

Workshop Recommendations

Uses of Data

Fisheries data are necessary to track the status of fish stocks. Resource managers use fishery independent and dependent fishery data sets as part of stock assessments. Fishery independent data are derived from scientific studies while fishery dependent data are collected from commercial reports and information provided through creel surveys. Sharing of information on all types of data collected between managers and fishermen is very important. Resource managers need to accurately evaluate stock status and in return inform fishermen on the status of fish stocks.

The participants in this breakout session highlighted a number of concerns that fishermen have with sharing information and made recommendations to help improve the collection of data. In general, fishermen are concerned about how their information will be used (the perception is that it will be used against them) and how the resource agencies are working to evaluate the impact of other activities (i.e. land-based sources of pollution, recreational uses). To improve data collection, resource managers need to gain the trust of the fishing community.

General Recommendations:

Information needs:

1. Collect more socioeconomic data, such as who is eating what type of fish.
2. Enhance programs that collect dockside information and develop processes that enable fishermen to provide more information to the management agencies.

Outreach:

1. Hold informal monthly meetings to increase direct outreach with the fishing communities. When possible hold these meeting in conjunction with events that fishermen will already be attending.
2. Develop material explaining the purpose of specific projects discussing why data are needed from fishermen, and illustrating how their data are used. In addition, management should inform the fishermen on existing management programs and activities to reduce the negative impacts on the fisheries and improve the sustainable development of the marine resources.
3. Institute mailings, newsletters, or fact sheets to inform fishermen of data collection and management activities.
4. Have a village fisherman serve as an extension agent to their resident village for gathering and disseminating analyzed information, providing them with a sense of ownership.
5. Collect information or views via survey forms from fishermen on what management efforts they would like to be involved with to protect, manage, and monitor their fisheries.

Ecosystem Assessment

By conducting ecosystem assessments, resource managers and scientists are able to determine not only biodiversity but also the relationships between the physical and biological systems. This leads to understanding ecosystem health and provides a basis for determining the effectiveness of management actions.

Breakout session discussions about ecosystem assessment highlighted some of the challenges related to effective ecosystem management (i.e. shifting baselines) and provided some suggestions to improve on them (i.e. involving the community by creating a sense of ownership).

General Recommendations:

Information Needs:

1. Identify indicator species, then survey and study them.
2. Compare today's data with historical information (look at resource biodiversity & other aspects).
3. Develop a baseline picture of what the resources are like right now. Do this initial assessment as soon as possible.
4. Conduct an economic valuation of the island resources to assess the importance of coral reef resources to the island communities in terms of benefits and dollar value to enhance long-term value and preservation of resources for future generations.
5. Study the population biology of the most exploited fishery resources.
6. Evaluate other impacts to coral reefs such as land-based sources of pollution (sedimentation) and recreational use (snorkeling and diving impacts). Do not single out fishing.

Management:

1. Use adaptive management. Monitor changes to the ecosystem, whether good, bad or benign, then adjust and fine-tune management as needed.
2. Develop a practical, simple definition of "ecosystem" that can encompass the complex linkages between biological components and their habitat (benthic and oceanographic) over multiple scales.
3. Management of coral reef resources, including ecosystem assessment, should include community-based, bottom up involvement, such as the model used in American Samoa.
4. Ecosystem assessment and survey methods should be standardized across the Western Pacific, to allow comparisons between islands and regions. However, it should be recognized that regional differences will occur because systems and resources are often not comparable.
5. Scientist/Resource managers need to define the minimum information for sustainable fisheries management, including assessing statistical confidence and defining the steps needed to reach a successful management program based on data needs.
6. When possible, reports should be peer reviewed before they are used to make management decisions.

Stakeholder Involvement:

1. Conduct a workshop to assess current and future management measures and adapt activities as needed. The workshop should: (1) include information gathering on fishery resources, management, and utilization; (2) transcend cultural and social barriers such as age, sex, and status; and (3) provide an opportunity to compare information.

Outreach:

1. Improve communication in the form of regular, interactive discussions between resource managers, fishers, scientists, and other stakeholders.

Long-Term Monitoring

A consistent long-term monitoring program provides information that can be used to assess trends and patterns in coral reef ecosystem health and function. This information can also be used to assess the effectiveness of management strategies and, in return, allow for adaptive management where needed.

The workshop participants provided information about the length of time a long-term monitoring program should encompass, suggested times ranged from 5 years to 75 years depending on the main purpose of the program. Some participants thought a monitoring program should be shorter to allow for adaptive measures, while others felt like longer programs that mirror tenure systems or generations were needed to ensure conservation. While there was no consensus on the time frame, all participants agreed fishery resources and activities should be monitored so that managers can assess any problems and make changes as needed. The breakout sessions provided recommendations for collecting information and enhancing communication.

General Recommendations:

Information needs:

1. Identify key indicator species to track sustainable fisheries and design methods to distinguish fishery impacts from other non-fishery impacts. Alternatively, resources agencies should work with the community to identify key target species for monitoring; then determine abundance, class sizes, and spawning information for these target species to evaluate long-term trends.
2. Keep creel surveys separate for different target fisheries, such as open water, bottom fisheries, or fisheries targeted by other methods.
3. Modify creel surveys to identify gender. Women may fish for different species or collect species using different methods.
4. Conduct inshore fishery evaluations (i.e. determine who, where, how often, how much was caught, etc.).
5. Collect more precise information on location (i.e. not just compass directions but physical places, latitude and longitude, etc.).
6. Collect more precise information on effort (i.e. determine how many boats and fishermen per boat, how long they were fishing or trip time, or how much fuel, which may determine how far out one can fish, etc.).

7. Establish a program to gather historical, anecdotal information including traditional practices and integrate this information into long-term monitoring analysis.
8. Place emphasis on long-term monitoring of management actions to evaluate effectiveness of decisions.
9. Assess fishing activity (both legal and illegal activities) and enforcement activities related to fishery regulations.

Management:

1. Provide continuous and stable funding to monitoring programs to ensure that personnel are properly trained and retained. This will allow for continuous data collection by individuals that are familiar with the local resources.

Stakeholder involvement:

1. Involve fishermen by providing incentives to them in collecting long-term fisheries dependant data (length/weight) or determining MPA effectiveness related to fishery resources. Determine if community-based monitoring programs are appropriate. If they are, identify equipment and program needs such as training and snorkeling equipment.

Outreach:

1. Provide more feedback to resource users on fisheries information and monitoring results to re-invigorate traditional values or respect for the marine environment.

Management Choices

Management choices impacting coral reef fisheries can be either direct actions that restrict fishing activity or indirect actions that are related to coastal management. Resource managers can use a variety of tools that will directly regulate fishing activities. These tools include a variety of controversial methods such as closed areas or gear restrictions, bag limits, and size limits. These management methods vary in their enforceability and related costs. Additionally, fishery management methods based on individual species are often a problem for fishermen as well as enforcement officers, who may often misidentify fish species. Management actions that indirectly impact fisheries are related to regulating coastal zone development or activities that utilize coastal resources, which in turn can negatively impact coastal environments by increasing runoff or increasing the risk of introducing a non-native species. In return, native species can lose critical habitat or be out-competed by introduced species.

Island governments have the challenging job of managing and preserving coral reef resources, while keeping their economies viable. American Samoa, Commonwealth of the Northern Mariana Islands (CNMI), and Guam have utilized a variety of management tools to aid the recovery of coral reef fishery species that have become less abundant and to protect coral reef resources; however, not everyone agrees on the appropriate actions to take. During these breakout sessions, workshop participants were able to discuss the challenges of coral reef fishery management and provide

suggestions for improving communication, encouraging cultural sensitivity, and building political will.

General Recommendations:

Information Needs:

1. Determine the effectiveness of established marine protected areas and other fishery management activities to enhance key fishery species.
2. Conduct a realistic socioeconomic analysis, including an examination of alternatives to no-take fishing areas.

Management:

1. Develop an enforcement program with “teeth” by improving laws and regulations and having sufficient number of skilled enforcement staff. Build the capacity of island resource agencies so they can be more effective at their job including continuous funding for research, management, and enforcement capabilities. Reserves should be used very cautiously in managing fisheries, and established based on science (i.e. some stakeholders feel that reserves should be “last resort” because they may not be reversible). Implementation of no-take reserves needs also to include adequate support for law enforcement. Work with the community to enhance management activities, which will ultimately result in a reduced number of violations. Build links between community-based management, governmental agencies and policy makers. Increase awareness about management actions through the development of multilingual material to circumvent cultural and linguistic barriers. Everybody (policy makers, managers, scientists, stakeholders etc.) must understand the limits of the resources. Create a program to make sure that information reaches all levels. Foster political will to effectively manage coral reef resources. Without political will, management cannot be effective.

LAS Implementation

In 2002, the U.S. Coral Reef Task Force met in Puerto Rico and adopted a number of resolutions to improve the implementation of the National Action Plan to Conserve Coral Reefs. As part of the resolution, the Task Force identified six key threats to address including land-based sources of pollution, overfishing, recreational misuse and over use, climate change and coral bleaching, lack of public awareness, and disease. To focus efforts, each state and territory is developing a local action strategy (LAS), or three-year plan, to address each of these key threats or a subset of these six threats.

The local action strategies addressing overfishing or coral reef fishery management developed in American Samoa, CNMI, and Guam have several common areas including enforcement, outreach and education, regulations, and coordination. The participants of these breakout sessions provided recommendations for potential additions for each of these areas and a number of other project ideas.

General Recommendations:

Management:

1. Establish fish size limits or fishing gear restrictions/regulations.
2. Set fishing seasons for species or specific areas (sites of spawning aggregations).
3. Establish a fishing license requirement for commercial, recreational, and subsistence fishing.
4. Efforts to preserve traditional fishing practices should always be a priority but they should fit into the overarching goal of conserving the natural resources.
5. Have a reward or incentive program for citizen reporting of marine protected area/fishing law violations.
6. Local action strategies should include all relevant projects, not just projects geared for the most recent local action strategy to ensure that duplication does not occur. Identification of all fishery management activities may facilitate identifying how projects supplement each other, especially when funding is low.

Outreach:

1. Disseminate information to stakeholders in a form that is easy to understand.
2. Have a marine protected area “answer man” at the preserves to educate the user of why it was established and how to avoid impacts.

Cultural and Community Issues

Each of the Pacific islands has unique cultural characteristics that are derived from both the native populations and the increasing immigrant populations; together these different cultures make up local communities. The increasing population growth on the islands creates more demand on their resources and introduces new traditions and practices. Thus, it is important to differentiate between culture and community so that island resource managers can target efforts where needed, define how fishing activities may have changed, and create reasonable opportunities or options.

The U.S. Territorial Islands differ in terms of cultural heritage and concerns. Each jurisdiction should evaluate and determine the approaches that are needed to successfully reach all groups within its larger community so that management actions will be more effective in reaching their goal. The workshop participants discussed a number of ways that governments can improve cultural sensitivity along with some of the communities’ concerns related to population growth and resource extraction.

General Recommendations:

Management:

1. Must have cultural sensitivity and empathy, from both resource managers and different segments of the community.
2. Develop viable alternatives to traditional methods or uses, such as alternatives to harvesting coral for Afuk (lime made from coral or clams that is used with beetle nut in CNMI).
3. There must be accountability at all levels including community, local government, and federal government. The necessary support to allow people to be accountable must be provided.

4. Managers, working with the community need to determine what is “traditional”. There are traditional fishing practices brought in from outside cultures that may be more destructive (i.e. the use of certain types of nets is a non-selective fishing method and take can include unintended fish).

Outreach:

1. There is reluctance to recognize and accept that things have changed in the reef ecosystems and “business can’t be as usual”. Programs need to be developed that foster sustainability and conservation for future generations.

Increasing Stakeholder Involvement

Stakeholder involvement is a key component of successful coral reef management and conservation activities. Managers need to understand the perceptions and practices of the resource users so that they can predict and plan appropriate management strategies and change strategies when needed. In return, stakeholders can enhance management activities by providing traditional knowledge, assisting in monitoring and enforcement efforts, and by being an advocate for management measures.

American Samoa, CNMI and Guam have worked with stakeholders to develop management plans and to implement management regimes. As with most activities, there is room for improvement. Participants of the workshop identified a number of areas in which resource managers could improve stakeholder involvement.

General Recommendations:

Information:

1. Develop incentives for each community sector to get involved with management and conservation. Identify the incentives by working closely with each community. Find out what will entice participation for each group (i.e. free food, prizes, class incentive [such as receiving a grade] and funding).

Management:

1. Set up partnerships with every level of the community, including government, villages, businesses, cultural organizations, schools, religious institutions, and the military. Find common goals and interests that pertain to the marine environment and network. For example, business partnerships could be created to develop specific programs such as with Continental Air Lines and the in-flight entertainment system, where visitors can be educated on environmentally friendly ways to enjoy the islands.
2. Improve curriculum in marine science and other environmental programs. Establish hands on learning opportunities, including outdoor classrooms and other marine activities such as field trips, aquatic sports, swimming, fishing, surfing, etc.
3. Provide fishermen with information on life cycles and spawning so that they may participate in the process of fishery management at the grassroots level.

4. Have a dedicated community involvement person on staff to oversee agencies' commitment to stakeholder involvement.
5. Train local resource staff in community involvement tools to improve outreach efforts.
6. Develop links with other organizations in the Pacific region to obtain technical support and advice on alternative ways to improve communication and dissemination of information.

Outreach:

1. Develop, enhance, and promote environmental stewardship by communities through education and awareness programs.
2. Improve methods of communication. Messages must be creative and focused. Develop innovative partnerships with the media (newspaper, radio, television, movie theater slides, etc).
3. Broaden education and outreach programs at all community sectors and levels. Determine specific goals for each community sector and work with them to develop a program.
4. Increase avenues for participation (such as meetings, in-school and after-school clubs, concerts, workshops and trainings).
5. Create or participate in events such as street parties, concerts, fundraisers, and fishing derbies for kids of all ages, where information can be disseminated or the stakeholder process could be creatively worked into the event program.
6. Invite community representatives and fishermen to workshops and trainings.
7. Select representatives from both the community-at-large and fishermen to participate in working groups related to a variety of management activities including planning and project development.

Other Impacts

Although the focus of this workshop was on coral reef fisheries management, it is widely recognized that there are other adverse impacts to coral reef ecosystems. These impacts include non-point source pollution, coastal development, natural weather events, climate change, marine debris, vessel impacts, recreational impacts, and invasive species. Degradation of coral reef habitats affects the health of associated species that depend on these resources. To conserve coral reef resources, governments and resources users must actively address all of these issues.

Federal and Territorial agencies do actively work on other impacts to coral reefs while simultaneously working on fishery related impacts; however, to what extent and how fishery management efforts relate to other management activities may not be known by the public. Resource agencies need to engage the public by relaying the different types of management activities that are taking place and empower stakeholders to actively participate in these conservation activities. It is also important for the community to voice opinions and concerns about these other impacts at public hearings and other public forums.

General Recommendations:

Management:

1. Ensure that adequate laws are in place and then enhance enforcement of existing laws and develop adequate penalties for these laws.
2. Develop fishing community-based management of marine protected areas.
3. Institute mandatory recycling/solid waste programs and provide financial incentives to participate in these programs.

Stakeholder Involvement:

1. Develop non-governmental organizations. The community should get organized and demand action from politicians and government officials.

Outreach:

1. Promote individual and community ownership of resources. Get them involved.
2. Develop programs that teach people to apply, require and sustain best management practices.