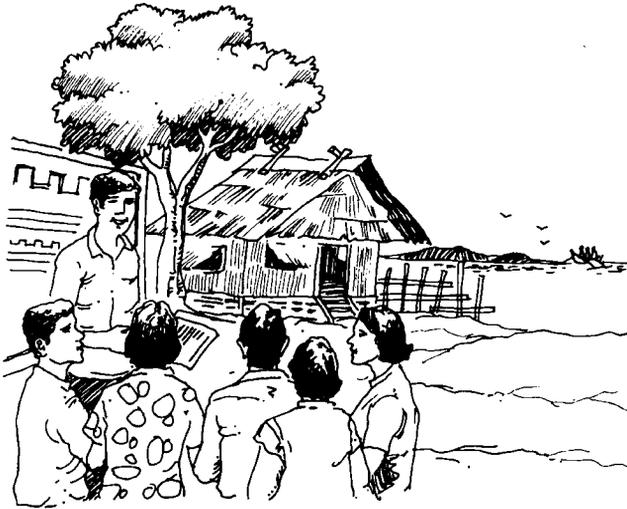
Prepared by Perry Paleracio

Brainstorming

Definition

Brainstorming is a group activity where selected members of a community take turns in sharing their ideas relating to a certain topic or question. A facilitator encourages participants to react to the topic or question and the responses of other participants.

Brainstorming differs from listing because it encourages participants to think critically and creatively rather than to simply generate a list of options, answers or interests.



Purpose

- To generate new information, perspectives and ideas or gather different opinions from several people on a certain topic in a short time.

- To generate useful information on some issues in the community to produce a quick overview of a specific subject.

It is most useful in discovering the “what” of a certain issue but can also be used to explore the “why”, “how”, “who”, “when” and “where”.

The information produced is often sketchy but can be followed up by other participatory tools or methods (refer also to topics on ranking, venn diagram and focus group discussion).

Requirements

Human resources

- ✓ facilitator
- ✓ recorder or note taker

Materials

- ✓ chalkboard and chalk
- ✓ bondpaper
- ✓ paper and pencil
- ✓ writing cards
- ✓ pentel pens
- ✓ masking tape

Suggested approach

Pre-activity

1. Set the objective of the activity.
2. Based on the objective, determine the individual or groups that should be involved in this particular activity (e.g., fisher, farmer, women, youth, etc.)

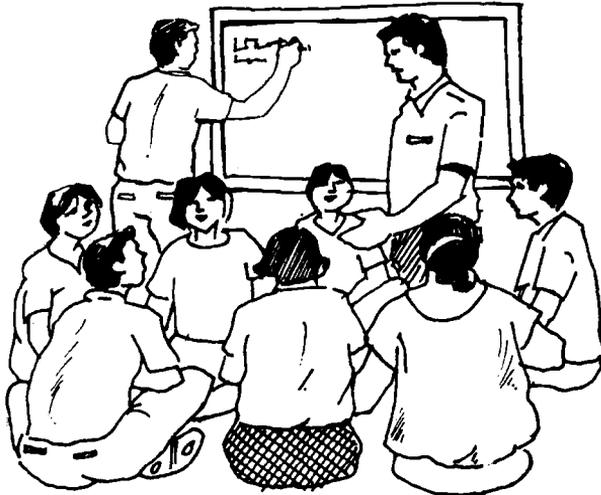
3. Inform and discuss with the community leader details of the activity and the criteria to be used in the selection of the participants. If the topic relates to coastal activities then fishers will be the target group.
4. Let the community leader identify the possible participants (refer also to topic on selection of key informants).
5. Set the date, time and place of the meeting with the community leader.

On the day of the activity

1. Explain and discuss the objective and mechanics of the session so that everyone understands the process.
2. Introduce the topic.
3. Ask each participant to give or share their ideas relating to the topic.

Do not sanitize ideas. Do not discuss in length.

4. Write down all ideas on the chalkboard as they arise.



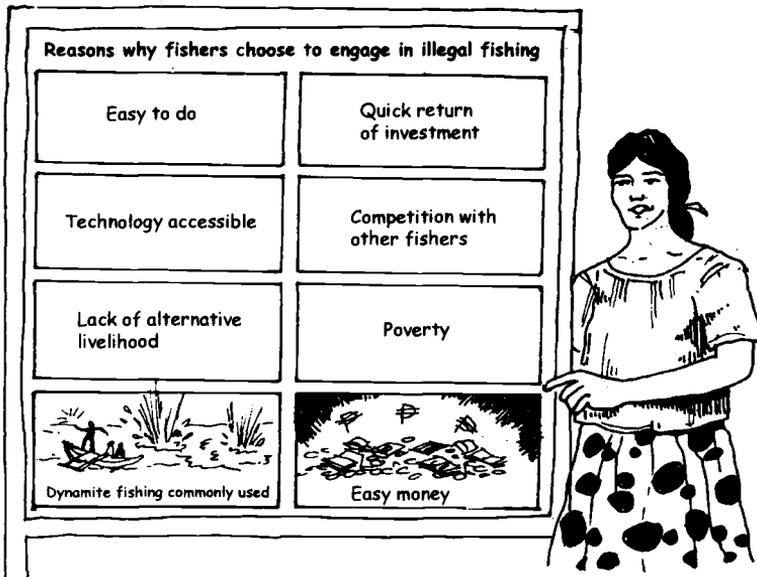
5. With the participants, sort, classify and synthesize ideas written on the board.
6. Discuss and analyze with the participants the results or use them as an input to the succeeding exercise.

The richness of the brainstorming session largely depends on how evocative the facilitator is in drawing out ideas from the participants.

Output

- ★ A set of new ideas or new ways of looking at a topic or question. The ideas may be classified, segregated or synthesized. They can also serve as the starting point of a new brainstorming session.

Result of a brainstorming activity done in Barangay Mugdo, Western Samar, Philippines



Strengths

- Provides information in a short time; usually takes 15 minutes
- Simple
- Highly participatory

Limitation

- Some participants might dominate the sharing. Using idea cards or forming sub-groups can eliminate this problem.

Variations

Using idea cards

In some cases, participants are hesitant to voice out their ideas. Using metacards or idea cards can help address this problem.

1. Distribute cards (made of cartolina or bond paper with a dimension of 10 x 30 cm) to each participant.

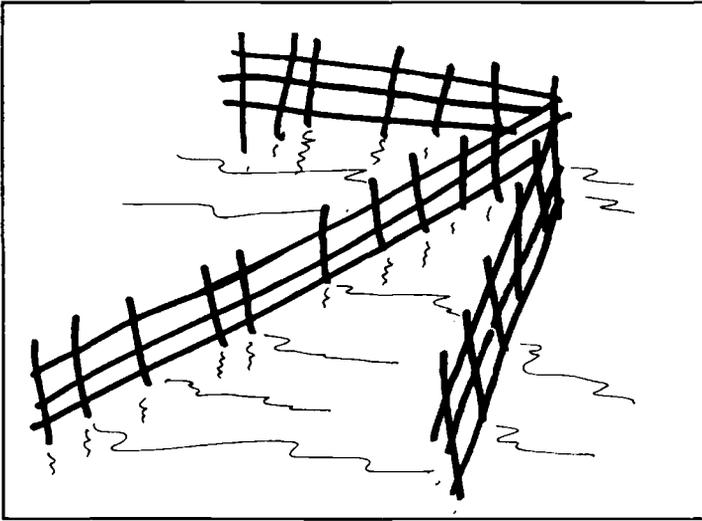


2. Let the participants write their ideas using a pentel pen and let them post the cards on the chalkboard.

Using cards saves the facilitator time and effort in gathering working ideas on the board. The cards can also be easily moved around the board when sorting, classifying and discussing the results. The use of symbols or drawings is also encouraged. Sometimes, ideas are better expressed in visual creative forms rather than as words.

Example

Instead of writing the word fish corral, a drawing showing that particular gear can be drawn. Symbols can be drawn either on a chalkboard or on writing cards.



Formation of sub-groups

Depending on the objective, group participants according to age, sex, class and ethnicity. The information gathered can either be compared, segregated or synthesized according to the categorization of the participants.

In India, a mixed-aged group of women participants can be dominated by the mother-in-laws. One solution is to split the group into sub-groups.

Reference

IIRR. 1996. Recording and using indigenous knowledge: A manual. International Institute of Rural Reconstruction, Silang, Cavite, Philippines.

Compiled by Charlotte Mayette Zamayla-Paredes



Surveys and interviews

Identification of key informants

Definition

Key informants are purposely selected community members who are able to provide information on a particular research topic based on their knowledge, skills or experience with that subject. Because it is not possible to speak with everyone in a community, individuals with experience on the research topic are sought.

The identification of key informants is a basic and critical step in doing participatory research.





Tip

Different types of people have different types of knowledge. If you ask the same question to a child, a woman, a less educated person and an older man, you may get four different answers. The type of knowledge people have is related to their age, sex, labor division within the community or family, enterprise, occupation, socio-economic status, experience, environment and history.

Purpose

The principle behind using key informants is the belief that the community members can provide the most accurate, relevant and detailed information about their own community. For example, the chairperson and members of a fishers' organization can give detailed information about issues confronting fishers in the locality (e.g., marketing, illegal fishing) using their experience as basis.

The identification of key informants is usually the first step in semi-structured interview, seasonal calendars, historical lines, transects and others.

Requirements

Human resources

- ✓ community members
- ✓ facilitators

Materials

- ✓ notebook
- ✓ pen



Knowledge can be grouped into three general categories

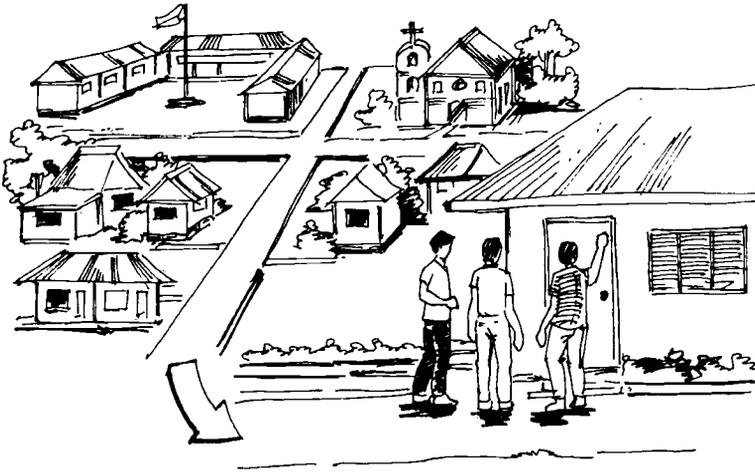
1. Common knowledge – held by most people in the community, e.g., how to cook rice.
2. Shared knowledge – held by many but not common to all, e.g., fishers know how to catch fish; so will other members of their household.
3. Specialized knowledge – held by only a few people who have special training, e.g., makers of *bancas* or boats, blacksmiths or teachers.

Possible approach

1. Identify the type of information that you need. For example, local names of fish species caught in the area, trends in fish catch, household incomes and fisher population.



2. Identify the village leader and arrange for a meeting to explain what you would like to do.



3. Ask the village leader to identify individuals in the community that hold key positions or are widely respected. These include religious leaders, heads of fishers or other community groups, health workers and teachers. This should include all major sectors of the community. Try to ensure that women, youth and elderly community members are represented.
4. Choose who among these people can provide relevant information based on your objectives. Find out where they live or how you can contact them so you can arrange for a meeting or an activity.
5. Leave a directory or list of key informants and their areas of special knowledge with the village leader for future reference.

Strengths

- Can be done for any topic or sub-topic.
- Ensures that the information gathered is from the most relevant sources, i.e., the community itself.
- Fosters a high level of participation.
- Can quickly and easily generate a list of individuals with shared or specialized knowledge.

Limitations

- Can give misleading or biased information according to the informant's interests. Cross-check information by asking a number of informants the same questions.
- One informant may dominate, or be present in too many activities which might cause bias.
- Works better in smaller villages where people know each other. In larger areas, a more systematic variation can be used.



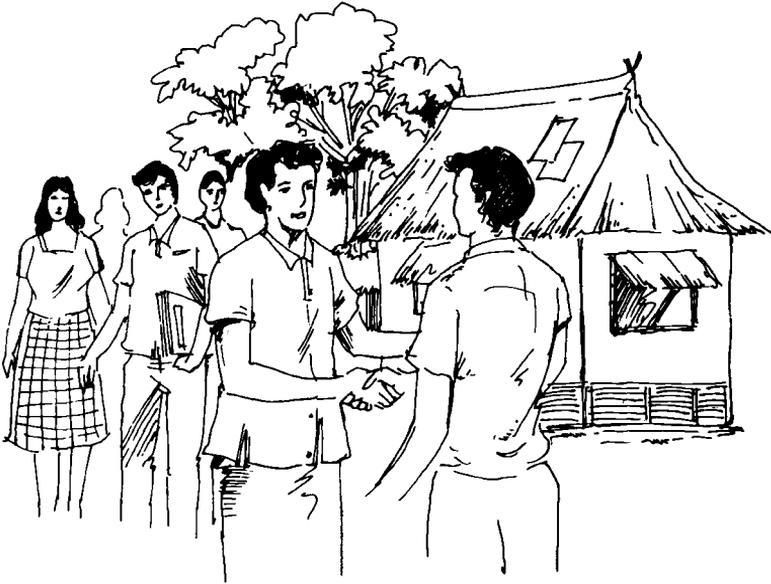
Tips

1. Outsiders might give more objective information or explanation of village issues. People from neighboring communities can give another perspective on issues raised.
2. Find the right people to ask and seek them out. For example, women who collect or glean mollusks may know more about them than their fisher husbands.

Variations

Snowball or rolling sampling method

- After identifying primary key informants, ask them who else could be of help in giving information about a particular topic. Other informants may be fishers with specialized local or ecological knowledge.



Others

- Another technique is to ask people who they disagree with on certain topics to get a range of opinions. Asking who people go to if they have a problem will also help identify people respected in the village.

- In larger communities, key informants can be identified by asking a broad sample of people to name others in the village who know most about a certain topic. Prioritize and visit the people whose names appear most often. Ask these people for further names. From these two steps the names that appear most often will give an indication of who the community thinks can provide the most information, or is an 'indigenous specialist'.

References

IIRR. 1996. Recording and using indigenous knowledge: A manual. International Institute of Rural Reconstruction, Silang, Cavite, Philippines.

Theis and Grady. 1991. Participatory rapid appraisal for community development: A training manual.

Compiled by Karen Hampson

Survey of commercial fish landings

Definition

Surveys of commercial fish landings are direct methods used for collecting information on fishery resources exploited on a large-scale from the local region. Community-based survey methods enable the members of a community to gather information on the resources from the fishers with the help of a facilitator.



Data on resource changes and past history can be collected from experienced fishers.

Purpose

- To collect indicative data on trends in resource changes and exploitation in the case of large-scale fisheries.
- To generate basic information on the quantity and size of fish caught, fishing gears, fishing grounds, etc.

Output of this survey can be used by the community for making its own decisions for local management of the resources. The information will also be useful to non-government organization (NGOs), resource managers, local administration and other fisheries interest groups.

- To obtain feedback from the community.

Requirements

Human resources

- ✓ facilitator with basic skills in fishery survey methods and in participatory rural appraisal (PRA)
- ✓ team members from the community (able to identify local fish species using local names)

Materials

- ✓ field notebook
- ✓ checklist of local names vs. scientific names or common names
- ✓ spring balance
- ✓ drawings/photographs of local species not common
- ✓ paper
- ✓ pencil
- ✓ pocket calculator

Prerequisite: site selection

- Planning is essential for a fish landing survey. Visit the area before selecting the study site.
- The proposed site must be representative in terms of fish species, craft, gear, scale of operation and accessibility for data collection. Suitable sites can be selected using PRA methods (e.g., participatory mapping).
- Ideally, the site should not undergo major changes in fishing operations during the year.
- Avoid sites where migrant fishers and vessels from other areas are landing their catch and where there may be conflicts among fisher groups (e.g., traditional *vs.* mechanized sectors).
- Choose sites where the community is supportive of project intervention.

Possible approach

Assessment of present resource status

1. Arrange for the team to go to the fish landing site and record information on fish species, weight and size using direct observation. You may need to convert local units (e.g., baskets) to kilograms. Use the attached form A.
2. Record other information:
 - total number of boats operating on the day
 - seasonality of fish abundance (e.g., peak season for Tuna)
 - seasonality of gears
 - seasonality of juveniles

3. Use this information to compare sites and look at trends.
4. Present the information to community (use maps, charts and diagrams).
5. Discuss the implications of your findings with the community. It will be useful to involve in the discussion a fisheries specialist who is familiar with the village.



6. Assess the need for further monitoring.

Variation

Assessment of changes in the resource status, with time

1. Using interviews, collect information on major species caught, fishing craft and gear used, changes in the sizes of fish landed, changes in the average catch per boat or gear, changes in the number of fishers operating in the area, changes in the fishing grounds, etc. (e.g., 10 years ago, 5 years ago and present). Use the attached Form B.

2. Present this information to community for discussion.
3. Look at the changes over time and discuss the reasons.



Check the information on present yields, craft, gear, etc. by direct observations.

4. Rank the reasons for changes in the resources.

Outputs

- ★ A set of basic data on the fish species caught and landed in the area (type, number/kg).

Fish catch/Fisher			
	1950	1970	1991
Size			
Volume			
No. of fishers	20	15	5

- ★ Decisions concerning intervention measures.
- ★ An analysis of trends in fish catch and landings.



Caution

Intervention decision!

- If the mesh size of the net is increased, initial decline in catch can result. The fishers should not misunderstand this and go back to the old mesh size. It will take some time for the catch to improve and this must be clearly understood.
- If use of a gear catching low priced fish is discontinued, absence of cheap fish may marginalize the small scale fish processors who depend on cheap fish.

Strengths

- Provides a broader understanding of the resource.
- Useful in evaluating changes that have occurred and understanding the reasons for such changes.

Limitations

- Monitoring of impact requires more effort and can be time consuming.
- Some data from 5-10 years ago is based on perception and experience rather than actual records; information may not be accurate.
- This method is not suited for monitoring artisanal fisheries.

Prepared by Mohan Joseph Modayil

Form A:

Fish landing sheet (fill up for each craft/boat)

Recorder : _____ Date: _____

Type of craft : _____ Horse power: _____

No. of crew: _____

Type of gear(s) : _____ Mesh size/
No. of hooks: _____

Area of operation : _____

Duration of operation: _____

No. of fishing days per month: _____

Fish Species	Quantity (kg)	Average size (cm)
Yellow fin tuna	250	800
Yellow Jav	100	300

Number of boats operated on the day: _____

Number of fishing days during the month: _____

Seasons/month when juveniles are caught
for each species: _____

Type and mesh size of gear used during that time: _____

Species of juveniles caught and when: _____

Seasonality of fish abundance: _____

Seasonality of gears used: _____

Form B:

Averages in Resource Status Location: _____ Date: _____ Recorder: _____ Interviewee: _____

	10 years ago		5 years ago		Present	
	Major species caught	Approximate size	Major species caught	Approximate size	Major species caught	Approximate size
Major species caught						
Common craft(s) used						
Common gear(s) used						
Number of boats						
Common fishing grounds						
Approx. catch/boat						

Semi-structured interview

Definition

A semi-structured interview is a conversation with a purpose. As such, it differs from a structured interview which has a specific set of questions in a specific sequence often with multiple choice options for responses.

A semi-structured interview usually involves a set of guide questions or discussion points. The interviewer combines these guide questions with the new questions that arise during the interview (as a result of responses from the respondents). Therefore, the information generated is not limited to a set of predetermined questions but evolves with new information provided by the respondents.



Purpose

Semi-structured interviews are often part of a broader program of research, for example, to complement participant observation or life histories (refer also to topics on focus group discussion and general guidelines for using participatory tools).

A semi-structured interview is a way of generating data or information by providing opportunity for the interviewer to do the following.

- To probe answers.
- To open up new dimensions of a problem.
- To secure vivid, accurate and inclusive accounts based on personal experiences.

Requirements

Materials

- ✓ notebook
- ✓ pen or pencil (ask permission from the interviewee to write)
- ✓ tape recorder (optional)

Preparation for the interview

1. Gather and review available information about the village.

2. For a more meaningful conversation, observe people, be familiar with the local technical terms they use and understand the cultural meanings of gestures and other symbols.

Remember that your sex, background, age and personality will affect the interview. For example, rural women may feel uncomfortable talking to a man even if no personal questions are asked.



3. Use participatory techniques in identifying key informants (refer to topic on identification of key informants).
4. Prepare an agenda and list of topics.
5. Phrase questions that require participants to tell a story and not those that are only answerable by YES or NO.

Example of a good question (open-ended)

How often do you go to the market?

Example of a bad question (leading)

Do you go to market twice a week?

6. Arrange for a place for the interview wherein the informant will feel at ease.

Types of questions to ask

1. Descriptive questions – These prompt informants to describe their activities.

Example: Could you describe what happened after the tourist resort was constructed?

2. Structural questions – These attempt to find out how informants understand their situations and organize their knowledge.

Example: Has the dynamite explosion affected your fish catch? If so, how?

3. Contrast questions – These encourage informants to discuss the meanings of situations and provide an opportunity for comparisons to take place between situations and events in the informant's world.

Example: How would you compare the fish catch of now with that of 20 years ago?

4. Probing questions - These allow informants to analyze and reflect on the deeper causes of a particular situation. Probing questions usually start with "Why?" and "How?"



Suggested approach

1. Introduce yourself and the purpose of the interview.
2. Present the general topics or themes to be covered in the interview.
3. Start with simple questions that require description. Then move on to more complex structural and contrast questions. Be particularly sensitive when asking probing questions.



Tips

- Start with general questions and then get more specific.
- Make links between the comments by posing further questions in the informant's own words so as to encourage him/her to provide a portrait in his/her own terms rather than in the interviewer's terms.
- Ask questions in different ways to probe so that informants will provide further information.
- Make links between observations and information given during the interviews.

4. Write-up the interview as soon as possible when it is still "fresh in your mind."
5. When possible, share with the informant how you have used the information from the interview.

Be aware that people might respond differently depending on who might be listening in the background. It would be ideal to conduct interview alone with the informant.

Strengths

- Semi-structured interviews can generate perceptions and emotions in detail.
- Interviews can lead to the truth.
- If done well and cross-checked with other information, semi-structured interviews can provide an excellent situationer for the area. The interviews can particularly be effective for revealing personal dynamics and how these affect the topics under discussion.

Limitations

- It is time consuming.
- Different interviewers may get different results. It is recommended that an experienced interviewer conduct the interviews.
- Some responses may be influenced by personal biases, e.g., people may use the interview to talk about personal grievances, etc.
- People may give answers which they think you expect to hear.

Variation

Group interviews

Group interviews are advantageous because the group has more control over the discussion as well as the questions posed. They also provide an opportunity for a dialogue among the participants in the group.

A multi-disciplinary team composed of a sociologist, anthropologist, biologist and practitioners from other disciplines may also conduct interviews although caution should be taken that the participants do not get overwhelmed by the presence of these people.



Local people can be trained to conduct interviews themselves with the members of the community. The informants might be more comfortable talking to them rather than to "outsiders".

Prepared by Corazon Lamug

Family food analysis

Definition

A process of assessing the nutritional adequacy of the foods and beverages consumed by individual members of the family. The process provides an opportunity to gather information on food diversity, food sources, food allocation and food security.

Family food analysis also includes the recording of the schedule and the number of meals taken each day, the practice of taking snacks and the sharing of food with relatives and acquaintances.

Individual food preferences, taboos and beliefs are also documented during the process. There are several tools used in family food analysis but food recording and weighing will be the focus of this paper.



Purpose

- To describe a family diet in a coastal area.
- To classify participants into well-fed, over-fed and under-fed categories based on percent diet adequacy.
- To identify, characterize and locate (through maps) groups or households that are nutritionally at risk.

Requirements

Human resource

- ✓ nutritionist or trained facilitator

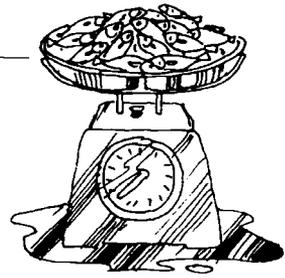
Materials

- ✓ ball pens
- ✓ ruler
- ✓ food record form (sample attached)
- ✓ weighing scales (dietary and bathroom)
- ✓ calculator
- ✓ tape measure
- ✓ measuring cups (solid and liquid)
- ✓ measuring spoon
- ✓ food composition table
- ✓ Recommended Dietary Allowance (RDA) table (optional)
- ✓ weight for height table
- ✓ food materials for demonstration and dry run
- ✓ camera (optional)

Prerequisites

The family food analysis is best conducted when:

1. Arrangements with local officials, community and organization leaders have been completed.
2. The facilitator has visited all parts of the community, has interacted with the residents and has some idea of their work schedules.
3. The facilitator has reviewed secondary data on the community.
4. The facilitator has coordinated with fieldworkers of other organizations.
5. Sample households have been invited to participate.
6. All materials needed are ready.



Collaboration with fieldworkers of various organizations in the area should be sought and strongly encouraged to avoid duplication of data collection activities and to facilitate other development initiatives.

Possible approach



Food has multi-faceted meanings to different individuals and households. Cultural and psychological values contribute to the meanings attached to food. This could affect the quality of people's participation in the family food analysis. Allow enough time to get to know the target participants before the activity.

1. Subdivide the community into sections that appear to have similar levels of food consumption.

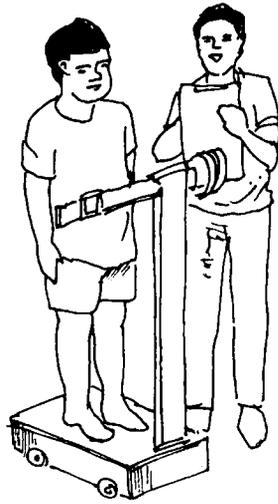


2. Select sample households at random from each section (30% of the households/area).
3. Conduct food weighing demonstration for the participants and explain how they should use the food record form.

Caution

Not all food is consumed at a group meal at fixed times. Thus, the eating habits of the participating families must be determined and the recording method adjusted accordingly.

6. Measure height and weight of individual household members.
7. Distribute forms and explain to individual family members how to record their daily food intake. They should do this on one ordinary day, one market day and a Saturday or a Sunday.
8. Ask the nutritionist or local fieldworkers to go around several participating households during weighing time to check if they are doing it correctly (optional).
9. Collect the completed forms after several meals and review and discuss the data.
10. Let the nutritionist or health workers calculate the nutrients (optional).
11. Ask the nutritionist to assess the nutritional adequacy of the diets documented.
12. Use the data to document households that are nutritionally at risk.



Outputs

- ★ Indigenous weekly menu.
- ★ Compilation of recipes with food beliefs and taboos explained and a list of suggestions on nutritional improvement.
- ★ Poster of nutritional/health status of the population.

- ★ Recommendations regarding health and nutrition programs and food production.
- ★ Spot map of nutritionally at risk households.

Example



Legend:

- ⊛ Nutritionally at risk household

Strength

- Provides detailed household level information.

Limitations

- Recording and weighing require practice for accuracy and precision.
- Time consuming. Participants must be highly motivated to sustain participation.

Variation 1: Food consumption

The method of recording food consumption can be modified or simplified to address the time and capacity of both the participating families and the facilitator. One variation to the process described above is as follows.

1. As described in the approach stated earlier.
2. As described in the approach stated earlier.
3. Determine the best ways to record food consumption. This will be determined by source of food, who prepares it, when and how it is cooked or prepared. Convenient measures are the most practical.

For example: “cups” of rice, pieces of fish, numbers of carrots. However, this will have to be tried in each sample household to be sure there is some way to relate the units to more precise, quantitative figures.

4. Get rough estimates from a number of families than a detailed information from a few families who might be able to and conscientious about recording information.

In some ways, the comparison of consumption by different members of the same family is more important than standardization of measurements for comparison between families.

5. Use semi-structured interviews (refer to this topic in this sourcebook) to explore these options.
6. During the interviews, obtain information on food preferences, taboos, sources of food (fishing, garden, market, relatives, etc.) changes in food availability over the years (what did you eat as a child) and seasonal changes in diets.

Variation 2: Food path

This method was developed by the International Institute of Rural Reconstruction (IIRR, 1987) and had been used in the Children's Program of the Institute in SADOPECO, Sto. Domingo, Albay, Philippines.

1. Ask for volunteers to post the steps that food items will take from production to consumption. Post the pictures on the board.



Planting



Transporting



Marketing



Cooking



Family
distribution

Sequence used by the children's program

2. Have the other participants comment on the sequence.
3. Ask the participants to identify for each step the following points. Write the responses below each picture.
 - a. Conditions/Problems
 - b. Solutions
 - c. Person/Agency Responsible:
 - Family member: Father/Mother
 - Agency: Department of Agriculture and Food, Department of Health, etc.
4. Discuss the results. Reinforce correct comments and modify wrong ones.
5. Proceed to the next topic or health program planning.

Sample output: Analysis of food path

Problems

Planting

1. No land
2. No capital
3. Calamity
4. Lack of knowledge in planting
5. Expensive fertilizer
6. Land not fertile

Transporting

1. Rough roads
2. Lack of public transport
3. No permanent public transportation
4. Expensive fare

Marketing

1. Lack of produce
2. Expensive goods
3. Fruits and vegetables not fresh
4. Vegetables too heavy on chemical inputs
5. Inaccurate weighing scale
6. Lack of knowledge in selecting nutritious food

Cooking

1. Lack of knowledge in cooking.
2. Lack of knowledge on quality of food.
3. Unsanitary utensils used in preparing food
4. Lack of knowledge in food preparation

Family distribution

1. Many family members but not enough food
2. Meals are not served on time
3. Feeding of children not given enough attention

Sample output: Analysis of food path (continued)

Recommendations

1. Seek help from the Barangay Council and people who have vacant lots
2. Plant in cans or pots
3. Make backyard gardens
4. Seek help from the Department of Agriculture and other agencies or people who have planting materials
5. Continue planting even after calamities
6. Learn Bio-Intensive Gardening (BIG)
7. Educate parents on:
 - a. nutrition;
 - b. family planning;
 - c. health care; and
 - d. cooking.

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Prepared by Angelita M. del Mundo

Assessment of income from fishery resources

Definition

This tool focuses on the assessment of the income the community earns from the resources it exploits. These may be fish, shellfish, mollusks, seaweeds or any other living resource which is systematically harvested from the local area.



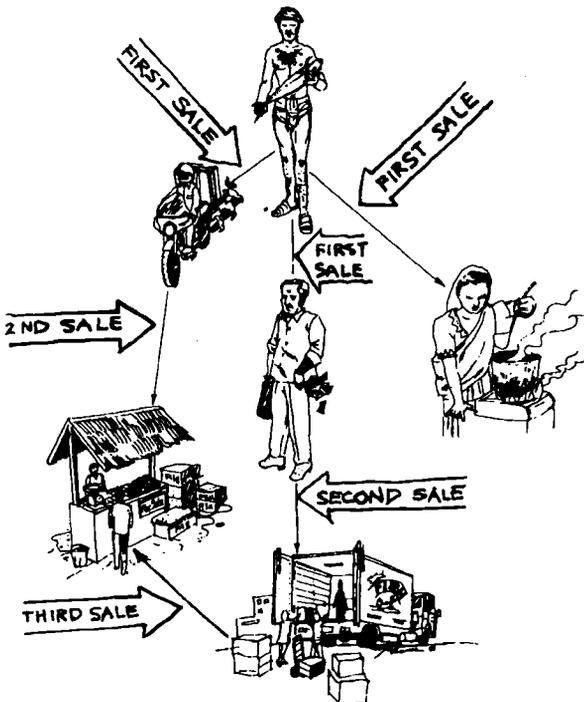
This method only measures the value of these resources at the point where they are sold for the first time; it does not measure value additions by further sales or transformations into other products.

Purpose

- To analyze the economic viability of the community's fishing practices.
- To consider options for improving fishing practices.
- Information can also be used in demographic analysis and economic planning at the community level.

Caution

The money value of the resource must be estimated at the point of the **FIRST SALE**. This is the place where the resource is exchanged for money for the first time after capture. Subsequent points of sale **MUST NOT** be considered for this assessment.



Prerequisites

Adequate planning should go in to the assessment process. Pre-assessment site visits must be made to select as many sites as possible to cover all types of resource exploitation activities and scales of operation.

Requirements

Human resources

- ✓ trained facilitator who takes the lead in the community to carry out the assessment during the early stages
- ✓ volunteers from the community

Materials

- ✓ field note book
- ✓ calculator
- ✓ site map



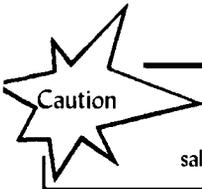
Pre-assessment activities like problem identification and participatory planning can increase the level of involvement by the community. Participation may be limited during the initial stages. But as the community becomes more familiar with the techniques, the facilitator will be able to reduce his/her participation and pass on the skills and responsibilities to them.

Possible approach

Two basic sets of data are needed for the assessment. These are:

- estimates of quantity landed of each resource; and
- average sale price of each resource.

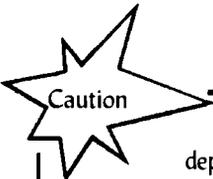
Collect the above sets of information from the sites of first sale using direct observation and semi-structured interviews (refer to these topics in this sourcebook).



Care must be taken to make correct estimates of sale price. Use direct observations and secondary sources to validate the sale prices and to estimate the quantities landed.

Decide on the method of data collection. Two possible approaches are described here. Use the criteria given below to choose the method.

<p>Method 1 Unit value method</p> <p>Advantages</p> <ul style="list-style-type: none"> • Participatory in approach • Results are very useful to community • Gives detailed price structure on varieties and units <p>Disadvantages</p> <ul style="list-style-type: none"> • A lengthy process • Skill/ training needed 	<p>Method 2 Total value method</p> <p>Advantages</p> <ul style="list-style-type: none"> • Easy and quick to do • Does not require high level of skill <p>Disadvantages</p> <ul style="list-style-type: none"> • Less participatory • Results may be too generalized • Gives only gross values
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The selling price of a resource changes or varies depending on supply, demand, local situations, perceptions, quality deterioration and value added. Remember that results are only estimates of the true/actual value of the resource.

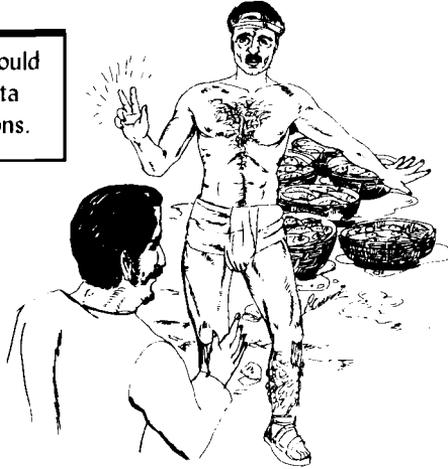
Method 1: Unit value method

1. Use a site map to make a list of all the sites where resources are landed after capture from the whole locality. Find out what types and how many gear units are operating in the area. If there are sites with a very high catch, select a smaller number of gear units from the site for data collection. Make sure that these include all varieties and scales of operation.
2. Visit the sites where the resources are sold for the first time. This could be a landing site on the beach, a local market, a village outlet, a trader's collection point or a retail outlet. Find out the total number of gear-wise fishing units landing in the whole area.
3. Find out the local units of measure for sale of the catch (e.g., baskets, bins, bagnets, heaps, numbers)



4. Find out the prevailing price for each variety of landed resource by making inquiries from fishers, auctioneers, traders, vendors, commission agents or agents of wholesale merchants who are present at the landing site.

The survey team should validate the field data by direct observations.



5. Find out the total number of units (e.g., baskets) of each species caught in the area. Do this by direct observations at all the landing sites and in the area through one-on-one interviews with the fishers. Use the data sheet for tabulation and assessment. If there are many gear units in a site:
 - select representative numbers; and
 - gather data from those fishers to find average catch for each species per gear/craft. Multiply this by the number of gears/crafts in the site to get an estimate of the total number of units of each species caught on that site.
6. Estimate the total value of each variety landed for the day by multiplying the average price per local unit by the total number of units caught in all the sites in the area.

Add up the values for all the species to obtain the total value for the entire site for the day.



Because landing quantities and prices may be different at different times of the day (or night), assessments should be done at several times - during early hours, during the peak and during the last hours of the landing. The results from these three assessments can then be added together and divided by three to reach a more accurate estimate of the total number and total value of the resources caught on that day.

7. Repeat this exercise several times during the same season to obtain average daily value for the season.

Note

- Estimates for the season or year can be obtained by multiplying this value by the number of fishing days during the season or year as the case may be.

Example

The average catch of mackerels estimated from five assessments in March at Kakinada Bay, India (two landing centers) was 68 boxes per day (range was 20 to 90).

The average price was Rs. 720 per box (range was Rs. 520 to Rs. 1200) at the first sale point.

There were 36 fishing days during the mackerel season.

Therefore, the average daily money value was $\text{Rs. } 720 \times 68 = \text{Rs. } 48,960$ while for the entire season, the landed resource of mackerels was worth $\text{Rs. } 48,960 \times 36 = \text{Rs. } 1,762,560$.

The mackerel season for the area was restricted to this 36 days and therefore, this was the amount for the entire year also.

There are 460 mechanized boats, 250 catamarans, 280 beach landing crafts and 16 shore seines operating in this area.

- If estimates of cost of fishing operations (fuel + labor + overheads) are available, this can be deducted from the gross value to yield the net income for the whole area. This will be a better index of the money value of the harvested resource.
- It may not always be possible to collect species-wise information because low value species may not be sorted out and sold separately. In such cases, only estimates of grouped species are possible.

Method 2: Total value method

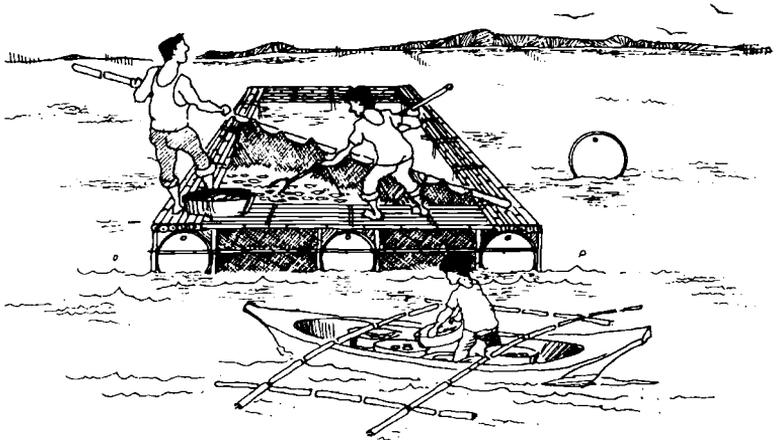
1. Choose a convenient place to interview the fishers.
2. Find out the total value of the fish sold during the day from the fishers through group interviews. This may be validated from auctioneers/fish vendors/middlepersons/traders.



3. Repeat this exercise several times throughout the fishing season.
4. Estimate the total number of fishing days in a month/season/year.
5. Multiply the average value obtained from the several interviews by the total fishing days of the month, season or year to give the gross value for the corresponding period.

Variations

- The value of the catch caught by each fisher can be calculated. By deducting his/her operating cost, the fisher would be able to calculate the net income he/she receives from fishing.
- The value of the catch for different types of gear can be assessed separately (e.g., handlines, beach seines, cast nets, traps, gill nets, etc.) so that incomes from these activities can be compared and information used to improve the profitability of fishing.



- The value of fishing resources can be calculated by weight rather than by local unit of measurement. The information can be on total weight for each species caught; and price per kilogram of each species.
Multiply these together to find total gross value.

Output

- ★ Data on the value of the resources caught in an area with respect to total value, per species, per type of gear, per individual fisher.

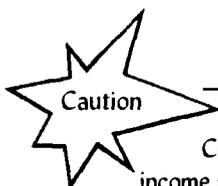
Field data sheet			
Locality _____			
Date _____			
Interview I			
Species	Total weight a	Value per kilogram b	Total value c = a x b
1.			
2.			
3.			
4.			

Strengths

- It is a community-based analysis where the fishers play a supporting role in assessing the profitability of the fishing activity.
- Reduces errors normally associated with indirect methods, e.g., valuing of resources based simply on perception and hearsay.
- It gives a straightforward measure of what the fishers can earn from their activity at the first sale level.

Limitations

- The process is time consuming and tiring.
- Inaccurate data on value or quantity of catch can result in incorrect estimates.
- Resource types may change and therefore updates are needed.
- Prices of fish may change with time or depending on supply, demand, quality and local situations and therefore, estimates made are valid only for short periods.



Caution

Community members may be concerned that income information may be used as a basis for taxes or they may consider their marketing information as confidential. The information you receive may not be complete or accurate.

Compiled by Mohan Joseph Modayil

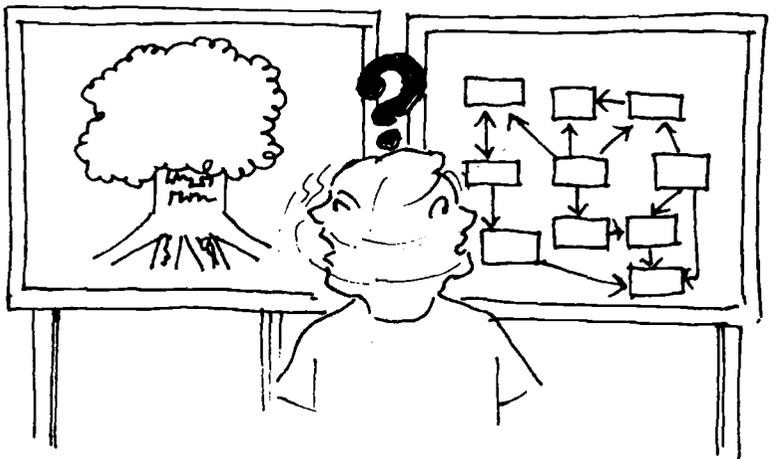


**Visualizing and
diagramming
relationships**

Problem trees and webs

Definition

Problem trees and webs are diagrammatic presentations of a problem, its causes and effects. These are done after a community has identified and prioritized its problems.



Purpose

- To identify core problem, its root cause and effects.
- To help the community members, development agencies, planners and researchers identify the cause and effect of a specific problem, and to agree on points of action.

Requirements

Human resources

- ✓ facilitator
- ✓ co-facilitator
- ✓ record keeper

Materials

- ✓ flip chart
- ✓ marker pens
- ✓ board
- ✓ board pins
- ✓ blank cards (optional)

Suggested approach

Choosing whether to use a problem tree or problem web

Problem trees are appropriate for participants who are new to using participatory tools, since they are quite simple to do. Problem webs allow participants to draw out more complex, interlinked relationship among effects or among causes. They can be done by more experienced participants.

Problem tree

1. Tell the participants that the focus will be one problem, its cause and effects. Give an example to distinguish between "problem", "cause" and "effect".

Example

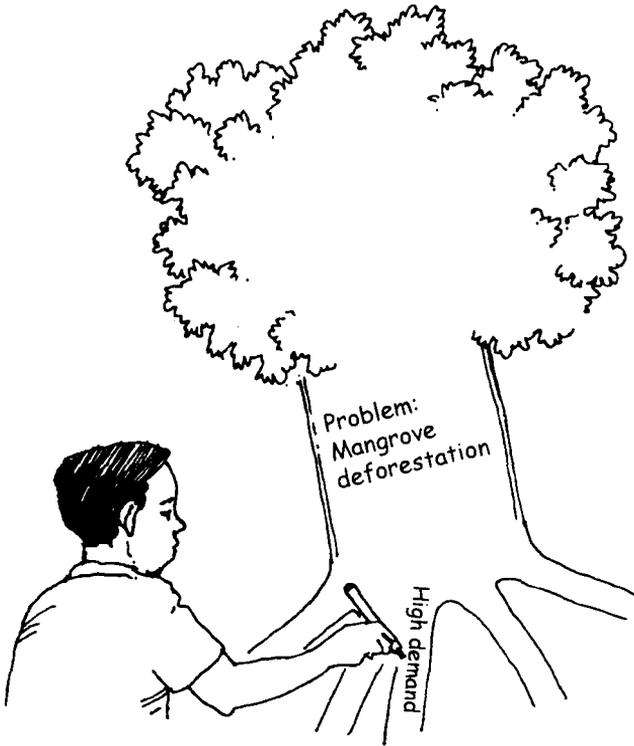
Problem: mangrove deforestation

Cause: high demand for firewood

Effect: decline of young fish in the area

2. Draw an outline of a large tree on the board. Do not draw yet the branches or roots. Write the problem on the trunk.

3. Let the participants brainstorm over the causes of the problem by asking the question “why?” Draw a root for each cause, and write the cause on the root.



4. Repeat the question “why?” for each cause identified in step 3, to identify secondary causes. Write these lower down the roots, below the primary causes identified.

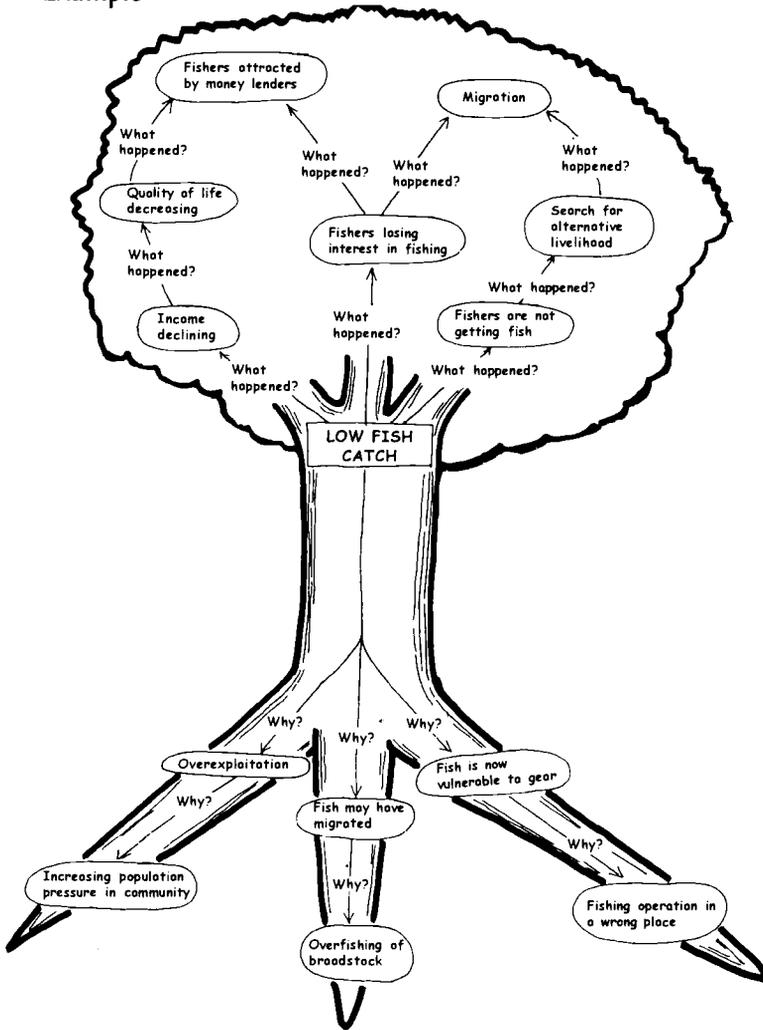


Primary causes may have common secondary causes, and even primary causes may be linked. Make the appropriate links in the roots of the tree to represent this.

5. Allow participants to continue until they can identify no more secondary causes.

6. Then ask participants to identify effects or impacts of the problem by asking “what happened?” Draw a branch for each effect, and write the effect on the branch.
7. For each effect identified, repeat the question “what happened?” to reveal secondary effects. Place these higher up the branch above the primary effects.

Example



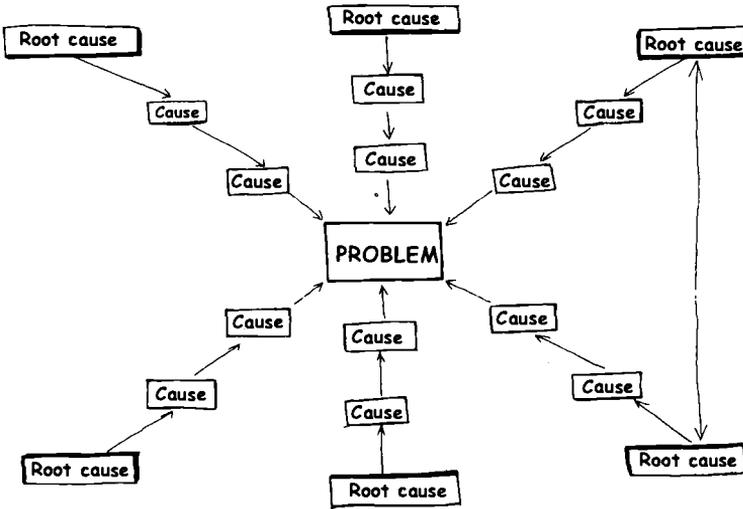
8. Allow the participants to continue until they can identify no more effects of the problem.

The facilitator can help participants produce a more polished version of the problem tree on another paper for future use.

Problem web

1. Tell the participants that the focus will be one problem, its cause and effects. Give an example to distinguish between "problem", "cause" and "effect".
2. Write down the chosen problem at the center of a large piece of paper.
3. Ask the participants to write on a card one cause of the problem by asking "why?" Place the card on any side of the center box.
4. Ask "why?" to this cause and write the answer in a box next to the card. Again, ask "why?" to this and write the answer in yet another box. Continue this process until the root cause is arrived at.
5. Draw an arrow from the last box to the center box connecting all the intermediary boxes. This gives the picture of the problem-cause relationship.
6. Ask the participants to identify another cause and write it on a card. Pin this up and go through steps 4 and 5 for this new cause.
7. If two root causes are the same or are linked, connect them with a two-way arrow on the diagram.

Example



Note

A problem web can also be used to identify the effect of a problem.

Variation

For both problem trees and problem webs, participants can write all the causes and effects they identify on separate cards and pin them on the tree. One advantage of this is participants can easily move the cards around as they see links among the causes and effects.

Output

- ★ A problem tree or a problem web. This can be the focus for developing a plan of action to resolve the chosen problem.

Strengths

- Develops the community members' skill in identifying complex webs of causes and effects in analyzing their problems.
- Gives a comprehensive view of the causes and effects of a particular problem.
- Helps clarify relationships between causes or between effects.
- Simple to conduct and easily facilitates understanding through clear visual presentation using a tree or a web.

Limitations

- Participants cannot easily confirm an issue, a problem, a cause or an effect. A good facilitator can guide them in deciding.
- Participants might identify some causes that they feel are beyond their power to change. This can lead to frustration. However, communities often have more power than they realize (e.g., they might be able to change government policies through an advocacy campaign).

Prepared by Dipankar Saha

Venn diagram

Definition

The venn diagram is a tool for illustrating relationships and relative influence of institutions, issues or problems related to an area or project. The venn diagram commonly uses circles or cutouts to represent groups. The size of the circle is related to the influence of the group. The position of a circle relative to other circles shows relationships. The position of the circles relative to a boundary distinguishes internal and external groups.



The diagram is conducted by all the participants present or a group of key informants who are familiar with the issues or relationships of institutions and the community.

Purpose

- To identify groups, individuals or institutions, both internal and external, and the nature of relationships between them and the community.
- To identify the interaction and relationship between different institutions vis-a-vis a particular subject (e.g., CRM, illegal fishing, etc.) in the community.

The venn diagram can be used at any time after the initial stages of a CBCRM project (e.g., resource assessment and planning). It can also be done after program implementation to determine changes over time in the relationships and degree of influence related to a particular issue.

Requirements

Materials

- ✓ cartolina or colored papers cut into varying sizes of circles, 3-5 sizes of circles at least 10 pieces each
- ✓ craft paper or manila paper
- ✓ card cut in square 1" x 1" to represent the subject coastal community
- ✓ markers
- ✓ masking tape

Possible approach

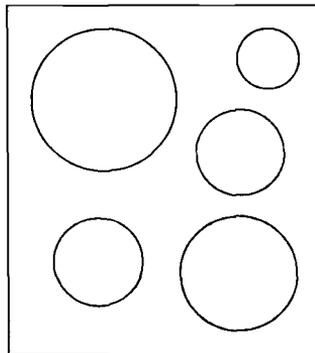
1. Gather key informants.



2. Explain the objective and use of the venn diagram to the participants.
3. Place the craft paper on the ground or on the table and ask participants to gather around.
4. Agree on the legend (or meaning of circle size or placement) that will be used. Some important considerations include the following.

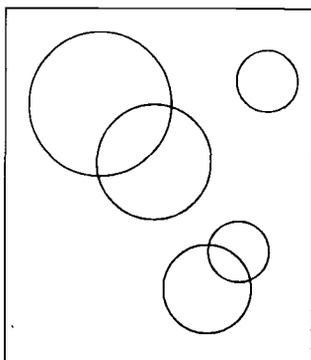
Size of the circles

- The larger the circle the more influence the group represented by that circle has on the issue.
- Size should be relative to other circles.



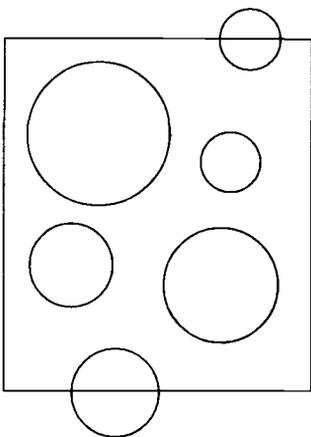
Placement of circles

- Circles representing institutions that influence each other can be placed overlapping each other depending on the degree of influence or number of similar membership.



Boundary

- A rectangle represents a boundary such as the community or project area.
- Circles inside the boundary represent internal groups.
- Circles overlapping the boundary are external groups with presence in the community or activities.
- External institutions but with some degree of influence in the community will be placed outside of the square; its relative distance from the square will depend on the link or effect of the institution identified.

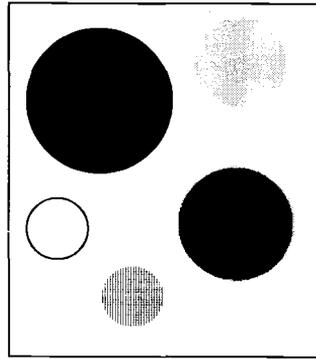


Remember

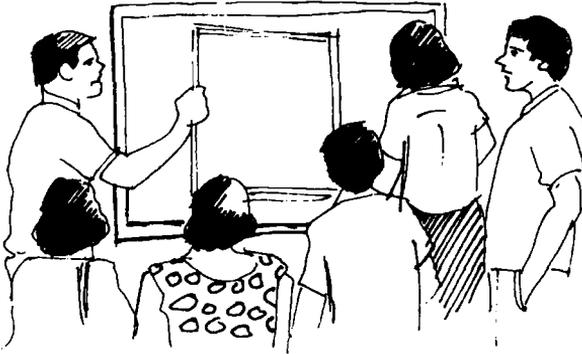
This is a sample legend. If your venn diagram requires the illustration of other relationships, be creative. Remember, always indicate the agreed meaning of circle sizes and positions somewhere on the group output.

Color of circles

- Colors can be used to differentiate between types of groups (e.g., red – community based; blue – government; black – academe).



5. Draw or paste a rectangle on the craft paper to represent the subject coastal community.



6. Ask the participants to identify groups (institutions or individuals) providing support or intervention in their community, both internal and external to them.
7. Symbolize each institution with a circle of the proper size.
8. Using masking tape, position the circles according to relationships between them and relative to the boundary. Allow the participants sufficient time to discuss positioning of symbols.

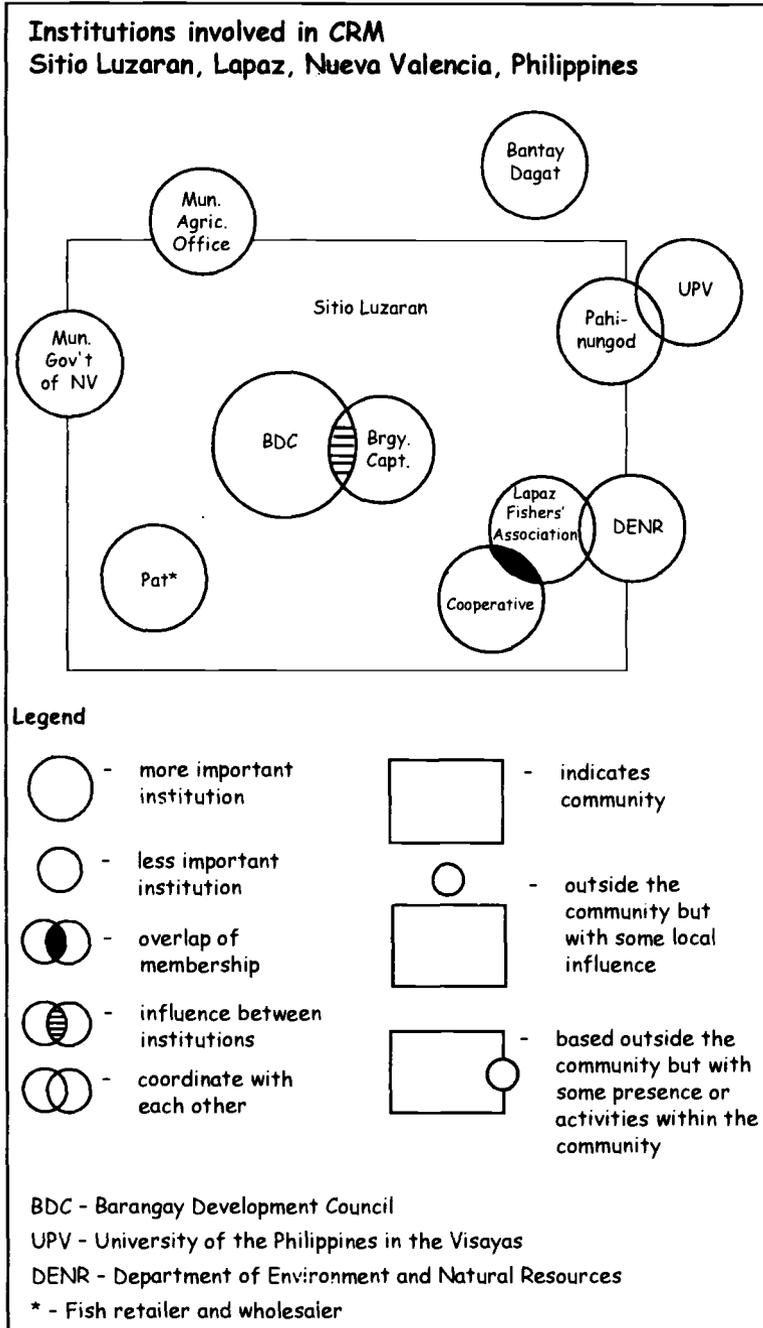
9. Let the participants review their outputs and make changes when necessary.
10. Write the legend used at the lower part of the craft paper.
11. Validate with a larger group if only key informants are involved in preparing the diagram.
12. Encourage the larger group to analyze the output. If necessary, prompt by asking open-ended questions or questions that will lead to discussion.
13. Make a copy for yourself and leave the original diagram with the community.



Output

- ★ A visual representation of the relative influence of groups on a community or issue and their relationship to each other. The participants that prepared and validated the venn diagram will have a better understanding of the key groups affecting a given issue.

Sample output of a venn diagram



Strengths

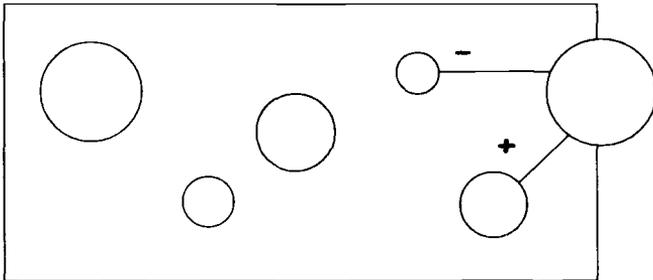
- Summarizes complex information in a visual manner.
- Identifies informal groups and institutions not recorded in secondary data.
- Highlights local perceptions on the relationships and level of influence of groups.

Weakness

- If the legend is omitted or lost, the information may be misinterpreted.

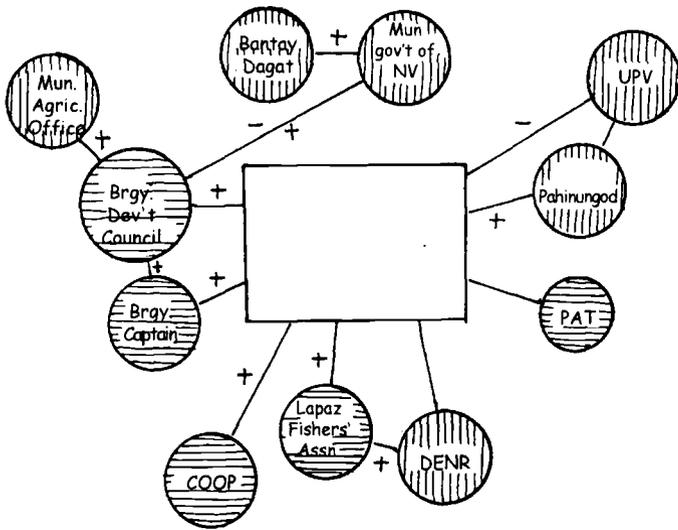
Variation

The type of relationship between group, i.e., positive, negative, neutral, can also be shown using venn diagram. Draw lines between groups that have some form of relationship. If the relationship is considered positive (i.e., the groups work well together) then the line is marked with a plus sign. If the relationship is antagonistic, the line is marked with a negative sign.



Sample output of a venn diagram showing type of relationship

Institutions involved in CRM
Sitio Luzaran, Lapaz, Nueva Valencia, Philippines



Legend

- - More important institution
- - Less important institution
- - Indicates the community (in this case, Sitio Luzaran)
- - Institution within the community
- - Outside institution/service organization providing assistance to the community
- + - Positive relationship
- - Negative relationship

UPV - University of the Philippines in the Visayas

DENR - Department of Environment and Natural Resources

References

- Community resource appraisal and planning workshop. 1996. Sitio Luzaran, Brgy. Lapaz, Municipality of Nueva Valencia, Philippines.
- IIRR. 1996. Recording and using indigenous knowledge: A manual. International Institute for Rural Reconstruction, Silang, Cavite, Philippines.
- SMISLE. 1995. Conducting the community resource appraisal and planning workshop. SMISLE Sustainable Development Process. Small Islands Agricultural Support Services Programme, Cebu City, Philippines.

Compiled by Melodie Buendia

Commodity flow diagram

Definition

Commodity flow diagram is a method that helps community members trace the movement or flow of their products from one area to another. It answers the following questions: Where does a particular product go when it leaves the production area? Who sells the product? Who buys the product? For how much? At what volume? What happens to those that are not sold?



Purpose

- To introduce basic marketing concepts.

- To generate information on the local market structure, e.g., prices, presence or absence of middlepersons brokers, presence or absence of cooperatives, infrastructure support, credit facilities, mark-ups/profits, taxes, etc.
- To identify and analyze marketing issues that need intervention.
- To broaden the community's awareness of the local market structure and economy.
- To develop marketing strategies for the products of the community.

Requirements

Human resources

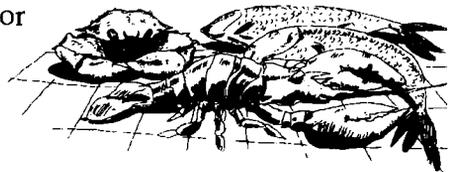
- ✓ extension staff
- ✓ facilitator
- ✓ marketing specialist (optional)

Materials

- ✓ craft paper
- ✓ markers
- ✓ masking tape

Possible approach

1. Ask participants to identify key commodities they produce and sell.
2. Divide the participants into groups composed of 5-8 members. Ensure that all groups work on the same commodity or commodities to ensure wider sharing of experiences.



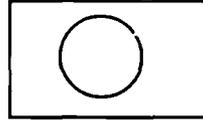
3. Explain the four important symbols used in the tool.

- a. The illustration of the commodity.

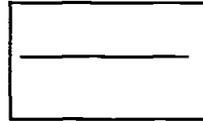
This represents the commodity being analyzed and is a reference point of the community.



- b. The size of the circle. This refers to the volume of product each market outlet absorbs.

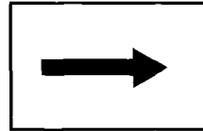


- c. The length of the line. This pertains to the relative distance of the market outlet from the community.



Sometimes, distance is not the only key factor. Other variables, e.g., time to market, accessibility, etc., should be considered.

- d. The arrow. The direction indicates the mode of transporting the commodities to the market. Commodities are either delivered (arrow points to the buyer) or picked up (arrow points to the seller) at certain areas.



4. Ask the participants to illustrate the flow (from producer to consumer including middlepersons) of each of these commodities.



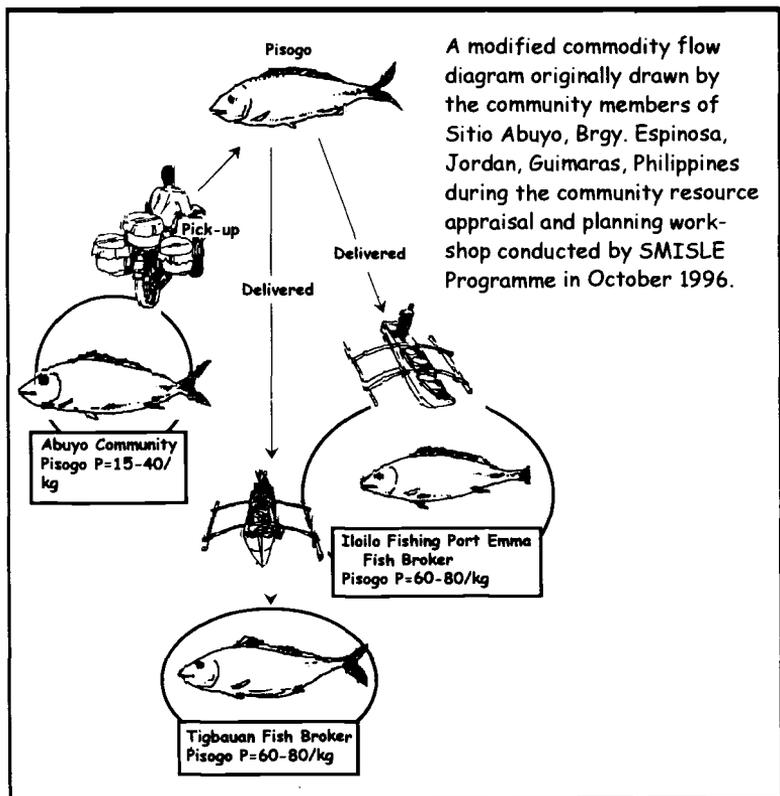
5. Give the groups at least 15 minutes to work on the exercise. Then, ask each group to present their workshop results.

6. Synthesize the result by pointing out the common or similar features of each small group workshop output. Try to resolve conflicting perceptions until the bigger group reaches a consensus.
7. Analyze results and draw out significant observations, learnings and recommendations into a commodity flow diagram that summarizes the group consensus.

Outputs

★ A diagram illustrating the flow of community products.

Example: Community flow diagram



- ★ An analysis of market-related problems/issues affecting the community products.
- ★ Information on the local economy and market structure.

Example

In 1995, at Brgy. Sto. Rosario, Pitogo, Bohol, Philippines, local fishers sold their wild grouper to the local market at a very low price. With the introduction of livelihood project coupled with this tool in early 1996, they started selling their cultured grouper to restaurants/hotels in Cebu, Philippines, commanding higher prices.

Before



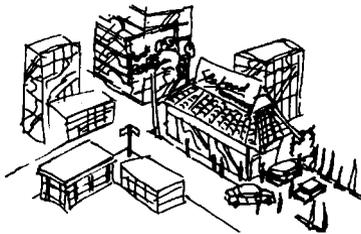
Community to one trader pathway

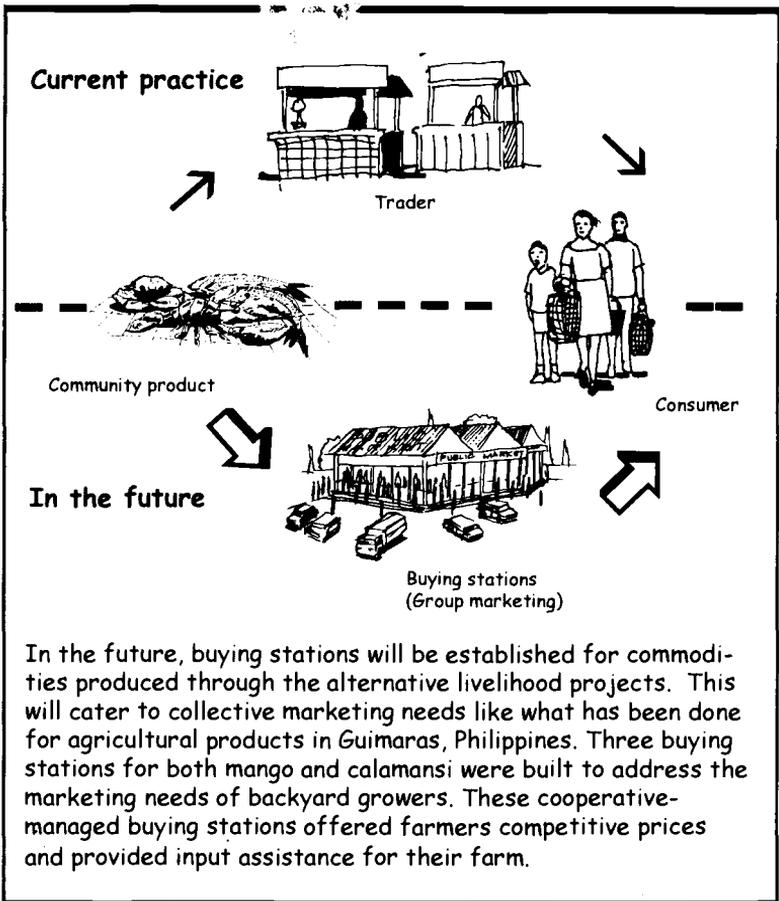


After



Community to other marketing options





Variations

- This can be used as a project-specific planning exercise focusing only on one commodity, e.g., grouper, lobster, siganid, etc.
- Targeting specific groups during the exercise can be done among women, young people, fishers and other homogeneous groupings (ethnicity, gender, age, etc.). There might be differences in the price and market structures and availability of credit facilities for the products of men and those produced by women.

Strengths

- Requires very minimal cost.
- Opens discussion on trader-producer relationships particularly on financing.
- Can be a very good introduction to a savings and credit component of a project.

Limitations

- Price of the product is not usually provided accurately. People tend to keep the information secret to protect their interests.
- Mean price of commodity fluctuates. This means that the data will only be relevant to a certain period of time. The use of a seasonal calendar to plot fluctuation can help project trends on commodity prices.
- Fishers find it difficult to change market system even if results of analysis point to this direction because they are indebted to local traders.

Compiled by William Jatulan

Family portrait

Definition

A family portrait is a description or a detailed profile of a selected family in a coastal community. It presents a detailed account of the interactions of the family with the bio-physical, socio-cultural, economic and political environment. It documents how different family types make decisions that affect the coastal community via their resource use system and how they are consequently affected by changes in the coastal environment.

A family portrait is generated through the use of semi-structured interviews. It also makes use of other participatory methods such as daily activity or time lines at the family level.



Purpose

- To determine the characteristics of certain types of families and how these affect or influence their attitude and behavior towards the coastal environment. Resource use patterns are results of the decisions made not only at the community level but also at the family or household level.
- To provide insights into the dynamics of family life in coastal communities.

The results can be used by the community in designing a CBCRM program that would meet the varied needs of different types of families in coastal communities.

Requirements

Materials

- ✓ barangay/village profile
- ✓ other relevant documents, e.g., results of semi-structured interviews with key informants
- ✓ markers or pentel pens, preferably of different colors
- ✓ notebook
- ✓ pen
- ✓ brown paper

Suggested approach

1. Set the objectives of the activity.

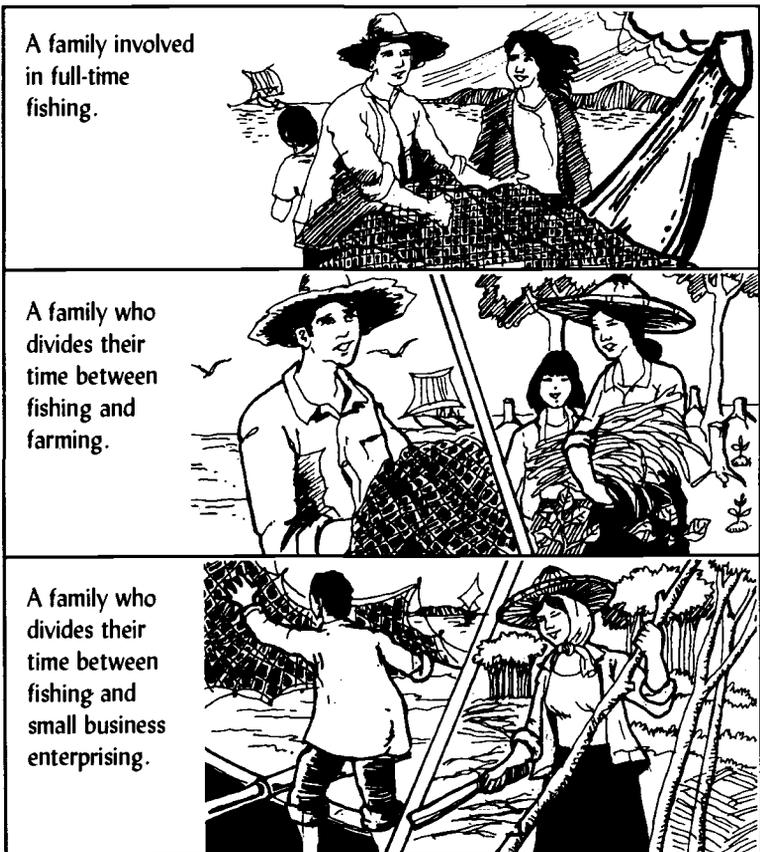
Examples

- To determine factors that families consider in deciding how to use the coastal resources.

- To determine the reasons for participation or non-participation in coastal resource management community projects.
2. Select families representing a cross-section of the community that you will make a portrait of.

Example

- Families that are full-time fishers, families that are part-time fishers and part-time farmers, or families that are part-time fishers and with part-time involvement in a small business enterprise (e.g., selling firewood).



Secondary data and semi-structured interviews with key informants provide a good basis for the selection of sample families for the portrait exercise.

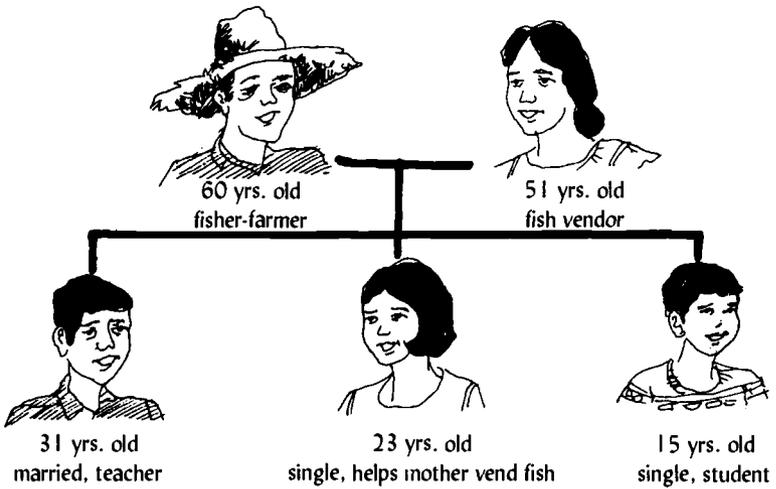
3. Get an estimate of the percentages of each family type in the village from key informants or any other available data. Get at least three suggestions from the key informants on the possible families within each type to do a portrait.
4. Prepare a set of guide questions to generate the information needed based on the objectives.



Guide questions

- What is the structure of the family?
- What are the sources of income? If the family is multiple earner, what is the primary source of income?
- How are the activities divided among members of the family? Construct a seasonal calendar for the family's various economic activities.
- What is the family's fishing history? How have the family's fishing practices changed over time? What are the reasons for changes?
- What facilitates or constrains the family from participating in community projects for coastal management?

5. Ask the whole family to participate in the making of their own portrait. Use the family tree as a starting activity.
6. Using the family tree, generate other details: age, civil status of children, occupation, income, contribution to family income, food supply and other household resources by each family member.



7. Continue using the semi-structured interview to generate the portrait of the family. Use other graphical methods such as daily activity, historical lines (at the family level) to make the process more participatory and creative (e.g., if done along the beach, use available materials to illustrate or draw the portrait).
8. Compile notes and write the narratives after the interview. Give a copy to the families interviewed.



Caution

- In writing the report, be cautious about distinction between confidential information and information for public consumption.
- Be sensitive about personal family and ethical issues. Example, the way the family members interact that suggests power relationships within the family.

Output

- ★ Family profiles or portraits that are representative of the main types of families in a given coastal area.

Contributions of each family member to the household resources



Strengths

- Provides information which may not otherwise be collected in community meetings and that necessitate probing from other information sources.
- Involves the whole family as the unit of analysis.

Limitations

- Facilitator has to have the trust and confidence of the families to generate accurate portraits.
- Can be time-consuming depending on the number of family portraits that have to be generated.

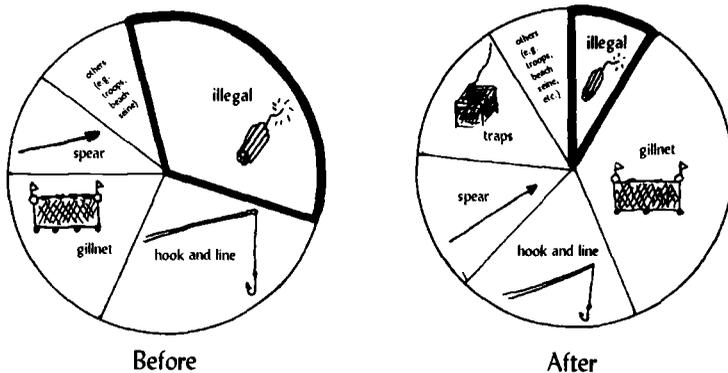
Prepared by Victoria Ortega-Espaldon

Presenting numeric data in diagrams or charts

Definition

This is the representation of comparative information (temporal, spatial) or numeric data using simple diagrams, graphs or charts in a manner wherein data can readily be shared with and understood by others.

Fishing gears used one year before and one year after marine protected area (MPA) establishment



Purpose

- To explain and visualize comparative or numeric data, which are often difficult to understand and hard to appreciate.
- To translate and summarize collected information in a format that is simple, attractive and easy to understand at a glance.

Requirements

Materials

- ✓ numeric or comparative data from finished appraisals
- ✓ colored chalk or crayons
- ✓ black board or manila paper

Possible approach

Do this immediately after the data gathering.

Some possible sources of data for charting

- | | |
|---------------------------------|-----------------------|
| • daily activity | • transect/quadrat |
| • logbook | • resource assessment |
| • fish catch landing assessment | • seasonal calendars |

1. Organize a short meeting with the team that collected the data and other interested members of the community to decide how to present the collected data.

2. From the data set, list all the types of information or comparisons that can be presented. Write/post the list on the board.

3. Ask the participants to identify which items are hard to understand or will be understood better if presented differently through charting.



4. Ask the participants to brainstorm on creative ways to represent the data. Be prepared to have a list of options to stimulate ideas, if necessary, for them to choose from.

Try to work with at least two different types of charts for each topic and see which type better illustrates the data.

5. Make the diagrams and charts according to the participants' ideas. This process could take more than one day.



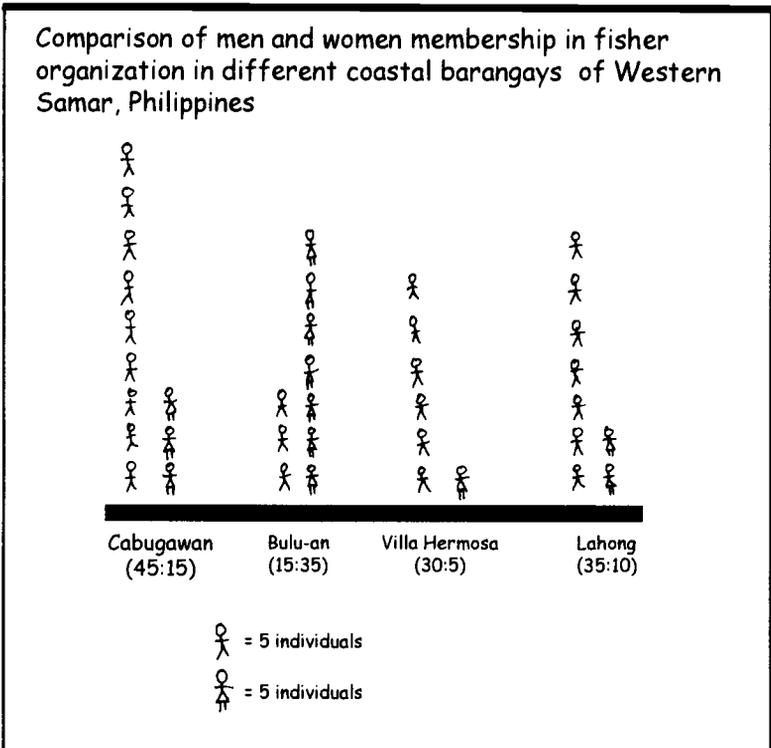
Reminders in making diagrams/charts

1. Chart only information really needed (as determined during the meeting or focus group discussion).
2. Do not try to put too much information on one diagram.
3. Make sure that symbols used are clear and appropriate.
4. Put a heading for each chart or title.
5. Test the ideas/style of the output by presenting it to the other members of the community and see if these are clear and easily understood.

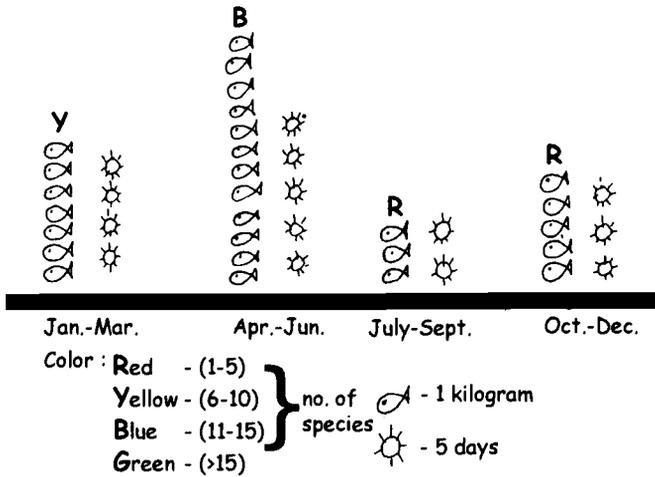
Output

- ★ Diagrams, graphs and charts representing collected data which can be used by the community for planning, awareness raising, information dissemination, etc.

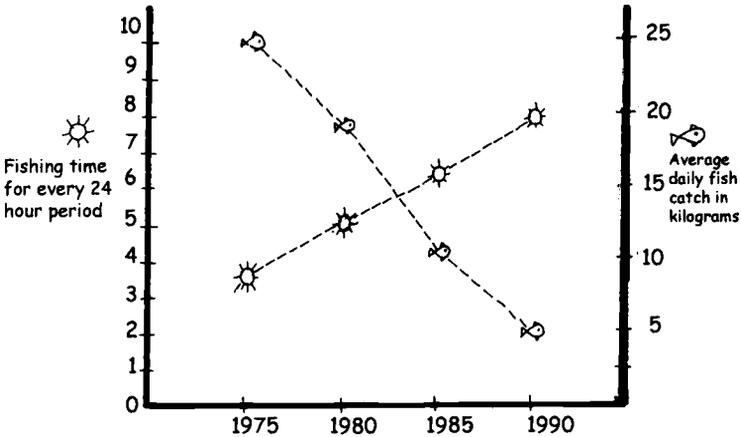
Example of outputs



Quarterly average of fish catch by a municipal fisher in Brgy. Cabugawan showing the average no. of fishing days per month and the relative no. of species caught per operation



Fishing time and fish catch: changes 1975-1990



Compiled by Vence Adajar



Temporal methods

Seasonal calendar

Definition

A seasonal calendar is a tool for documenting regular cyclical periods (i.e., seasonal) and significant events that occur during a year and influence the life of a community.

The seasonal calendar provides a general picture of important environmental, cultural and socio-economic periods throughout the year.

The seasonal calendar activity can be conducted at the early stages of participatory assessment. It should be after the preparation of the resource map, as the features on the map may serve as a guide for the calendar.

Sample seasonal calendar matrix

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
WEATHER											
											
SOCIAL ACTIVITIES											
											
ECONOMIC ACTIVITIES											
											
COMMON ILLNESSES											
											

The calendar emphasizes qualitative information focusing more on periods (usually lasting a few days or more) than events (that usually last a day or less). The periods are based on experiences from previous years.

Purpose

- To inform practitioners of community-based coastal resource management (CBCRM) of important and regular periods during the course of a year that influence the activities and socio-economic conditions of coastal communities.



Be aware of and make use of local calendars.

- To identify appropriate periods for conducting various CBCRM activities.
- To generate information that highlights potential biases in information collected only during certain periods of the year.

Requirements

Human resources

- ✓ facilitator (preferably experienced in coastal/fishery issues)
- ✓ co-facilitator (may be necessary if the group size is large)
- ✓ participants



Participants involved in preparing the seasonal calendar must come from the coastal community of that area. Encourage the more marginalized sectors, i.e., municipal fishers, indigenous groups and women to be involved as these groups are often an overlooked source of important traditional ecological knowledge.

Materials

- ✓ craft paper
- ✓ tape or push pins
- ✓ pentel pens
- ✓ different colored pens, crayons
- ✓ notebook

Possible approach

1. Prepare for the activity by having participants draw an outline of the local annual calendar on craft paper.

Example

Seasonal calendar												
Activity	MONTHS											
	J	F	M	A	M	J	J	A	S	O	N	D

2. Ask the participants to identify important environmental, cultural, or socio-economic periods in a year that influence their activities or condition. Give examples such as rainy season(s), cultural festivals, periods of high incidence of disease or food insecurity. (Refer to box for other suggestions).

The activities/ events which could be used are:

- environmental conditions (e.g., weather, currents)
- fishing (e.g., fish catch levels and spawning times of the top five important fishery species)
- economic aspects (e.g., household expenditure, market values)
- illegal activities (e.g., dynamite fishing, pollution)
- social aspects (e.g., health, education)
- other livelihood activities (e.g., agricultural crops, tourism, handi-crafts)
- socio-cultural activities (e.g., religious events, holidays)

3. Use symbols or drawings to add interest to the activity. Let the group decide what symbols they want to use.

For example,  could be a symbol for rainy season. It should be placed in the matrix at the appropriate time periods (e.g., months) that it occurs.

4. Repeat the process for other periods.
5. After the activity, transfer the output from craft paper to a long bond paper. Leave the original with the community.



Analysis

When analyzing the calendar, make links within the calendar and with the overall problems and issues of the community.

For example, is expenditure high at the same time as destructive fishing occurs? When is expenditure high and why? Are school fees due? When are the commercial fishing vessels encroaching? Is it at the same time as the fish catch is low? Is fish catch high due to fish stocks being high or because of increased fishing effort due to high demand by the markets?

Encourage the community to probe into issues and make the links. Note down what trends need more study and data gathering.



Tips

If there are data gaps, then a strategy to fill these should be put in place. One such method is to keep a logbook to record significant events, e.g., destructive fishing, endangered species. Some activities/ events may need further discussion, this may be best facilitated by inviting key community members to participate in a focus group discussion (example: illegal fishing). (Refer also to topics on logbooks and focus group discussion).

Outputs

- ★ Seasonal calendar
- ★ Analysis of trends

Strengths

- Involves all sectors of the community.
- Comprehensive: includes social, economic, political and environmental issues.
- Quick and easy to do (requires few inputs).

Limitation

- Relies on people's memories.

Prepared by Karen P. Vidler

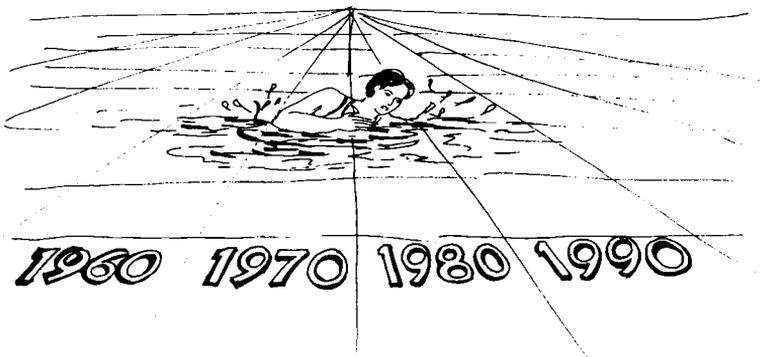
Historical lines

Definition

This activity generates historical information on significant changes in the community's environment, demography and other events that affect the community.

This tool documents significant events and changing conditions in the community in written format, symbols or both. Ideal participants should include elders, long-time residents and younger groups.

This tool can be used during the initial phases of program identification with focus on marine environment and socio-economic conditions. Succeeding activities may focus on specific events.



Purpose

- To better understand the local, national or international events the community considers important in its history, how it has dealt with problems and issues, e.g., natural resources and environmental, economic and political issues, in the past.
- To gain insights on present practices and attitude of the community.
- To provide an overview of the community's history. The details of historical lines can be done through other temporal tools such as historical transect, trend lines and historical narratives.
- For the younger generation to appreciate previous experiences of earlier community members. The older generation would be able to share their insights and thoughts to the younger generation.

Requirements

Materials

- ✓ pentel pens
- ✓ craft paper
- ✓ masking tape
- ✓ crayons
- ✓ bond paper
- ✓ scissors
- ✓ paste or glue
- ✓ available historical documents or write-ups

Possible approach

1. Organize the participants composed of elders, males, females and young adults (maximum 20). Have each group (of five or six people) construct time lines. Participants may also choose not to group themselves.
2. Rather than defining what is important for them, ask the participants to identify the events that shaped and influenced individual and community activities.



Date when the fish kill first occurred can be a starting point of discussion on CBCRM.

3. Let the groups use large sheets of paper and permanent markers to write in large letters, preferably in the local dialect.
4. Ask each participant to list one event for each sheet of paper. Ensure that these are written large enough to be seen at some distance. After doing so, let the participants group the events in their respective years. After which, present the results to other participants for validation.

5. If interested, allow the participants to divide the information into useful categories such as environmental or natural changes (e.g., occurrence of natural calamities) or human-made events (e.g., political, economic or cultural).
6. When the time line is established and agreed upon, determine whether one or another type of event (drought, for instance) is increasing in intensity and frequency.

Discuss the trends and how the community has adjusted to these changes. Ask participants for their opinion about recent efforts by the government, church, or other groups to address the community's problems.



Tips

- If the group is having difficulty in establishing dates for particular events, try to relate them to other well-known events like war, e.g., World War I and II, drought, typhoons, earthquakes, etc. Refer to available historical documents or write-ups.
- Ensure that everyone has materials to use and work on and encourage participation.
- Activity should not exceed an hour but if the participants are enthusiastic then allow them more time.
- Avoid situations wherein a single participant (e.g., elder) dominates the activity.
- Make sure that participants concur on identified reference points.

Output

- ★ A chronology of significant historical events in a particular community.

Sample output

Historical line of Taytay Poblacion, Palawan, Philippines

Year	Poblacion
1600	Raids by Moro pirates
1700	Taytay is the capital of Paragua, Palawan
1930	Establishment of Pujalte Estate Lumber, Co.
1940	Entry of "Pescador" fishing vessels - 1960
1950	Assasination of A. Sarabia
1950	San Diego Concession started
1957	Decline in fish catch felt
1960	Term of Mayor Ordenez started
1961	Private high school founded
1972	Municipal hospital constructed
1978	People become shareholders of PHS
1982	Puerto Princesa-Taytay highway completed
1985	New market site completed
1989	Assasination of Vice Mayor Gabiana
1990	Cyanide fishing becomes widespread
1993	Illegal logging exposed
1994	Drug smuggling exposed

Variation

Historical lines can also be presented using a matrix that identifies certain CBCRM parameters such as fish catch, income, etc., and comparing past and present status.

1. Identify parameters relevant to CBCRM and write them in the first column.
2. On the second column, let the participants describe the status in the past (e.g., 10 years ago).
3. On the third column, ask the participants to describe present conditions.
4. In the last column, give the explanations for the change.
5. Present and discuss the matrix for group validation.



Sample output

Barangay Silang, Cavite, Philippines

	Situation 10 years ago	Situation today	Explanation for change
1. Rainfall	Same as today		
2. Fish - variety - sizes - catch	More Big 100 kg/day	Less No change 20 kg/day	Illegal fishing (No explanation) Overfishing
3. Income	More	Less	Low catch
4. Education	Less	More	Overseas workers
5. Use of illegal fishing methods	Less	More	No alternative livelihood
6. Population	More	Less	Migration
7. Mangroves	Trees more saplings less	Trees less saplings more	Fish ponds
8. Coral reefs	More	Less	Blast fishing
9. Fishing ground	Near	Farther	Low catch

Strengths

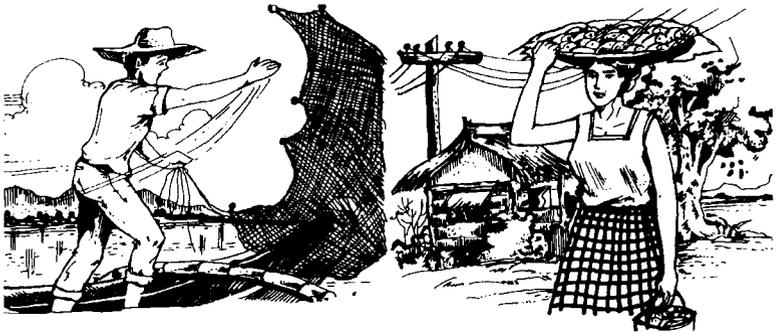
- Provides detailed historical information that could complement the results of other temporal tools.
- Reveals differences or similarities between men and women. For example, men may show interest for national events that affect their lives while women may show concern for dwindling resources that affect their immediate daily lives.
- Enhances historical documentation thereby providing useful information for future use.

Compiled by Ephraim Batungbacal

Daily activity

Definition

A tool that provides information on the various activities performed daily in the reproductive and productive sphere, as well as in community leadership and management. This tool can complement other tools that look at time such as historical timeline and seasonal calendars.



Purpose

- To identify the activities performed by the various sectors in the community in a day. This tool is also used to differentiate daily activities of various segments of a community, particularly according to gender.
- To help CBCRM practitioners better understand the constraints that local people have regarding their time thus helping them design more appropriate community organizing strategies and CBCRM activities with the community.

- For CBCRM planning, implementation and monitoring, the tool can help identify primary interest groups that have the time, skills and experience on management activities and/or alternative economic development.

Requirements

Materials

- | | |
|-----------------------------------|----------------|
| ✓ crayons | ✓ manila paper |
| ✓ pencil | ✓ bond paper |
| ✓ pentel pen
(assorted colors) | ✓ masking tape |

Any materials that can be used to represent/help visualize the participants' responses.

Prerequisite

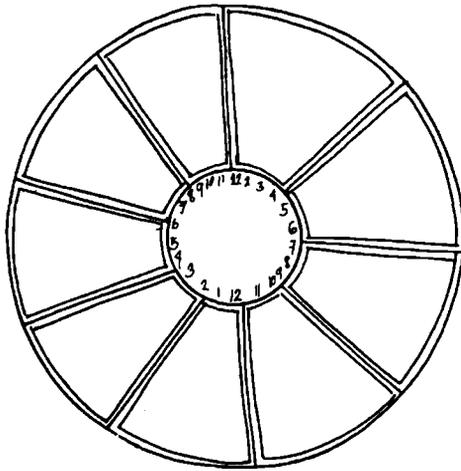
Daily activities should be conducted after the initial participatory assessment activities have been introduced such as timeline, resource mapping, transect and seasonal calendar. At this stage, the participants are already familiar with the participatory nature of the tools/activities.

Possible approach

Prior to the meeting

1. Invite participants (10 to 20 members) from the community with a balanced representation of men and women from the major sectors of the community (e.g., fishers, farmers, youth, etc.).

2. Explain to the participants the nature and purpose of the activity. Clarify with them the schedule and venue.
3. Prepare a blank 24-hour chart on a sheet of poster paper for each group (e.g., men, women and children).



During the meeting

1. Explain the activity, purpose, use of the information, general flow and expected output.
2. Provide each participant with bond paper and pencil and ask them to write/list down the activities they do in a typical day, from the moment they wake until they retire.
3. Divide into sub-groups (e.g., according to gender, sector, age, etc.) depending on the objective of the activity. Ask each individual in the respective sub-groups to share his or her typical daily activities.
4. Ask each sub-group to prepare a daily activity chart representing the typical activities of that sub-group. If possible, draw or symbolize each activity.

5. Ask each sub-group to choose among themselves a group leader/facilitator and a rapporteur. Ask the different groups to share/present their work to the rest of the participants.



6. Ask the participants to share their personal insights/feelings about the information that came out of the whole process or activity.



Tips

- Be prepared to conduct daily activity at night specially when this is the only time available for the participants.
- Sub-grouped results must have the consensus of all the participants.
- Encourage the participants to present the data/group work.

Output

- ★ A visual presentation of typical activities undertaken by various segments of the community.
- ★ Information on how various segments of the community allocate and manage their time.

Sample output



Variations

The participants could be asked to do daily activity charts during different seasons or phases of production. For example, daily activity during peak and lean months for fishers (refer to topic on seasonal calendar for specific periods).

Male participants could be asked to do the daily chart of the female and vice versa. This could provide insight on the perceptions of each group on the other.

Regular use of the tool can help monitor the impact of participation in the implementation of the development plans on the workload of women and men. (Changes in workload; sharing of domestic work between men and women).

Strengths

- Activities done by women which are usually neglected or not given importance are reflected in this tool.
- An effective tool to start self/gender awareness in the community or initiate gender planning to address the issues faced by the women in the community.
- Facilitates data segregation between male and female in the production and reproduction sphere, and community participation.

Limitation

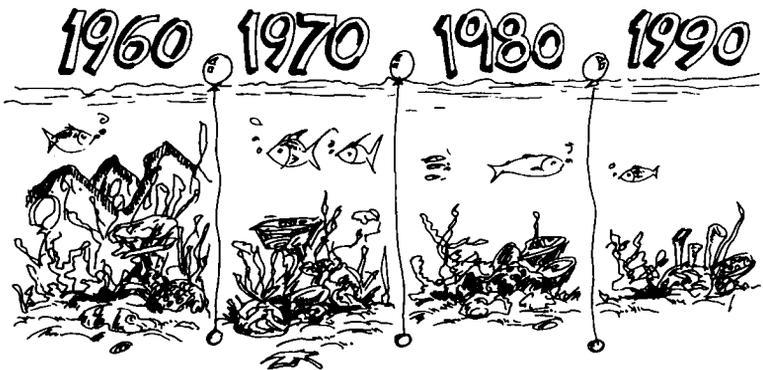
- Important activities not considered part of a typical day maybe overlooked. For example, weekly or monthly events such as religious and community activities may not be reflected in the chart.

Prepared by Jovelyn Cleofe

Historical transect

Definition

A historical transect is a pictorial representation of an area through time. It is used to show trends in both bio-physical and socio-cultural conditions using variables such as land use, vegetation, marine diversity (fish, mangrove and seagrass species), coral reef variety, health or condition, catch trends, fishing gear (legal and illegal), income, health, education and population.



A historical transect can be used during the initial phases of program identification. Succeeding activities may focus on specific events.

This tool can be done along with other temporal tools: historical lines, historical narratives, trend lines and seasonal

calendar. It is also recommended to perform historical lines before the historical transects.

Ideal participants for this tool are long-time residents and younger groups.

Purpose

- To help establish correlations between various parameters over time, e.g., the relationship between fish catch decline and the incidence of poor health.

Requirements

Materials

- | | |
|-----------------|----------------|
| ✓ pentel pens | ✓ craft paper |
| ✓ colored paper | ✓ scissors |
| ✓ paste/glue | ✓ masking tape |
| ✓ bond paper | |

Possible approach

1. Ask the group to brainstorm on possible variables to include in the historical transect (refer also to topic on brainstorming). Select the most significant ones (e.g., limit the variables to 5).
2. Divide participants into groups of six. If possible, male and female participants should have separate groups. It is advisable to have a maximum of 20 participants.

3. Ask each group to divide the manila paper into rows and columns. Write the time or season along the top row. Write the resources or other variables along the first column.
4. Using symbols, drawings or anything available (e.g., magazine, pictures, leaves, shells) ask the participants to give the trends of the variables focusing on the quantity of the variable.



5. Clarify the use of pictorial representations (e.g., does size of tree represent the quantity of trees or relative size of the trees?) Ask them to include the legend beside the transect chart or table.
6. Ask the groups to identify possible reasons for the trends. They may write them down in the last row.

Caution

This tool helps to establish correlations. However, interpretation of the results should be verified by the community.

7. Discuss with the group the trends and how the community has adjusted to them. Ask participants for opinions about recent efforts by government, church, or other groups to address the community's problems and seize opportunities.



Tips

- Limit number of variables to be used.
- Trying to get too much information at one time is not advised.
- Decide on a reasonable interval between the years to be observed in order to establish a trend. It does not have to be a ten-year interval.
- The activity does not usually exceed an hour. But if the participants are enthusiastic, be flexible and allow them more time.
- Include one important event from the historical line to the time periods to help participants think about the conditions at that time.

Output

- ★ Visual representation of the changes in specific variables over time.

Sample output

Year	Population	Income	Fish catch	Mangrove	Coral reef
1940					
1950					
1960					
1970					
1980					
1990					
Trends or correlations observed (per variable)					
Indicators					
Reasons					
Correlations observed between variables:					

Strengths

- Shows how a community perceives local conditions in relation to changes over time.
- May provide initial evidence of correlations between variables. This should suggest additional analysis using other research methods that can examine the subject in greater detail and with greater precision.

Limitation

- This tool only gives a relative picture of trends.

References

Mascarenhas, J. 1992. PRA and PALM: Recent experience from MYRADA and So. India.

PRA handbook: Conducting PRAs in Kenya. Prepared jointly by National Environment Secretariat, Egerton University and Center for International Development and Environment of the World Resources Institute.

Pretty, J.N., I. Guijit, I. Scoones and J. Thomson. 1995. A trainer's guide for participatory learning and action. IIED Participatory Methodology Series. Sustainable Agriculture Programme. International Institute for Environment and Development. London WC1H 0DD, UK.

Prepared by Ephraim Batungbacal

Historical narratives

Definition

Historical narratives are personal testimonies of past events and conditions usually presented and documented in chronological order. These narratives document the first-hand knowledge of individuals who are participants or witnesses to the events. These also document the oral history of the community.

The oral history is a form of a semi-structured interview that emphasizes the chronology of events and their impact.



Although the key informants in this activity are the elders in the village, the presence of the younger generation, including the children, is encouraged for the transfer of information.

Purpose

- To examine the impact of major historical events on the life of local individuals.
- To allow for the transfer of history, stories, folklore information and lessons of specific events from generation to generation.
- To document in detail single perspective chronologies of a given area.

Requirements

Materials

- ✓ tape recorder
- ✓ blank tapes
- ✓ notepad

Possible approach

1. Select respondents (refer also to topic on key informants).
This activity targets older men and women but could also include younger members of the community.



2. Schedule a suitable time and place for the interviews.
3. State clearly the focus of the interview and the questions that you want to address to avoid wandering off into different topics. Prepare questions that will guide the discussion. (Refer also to topic on semi-structured interview.)
4. Start with personal questions (e.g., When were you born? What was the first important event that you can remember in your community?)

Sample question guides

- How have the practices that determine people's access and control over resources changed over time?
- Identify the dominant economic occupations in the past.
- Describe the status of the resource system at different years.
- How has the community perception of resource depletion and environmental degradation changed over time?
- Were there perceived negative changes in the environment? How did these changes affect you?
- What activities have they done in response to these conditions?
- How has the local population changed over time and how has this affected coastal resources?
- What lessons related to coastal resources management have been generated in the past and how could they be relevant today?
- What mistakes (related to coastal resource rights) have been made in the past and how could we learn from them today?

5. An hour of interview is long enough. If the respondent is tired, cut short the discussion. If enthusiastic, be patient and listen. Note down the key points raised.



Hint

You can use a tape recorder but ask permission first.

6. Write down notes and other observations immediately after the interview. Allow the interviewee to listen to the tapes and read the narratives to ensure that the interpretation is appropriate.

Strengths

- Significant events in the past are documented. Historical information adds an interesting dimension.
- Specific events can be studied in detail.
- A very specific and personal case study is developed that adds a human dimension to data.

Limitation

- Information is solely based on respondent's experiences. To validate, cross-check information with other respondents.

Prepared by Ephraim Batungbacal

Trend line

Definition

Trend line graphically illustrates the community's perception of certain events and changes. Perceived changes in land productivity, fish catch, income and other aspects of resource availability and use can be highlighted. Ideal participants should include both long-time residents and younger groups .



Purpose

- To document changes in resource status and infer a particular pattern or trend over time.
- To verify trends shown in the historical transect if the period being analyzed is the same.

Trend analysis helps in understanding how a community views changes in various sectors. Integrating key changes into a village profile simplifies problem identification and makes identification of opportunities easier.



Trend lines can be used for the following topics:

- Fish catch (total production, species-specific)
- Income
- Land productivity (total production, crop-specific)
- Population
- Migration (residents leaving community or new residents)
- Education (increase or decrease in the number of students)
- Government budget for certain sectors, e.g., agriculture
- Illegal fishing activities (incidents/violations recorded) within a year

Topics can also be used for historical transects.

Requirements

Materials

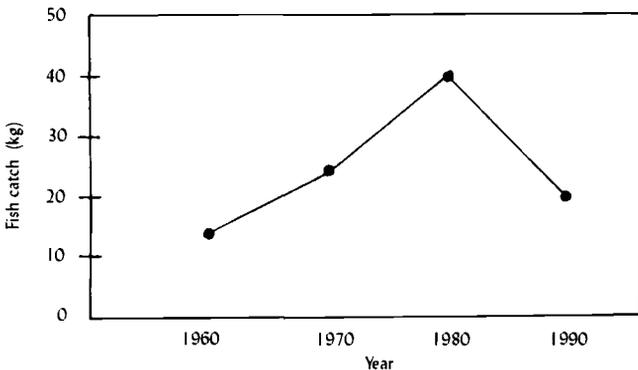
- ✓ pentel pens
- ✓ paste/glue
- ✓ craft paper
- ✓ scissors
- ✓ colored paper
- ✓ masking tape
- ✓ stones, seashells, other material
- ✓ bond paper

Possible approach

1. Organize one to three groups with three to six members.
2. Use a sample graph to explain the concept of trends and trend lines.

Recommendation

Perform historical lines before trend lines. Also refer the results of this activity with other temporal tools, e.g., historical lines, historical transect, historical narratives and seasonal calendar.



3. Ask the group to draw the trends of some of the most important changes in the community. You may make suggestions on how they can do it but encourage them to come up with their own style.
4. Use stones, seashells, art paper or other available materials to show trends.
5. Let each group present their graph to the rest of the group.
6. Probe for explanations of the changes. This helps identify underlying problems. Find out what solutions have been tried, its advantages and disadvantages and reasons for success or failure.



Using manila paper has its advantages as it can easily be stored after use. However, taking pictures of the results of this activity can be an effective documentation tool.

7. Formulate preliminary recommendations to address the problem.

Variation

Let participants draw trends on small sheets of paper using one variable per sheet. Afterwhich, ask the participants to group similar variables together.

Let them present the trends and do the analysis and revisions until the participants are satisfied with the results.

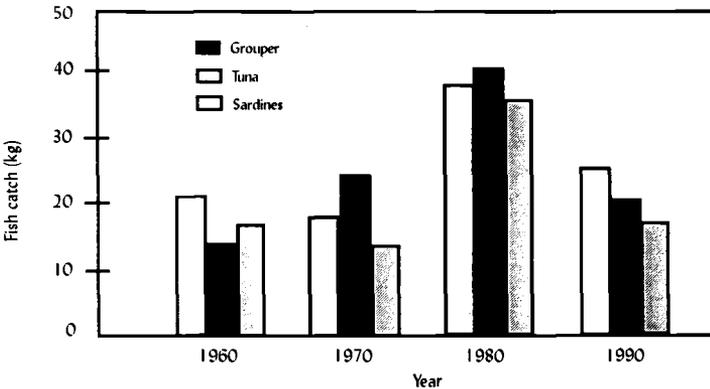
Output

- ★ The output could either be a bar graph, line graph or pie graph with its variation.

Example

In order to consider trends in fish catch, participants might look at three different species separately (e.g., grouper, tuna and sardines). The output of this would be three trend lines.

These data could be grouped together using a bar chart to give a clearer view of changes in fish catch.



Strength

- Provides clear and simple visual presentation of changes through time.

Limitations

- Trends are based on individual experiences. Thus, results may be subjective.
- Relationship between variables cannot be established, although it can be inferred.
Example: declining fish catch and increasing fisher population.

Compiled by Ephraim Batungbacal

Flow charts

Definition

A flow chart is a diagrammatic representation of a series of events, activities or procedures, which can show a sequential process, cycle or flow from beginning to end. (Refer also to topic on commodity flow diagram).



Purpose

- To condense information into an easy to understand format and highlight sequences of activities to give an overview of a process.
- To highlight critical steps in a sequential process where interventions have a good chance of having impact (e.g., a critical link in a commodity flow diagram or a problematic step in a conflict resolution process).

Requirements

Human resources

- ✓ facilitator
- ✓ group of participants

Materials

- ✓ different sizes of paper
- ✓ pens or pencils

Possible approach

1. Identify the process (a flow or a cycle) for discussion, using information previously gathered.
2. Assemble a group of participants (refer to topic on identification of key informants).
3. Brainstorm on the processes involved in the chosen topic. Ask questions like "What do you do first?", "What happens next?"
4. Note the steps as outlined until all steps in the flow or process have been covered. Once they have all been noted, ask some participants to choose one of the steps and try to draw it on smaller card or paper.
5. Facilitate the participants in putting their drawings/ descriptions on to a larger piece of paper in the proper sequence. Use arrows to connect the flows. Other symbols can be used to differentiate between activities done by men, women or children.

6. Analyze the flowchart. Examine each step to identify weaknesses. For example, a flowchart of soil erosion in a coastal watershed may help identify where erosion could be reduced (i.e., at the farm) or how it could be mitigated (i.e., vegetative buffer strips along creeks and rivers).

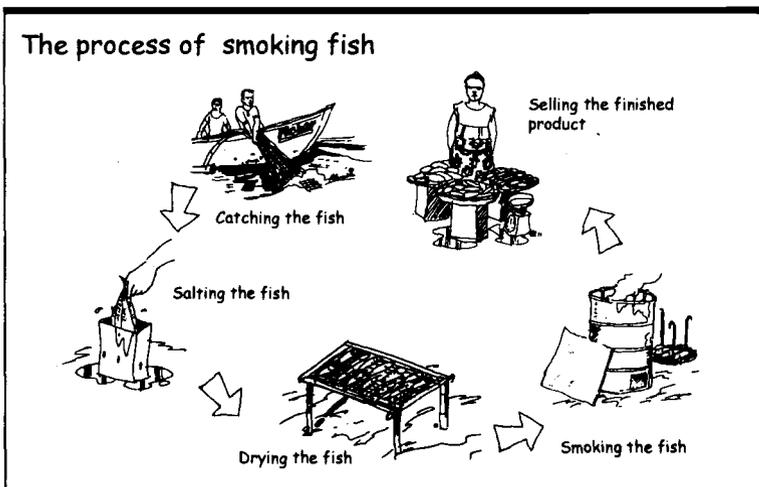
Flowcharts can also be used to examine weaknesses in social or institutional processes. For example, analysis of the process of getting a local ordinance passed to establish a municipal marine sanctuary may point to the step requiring scientific assessment of the site as the most problematic step.

7. Present and discuss the outcome for clarification and validation.
8. Leave the original with the community and make a copy.

Output

- ★ A diagrammatic representation of a flow, process or cycle.

Example of a flow diagram



Variation

Flow charts can be done with different sectors to highlight different aspects of the same process.

Bio-resource or natural resource flow diagrams can be very useful tools (e.g., nutrient flows). The sequence will often not be just one way, but is more likely to be cyclical, going back and forth between the components.

Strengths

- Help outsiders get a better understanding of the 'what' and 'how' of local practices.
- Help identify key areas (i.e., steps or stages) in complex procedures where reforms or efforts to increase efficiency can be directed.
- Raise awareness among local people of the extent and usefulness of their knowledge.
- Information can be easily simplified and presented.

Limitation

- Too much detail can make flow charts too complicated.

References

- IIRR. 1995. Livelihood options for coastal communities. International Institute of Rural Reconstruction, Silang, Cavite, Philippines.
- IIRR. 1996. Recording and using indigenous knowledge: A manual. International Institute of Rural Reconstruction, Silang, Cavite, Philippines.

Prepared by Karen Hampson

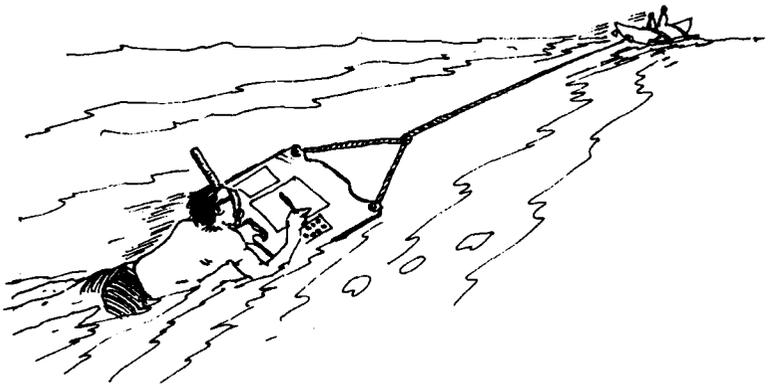


Spatial methods

Manta tow technique

Definition

Manta tow is a survey tool used to look at general trends on the distribution of corals (such as live, soft and dead corals), seagrass, diversity of some indicator reef organisms and/or presence of pollution. However, it may also be used to survey other habitat and marine resources. The survey involves the local members of the community.



This tool provides an overview of the general morphology of the sea bottom. It may also be used to compare fishers' perception about resource status with a more scientific approach. This tool may be used during the baseline data collection phase of specific interventions, e.g., marine reserve establishment. The results from the manta tow can be used to select sites that are representative of large reef areas for more comprehensive and in-depth studies such as underwater visual census.

Purpose

- To determine the extent of the damage caused by large-scale disturbances, such as destructive fishing practices (e.g., dynamite and poison fishing).
- To assess other reef organisms of particular interest (e.g., outbreaks of Crown-of-Thorns Starfish).
- To validate the results of participatory resource mapping.
- To highlight difference in perceptions of fishers and researchers, i.e., scientists.
- To explore fishers' understanding of the marine resources

Requirements

Human resources

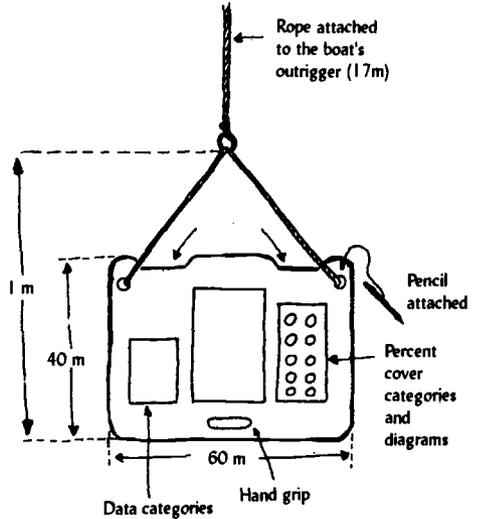
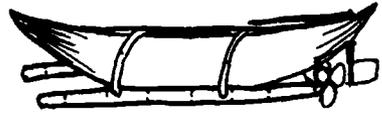
- ✓ boat driver
- ✓ observers (at least 2 persons), preferably one researcher
- ✓ snorkelers (at least 2 persons), preferably a researcher-snorkeler with a technical background and a local fisher-snorkeler
- ✓ person using the manta board (must have previous experience with the technique or access to an individual who does)

Local fishers are usually excellent for this job as they know the area very well.

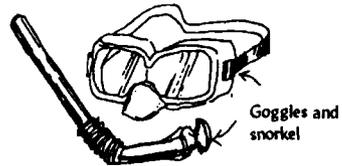
Materials and equipment

Pre-survey

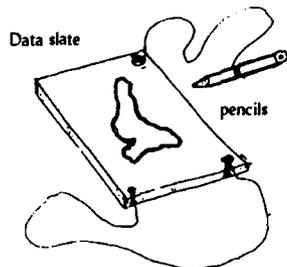
- ✓ a small motorized boat with an outrigger
- ✓ 1-2 manta boards made of local materials with associated slate and data sheet.
- ✓ extra slate and data sheets
- ✓ a map of the reef drawn on the underwater slate or topographic map
- ✓ water-resistant watch to time the tows
- ✓ mask and snorkel
- ✓ anchor
- ✓ extra amount of fuel
- ✓ spare pencils and underwater slates
- ✓ pencil sharpener or knife
- ✓ drinking water
- ✓ first aid kit
- ✓ compass or global positioning system (GPS) (optional)



Manta board



Goggles and snorkel



Data slate

pencils

Post-survey

- ✓ brown paper
- ✓ colored pencils or crayons

Possible approach

Pre-survey

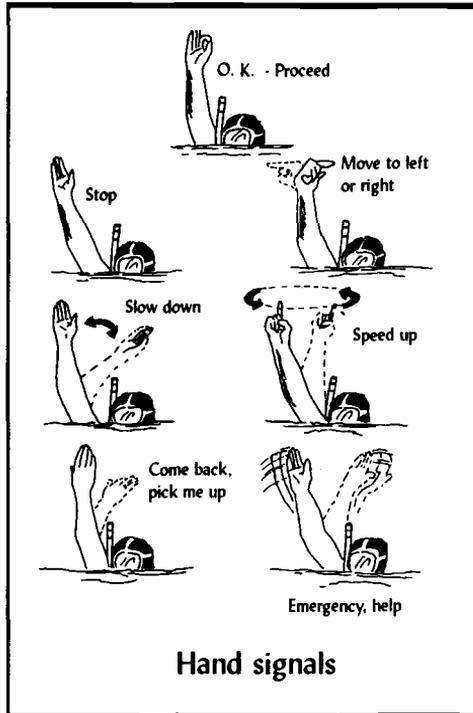
1. Meet with the community to discuss planned activities and explain the importance of the survey.
2. Describe the whole process of the manta tow technique and explain the different categories of coral cover to the community.
3. Carry out a participatory mapping of the coastal marine resources (i.e., seagrass/seaweed beds, coral reefs, etc.). Refer also to topic on resource mapping.

Ask the fishers to use this map to rank the coral areas into five different categories (1-poor, 2-fair, 3-OK, 4-good, 5-excellent). Keep this copy for the post-survey phase.

4. Transfer this map onto the underwater slate.
5. Review the use of snorkel, fins and mask, and proper handling of manta board underwater.



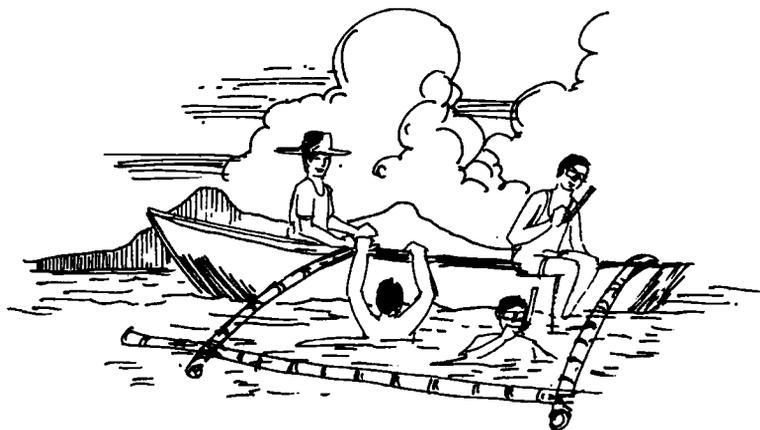
- Review the hand signal signs for snorkeler-observer communication system or make a different system that is more applicable to the fishers.



- Discuss with the fishers what information they would like to survey: various types of corals, fish species, food species, etc. Use local names and the other symbols that would clearly illustrate the variables chosen.
- Identify the route (e.g., north-south, east-west along a fringing reef, ziz-zag or criss-cross route on shoal) and mark the local names of the area.

Actual survey

1. If possible, begin the tow from an easily identifiable reference point. Make sure that the motor is kept in neutral or in idle until the snorkelers are well away from the boat and the rope is laid out.



2. Ask the snorkelers to mark the tow "No. 1" on the sheet attached on the board and give the "o.k." signal to the observers.

Fisher variation: Fisher-snorkeler can use: a) separate manta board; b) the same manta board as the other snorkeler; or c) hold onto the outrigger with an underwater slate.

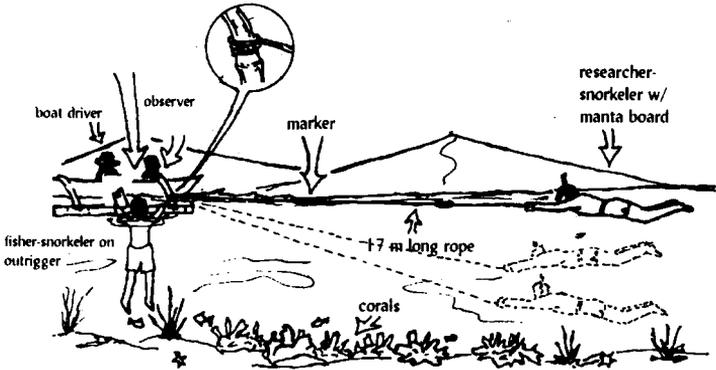
3. Ask the observers to mark the position of the tow on the map and the bearings of the tow on the observer sheet.

Fisher variation: Fisher-observer notes down the position of the tow using local names referring to the area (i.e., triangulation for the start and the end point or local names of landmarks).



Triangulation is a technique using three landmarks to enable fishers to pinpoint their position at sea.

4. Let the boat driver navigate the boat for two minutes at a slow speed of 1-1.5 knots, i.e., speed of brisk walking.



5. Ask the snorkelers to make observations from the surface of the water. Each or both can dive below the surface if the substrate is no longer visible (i.e., less than 6m) or if closer inspection is required.

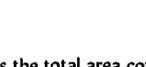


Communication between the snorkelers and observers is done using hand signals or other systems developed by the team.

6. At the end of two minutes, remind the driver to stop the boat and let the observers signal the snorkelers to start recording the data by giving two distinct tugs at the rope.

Data to be gathered

- Estimation of percentage cover

Category	Researcher's perception	Fisher perception	Fisher #
Category 1 0-10%		Coral color White corals (dead)	1
Category 2 11-30%		Few colored corals	2
Category 3 31-50%		Colored corals	3
Category 4 51-75%		Many colored corals	4
Category 5 76-100%		Too many colored corals	5

Percentage cover is the total area covered by the tows occupied by either types of coral (i.e., live, soft and dead corals) and substrate (i.e., sand/rubble).

- Visibility (Vis)

Visibility is recorded every 15 tows, or whenever there is a change in the clarity of the water. It is estimated using the marks tied along the tow rope.

Code	interval (m)	Visibility	Fisher's perspective
1	0-6	poor	Cannot see far
2	6-12	good	Can see quite far
3	12-18	excellent	Can see a long way

- Other observations/fishers' observations on the area

For example, presence of hard corals and their local names (e.g., branching corals, massive corals, etc.), dead corals (e.g., those caused by the effects of dynamites and poison fishing), different types of fishes, visible pollution (e.g., plastics), etc.

7. Simultaneously, ensure that both the snorkelers and observers enter the necessary data under "Tow No. 1" and each gives the "o.k." signal to the other when ready to proceed with the next tow.
8. Rotate the roles of the snorkelers and observers after 15 consecutive tows or when a snorkeler is already tired. Prior to change-over, the team should have a debriefing about their observations (i.e., general reef feature, presence of common or dominant lifeforms, presence of associated and indicator species, characteristics of the area and possible pollution encountered).
9. End the survey when the entire predetermined location has been inspected.
10. If it is not possible to complete a survey in a single set of consecutive tows, put marker or buoys to denote where the next set of tows will begin.

Example of using fisher knowledge

In the Central part of Visayas, Philippines, local fishers have conducted manta tow surveys. During the data collection the fishers identified areas known locally as *Aw*. These are similar to a lagoon and are known as fish-breeding grounds. *Aw*s are very good sites for fish sanctuaries or reserves. The use of manta tow enables the identification of these areas.

Post survey

1. At the end of the survey, check the data collected by the snorkelers and observers. Transfer the data collected into the manta tow data sheet. (Refer also to topic on logbook.)

Sample manta tow data sheet

Date: _____ Cloud cover: (Fine, Moderate, Overcast)
 Time started: _____
 Time ended: _____ Wind: _____
 Tidal level (high, low): _____ Snorkeler: _____
 Observer: _____ Boat driver: _____

Tow #	% CORAL COVER				VIS	LANDMARK	REMARKS
	LIVE	DEAD	SOFT	S/R			
1							
2							
3							
4							
until							
30							

Map of the reef:

2. Prepare the map drawn before the survey. Then, ask the snorkeler-fisher to present his/her data results alongside the map drawn by the fisher-observer.

3. Ask the researcher to present his/her own results.
4. Analyze and discuss the two presentations. Look at trends and compare the differences in data.

Sample data results

Using manta tow technique, two reef communities were surveyed in Antique, Panay Island, Philippines (i.e., the Sebaste shoal and the Pandan fringing reef) for the purpose of community awareness. The fishers were involved in the whole process.

Strengths

- Large areas can be surveyed in a fairly short time.
- Relatively simple to perform after some training.
- Can be performed in remote locations with minimal support.
- Allows comparison of perspectives between the snorkelers. The snorkelers then come up with a mutually agreed upon version of the data results.
- Allows different perspectives of the areas to be discussed (e.g., scientific and indigenous knowledge).
- Enables the fishers to do the manta tow the scientific way and the researcher to do the manta tow the fisher way. This enables learning for both the fishers and researchers.
- If combined with environmental education, it can provide very good results in awareness-building.

Limitations

- The method has a large margin of error, e.g., small animals can be overlooked, the snorkelers may miss other biological data, particularly when the boat is not completely stopped between tows.
- The snorkelers may have too much information to remember, particularly if many variables are being recorded.
- The method can only be conducted during good weather conditions.
- Will take time to develop the participatory method. Unless women are actively encouraged, they do not tend to participate (i.e., as snorkelers).

References

- Dartnall, A.L. and M. Jones. 1986. A manual of survey methods. Living Resources in Coastal Areas. ASEAN Australia Coop. Program on Marine Science Handbook. Townsville: Australian Institute of Marine Science. 167 pp.
- English, S, C. Wilkinson and V. Baker. 1994. Survey manual for tropical marine resources. Australian Institute of Marine Science, Townsville.

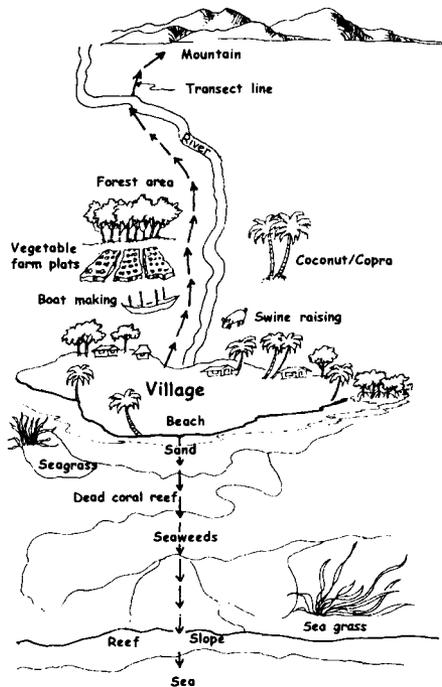
Prepared by Ingrid P. Consing

Using transects to build a coastal profile

Definition

A transect is a series of observations performed while walking or swimming across an area (village, marketplace, forest, farm plot, beach, reef).

A coastal profile is a cross-section of the coastal community, showing the connection between land and sea. Information in the profile is built up from one or more transects.



Purpose

The coastal profile

- Reveals the interrelationship between various ecosystems in the coastal zone especially from the inland watershed to the marine ecosystems.
- Helps people gain an understanding about the coastal area (extent of habitats, severity of problems, resource use).
- Contributes to the coastal management planning process.
- Is a quick, initial assessment tool that may reveal a need for more detailed or quantitative assessment.
- Provides a venue for the community to share information among themselves and view their area in a different perspective.

The transect method

- Allows direct observation, as a cross check, for information previously collected through interviews.
- Helps develop friendly relations with community members through informal, relaxed interaction.
- Introduces the team members to farmers and fishers who may not be available for interviews in the village.
- Provides specific information needed for mapping and analysis, including sensitive issues that may not be brought up in more formal settings.

Types of information that can be gathered using transects

Biophysical

- Topography, hydrology, soil type, geology
- Type, extent and distribution of habitats (forest, agricultural, mangrove, reef, mudflat, etc.)
- Extent of environmental problems such as erosion, coastal abrasion, blast fishing
- Status of rare or endangered species (i.e., bird counts, reptile counts, turtle counts, visual survey of sea grass beds to check for dugong feeding tracks, etc.)

Resource use

- Systems of agriculture, land use and ownership, types and intensity of marine resource exploitation
- Types of plants present that are used by the community, i.e., medicinal, food, animal fodder

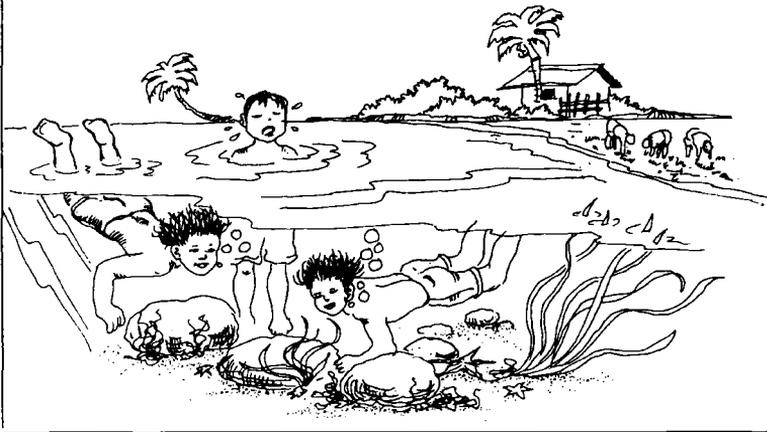


Socio-economic

- Number and types of housing, boats, shops and other economic indicators
- Economic activities (food processing, boat building, livestock pens)
- Types of foods being grown or gathered or available in the market
- Sanitary facilities, water sources

Sample application of a beach transect

In many coastal communities, people eat seaweed, a valuable source of trace minerals. Often, because only a few of the useful seaweeds are being used in any given village, this resource is underutilized. One quick and enjoyable way of documenting the variety of available seaweeds is to walk a transect along the drift line of the beach together with the children. The children will quickly find all the different types of seaweeds, as they have a keen eye for detail and are used to playing on the shore. Older ones will also be able to tell you which seaweeds are commonly eaten and what they are called in the local language. If you cannot immediately identify the seaweeds, the collection can be photographed or a sample of each type can be sun-dried and taken to a resource person for identification. Compile a list showing the diversity of resources and their potential uses (for fertilizer, animal fodder, human food, handicrafts). This list can then be the basis for discussion about seaweed as a village resource.



When do you do a transect?

Walking a transect usually occurs after the team has worked through the basic stages of getting to know a community. In some cases, this includes a participatory mapping activity (see variation below). The transect exercise is then used to validate and enhance the mapped information.

In other cases, a transect may be used to gather detailed information that will be built into a more sophisticated resource map for management purposes. In this case, the mapping exercise would follow the walking of the transect or transects. If very detailed resource information is to be mapped, quantitative sampling tools such as quadrats can be combined with the transect method.

Who does a transect?

A team, together with villagers, who are involved in resource use and can act as key informants and guides can do a transect. For a land transect, farmers, foresters and people active in harvesting forest products should be involved. For a marine transect, fishers and shellfish gatherers should be involved.

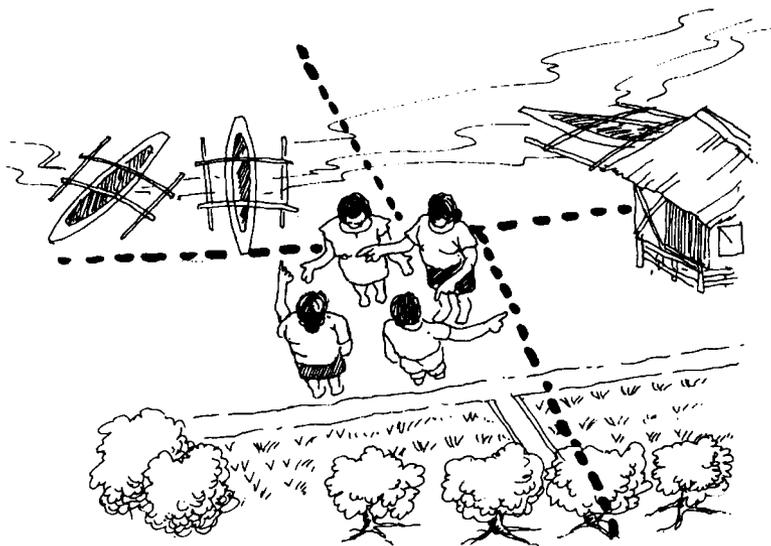
Requirements

Materials

- ✓ comfortable walking shoes or snorkeling equipment, as appropriate
- ✓ length of rope to mark off distance
- ✓ yardstick or tape measure
- ✓ pen and notebook
- ✓ video or still camera, if appropriate
- ✓ compass (optional)

Suggested approach

1. Select team members, clearly identify the information needs and prepare a work plan. Consult with community members in choosing the best area direction and length of the transect.
2. Choose the path and assemble equipment. Choose either to go through the village and into the surrounding countryside, following a footpath or river, or walk down to the shore and out to the edge of the reef. More specific transects can be performed along the reef crest, along the high tide mark of the beach or through farm plots depending on the information needed.



3. Choose the time. Early morning is not only more comfortable but is also the time when community economic activities may be most likely to be done.

4. If covering a large area, use a 50 or 100 m long rope to mark off the distance covered. For a transect over a short area (reef, field, forest garden) where you want detailed information, observe at closer intervals.



Some prefer not to use a rope; however the profile or map cannot be drawn to scale without this measuring tool.

5. Take notes of observations made to the left and right sides every 50 m (or whatever the rope length). Explore the leftward and rightward areas from the reference/ transect line but always return to the transect and resume the original path.



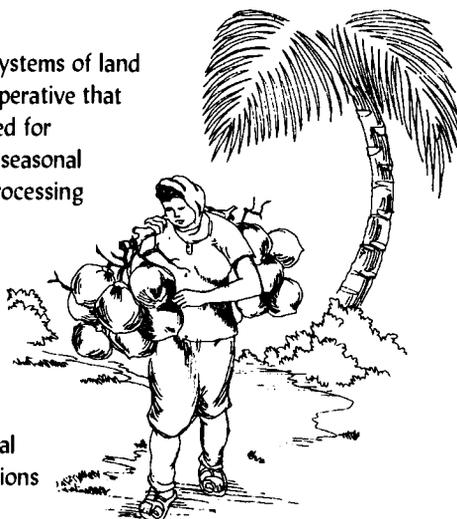
6. Record distance and elevation or water depth whenever a significant ecological change is encountered. Ask whether local people have their own names for different elevations or habitat types. Discuss observations with the villagers who accompany the team and with those met along the way.

7. Note any additional questions that arise that need to be answered regarding local condition and activities.
8. At the end of the transect, return to the village to consolidate and cross check the information.
9. Use the information to draw a coastal profile together with local participants. Feed other information into other activities (resource mapping, historical documentation, socio-economic analysis, etc., as appropriate).

Example

While doing a transect, the group saw a woman carrying a large load of coconuts. She was making her way from the forest above the village down to the beach. The team learned from her about an important village economic activity, coconut processing. They found out that coconuts come from forest gardens in the hills and brought to the beach for processing. Here, women worked together in groups to extract milk and oil from the coconuts.

The team learned about systems of land ownership and use, a cooperative that owns the equipment rented for processing, methods and seasonal patterns of harvesting, processing and marketing. They also discussed the roles of older women and children, who control the income from the activity, how the commodity is taken to the market and what social and environmental conditions affect the enterprise.





Transect tips

Using a compass keeps you on a straight line in the case of a swimming transect.

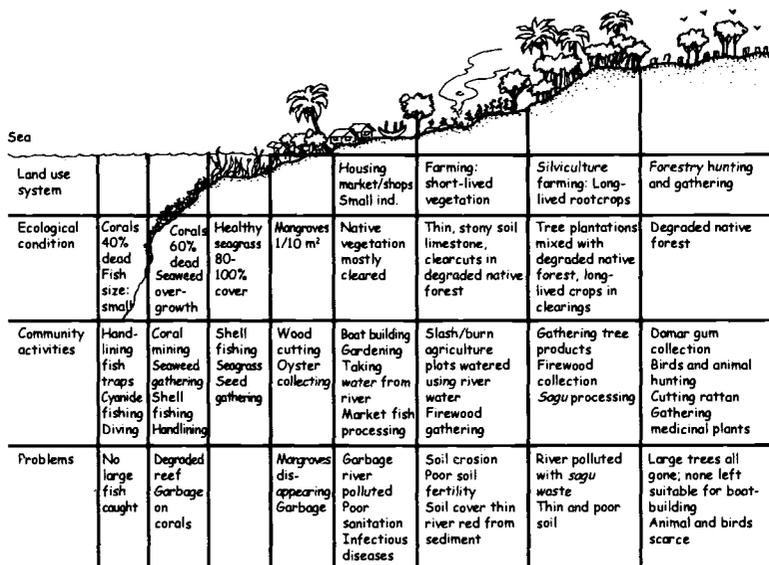
It is very important to be conscious observers. Discuss what you see with village participants. Talk to others you meet along the way. Ask very basic questions about everything, even if you think it makes you look stupid! You may have walked many transects through similar terrain in the past. Pretend that this is your first one. Keep your mind open to new information.

If you have permission and people are comfortable with it, bring along a still or video camera to document conditions and provide photos that can be used in discussions later on.

Output

★ Representation of a coastal profile

Example of a coastal profile



Variation

This variation uses a different style/approach in the preparation of the coastal profile. The main difference is that the coastal community members prepare a coastal profile (using other local materials) using their memory and experiences. Afterwards, the profile is validated by walking/swimming through the area with the interested community members.



Requirements

Materials

- ✓ paper and pencils
- ✓ completed resource map
- ✓ note books and pens for each work group

Prerequisite

Complete the resource map before this activity.

Suggested approach

1. Give an introduction and define a coastal profile.

2. Ask the community what cross section of the resource map touches the highest variety of habitats and community activities. The numbers of coastal profiles they will prepare depends on the diversity of the area.
3. Divide the participants into groups of 4-8. Working from memory, let each group prepare a profile. Allow at least one hour for this.

Another way of doing this is to assign two to prepare a profile for the same location. Let them work on their profiles separately. After they have finished, convene again and ask each group to present their profile. Encourage discussions and debate until the group comes to a consensus. Draw up a list of information needs or locations where they are not certain.

4. Using the transect method, let the participants go to the location of their coastal profiles and check their information. Discuss with them the differences.

Example

The group has drawn a mangrove forest on their profile. However, during the field validation, there is actually only a small fringe of mangrove forest and the area behind it is cleared. Has this just occurred? Is it a sensitive issue? What do they think about it?

5. Revise and update profiles, have further discussion and make a list of particular issues or problems highlighted. Are there opportunities for the community to manage things differently? What affirmative action can be put in place to address the issues or problems? Use this information to assist in planning.

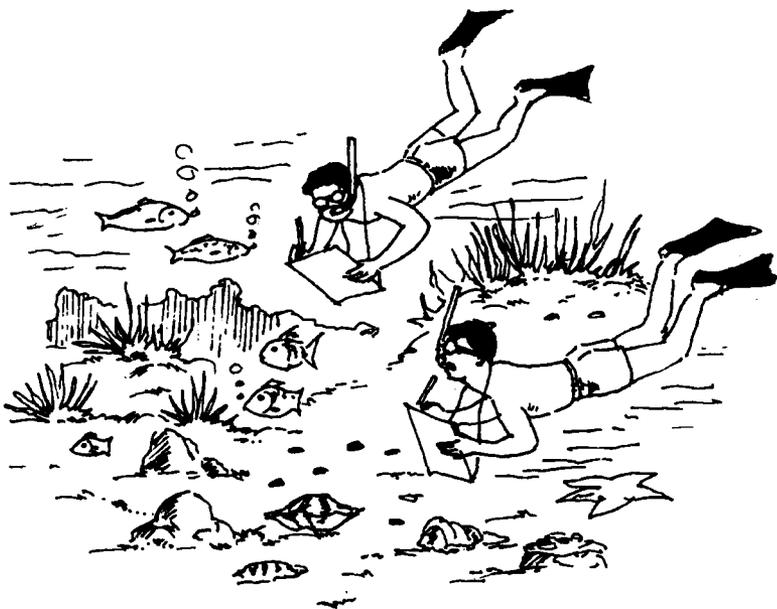
Prepared by Irene Novaczek

Underwater fish visual census

Definition

This is a method that can be used by coastal communities to estimate the variety, numbers and sizes of common, easily-seen and easily-identified fish in areas of good visibility.

The method complements small-scale fish catch monitoring. Underwater visual census is readily adaptable to a variety of organisms. However, this method focuses on reef fish.



Purpose

- To monitor the variety and abundance of fish in a given area, particularly in fish sanctuaries.

Requirements

Human resources

- ✓ volunteers (around 4 to 8) who are able to identify various fish types
- ✓ facilitator experienced with the technique

Materials

- ✓ resource map with information on fishing grounds, depth, habitat type, management zones, fish distribution (if available) and other impacts relevant to the resource
- ✓ goggles or mask and snorkel
- ✓ two 50-m lines each marked every 5 m
- ✓ underwater slate with attached pencil
- ✓ calculator

Options

- ✓ laminated butterflyfish identification guide (for use underwater if butterflyfish indicator species are to be observed and counted)
- ✓ boat (depending on the distance of the survey site from shore)

- ✓ numbered model fish of various lengths (if sizes are to be estimated)
- ✓ underwater camera for documentation (optional)

Possible approach

1. Clarify objectives with the community and make sure that this is the appropriate method to use.
2. Choose a book that showcases the group of organisms to be surveyed. Make sure that the book is appropriate to the bio-geographic area (e.g., Indo-Pacific, Caribbean, etc.) and habitat (e.g., reef fishes, seagrass fishes, etc.) to be censused.



You may also compile and use a picture album of the fishes in your area.

3. Gather a volunteer census team. Spearfishers and aquarium-fish gatherers are usually good at identifying reef fish and estimating size. Encourage women to participate as men and women often differ in the species they can identify.
4. Together with the team, choose the fish types to be counted and observed based on the following:
 - the objectives of the census;
 - the importance of the particular fish types to the community; and
 - the level of experience of the census takers.
5. Ask the census team to list the local names and relative abundance (uncommon or common) for each fish types selected for assessment. Copy the list of local names on the community logbook and on the underwater slates. This list should guide the observers to be consistent in the use of names during the assessment.



Local names

One local name may sometimes refer to many different species. Make sure that the local names are distinct for each of the fish types.

Examples of fish types

Favored by fishers (for food or for the market):



Parrot fish



Grouper



Squirrelfish/
soldierfish



Cardinalfish



Surgeonfish/
unicornfish



Rabbitfish



Sweetlip/grunt



Emperor



Snapper



Jack



Fusilier



Goatfish

Indicator species:



Butterflyfish

Other ecologically important
species



Triggerfish



Filefish/leatherjacket

Common species



Moorish idol



Wrasse



Angelfish



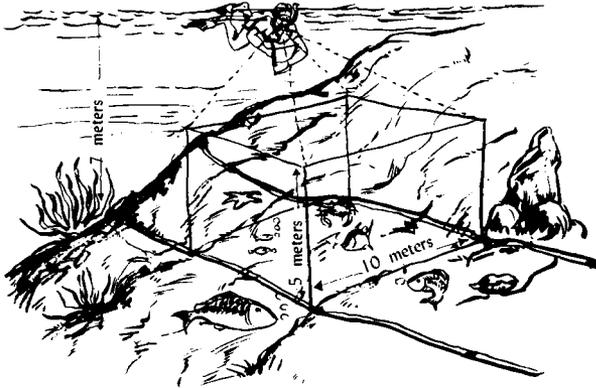
Damsel fish

6. Decide on the location, depth, number and length of transects to be observed. Also, decide on how often observation will be done.

Consider:

- the objectives of the census;
- movement ranges, abundance and distribution of the fishes to be assessed;
- the team's mobility; and
- the team's available time.

7. Lay the two transect lines parallel to each other and 10m apart. Make sure that the area enclosed is of a constant depth (or depth range—if on a slope). Record the depth. Wait 10-15 minutes for the disturbed fishes to return.



8. Float directly above one end of the line. Record the name and count each fish type seen between the two lines up until the next 5-m mark. List faster-moving and roving fishes first; record slower-moving and resident fishes later.
9. Swim to and stop every 5-m along the lines to record until the transect is completed (Table 1). A 50-m transect takes approximately one hour in the water.
10. Similarly, record the other transects until all the target transects have been observed.



Do not scare the fish

Clarify each team member's role beforehand so as not to have too many people in the water. Also, caution team members not to be splashing around because this may scare away the fish and bias the results. Do not census before 8:30 a.m. or after 4:30 p.m. so that it will not yet be too dark and so that the numbers of day-active and night-active fishes are not changing. Practice newly-trained census takers a couple of times before doing the actual census.

11. Categorize the various fish types, transect and areas into groups so the data will be more manageable and easier to understand. Fishes may be grouped by economic value and/or ecological function (e.g., herbivores) while transects may be grouped into areas and/or management zones.
12. Sub-total the counts of each type of fish for each transect. Label each sub-total with the unit "per transect".

Example: 5 parrotfish per transect

Table 1. Sample raw data

Date: April 15, 1997		
Reef: Minombonan Fish Sanctuary		
Village: Camanga		
Municipality: Salcedo		
Province: Eastern Samar		
Observer: Cone Macatimpag		
Distance along transect (m)	Type of fish	Number of fish
0	Parrotfish	1
	Surgeonfish	1
5	Checkered wrasse	1
	Damselfish	20
10	Line-tail grouper	1
	Coral fish	1
	Damselfish	10
	Hummerhead wrasse	7
15	Snapper	3
	Damselfish	15
	Butterflyfish	10
20	Wrasse	1
	Damselfish	3
	Fusiliers	30

13. Sum these sub-totals for each fish group for each area and/or management zone. Similarly, label with the total number of observed transects.

Example: 19 surgeonfish per 3 transects

14. Tabulate and graph the sums of counts.
15. In comparing the sums with measurements from other places and times, multiply the numbers with the appropriate factor (number of transects to be compared divided by the number of transects actually observed) so that similar volumes of sample are being compared.
16. Ask the census team to present their findings to the community for verification and comments. Suggest that the community discuss the possible implications of the comparisons keeping in mind differences in observer, place, time and management.

Outputs

- ★ Variety, count estimates and size distribution of surveyed reef fish.
- ★ Translations of the local names of fishes.
- ★ A comparison of two or more sites to help decide where to establish a marine sanctuary.
- ★ A billboard with data on fish variety and numbers.



Billboard

Eye-catching graphs of the results may be rendered on a billboard at a prominent location near the census site (e.g., fish populations of a marine protected area through time).

Sample output

	Cabacongan marine reserve established 1997			Camanga fish sanctuary (no buffer zone) established 1995	
Food fishes	Inside sanctuary	In buffer zone	Outside reserve	Inside sanctuary	Outside reserve
Groupers					
Surgeon fishes					
Fusiliers					
Snappers					
Butterfly fishes					
Trigger fishes					
Damsel fishes					
Fairy basslets					
Wrasses					
<p>Legend:</p> <p>1-5  26-100  601 or more </p> <p>6-25  101-600 </p>					

Strengths

- Useful for the conduct of simultaneous census of many reef fish species.
- Highlights the special skills of some organization members.
- Strengthens monitoring capability of fishers' organization.

Limitations

- The method is limited to areas 3-7 m deep.
- Fishes may be frightened by or attracted to the census takers thus, biasing observations.
- Not suitable for censusing sparse or highly mobile fishes.
- Can be tiring.

References

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- Green, S.J. 1997. A simple community based monitoring and evaluation scheme for fish sanctuaries. In: Marine Protected Areas Workshop (Dumaguete, 19-21 March 1997). Volunteer Service Overseas-Philippines. Manila, Philippines.

Compiled by Andre Uychiaoco

Resource mapping

Definition

A method for collating and plotting information on the occurrence, distribution, access and use of resources within the economic and cultural domain of a specific community. Variations are introduced in selecting particular participant groups (e.g., gender) or in adding a further stage to generate a topographic map – related information through a two-stage resource mapping process.



Resource mapping is ideally preceded by a resource historical transect, which provides for a preliminary checklist of resource-related issues relevant to the community. The resource map provides useful information to help orient the transect walk, which generally follows. Information generated during the conduct of the latter further complements the outputs of the resource mapping exercise.

Resource maps

- may be used by the community itself (with or without facilitators) for internal discussions or to relate to outsiders;
- are essential inputs both for insiders and outsiders for planning and monitoring purposes; and
- support researchers in the conduct of in-depth assessments of particular resources.

Purpose

- To allow community members identify, locate and classify past and present resource occurrence, distribution, use, tenure and access, and to reveal the significance the participants attach to them. Critical locations such as areas known for illegal fishing, pollution, siltation, etc. can be identified and mapped.
- To allow the establishment of relations between information sets and their spatial location (e.g., establishing visual relations between resources and/or issues).



Important

Resource mapping is best associated with other tools and in particular with the inland and coastal transects, which contribute to a more critical analysis of the individual resource. Resource mapping should be conducted at the onset of a CBCRM activity, but only after rapport has been established with the community.

Knowledge of the social structure of the target community is a prerequisite for the facilitator. This is because resource distribution, use and access may be considered as sensitive issues by the community. At given intervals, similar exercises can be repeated for monitoring and evaluation purposes. Follow-up in-depth resource mapping (i.e., of a particular coral reef, fishing ground or mangrove area) can be done at any time of the project cycle, possibly generating qualitative and quantitative information.

Resource mapping can apply to all ecosystems known to the community and the scale of the maps can be set/adjusted depending on the required level of detail.

Requirements

Human resources

- ✓ facilitator (preferably skilled in CBCRM or related disciplines)
- ✓ co-facilitator
- ✓ documentor

Materials

- ✓ craft or manila paper (at least 1 x 2 m)
- ✓ pencils and chalk assorted colors
- ✓ fixative spray (e.g., hair spray)
- ✓ markers
- ✓ masking tape

Optional

- ✓ compass and ruler
- ✓ topographic map and or nautical chart (original, colored)
- ✓ topographic map blow-up (1:25.000), 2 to 3 copies
- ✓ camera



Any surface can be used. The map can be drawn with chalk on a concrete floor, or on the ground with a stick. Resources and features may be pictured by the use of local materials like stones, leaves, sticks, shells or other. But these kind of maps need to be transferred to a more durable and mobile base (paper) to preserve the generated information over time.

Suggested approach

1. Identify the participant group.
2. Describe purpose and scope of the mapping exercise.
3. Invite the group to select key informants knowledgeable about the resources to be described (i.e., fishers should predominate in coastal, while farmers or forest dwellers in terrestrial resource mapping). Should access and use of resources be culturally or socially related, and should this be critical for CBCRM, then participants may further be stratified according to ethnicity, gender or age.



4. Collate checklist of resources or features to be mapped. Consider that only a limited number of topics can be mapped.

5. Position the paper in a place which has a good view of the area to be mapped.

6. Facilitate the preparation of a base map on craft paper. Make sure that participants have a common understanding of the orientation. The

size of the map (1 m x 2 m) should allow several people to contribute at the same time. Ask the participants to draw landmarks, reference points or reference lines.

The sequencing is important. Start with coastline, followed by watercourses, islets, mountain peaks, paths, roads, human settlements, etc. Agree on the local name for each feature.

7. Ask participants to locate on the map the listed resources and features. Allow for additions the participants (and you) think are important in relation to the resources'

Examples of topics that can be mapped

- habitats, e.g., mangroves, mudflats, seagrass beds, coral reefs, nipa swamps, etc.
- breeding grounds
- migration routes
- fishing grounds
- specific species' areas
- gendered resource and uses
- usage
- access limitations
- rights and tenure
- areas of conflict



Make sure that the process is properly recorded by the documentor and that issues debated among participants are noted down.

occurrence, distribution, use or access. Use symbols and colors to represent various sets of information and generate a corresponding legend.

8. Allow for validation of the information by a wider forum.
9. Once the output is agreed upon, fix chalk and pencil by use of the fixative spray.
10. Draw copies of the maps. Leave the original with the community and, if necessary, copies with other concerned parties.

Output

- ★ A map and a written report of the process. However, this could differ according to the specific purpose of the exercise and the characteristics of the participants.
- ★ The composition of the map reflects the perception and vision of the participants about the resources and features they have been portraying and provides an insight into the intimate relation between the participating group and the resources.

For example, issues on resources important to the participants might appear exaggerated in size or color versus minor issues which might be pictured small.

The most important resources or features will appear first in the map. Documenting this process is an essential part of the output.

Strengths

- Provides visual representation of resources and their uses.
- Represents a good starting point for participatory problem analysis and planning.
- Is easily understood and implemented.

Limitations

- Difficult to use as supporting documentation in formal or legal contexts.
- May contain a limited number of information sets (less than 10).

Variations

Variation 1: Stratified resource mapping

Stratified resource mapping involves dividing participants into groups according to gender, age, ethnic origin or other categories. This is extremely useful in identifying relationships of social groups and resources. This knowledge is essential for planning purposes, specially when selected strata of the community have exclusive or limited access to given resources.

This approach generates stratified information of valuable use in identifying customary rights in resource use, access and tenure and in the allocation of resource management responsibilities.

The steps in conducting stratified resource mapping are similar to the steps described before. But the facilitator needs to conduct a preliminary assessment of the community to get a deeper insight into its social structure, to identify appropriate venue and timing for gathering the selected group of participants.

Output

- ★ Stratified resource maps based on gender, ethnicity or age-related resource maps. The outline of the resources strongly reflects the domains of interest of the participating groups.

Variation 2: Gendered mapping

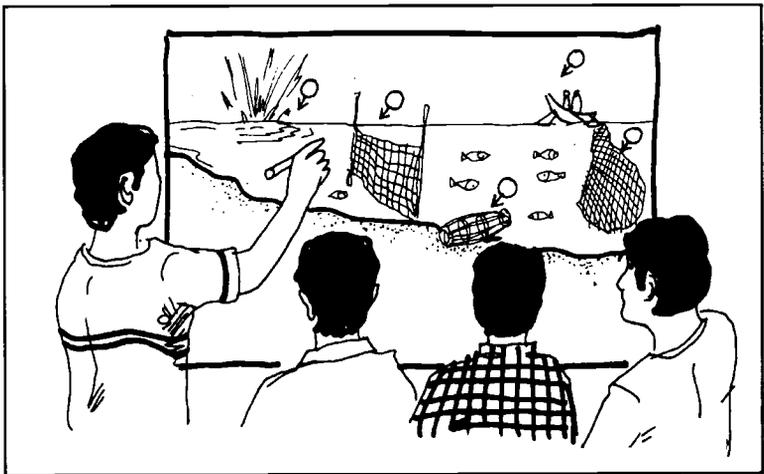
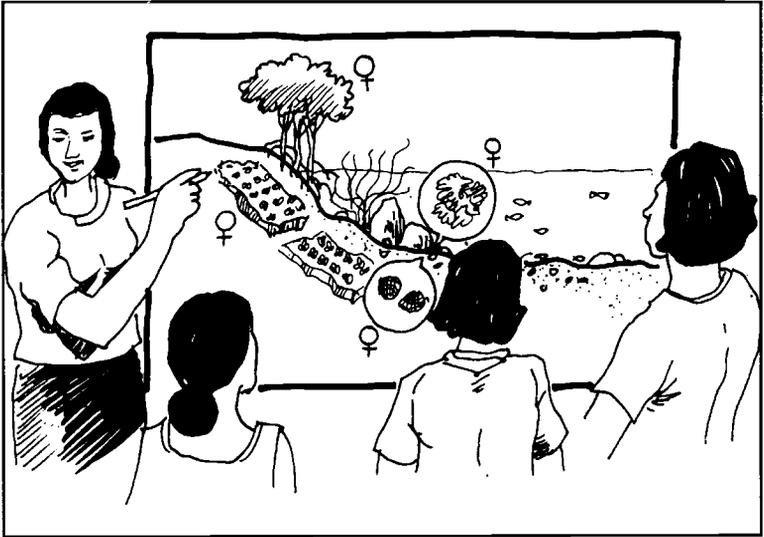
This is the variation that highlights men's and women's access to, control over and perceptions regarding the importance of certain resources. There are women's and men's spaces in the coastal zone, as well as fishery resources and practices that are associated with men and women.

For example, mangroves and inshore flats are usually associated with the shell- and seaweed-gathering activities of women whereas fishing on coral reefs and deeper waters are usually the domain of men. Gendered mapping is usually conducted among separate groups of men and women. Remarkably, different outputs might be achieved if the filter is applied.

The following are additional steps to be considered by the facilitator:

1. Ask the participants to identify symbols to represent men and women. For example, ♂ for men and ♀ for women.

2. For each of the resources or features in the sketch map, ask the group to determine whether it is predominantly associated with men, women or both and apply symbols accordingly. If time permits, further clarify who has access and who has control over the resources.



Uses

Gendered maps may be used for:

- raising and discussing issues and concerns;
- identifying existing and potential resource use conflicts and forming the basis for appropriate action; and
- identifying livelihood opportunities for men and women.

Variation 3: Two-stage resource mapping

This variation involves transposing the information from the sketch map to a conventional topographic map. Two-stage resource mapping may be used by the community in dealing with formal institutions on particular issues related to tenure, usage rights, right of way, etc.

The outputs obtained from this variation can be transferred with minimal distortion to more sophisticated information storage systems (i.e., Geographic Information System) and be used for planning and monitoring purposes on broader geographical areas. To maintain momentum among participants, the process of data transfer occurs before the completion of the sketch map.

The following are some additional steps to be considered by the facilitator:

1. Expose the topographic map (in a suitable scale) close to the developing sketch map, aligning the two maps according to the compass points. Allow for some time for the participants to familiarize themselves with the topographical map, eventually assist them in interpreting illustrations, like contour lines.

2. Ask some participants to start transposing the information spotted on the sketch map on to the topographic map. Use symbols and colors uniformly in representing individual sets of information. Should one topographic map be crowded a second one can be used. Name landmarks, islets, rivers, mountain peaks and settlements. Make sure that a legend appears on each map.



3. Make sure that both maps are being completed then ask participants to list their names at the bottom of the maps.
4. Allow for validation of the generated information sets by a wider forum.
5. Fix chalk and pencil by use of a fixative spray.
6. Draw copies of the maps. Leave originals with the community.

Outputs

Two-stage resource mapping generates two outputs: the resource sketch map (stage 1) and the elaborated topographic map (stage 2). The first is richer in people's perceptions. The second adds precision in the location of the information, allowing for a larger number of information sets to be mapped because of spontaneous drawing closer to scale by the participants.

Strengths

Facilitates the communication between insiders and outsiders, because the media is understood and valued by both sides.

Translating information from a resource sketch map onto a topo-map allows:

- information to be defined in terms of occurrence and most significant in terms of extent;
- the collection of local names not necessarily available from centralized information sources;
- the generation of an output readily linkable to secondary information;
- the use of the map within an evaluation process, because the topographic base map remains the same over time; and
- the transfer of the information into a computerized format, providing a valuable contribution in addressing forthcoming scientific research or comprehensive resource management planning.

Limitations

Limitations apply to the second stage of the process in cases where topographical maps are not available or inaccurate, or when the physiography of the area is constantly changing like in estuarine areas.



General considerations and recommendations to mapping:

- The process explored in the first half of the paper may be applied to generate other types of maps like social maps, economic maps, health maps, etc., or providing useful information on resource tenure and rights.
- The conduct of mapping may take one day. An additional half day may be necessary to produce copies of the outputs and to consolidate the notes taken by the documentor. The validation may occur on the same day and generally takes about one hour.
- The cost of conducting mapping includes the acquisition of supplies, travel expenses and food allowances for the facilitating team and participants.
- Unlike inland communities, the economic domain of coastal communities may stretch over several kilometers of coastline and coastal waters. Prepare your supplies accordingly. In the case of topographical maps, make sure that they contain a reference scale in the form of a line of a given length and that the coastline is clearly identified.
- Consider the opportunity of complementing or cross-checking the generated information.

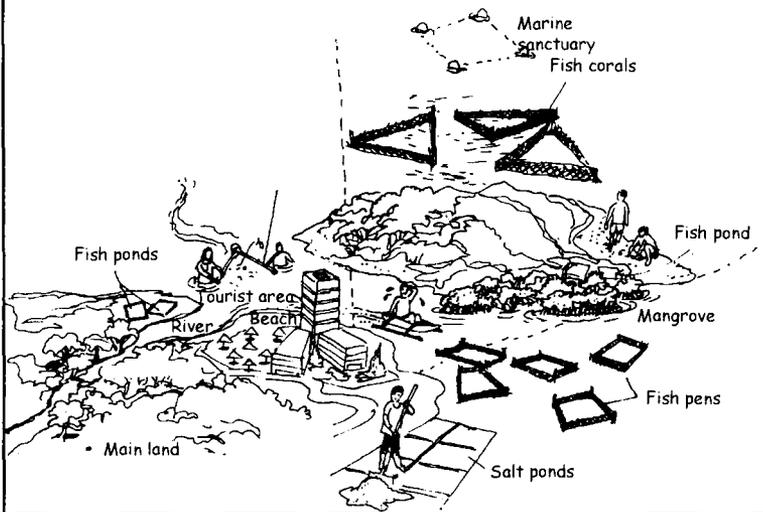
Prepared by Giacomo Rambaldi, M. Luisa Fernan and Susana V. Siar

Participatory coastal zoning

Definition

This is a method of addressing conflicting interests among resource-users through the delineation of areas or zones for specific uses. The areas or zones are based on the features and importance of the ecosystems as well as the concerns and recommendations of different sectors affected by the zoning plan.

This approach is based on the experiences of a coastal community in Bolinao, Philippines, who, for the past two years, have been working towards zoning their municipal waters. As of this writing, they are currently negotiating with the municipal government and other resource-users for a common zoning plan.



Purpose

Coastal zoning allows different sectors who use the coastal area to reach a consensus on coastal use. It is a chance for dialogue and cooperation among fishing communities, business interests, non-government organizations (NGOs) and local government.

Requirements

A prerequisite for zoning is to have several well-organized contiguous coastal communities sharing a common resource (e.g., a bay or gulf) that are willing to work with each other in a lengthy process that requires patience and flexibility.

This exercise would be more effective if community-based organizations (CBOs) have working knowledge and skills in the following areas:

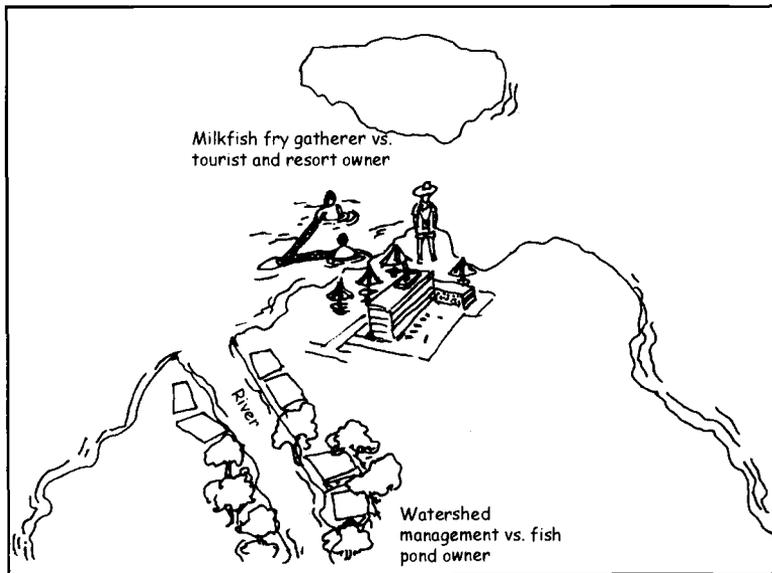
- ✓ basic marine ecology – to understand the local ecology and the impact that different resource uses have on it
- ✓ conflict management and resolution
- ✓ knowledge of local and national laws – to be aware of how zoning can be enforced
- ✓ leadership, negotiation and planning skills – to be able to work with various interest groups in reaching a zoning plan
- ✓ advocacy skills – to raise awareness about the zoning plan in the coastal community

- ✓ management, monitoring and evaluation skills – to implement the proposed zoning plan

Possible approach

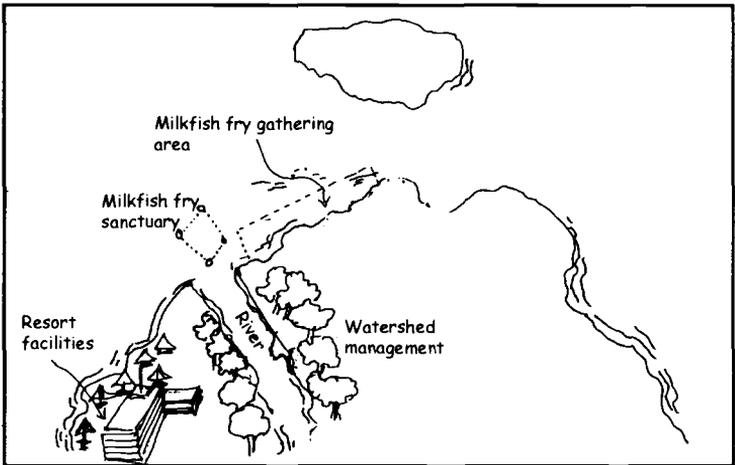
1. Let each CBO identify resources, how they are used and what conflicts there are among resource users for the coastal zone that they use. Resource mapping and transects are useful tools for this process.
2. Ask each CBO involved to produce a map showing the current use of resources in their area and locate where the conflicts are.

Example of a map highlighting resource-use conflicts



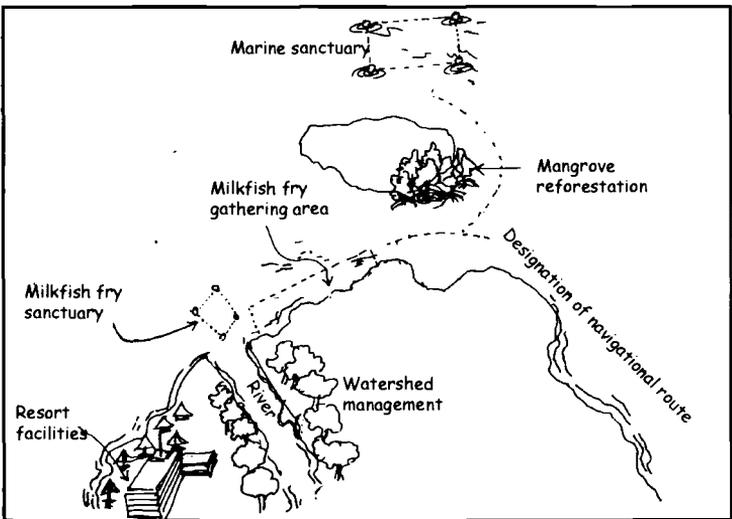
3. Ask each CBO to produce a second map that in their view resolves these conflicts through zoning.

Example of a map of how the area could be zoned



4. Gather together the CBOs in the municipality that are committed to the zoning project to discuss their respective zoning plans. Let them produce a joint map suggesting how the area could be zoned.

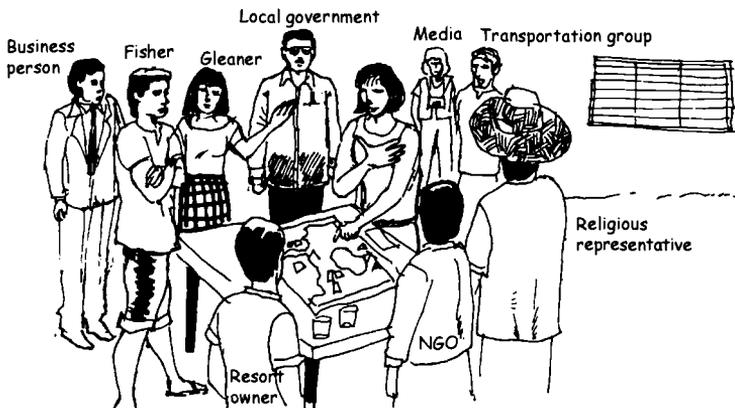
Example of a map jointly produced by the CBOs



5. Ask the CBOs to carry out an information campaign about the proposed plan to community members of their neighboring coastal areas within the municipality to gain the support of unorganized coastal communities.
6. Encourage the CBOs to work with local government in setting up a multi-sectoral forum on coastal zoning. Invite all stakeholders so that they can give their input on how the area could be zoned. Likely sectors are:
 - CBOs
 - small-scale fishers, fry gatherers, gleaners
 - commercial fishers (deep-sea fishers, fish pen/pond owners)
 - business community (tourist resort owners, boat transportation group)
 - NGOs and religious organizations, etc.
 - local officials
 - the police
 - media
 - national government agencies (if appropriate)

Encourage all coastal villages to attend.

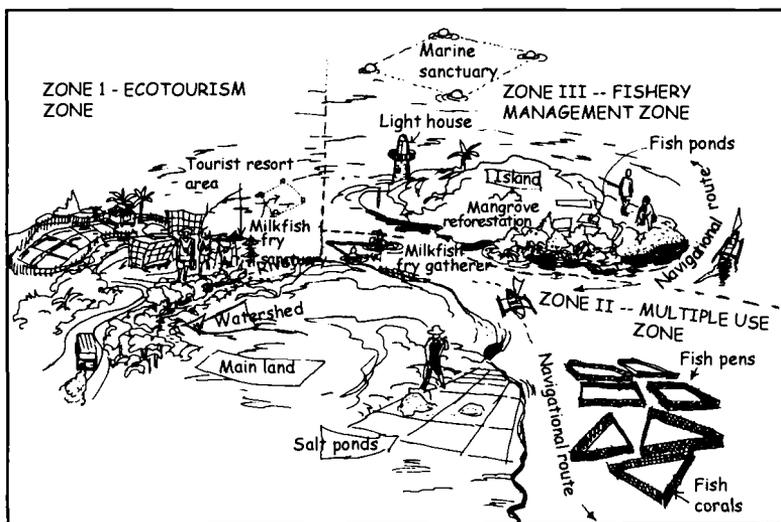
7. Ask the CBOs to present their proposed zonation plan at the multi-sectoral forum and hear the views of other sectors. Do not expect to arrive at a consensus at this early stage of the consultation process.
8. Form a multi-sectoral committee for coastal zoning from among the sectoral representatives. Ask the committee to meet regularly to decide the finer details in producing a zoning plan that takes into account all the views of the forum.



The committee regularly reports back to the whole forum. All the sectors should be represented in the committee. It is essential to have a strong CBO presence in the forum, and particularly the committee, because the local government may tend to be influenced by more powerful sectors, e.g., business and commercial allies.

The output of the committee is the final zoning map and an implementation plan.

The final version of the coastal zoning map



9. Submit the plan to the appropriate legislative body for legislation and discussions on how the zoning laws can be enforced (refer also to topics on legal and institutional analysis).
10. Implement the coastal zoning plan.

This will involve:

- working with different sectors in transferring activities to designated zones;
- setting up environmental projects, such as mangrove reforestation; and
- tapping funding from local government, business sponsors and donor agencies.

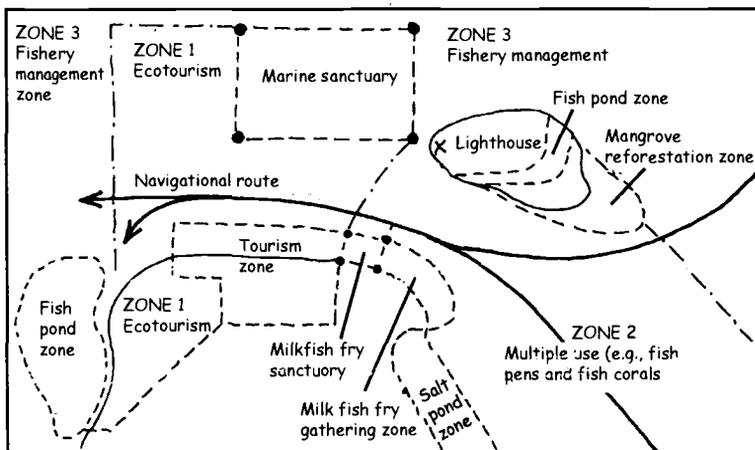


Allow a grace period in the legislation for affected sectors to transfer activities.

Output

★ Comprehensive coastal zonation plan

Sample output: Zoning map in Bolinao, Philippines



- ★ Partnerships formed among stakeholders (refer to topic on building partnerships)

Strengths

- Highly participatory, coastal communities are involved from conceptualization to implementation stage.
- Numerous community consultations involved serve as a venue to expand CBCRM advocacy.
- CBOs are empowered to initiate coastal zoning plan and forge collaboration with various resource-users to implement CBCRM.

Limitations

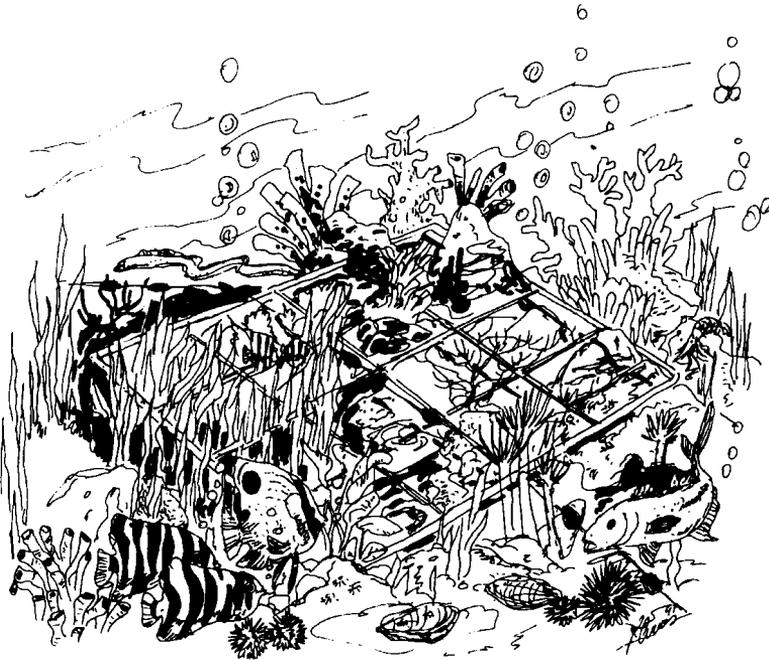
- Arriving at a consensus or compromise resolutions might take a long time because of the different interests involved.
- Collaboration between CBOs and local government units (LGUs) may be difficult to achieve especially if the latter is influenced by other interests (e.g., commercial).

Prepared by Severino Salmo III

Quadrat transect methods

Definition

Quadrats are used to improve the precision of the transect method. Thus, quantitative data about spatial extent and condition of a variety of habitats and resources are gathered in a systematic way.



Purpose

This method is useful for gathering many types of quantitative data, including:

- coastal habitat inventory that provides information on quantity and condition of resources (mangroves, seagrass, seaweed, shellfish, coral, etc.);
- resource mapping in the intertidal area or in deeper water (using snorkeling or diving equipment). These detailed maps can be used as tools for various management tasks, such as zoning and resource monitoring;
- mapping soil types (samples in this case would be soil samples) in farm or forest plots; and
- mapping extent and condition of areas exploited by the community (e.g., shellfish gathering areas).

When to use this method

This activity would normally follow a participatory mapping exercise that resulted in a sketch map. The transect/quadrat method is then used to field check information and provide more precise spatial, resource and habitat information so that a detailed resource map can be either drawn from scratch or overlaid on an existing marine chart.

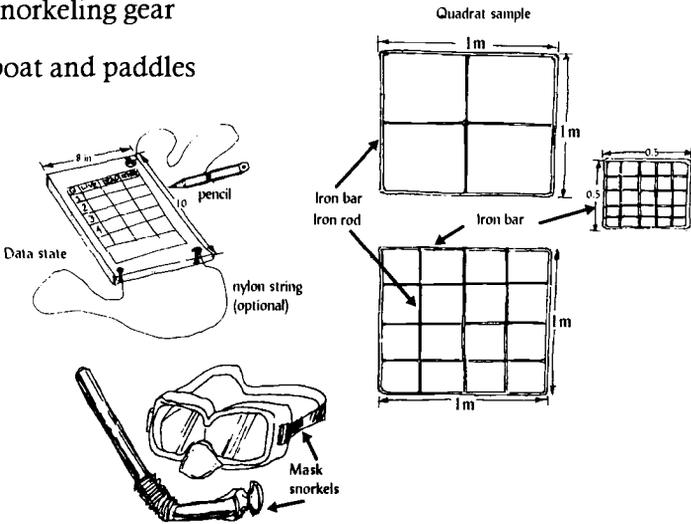
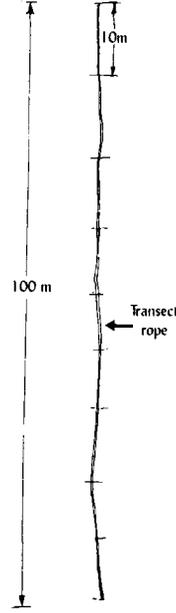
Requirements

Human resources

- ✓ community members (4-6)
- ✓ facilitators

Materials

- ✓ 100 m transect rope marked off at regular intervals
- ✓ base map, chart or sketch map of the community territory
- ✓ compass
- ✓ waterproof data slates
- ✓ suitable quadrat(s)
- ✓ ruler or tape measure to measure water depth
- ✓ shoes appropriate for walking on wet/submerged intertidal rocks
- ✓ snorkeling gear
- ✓ boat and paddles



Suggested approach

1. Do a quick site inspection to see what range of habitats you will be working in (manta tow or transect method would be useful).
2. Select sampling interval and quadrat size.
3. Decide which animals and plants will be recorded. Be selective.
4. Prepare equipment and explain the method and sampling tool to each work group.
5. Lay out the transect rope over the site, following a systematic pattern, i.e., parallel or perpendicular to high tide mark or reef crest. Record the starting point in terms of distance and angle relative to clear landmarks (use compass), and find the position on your map.



Hint

Sampling in intertidal habitats should be carried out during low tide and in a month when there are very low tides during the daytime.

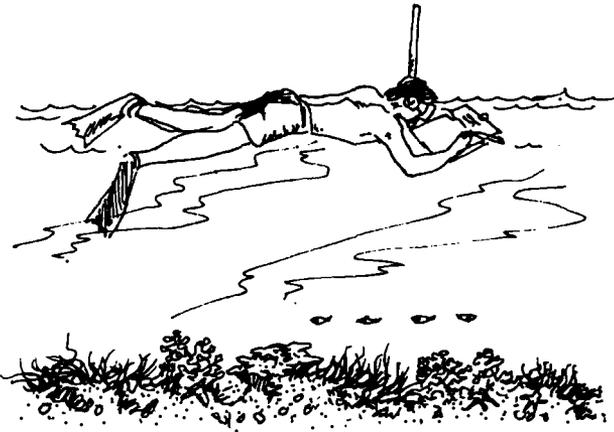
6. Use the rope to find sampling points at regular intervals.
7. At each sampling point, lay down a quadrat (on top of the transect rope) and record the type of bottom, and percentage of bottom covered by various attached animals and plants inside the quadrat. Record the number of mobile animals (shellfish, sea cucumbers, etc., according to information needs) in each quadrat.



When very high numbers of animals (e.g., shellfish) are encountered, do not try to count every one inside the transect. Subsample!

Too many snails! Count the number of snails in five out of the 16 quadrat squares. Average these, and multiply by 16/5 to give you an estimate of the total number of snails in the quadrat.

- Use simple categories for bottom type (e.g., sand, mud, gravel, rock, coral) and living things (e.g., seagrass, corals, snails, bivalves, edible and other seaweeds, etc.). Use local names and categories if possible. Describe corals further in terms of their form and condition, i.e., alive or dead; broken or standing; branched, massive, encrusting, etc.

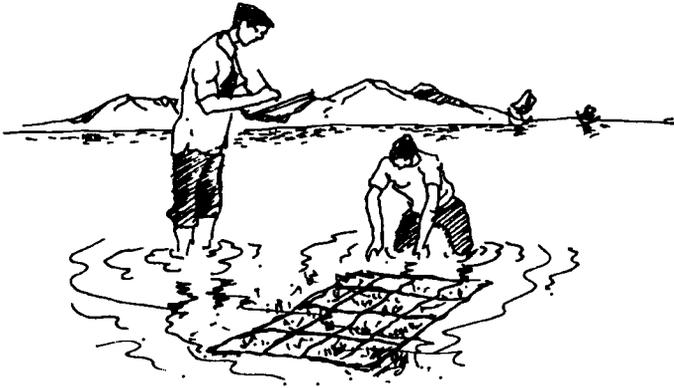


Caution

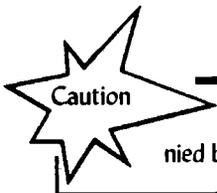
Be sure all workers have a common understanding of local names and terms used.

- Record water depth (if at sea) at each sampling point.

- Between sampling points, take note of where any changes in slope, vegetation and bottom type occur as you walk along the transect. Also note occurrences of rare or endangered species and plants or animals that are or could be used by the community. For more detailed mapping, measure and record distance features and boundaries to left and right of the transect line.



- Continue to record observations until the boundary of the area being assessed/mapped is reached.



For safety, swimmers should always be accompanied by a boat.

- Perform additional transects at suitable intervals within the area. Map the different habitats and calculate the extent and average coverage of various bottom types and life forms.



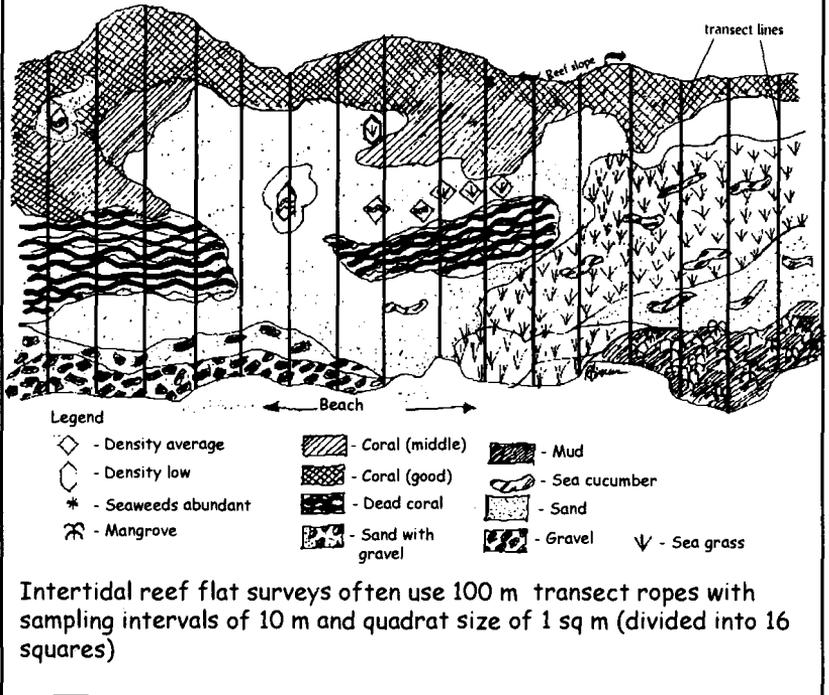
The number and frequency of transects will vary according to: a) the size of area being mapped; b) whether or not a good base map exists that could show the size and shape of the reef; and c) the level of detail needed in the data. If an accurate map is already available indicating the size and shape of intertidal area, detailed measurement of the width of the reef is no longer needed. However, if the map is being built up without benefit of such a base map, more measurement and transects must be made.

13. Gather data from each transect and check for completeness.
14. Use data to draw a transect profile and/or resource map. Transect profiles can be prepared by community participants. More sophisticated resource maps are usually prepared by non-government organizations (NGO) or other outside resource persons and then returned to the community to be checked before final revision.

Output

- ★ Accurate and detailed quantitative data/information on the spatial extent and contribution of a variety of habitat and resources.
- ★ More detailed resource map or transect profile to complement other resource maps and transects.

Resource map of intertidal reef drawn using 14 sets of transect/quadrate data



Strengths

- Provides quantitative and spatial information.
- This method is useful in a wide range of habitats.
- Can be used to collect a mixture of biological and socio-economic information.

Limitations

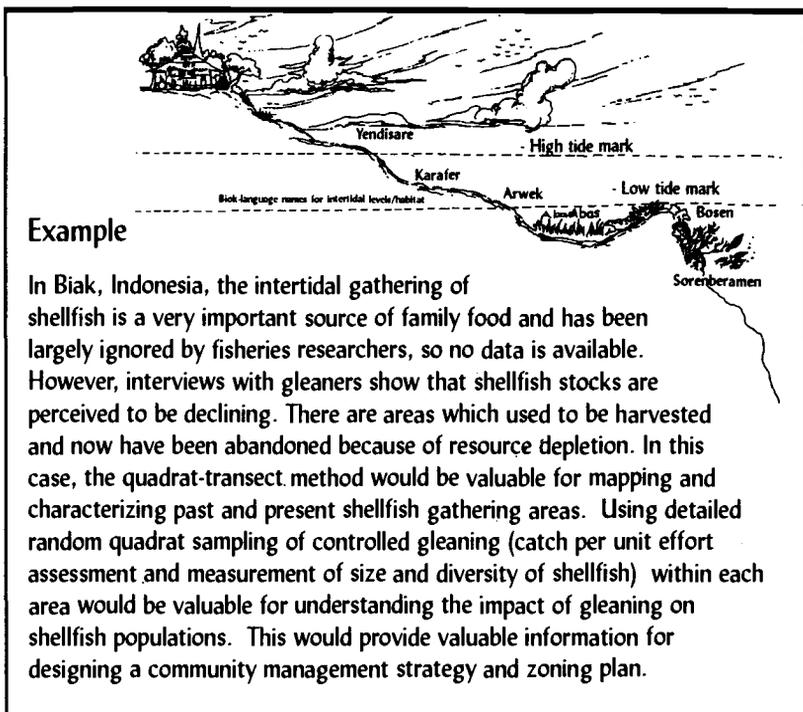
- The number of samples collected per habitat will not always be enough to fully characterize a particular resource.
- Random quadrat sampling within a habitat in different seasons provides more detailed information on resource condition.

Example

When applied to an intertidal habitat, this method provides information about intertidal marine resources that are present during a particular month, remain during low tide, and can be found in daytime. To obtain information on deep water fisheries, or on intertidal resources that are found at different seasons of the year or other times of day or night, a range of other methods must be used (manta tow survey or swimming transect at high tide, seasonal calendars, daily activity charts, fish catch records, etc.).

Variation

Gather socio-economic information while performing this method, just as the qualitative transect is done. Ask village participants for information about the various things being recorded. Which shellfish is collected? By whom? How many? What are the local names? Write down local names for each plant and animal as well as for the different habitats or levels of the shore.



Prepared by Irene Novaczek

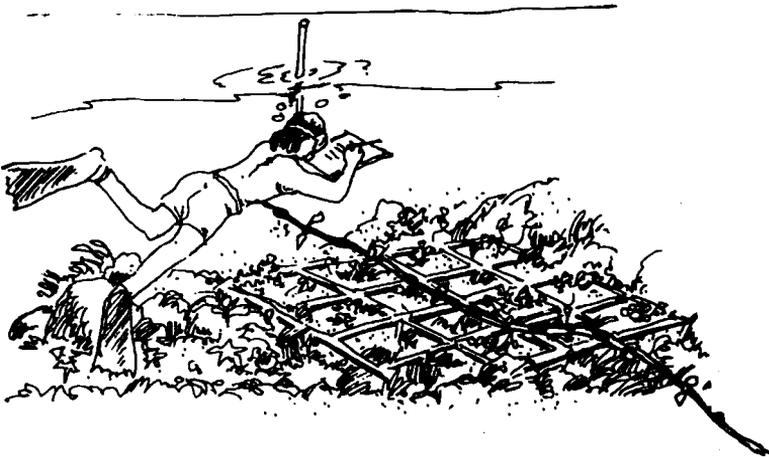
Random quadrat sampling method

Definition

This method measures the percentage of sea floor covered by particular organisms. Data collection is done by a trained team of community members.

The tool used to collect data from a number of sampling points inside a sampling site is called a quadrat. (Refer to topic on quadrat transect methods.)

The sampling points are randomly scattered over a sampling site and selected using a sampling rope.



Purpose

- To monitor the status of coral reefs or to document change in any plant, animal or community attached to or lying on the bottom in other habitats (seaweed beds, seagrass beds, shellfish beds, rocky bottom).
- To monitor impacts over time from human activity such as use of destructive fishing gears (bombs, poison), pollution, etc.
- To compare current habitat health in different sites (i.e., polluted versus non-polluted, bombed versus not bombed).
- To perform a quantitative resource or habitat inventory.
- In combination with the transect method, to collect quantitative data for resource mapping.

Prerequisite

Random quadrat sampling is a technical method that requires a high level of motivation and commitment on the part of the community. The community should always discuss whether this is in fact the most suitable option. A monitoring method based on traditional knowledge that already exists in the village can be easily integrated into daily village activities.

Requirements

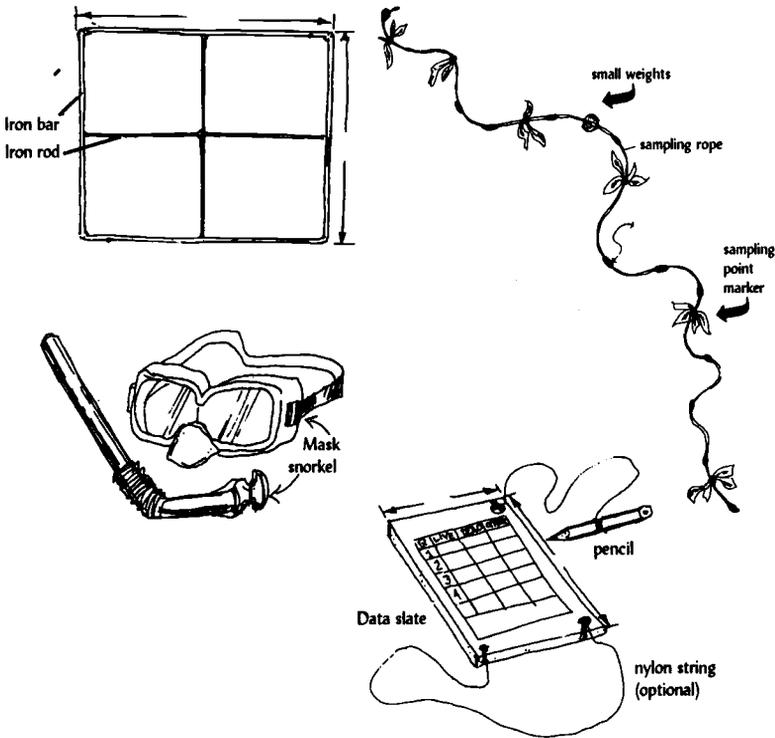
Human resources

- ✓ facilitator to help with planning, method development, training, site selection, supervision and data analysis.

- ✓ field team(s) composed of three persons: one boat tender, two persons equipped with snorkel gear to place the sampling rope and quadrat and record data.

Materials (See annex)

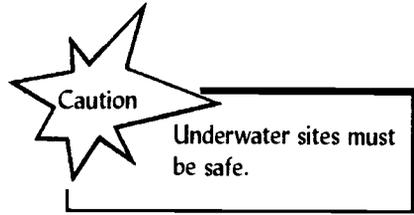
- ✓ 25 m long sampling rope
- ✓ 1 m square quadrat made from thin iron rods welded together
- ✓ snorkeling equipment (2 sets per team)
- ✓ 3 or more data slates
- ✓ boat with paddles
- ✓ data book



Suggested approach

Preparing the monitoring plan

1. Select sample sites.
2. Define the information needs very clearly; determine how many samples are needed.
3. Train a team of community members.



4. Develop the data recording and analysis plan and assemble required equipment.
5. Hold a workshop where community members can review and revise the method and work schedule, and share their knowledge.

Using quadrats to measure coral reef health

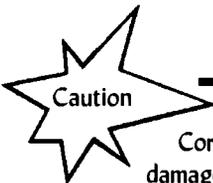
1. Check tide to determine the right time to go out on the reef. The tide should be about 2 m above the sampling site.
2. Assemble equipment.
3. Paddle or swim out to the sampling site.
4. Record date, time, water depth, weather, visibility.
5. Let the two observers lay the 25 m sampling rope along the bottom so that sampling points are selected without bias. The rope should perch lightly on top of the corals.



Remember

Do not try to lay the rope straight. It is a sampling guide, not a transect.

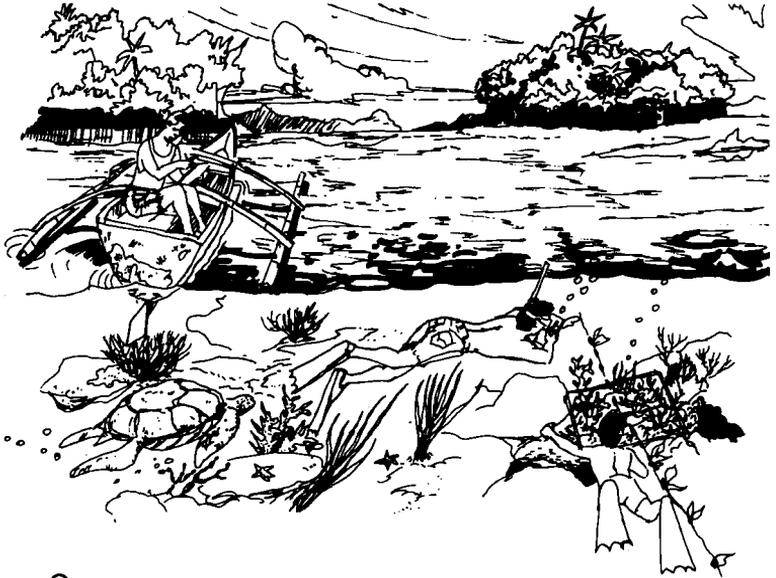
6. Ask one person to carefully place the quadrat over each sample point marker in turn.



Caution

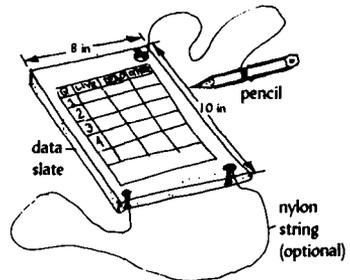
Corals are fragile and grow back slowly. Do not damage them with your sampling rope or quadrat. If entanglement or breakage is a problem, try using an "imaginary quadrat" or half quadrat.

7. Let the second person record percentage cover data. Observers must estimate the percentage cover of corals inside the quadrat while floating on the surface of the sea above the sampling point.



In general, it is easier to estimate percentage cover when it is close to 100% than if it is below 70%. Therefore, observers should be encouraged to take their time and consult one another when trying to estimate cover on patchy bottom.

8. Record data underwater on a data slate. Continue this process until the pre-determined sample size is reached.

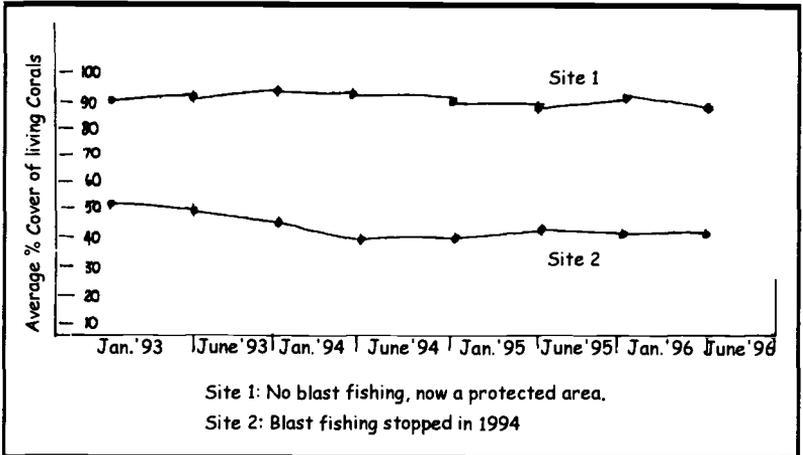


9. Take additional notes you need (presence of rare species, fish, etc.) in the surrounding area.

Site: Amafur reef Date: Feb./97 Time: 10 A.M. to 12nn Water depth: 3m				Weather: Sunny clear Tide: High Sea state: Calm Visibility: 15m				
	Hard Coral							
Sample	% Live	% Dead	Type of Dead coral	% Soft coral	% Sea weed	% Other animal	% Sand	Notes
1	40	40	new	0	5	5	10	white skeleton coral
2	60	0		20	5	5	10	-
3	20	60	old	10	0	0	10	bombed rubble
4	75	10	old	0	10	5	0	old dead coral
5	70	0		5	10	10	5	-
Notes	Saw 1 green turtle Fish abundant							

10. Transfer all data and notes to a data book immediately after the sampling is finished (refer to topic on logbooks).
11. Together with end users of the data (fishers, local management institutions, tourism operators), plot and analyze the data. The values for percentage cover of each indicator should be recorded in a data table. Then, average the values for each category.

12. Plot the averages on a graph to show how different sites vary from one another and over time.



13. After drawing conclusions from the data about the health of the reef, decide whether further actions need to be planned or the sampling strategy has to be modified.
14. Package and make available information which needs to be shared with other stakeholders.

Possible outputs

A key indicator of coral reef health is the percentage cover of living coral. Depending on the purpose of the monitoring exercise, the outputs will include measurements of one or more of the following indicators.

Data	Why collect it?
<ul style="list-style-type: none"> • % cover by living hard and soft corals 	<ul style="list-style-type: none"> • key indicator of reef health; observers may want to limit themselves to this one category
<ul style="list-style-type: none"> • % cover of dead corals 	<ul style="list-style-type: none"> • to monitor impact of destructive fishing gears, pollution, etc. <p>Recently killed coral is bright white and coral dead a long time is overgrown by green or reddish fuzz, small pink crusts or other small lifeforms.</p>
<ul style="list-style-type: none"> • % cover of newly broken but still living coral 	<ul style="list-style-type: none"> • to monitor impact of careless anchoring, tourists
<ul style="list-style-type: none"> • % cover or number of other animals (anemones, crinoids, giant clams) 	<ul style="list-style-type: none"> • to monitor biodiversity
<ul style="list-style-type: none"> • % cover by seaweed 	<ul style="list-style-type: none"> • indicator of nutrient pollution. <p>Too much fertilizer will encourage seaweed to grow over the top of corals, causing corals to die.</p>
<ul style="list-style-type: none"> • % cover of non-living bottom, i.e., sand, mud, pebbles, bare rock 	<ul style="list-style-type: none"> • monitors movement of sand by storms and currents, increase in mud due to sedimentation from land-based activities
<ul style="list-style-type: none"> • water depth, weather conditions 	<ul style="list-style-type: none"> • may affect accuracy of observations

Data	Why collect it?
<ul style="list-style-type: none"> • water clarity (how far can you see through the water - is it clean or dirty?)/turbidity 	<ul style="list-style-type: none"> • may affect accuracy of observations. <p>Indicator of pollution or plankton blooms. To stay healthy, corals need lot of light, i.e., light can only pass through if water is clear</p>
<ul style="list-style-type: none"> • sedimentation (if you wave your hand over the coral, does a cloud of dirt rise up?) 	<ul style="list-style-type: none"> • corals may die if smothered by sediment
<ul style="list-style-type: none"> • fresh surface water layer that may touch the coral heads 	<ul style="list-style-type: none"> • corals can be killed by exposure to fresh or brackish water
<ul style="list-style-type: none"> • garbage 	<ul style="list-style-type: none"> • plastic rubbish can smother and kill corals
<ul style="list-style-type: none"> • number of rubble filled craters on the sample site 	<ul style="list-style-type: none"> • indicator of blast fishing
<ul style="list-style-type: none"> • intact bleached coral skeletons 	<ul style="list-style-type: none"> • indicator of use of cyanide for fishing or local rise in water temperature
<ul style="list-style-type: none"> • presence of crown of thorns starfish 	<ul style="list-style-type: none"> • a serious coral predator
<ul style="list-style-type: none"> • rare or endangered species on the sample site (giant clams, turtles, etc.) 	<ul style="list-style-type: none"> • monitoring status of endangered species
<ul style="list-style-type: none"> • relative or actual fish abundance on the sample site 	<ul style="list-style-type: none"> • indicators of biodiversity and fisheries potential
<ul style="list-style-type: none"> • different forms of coral present (encrusting, branched, foliose, massive, submassive) 	<ul style="list-style-type: none"> • indicator of biodiversity and tourism potential

Strengths

- Provides quantitative data. Allows communities to compare the condition of their reef with that of other communities. May help foster a sense of pride or motivation to restore/conservate a reef.
- Increases environmental awareness for village participants as well as sharing of local ecological knowledge.
- Use of a “scientific” method builds pride and confidence in local managers (but recognition and institutionalization of a local, indigenous method may do this as well).
- Involves direct observation of a reef in a systematic way. Many types of information can be collected at the same time and changes in reef health reported to managers to stimulate an appropriate and timely response to any emerging problem.
- An enjoyable communal activity by village participants.
- Method can be applied to a wide range of habitats.

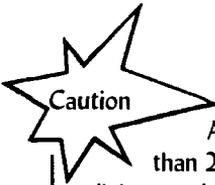


Random quadrat sampling sites should be homogeneous, i.e., one habitat type and with consistent depth.

Limitations

- Is based on a standard scientific method which is probably foreign to the community.
- Requires a period of training and practice.

- Requires investment in equipment not normally available in villages (snorkeling gear, quadrat).
- Requires support from a local management institution. In the absence of a village-based facilitator or management institution, the effort required for this method may be difficult or impossible to sustain.
- Suitable only for shallow water habitats. For deeper water monitoring, scuba equipment is needed.



Caution

Avoid monitoring reefs at low tide when water is less than 2m deep. Observers will be tempted to stand on the living coral instead of floating above it. Optimal water depth for this method is 2-3 m.

Variation

Random swimming transect without sampling tools

In this case, the principle is similar but the method is quicker, simpler and the resulting data is less precise.

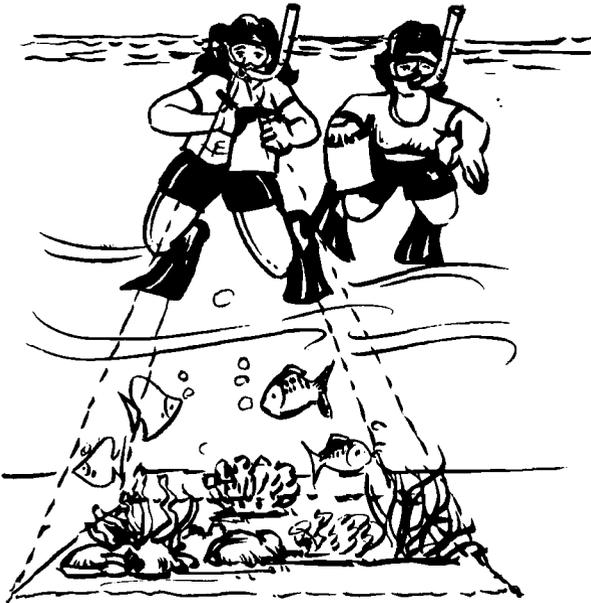
1. Swim across the sampling site, following the contour of the reef so that sampling is consistently in one water depth. Record water depth.
2. Stop after every 50 fin kicks. In this way, sampling points are selected by counting fin kicks.



Caution

The observers must be very conscious of possible bias, so that they stop and use the spot directly below them regardless of its condition. They may be tempted to move a bit left or right to a place where the coral is better or measurement is easier.

- Record the percentage cover of different categories found in an "imaginary quadrat" (1 m square area).



As a general guide, 10 sampling points provide a reasonable estimate of coral reef health. However, if the reef is very variable, more sampling points may be needed.

Prepared by Irene Novaczek

Glossary

This glossary is designed to provide both general definition of terms used in the sourcebook as well as special forms of usage that have been adopted for this particular publication.

A

ancestral waters marine areas claimed by indigenous peoples as having been part of their territory since time immemorial

approach a systematic strategy or methodology for addressing a development or conservation concern

For example, community based coastal resource management is an approach to addressing integrated conservation and development in coastal areas.

artesian fisheries usually small-scale, local, subsistence fisheries conducted by individuals or small groups

assessment a review or informal evaluation of a selected condition

associated species living things (e.g., plants, animals) that are commonly found or interact with a given organism, habitat or ecosystem

B

baseline information usually the first measurement of an indicator taken at the beginning of a project and used to compare with subsequent measures taken after some intervention has been implemented

biases a prejudiced outlook of an individual or group of individuals based on a perspective or pre-conceived notion that does not fairly represent the larger population.

biodiversity the variety of living things found in a given area

This includes the variety of genes (i.e., genetic diversity), the variety of species (species diversity) or the variety of ecosystems (ecosystem diversity). In addition, the variety of functions (e.g., producers, consumers and decomposers) and the variety of cultures or cultural diversity (e.g., distinct ethnolinguistic groups) are also considered part of biodiversity.

buffer strips lengths of land or water that serve to provide protection to an area in need of protection from some external threat

For example, a five-meter wide strip of land running alongside a river may serve as a buffer strip to prevent surface erosion from entering the river.

buffer zone an area of land or water that serves to provide protection to a conservation area (usually surrounding it) designated for protection from some external threat

For example, an area one hundred meters wide surrounding a marine sanctuary that may have some regulations regarding productive activities.

C

case study a short description of a particular project, situation or condition that serves to communicate key messages to the reader

Case studies are commonly used to document experiences and share them more widely through training or workshops.

community an association of people living in a given area or sharing some general commonality in addition to geographic proximity

An ecological community refers to an association of plants and animals living in a given ecosystem.

comparative information data that relies on other data as a point of reference (i.e., relative measures) and that can not provide a precise measure of accuracy in and of itself

For example, trend analysis may indicate that fish yields are decreasing every year, but will not necessarily provide the absolute figures for yield for each year. Similarly, local preferences may rank choices by comparison and not necessarily by some independent quantitative measure. This information may be all that is necessary to initiate some action, in other cases, more absolute information may be required.

consensus agreement by a large majority of a population or group

It is considered ideal when the entire population or group is in agreement.

conservation the maintenance of careful regulation of a resource or area through sustainable use

The term conservation has been commonly and mistakenly been used as a synonym for preservation which refers to strict protection of a resource or area.

coping mechanisms ways in which individuals, households or groups adjust to or deal with difficult or changing conditions

For example, during periods of peak labor requirement, children may be taken out of school to provide additional labor. For projects, coping mechanisms may refer to ways in which project staff address problems that may impede the implementation of planned activities.

customary laws rights, regulations and norms that have been established over time and are generally accepted by a group as a framework for governing social behavior

Contrast with State law, which refers to an official legal system of a nation.

cross-check a way of ensuring accuracy of data collection by comparing information on a given subject from one source or method with information on the same subject from another source or method

cyclical periods specific lengths of time that are established by naturally occurring cycles or rhythms

For example, the length of time required for the earth to make one complete revolution (orbit) around the sun is referred to as an annual or solar cycle. Depending on latitude and regional climate, this will result in regular seasonal patterns. Similarly, the length of time required for the moon to revolve (orbit) the earth is referred to as a lunar cycle. This cycle influences tides and associated phenomena.

E

emphatize the ability to understand the feelings of another person or group by trying to put oneself in the position of the other person and feel the emotions from this perspective

enhancement the improvement of some condition based on a human perspective of what constitutes improvement

F

fish fry recently-hatched fishes

G

gender “the socially constructed roles and responsibilities of women and men, in a given culture or location” (*CEDPA/Gender and Development Training Manual, 1996*)

gender analysis “an organized approach for considering gender issues in the entire process of program development” (*CEDPA/Gender and Development Training Manual, 1996*)

gender and development an approach which seeks to empower women and transform unequal relations between women and men” (*CEDPA/Gender and Development Training Manual, 1996*)

genera plural form of *genus* which is a category or level used to classify living things according to biological and structural similarities and differences

gleaners individuals or groups that collect or harvest resources from the wild without cultivation or propagation

indicative data data that implies, demonstrates or suggests a certain condition

For example, the existence of coral rubble in a circular pattern is indicative data suggesting the occurrence of dynamite fishing.

indicator species a specific organism that implies, demonstrates or suggests a certain condition

For example, the occurrence of large numbers of crown of thorns starfish.

indigenous knowledge information, practices, technologies, beliefs, tools, materials, experimentation, skills, pedagogy, communication systems and other social systems or institutions that people in a given group, community or area have tested, adapted and continue to adapt over time

indigenous taxonomies systems and categories of organizing or associating living and non living resources

For example, local groups will classify or categorize soil, fish and other resources into locally-recognized groupings.

informal community organizations organizations that are not officially registered or recognized by national or local governments

informant a person who provides information

intertidal zone the area between above the lowest low tide mark up to the point where tidal influence continues (commonly the highest high tide mark) or slightly beyond

J

juveniles fish or aquatic organisms usually characterized by the incomplete development of reproductive organs

L

legend a description of symbols or abbreviations used on a map

letter-petition a formal and organized request for change or action by preparing a letter of request and having it signed by a large number of people who support the specific contents of the letter

local ecological knowledge *refer to indigenous knowledge*

logbook a notebook used to record in chronological order the events considered important based on local needs and preferences

M

manta tow a shallow water survey method that employs towing a swimmer behind a boat by a length of rope with a wooden board at the swimmers' end that is used for stability, maneuverability and recording observations

marine reserve an area of ocean protected from specified or all uses for any number of reasons including unique biodiversity, its support as habitat for local fisheries, educational purposes, rehabilitation and resoration

marketing the entire process of identifying, creating addressing and supplying the demand for any given product

This may involve market research, product development, pricing, advertising and determining methods of sales.

media any or all of three forms of information dissemination: 1. print (e.g., newspapers), 2. audio (e.g., radio) and audio-visual (e.g., television)

media campaign a systematic effort to use the media to gain support for a particular position or objective

medium a channel of communication or information dissemination (*refer to media*)

methodology a general approach or framework that employs a related collection or body of methods consistent with the overall approach

For example, CBCRM can be seen as a methodology.

methods a systematic procedure employed to achieve a certain objective

For example, participatory methods are procedures that follow certain guidelines to maximize participation, minimize bias, ensure validity and balance precision with time and effort. The methods described in this sourcebook make use of more specific tools such as matrices or diagrams and are part of a larger methodology.

monitoring the process of measuring changes in specific indicators at regular intervals over time

morphology relating to the shape (i.e., form or structure) of an organism

N

numeric data information presented in quantitative form or using numbers

O

organization a group or association of people bound by a common interest

P

paralegal a person with training in the law but not licensed to practice the law officially

permanent belt a permanent transect distinguished by two parallel lines

point of first sale the site at which a product (e.g., marine resource) is first transferred from the person who caught or produced the product to a person who pays for the product

preservation the strict protection (i.e., no use) of all resources (living and non-living) in a defined area

process a predetermined and systematic series of steps, actions or operations used by an individual or group to achieve specific objectives and move toward a general goal

productive roles the activities, responsibilities and expectations of an man or woman related to providing the basic economic needs of a household (e.g., food production, wage employment, etc.)

property rights the official or legal interest of an individual or group to access or control a certain area of land or water or resource

protected area the generic term used to describe an area of land or sea that is governed by some form of protection from use or degradation

This may be in the form of conservation or strict preservation.

Q

quadrats a rectangular plot or frame used to assist in the measurement and study of ecological conditions

R

rehabilitation the process of improving the conditions of an area of land or sea so that they are more favorable to conditions suitable to humans

reproductive roles the activities, responsibilities and expectations of a man or woman related to the care and maintenance of the household (reproduction, child care, education, health, home maintenance, security, etc.)

respondent a person who provides information to another person often through completing a survey questionnaires but also through participating in group discussions or participatory methods of analysis

restoration the process of returning a given area of land or sea as closely as possible to the specific conditions (i.e., specific species, relative abundance, etc.) that existed in an earlier time

S

sanctuary an area of land or sea that is often governed by strict protection (i.e., no activities or resource use allowed) often placed within a larger marine reserve

spatial related to geographic area

For example, spatial tools look at where things occur in a given area or in relation to each other. Compare with temporal tools which means having to do with or related to time.

spawn the production or deposition of eggs or young of aquatic organisms

species a category of formal scientific biological classification that describes organisms that are biologically and morphologically similar and capable of interbreeding

stakeholder usually groups of individuals – within a larger population (e.g., community) - that share a common interest, perspective, worldview or background

T

temporal related to time

For example, a time line is a temporal tool that looks at the significant events in the history of community.

tenure the right to access or control over a resource or area of land or sea

terrestrial related to land as opposed to sea

tools specific analytical techniques (matrices, diagrams, transects) that assist in the collection and analysis of data

For example, a matrix is a tool that can be used for participatory livelihood analysis which is a participatory method and is part of an overall methodology that is community-based coastal resource management.

triangulation (validation) the process of confirming, validating, or improving the precision of data by seeking separate and independent confirmation of the data

Triangulation can be done by using different methods to collect the same data or seeking different respondents or both.

triangulation (geographic) the process of determining or locating a specific point on a plane using landmarks to determine the intersection of two lines

transect a length of land or sea – usually a straight line – that is used as the basis for sampling plants, animals or other indicators of interest using various sampling techniques

V

village assembly a meeting open to all residents of a village for the purpose of sharing views and disseminating public information

W

watchdog groups informal groups or formal organizations that serve to monitor activities related to a particular issue

For example, a small group of residents may form a group to monitor the occurrence of illegal fishing operations in sanctuary.

watershed an area of land that shares a common point where water drains – usually to the ocean

Watersheds are commonly divided into functional (although arbitrary) sections such as upland, lowland and coastal ecosystems. Another functional grouping looks at catchment areas, service areas and drainage areas.

Z

zoning the process of determining and assigning specific purposes, uses or regulations to specific portions of land or sea in order to optimize land-use

For example, a zoning plan for a bay may be developed to ensure the optimal and equitable allocation of space for often competing uses such as aquaculture, recreation, transportation, conservation or preservation, etc.

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