

Report

Methodology to assess opportunities to enhance consultation and coordination between government agencies and fishers in the U.S. Caribbean

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Introduction

The Caribbean Fishery Management Council (Caribbean Council) has determined that some fishing activities in the US Caribbean have caused adverse impacts on fish habitat, including coral reefs, and that restrictions on fishing gear on coral reefs are appropriate (CFMC 2004a). NOAA Fisheries has identified fishing capacity reduction for most of the nation's fisheries, including the US Caribbean queen conch fishery, as a high priority (NMFS 2004). The Caribbean Council has also concluded that some fishery resources are overfished, and that limited entry is an appropriate management method to address overfishing (CFMC 2004b). Yet fishers in Puerto Rico adamantly oppose limiting the numbers of fishers (Trumble et al. 2004).

Fishers in the US Caribbean express a strong opinion, especially Puerto Rico, that they should have an opportunity to confer with fishery management agencies and participate in developing management strategies, including limited entry, that affect them. Puerto Rico fishers vehemently oppose recent fishery regulations, and have worked to overturn them. In this environment, efforts to develop limited entry programs in Puerto Rico will likely prove confrontational and may have a low probability of success. However, a mechanism that establishes a successful consultation/communication between fishers and State and Federal agencies could improve the chance of finding an effective limited entry compromise as an interim measure.

This report presents a methodology or protocol for the development and establishment of an effective consultation/communication mechanism in the US Caribbean. Effective communication among fishers and agencies would benefit all fishery management activities in the region, and would serve as a first, but necessary, step in developing a US Caribbean limited entry program. A limited entry program would help control fishing impacts on coral reefs and other fish habitats.

The methodology designed by the consultants is based on the following: Analysis and examination of background information on participatory approaches and consultation strategies in the U.S. Caribbean; Analysis and interpretation of recent events in Puerto Rico related to the application of the fisheries' regulations; Identification of obstacles to information flow among the participants in the fishery; Analysis and interpretation of similar processes in St. Croix; Examination of the local management context; Results from social, cultural and economic research activities; Recent debates on participatory approaches and adaptive management strategies in fisheries; Lessons learned for various cases throughout the Caribbean; and Application of tested strategies in the management of public disputes, and the development of conservation projects using participatory approaches. The consultants expect this methodology to be used by the fisheries management agencies and the stakeholders, through the mechanism of a working group, composed by key members of the agencies, consultants and collaborators. Throughout this report, the team will be referred to as "the working group."

Background

A current poor communications environment among fishers and agencies has contributed to lack of participation by US Caribbean fishers during development of fishery regulations, and has led to vociferous opposition to some proposed management actions. Fishers may rally to oppose management actions after the time to influence the decision has passed.

An old plywood panel placed in the front yard of a house in the western town of Rincón displayed the following words: “Law 247 discriminates against the fishermen.” In a cool day in November 2004, after a number of presentations on a variety of fisheries issues and regulations at La Parguera, in the southwest coast, a Puerto Rico Department of Natural and Environmental Resources (DNER) official stood up to give her presentation. The fishers also stood and left the building shouting a number of things, including that they were not going to provide DNER with their landings data, in retaliation to the passing of the law. This behavior had been previously observed and reported during the 1980s, when the government was developing a Marine Sanctuary for La Parguera (see Valdés Pizzini 1990).

Over the past thirty years the Puerto Rican fishermen have faced the Commonwealth of Puerto Rico and the Federal government, as adversaries in the process of management, a process that calls for the collaboration among the different interested parties. Instead, the trend over the past years consisted in an increase in animosity and conflicts. The mandate of the government agencies is to increase the total percentage of areas under protection (under MPA or other forms of management and conservation), and to protect the natural resources. However, the human factor is not considered to the extent that it should.

Data from an on-going research project funded by NOAA suggests that fisheries management is targeting a number of species without the appropriate knowledge and data for the decision-making, and that the fishers do possess important information that could contribute to the conservation or sustainable use of the species. However there is a communications and information gap between the users of the resources and the managers, who are in a conflictive situation over the enforcement of Law 247, and the rules and regulations of the DNER.

Fishermen believe that the weight of resource management is on their shoulders, and that they are considered the sole culprit of resource depletion. They argue that the process of management must incorporate an array of users and a set of situations that affect how the marine resources are used and conserved. In other words, management must engage in the analyses of these factors or key issues, in order to understand the full extent of its measures. Fishermen also tend to agree that the current status of the fishery cannot be solely attributed to fishing pressure, but to a complex process of resource utilization in which the industrial and service sector must also share responsibilities. For the small-scale fishermen, marine resources are also used by sport and recreational fishermen, fishers for ornamental species, and other users.

Pollution and environmental degradation appears as a major concern of the fishermen in surveys and field notes over the last decade. It is our assessment, that the appropriate discussion and management of the aforementioned issues will ease any regulations carried upon the shoulders of the fishermen. The fishermen are willing to collaborate in the process of management, if their concerns are taken care of. There is sociopolitical evidence of the adverse effects of public policy that disregards the concerns of the fishermen, especially when the opening argument features the sad state of the local fisheries, as a result of overfishing.

A study of the knowledge of Puerto Rican fishers in La Parguera (Martínez and Valdés Pizzini 1996) revealed their openness and transparency on the issues of the status of the stocks, and the problems with management. They also pointed out some of the essential problems that needed to be considered before they considered collaborating with government agencies. They raised the following key issues:

- Increase in the demand for space and housing in the coastal areas, resulting in the displacement of fishers (the process of gentrification.)
- The adverse effects of the infrastructure development in the coastal habitats, and the destruction of the mangroves, contamination of the waters, and the sedimentation of the inshore reefs.
- Acute competition for space between leisure and production: a) recreational boating (including the use of jet skies) in the inshore area, and in the mangrove channels and inlets, vs. the array of fishing activities (use of gillnets, fishing for bait using cast nets, mangrove oyster collection, and hand lines), b) recreational boating in the outer portion of the reefs interfering with the use of traps, and c) sportfishing in the summer interfering with the use of traps near the shelf drop-off area. As a result, the fishers have reduced their activities during the weekends, and refrain from fishing in certain areas.
- An acute sense of injustice on behalf of the government resource management agencies. Systematically, in interviews as well as in informal conversations and meetings, one of the key elements of the fishers' discourse is unevenness in the application of justice. They feel that the government officials monitor fishers' activities, while officials keep a lax stance towards the recreational users, and illegal settlers of the coasts, and developers.
- An increase in the number of small-scale and recreational fishermen. The increase in the number of fishermen was attributed to the different changes in the rate of unemployment in the area. Fishers recognize that fishing is a labor buffer zone that absorbs idle hands when certain industries decline and unemployment otherwise increases. This problem is also related to the discussion on the categories of full-time and part-time fishermen.
- There is an increase in effort, measured in the number of fishermen and the gear they use.
- There is a perceived decline in the stocks, attributed to the factors mentioned above, and to pollution, use of motors crafts, recreational activities, and the use of beach seines in the estuaries.

- Occasional competition from the sport and recreational fishermen in the sales of dolphin fish, mackerel, and other fishes.
- Increase in the demand of certain fish and shellfish (lobster, conch, snappers, groupers) that force the fishermen to seize the opportunity of catching them during their seasonal "runs" and aggregations (excerpted from Martínez Reyes and Valdés Pizzini 1996).

The agencies do make efforts to involve fishers. There is an on-going process of educating the fishers on the procedures of the Caribbean Council (see McCay and Creed 2000), as well as the mechanisms to engage in an open dialogue with government agencies. The Caribbean Council moves meetings around the US Caribbean region to make the meetings accessible to fishers; however, fishers state that they do not like to attend meetings in large hotels typically used by the Council. DNER had previously established a regular forum for conferring with fishers, but the forum failed and was discontinued. The USVI has a Fishery Advisory Committee (FAC) for St. Croix and for St. Thomas-St. John to bring active participation of fishers; however, the FACs do not receive adequate technical or financial support, and FAC members often receive threats for recommending positions opposed by some factions of the fishing community (reference). NOAA Fisheries holds meetings and workshops on special topics to help inform fishers, but these meetings are primarily informational.

During a series of workshops¹ to discuss use of limited entry as a management tool, fishers in the US Caribbean expressed serious concern with the management role played by Regional Council, State, and Federal agencies. Many fishers felt that agencies operated in isolation from the fishers, imposed regulations without considering management actions of other agencies, and did not recognize conservation measures already in place. In Puerto Rico, fishers wanted to talk about new fishing regulations, recently implemented by DNER, which the fishers strongly opposed. Fishers uniformly expressed an opinion that they needed a significant participatory role in developing management measures. Fishers typically blamed DNER for a lack of responsiveness to fisher input and for imposing restrictions unilaterally. Fishers commented on a need for coordination among management agencies.

The results of the workshops revealed the following:

- Fishers at the workshops supported stronger coordination among the State and Federal management agencies.
- Fishers had not seen or heard reports that justified many management actions imposed on the fishery, so felt a high level of suspicion for the actions.
- Fishers from Fajardo (northeast coast) and Ponce (south) strongly supported a procedure for association heads to represent them in dealing with government agencies.

¹ The Southeast Regional Office, Cooperative Research Program, provided funding to MRAG Americas to produce the workshops. Dr. Robert Trumble (MRAG) and Dr. Juan Agar (SEFSC) conducted the workshops.

- Puerto Rico fishers discussed an effort in the legislature to establish a new corporation to oversee fisheries. The legislation proposed to establish the new corporation would remove the fishery functions from the DNER and from the Puerto Rico Department of Agriculture (DA). Previous efforts to establish a government structure that would increase communication between fishers and the government had failed, so the new corporation would have a board of directors with eight commercial fishers and four government representatives.
- The efforts in Puerto Rico for a new fishery corporation speak to a need for enhanced participation of fishers and enhanced cooperation between fishers and agencies in fishery management. Increasing cooperation is not a trivial process, as both fishers and agencies have issues they prefer to include or exclude from the process.
- At the conclusion of the workshops, Puerto Rico fishers agreed that a research effort to identify and help implement an enhanced communication mechanism among fishers and agencies would benefit.

The team conducting the workshops concluded that commercial fishers lacked information necessary to understand the background for the management measures and for possible limited entry methods, and that substantial outreach was necessary to bring fishers into the management process. The opinions expressed by fishers at the limited entry workshops clearly indicated that the efforts by the Council, NOAA Fisheries, DNER, and DA to involve fishers do not satisfy fishers perceived needs.

The methodology to assess opportunities for the enhancement of consultation processes in the U.S. Caribbean was designed to increase and improve the working relationship between the National Marine Fisheries Service (NOAA Fisheries), State fishery agencies, Caribbean Council, and fishers.

A key aspect of the methodology is the involvement of fishers and agency staff in development and evaluation of management and regulatory options. Once in place, the designed process will contribute with recommendations for fishery management agencies in the US Caribbean Region (federal and state waters). The National Marine Fisheries Service (NOAA Fisheries) and the Caribbean Fishery Management Council (Council) both have responsibilities in federal waters (9-200 nautical miles around Puerto Rico and 3-200 nautical miles around the US Virgin Islands), and the Fisheries Research Laboratory (FRL) of the Puerto Rico DNER and the Division of Fish and Wildlife (DFW) of the US Virgin Islands Department of Planning and Natural Resources have responsibility in state waters.

Effectively managing Caribbean fisheries has been challenging not only because of the multi-species and multi-gear nature of the fisheries, but also because fishermen generally lack knowledge about the management and policy process. Recognizing the need to better assist the Caribbean Council in its decision-making, particularly with respect to socio-economics, the Southeast Fisheries Science Center (SEFSC) has embarked in a series of research initiatives to improve the quantity and quality of the socio-economic research conducted in the region. To provide managers with greater understanding of socio-economic and cultural implications of

management actions, the SEFSC has supported the development of a fishermen census in both Puerto Rico and USVI and is presently working with contractors developing costs and earnings surveys for the lobster and reef-fish trap fisheries. These data will be used to analyze the economic effects on commercial fishermen of proposed regulations. In the coming years, the SEFSC plans to conduct additional studies designed to examine fishermen's level of dependence on marine living resources.

This methodology will help the agency satisfy the various requirements under the Magnuson Act, particularly National Standard 8 and NEPA, and develop a socio-cultural and economic baseline for the U.S. Caribbean, taking advantage of the information flow expected from the consultation and participatory process. Despite SEFSC efforts, there is continued need to educate fishermen on the policy process to encourage more participatory fishery management.

Obstacles to communication flow

The process of engagement of stakeholders in a complex process of consultation and collaboration requires that the hurdles to the flow of communication be identified and eliminated. Some of the obstacles identified by us, in reference to the management of Caribbean fisheries, consist of the following:

1. Rules, regulations, and constraints related to the information exchange (public hearings).
2. The structure (and culture) of public meetings, hearings and meetings configured by the spatial organization of power.
3. Pre-conceived notions of what fishers are and represent, and their knowledge of the fishery.
4. Pre-conceived notions of what managers are and represent, their knowledge of the fishery, and their concern for the welfare of ecosystems and fishing communities.
5. Cultural, political, social and policy perceptions brought to the table by the different participants (stakeholders).
6. Distorted views and definitions of the problems.
7. Lack of historical data and processes.
8. Language differences: use of English or Spanish in the deliberations, the process of translation, the use of scientific jargon, and the diverse levels in the use of the languages employed in the deliberations.

These obstacles point at the fact that the process of management² requires a communications and conflict resolution strategy, that is open and participatory. Managers and scientists recognize that need for Puerto Rico:

It is exceedingly difficult to develop effective management if the people involved are not aware of existing problems, their potential consequences and possible solutions. Without

² Defined here as a process that includes all those involved in the use and allocation of the resources, according to cultural, social, economic and legal practices. Thus, this definition of management includes government agencies, NGO and resource users, as active participants.

the participation and cooperation of fishermen, management will be difficult at best, and most likely impossible (Kimmel and Appeldoorn 1992).

The process and methodology we are recommending follows the route recommended by Kimmel and Appeldoorn (1992) to make participants aware of the existing problems, and initiate a formal collaboration among the stakeholders. Berkes et al. provide the rationale for such form of collaboration among stakeholders in the context of small-scale fisheries:

In small-scale fisheries, the scope for civil society participation is great, perhaps more so than in many other sectors. This is so partly because small-scale fishers have been marginalized in the conventional top-down decision making process, and there is now a trend toward greater community orientation. But this is also due to the very nature of small-scale fisheries, which are virtually unmanageable without the input and cooperation of stakeholders. The use of imperfect information for management necessitates a close cooperation between the management agency and the fisherfolk. Such process requires collaboration, transparency and accountability, so that a learning environment can be created and management can build on experience. Transparency means openness, and full and free availability of information, decisions, and plans. Accountability means the people who make the decisions should be available to answer to the people who are affected by the decision (Berkes et al., 2001:33.)

The methodology proposed for the consultation and collaboration process dwells on the principles of transparency (free flow of information), and accountability (stakeholders will respond to each other in the process).

Methodology for the establishment of a participatory process in fisheries management

This methodology is based on the principles of conflict management as outlined by Carpenter and Kennedy, in their seminal work Managing Public Disputes (1988, 2001), and the guidelines established by Margoluis and Salafsky (1998) in their work for the design and implementation of conservation projects.

As stated earlier in this report, the situation between the Government agencies and the resource users in Puerto Rico is one characterized by public disputes and conflicts, bringing the management system to a crisis. Public disputes involve a complicated network of interests, the constant emergence of new actors in the arena, varying degrees of expertise (including strategies for participation) among the stakeholders involved, and strongly held values and cultural perceptions (Carpenter and Kennedy 1988, 2001).

The strategy towards the mitigation of the conflicts, based on the full participation of the stakeholders, must be based in the following initial guidelines:

- (a) The focus must be on solving the problem;
- (b) The process must include face to face interactions of those involved in the crisis;
- (c) Participants (stakeholders) must contribute to shape the process; and
- (d) Decisions are made by consensus (Carpenter and Kennedy 1998). Key to this process is the understanding of the problem (and the development of a constructive definition of the problem) and the stakeholders participation in the design of the process.

Thus, conflict management requires a number of steps that include the following:

- (1) Clarification of issues and participants;
- (2) Identification of problems;
- (3) Commitment among the interested parties;
- (4) Joint selection of a process;
- (5) Development of rules of engagement;
- (6) Facilitation by outsiders;
- (7) Commitment towards fairness, transparency, and accountability;
- (8) A clear negotiation process, and
- (9) The ratification of accords. The end product of this process will be as set of guidelines for the incorporation of fishermen and other stakeholders into the process of management.

Implementation of this methodology requires, for the working group in charge of the process, to proceed in three major components:

- 1. Using existing information and interviewing stakeholders to obtain insight on various organizational structures to enhance consultation and communication and to develop a list of key issues and topics;
- 2. Using the information from step 1 to develop alternatives for the organizational structure and working with the agencies and fishers to reach consensus on the preferred alternative; and
- 3. Implementing the agreed-to plan, if appropriate.

The procedures for completing components 1 and 2 are fairly predictable, and are described below. The third component, however, could take a number of forms, ranging from no further activity to agreements for informal consultation to a legislated process. Consequently, this report examines components 1 and 2 separately, but address component 3 only in general.

The steps for this process are: Component 1 – Stakeholder Positions

- I. **Identification of the stakeholders in this complex process of management and information exchange.** Selection of key stakeholders (based on expert consultation techniques) to participate in the panels. The consultants initially identified the stakeholders as decision makers at PR DNER, PR DA, NOAA Fisheries Southeast Regional Office, Caribbean Fishery Management Council, the heads of commercial and recreational fisher organizations, commercial fishers, and recreational fishers. This process will also include an assessment of the stakeholders involved in the following “consultative” processes: The fisheries boards (*Juntas*) developed by the DNER and the DA to deal with the Fisheries Regulations, the Caribbean Council Advisory Panel and Scientific and Statistical Committee, and the participants in NOAA’s Local Action Strategies meetings in Puerto Rico. During subsequent steps, the working group will adjust the stakeholder categories based on information received.

- II. **Identification and description of the key issues and problems, matched with the stakeholders.** The working group will divide the key issues and problems into two parts: 1) ideas from stakeholders on an effective forum for discussion and consultation among stakeholders; and 2) specific topics that stakeholders want to resolve. The group will use a variety of sources to identify the key issues, and then use the various sources to construct position summaries for the various stakeholders.
 - i. **Identification of documents produced by local agencies (primary sources) that evidence the diverse positions held by fishers, agencies, and other stakeholders.** Concurrent with the initial interviews and focus groups, the working group will obtain and search documents produced by various agencies that deal with positions and responses to fishery management, research, and enforcement that may identify stakeholder positions. The wealth of information from hearings and other activities at the Caribbean Fisheries Management Council is astounding, and it remains unstudied and unclassified. Other agencies likely have similar material. For example, NMFS office in Puerto Rico, jointly with UPR Sea Grant, and the DNER held a number of workshops for the fishermen on a number of management issues. Most of the workshops were taped, and the information on the deliberations is available for examination. The Coral Reef Task Force Meeting in 2000 had a focus on the fishermen participation in management. The deliberations were taped, and the

Proceedings are available.³ It is our understanding that the thorough identification of the sources, its management as data, and its analysis will provide key information on stakeholders and management issues, by regions.

The working group and its collaborators will request government agencies to assemble likely documents; members of our research team will visit the offices, review the documents, and copy relevant documents or sections.

- ii. **Examination and analysis of information in secondary sources: Technical Reports, Management Plans, Articles, and Books.** Many agencies, directly or through contractors, summarize the information from the source documents of Item II (i) into secondary documents. The working group will review the secondary documents in a similar manner to the source documents for use in constructing position summaries.
- iii. **Analysis of the data from the fishing community profiles currently funded by the NMFS, to map issues and communities.** NMFS is funding socioeconomic research in Puerto Rico and the US Virgin Islands leading to fishing community profiles. A survey for western Puerto Rico is currently underway, and a survey for eastern Puerto Rico is in preparation. As analyses from these profiles become available, the working group must incorporate results into our position summaries.
- iv. **Interviews with selected individuals.** The working group also collects information through initial interviews with selected individuals. The initial interviews will focus on individuals in agencies who have both regular contacts with fishers and with management decisions, and on individuals in the fishing industry who regularly interact with other fishers and have experience with management agencies. In this way the working group will be able to obtain preliminary information prior to extensive data gathering. Both, the initial interviews and the focus groups described later, will use a list of predetermined topics as aids for discussion. This process and methodology does not require the use of formal survey questionnaires in either interviews or focus groups. A relational database (such as Microsoft Access) can be developed as a storage and analytical tool for the data collected through interviews (and subsequent data sources). Data can also be stored in a text format, amenable for other types of qualitative analysis.

³ The CFMC is currently holding meetings on the draft SFA alternatives and plans for the management of the fisheries. The consultants are attending the meetings, and collecting information for the continuous enhancement of the methodology.

- v. **Expected key issues.** Based on our experience, it is expected that the key issues to arise will include the following:
- a) Limited access/limited entry
 - b) Area and seasonal closures
 - c) Management of specific species, under regulations and Fishery Management Plans
 - d) Available scientific and traditional ecological knowledge (TEK) information
 - e) Data and the fisheries statistics program (landings data and the bio-statistical sampling process
 - f) Enforcement
 - g) Equity and environmental justice in the application of laws and regulations
 - h) Role of development in the health of the coastal and marine ecosystems
 - i) Role of the sport and recreational fishermen in the economy, and in the use and exploitation of the resources
 - j) Market: high demand for specific products
 - k) The objective of the managers and the legal instruments employed to manage and conserve ecosystems and resources
 - l) Communication and participatory process
 - m) Institutional mechanisms for the achievement of effective collaboration
 - n) The design of alternative mechanisms for consultation and collaboration

III. **Classification and analysis of themes, topics, issues and processes involved in the following: management, conservation, resource utilization, and others.**

Following collection of the data sets identified above, the working group will construct position summaries for each stakeholder group, and identify areas of agreement and disagreement. It will use the relational database to compare positions expressed by stakeholders in the various information sources. Thus, the group can compare and contrast the positions of stakeholders internally as determined from each data source for consistency, and compare and contrast the positions across stakeholders. The consultants recommend that this process

incorporates the use and application ATLAS.ti a software for the organization and analysis of qualitative data in the form of texts (for example, interviews or the deliberations in a meeting or a focus group). This computer software facilitates the process of understanding relationships among concepts, ideas, group positions, and issues, in a graphic and quantitative manner. This type of analysis will facilitate the development of a conceptual model of the fisheries. According to Margoluis and Salafsky (1998:28), a conceptual model is “a diagram of sets of relationships between certain factors that are believed to impact or lead to a target condition.” The development of a conceptual model of the fisheries is vital in a consultative process, such as this one. The model provides the following “tools” for the deliberations: a picture of the situation, linkages between factors (usually relevant factors, and based on sound data), and the identification of direct and indirect threats (Margoluis and Salafsky 1998: 28-34).

- IV. **Preparation of a “white paper” on the findings, to be used as a reference (jointly with the rest of the information) in the deliberations with the stakeholders.** One key task of the working group is to summarize the results of the initial interviews, reviews of source and secondary documents, and community profiles into a background document (in Spanish with English translation) that stakeholders can use to familiarize themselves with the issues important to the development of a consultative process. The white paper will allow all stakeholders to begin discussions from a common base. Material in the white paper will form the agenda for subsequent focus group and panel discussions.
- V. **Formation of the stakeholders’ panels (sport and recreational fishers, small-scale fishermen, fishery managers, and others identified through this process), to participate in the deliberations.** The panels will be composed by N groups, formed by homogeneous and heterogeneous sets of stakeholders to discuss the issues, with an objective to negotiate a plan for the consultation and participation of fishermen in the management process.⁴
- VI. **Development of the consultation process, jointly with the stakeholders.** The structure of the panels’ meetings and deliberations will be designed and negotiated among the members of the panels. Our research team will facilitate the process and stimulate the use of participatory and democratic procedures, such as: (a) the use of various forms of meetings and group participation: roundtable discussions, task groups, problem solving workshops, (b) Identification of clear and achievable goals and objectives, (c) The use of an “outside” facilitator (a role for a member of our team); (d) The sharing of the responsibility of hosting and / or chairing the meetings, (e) Development of ground rules for the appropriate participation of the stakeholders, (f) and the designation of the process of deliberation as “*conversatorios*,” or conversations, to differentiate the process from public hearings. The working group must design and implement, in

⁴ The plan is to have (at least) four panels, composed of eight stakeholders each, discussing the issues and the procedure separately, and coming together in a final conclave.

consultation with the stakeholders and participants, the technical process of conducting and facilitating the deliberations, namely: the use of a convener, a sponsor for the meetings (for example, a fishermen association, the Legislature, another organization), employment of a recorder, the use of technical resource experts in certain meetings, observers, the incorporation of outside experts, location of the meetings (a factor of critical importance due to the cultural values of the participants), the appropriateness of a news media strategy, and the timing and scheduling of the meetings based on the cultural, social and official calendar of the Puerto Rican society (Lent, Christmas, Local and Federal holidays, summer vacations, hurricane season, local festivities).



Figure 1 Fishermen and stakeholders meetings

- VII. **Focus groups.** A small sample of fishermen, representative of the different regions, gears, and targeted species, will be selected (from the Fisheries Laboratory Census Database) using the guiding principles of Multistage Cluster Sampling. This “sample” of 30 fishers will be contacted to participate in focus groups. The focus groups (a total of 8) will be held throughout Puerto Rico, including Vieques and Culebra. Information from the focus groups will “feed” the meetings with the stakeholders’ panels.

Component 2 – Alternatives and Consensus

- VIII. **Preparation of a summary document of the results of the discussion and deliberation, and a draft of the guidelines for participation in management.** The summary document will function as a guide for decision making by stakeholders. The introductory portion of the summary will consist of adequate background to frame the problem and a concise summary of positions expressed by stakeholders. The working portion of the paper will consist of a recommended set of goals and objectives, a series of alternatives for constructing a consultative mechanism, and a ranking of key issues from the stakeholder groups. The consultants, in designing this methodology, expect that the summary document

will function in a role similar to environmental impact statements or draft amendments to regional council fishery management plans: a wide range of alternatives with analysis of advantages and disadvantages of each alternative provide for a common base for stakeholders to use in selecting a consensus position. The report will be written in a manner sensitive to educational levels of stakeholders; the working group is expected to place technical and complex material in appendices, leaving the body of the document as simple and clear as possible.

IX. Reaching Consensus

- i. Distribution of the document among all participants.
- ii. Comments to the draft from the participants. In order to secure their comments, members of the research and outreach team will contact the participants through visits and phone calls.
- iii. Incorporation of the comments into the Final Draft.
- iv. A one meeting or conclave. The Final Draft will be presented at the conclave, and comments will be gathered for the final document.

- X. Reports on the recommendations to policy and conservation measures.** The end result of the process will be a set of Guidelines to be incorporated by the agencies in their policies regarding the input of the public in management. While management decisions made to comply with state or federal requirements give agencies the authority to impose regulations, the effort to form a consultative mechanism will require compromise to build a procedure that effectively involves all stakeholders.

Component 3 – Implementing the plan

Implementation of a plan to construct an agreed-to consultative process will depend on the type of plan. For this component, the working group must respond to the consensus position developed during component 2, and discuss with stakeholders the appropriate role for our assistance. It is expected that implementation would require development a protocol for incorporating fisher input into the management process, possibly in the form of memoranda of understanding, but possibly involving Puerto Rico legislation.

A process of this magnitude and sophistication requires a 2-year time line (see a mock-up of the process schedule in Table 1). During year 1, the working group will plan the project, and collect and analyze data. During year 2 the group is expected to write background reports from the analyses, summarize points of view and prepare alternatives for the consultative process, develop the consensus, and implement the plan to the degree appropriate.

A new role for management

Federal, Commonwealth, and Council management agencies operating in Puerto Rico would benefit from incorporating the notion of Adaptive Management, an approach that learns from the past success and failures, but, more important, it emphasizes learning by doing. This approach underscores the proposition that management is an experimental process, from which managers and resource users can learn (Berkes et al. 2001: 26.) Feedback learning from the environment (including the complex interactions between people and ecosystems) is an essential component of this strategy aiming at changes in policy:

Individuals commonly learn from mistakes; this also seems to be a way in which resource management institutions learn. The important point is, effective learning occurs not only on the basis of management successes but also failures. The international experience with environmental management agencies show that there often is institutional learning following a crisis. Adaptive management recognizes that resource crises and management mistakes can be useful because they create learning opportunities. (Berkes et al. 2001: 27).

The crisis of the passing of the Fisheries Law 247, and the ensuing conflicts asks for an innovative approach to management, based on the process of continuous consultation with the stakeholders. This strategy must be designed by learning from past mistakes. It also requires that the stakeholders from the side of the government recognize that the management of resources is, in essence, the management of information. Unfortunately, this is barely understood by many conservation agencies. In the case of fisheries, recent events show that management is enacted in an information deficient situation, which needs to gather all the pertinent information, including the Traditional Ecological Knowledge (TEK) of the local fishers, and their proposed alternatives. A current effort to form a board to handle the problems of the local fisheries is a step in the right direction, but it is unable to grasp the enormity of the task, and manage the information in an objective manner, to produce results.

Application to limited entry

The methodology presented in this report is a first and necessary step to foster an environment in which fishers and agencies of the US Caribbean can comply with the NOAA Fisheries recommendation to reduce overcapacity and begin productive discussions on limited entry programs appropriate for the region. NOAA Fisheries (NMFS 2004) has determined that overcapacity is a common problem in many domestic and international fisheries, which fosters destructive derby operations (the race to fish), aggravates overfishing and bycatch, creates chronic management problems, and undermines the economic performance of the harvesting sector. For the US Caribbean, this first step would have important benefits to coral reef areas that make up much of the habitat surrounding the islands. As effective communications develop among fishers and agencies, the probability increases that fishers will see benefits from effort or capacity limitation programs that would ultimately reduce fishing effort on coral reef areas. If degraded coral habitat limits current fish production, recovery of the reefs would lead to

increased fish production. Effort/capacity limitation would eliminate or minimize dissipation of the increased production over new entrants, benefiting both fishers and coral habitat.

NOAA Fisheries recognized the need to work cooperatively with the Councils to identify fisheries in need of capacity reduction and to develop measures to achieve those reductions. NOAA Fisheries also recognized the frequent overlap between State and federal fisheries, and suggested that capacity reductions in federal waters will be more effectively developed in collaboration with the States.

As part of its plan to manage fishing capacity, NOAA Fisheries (NMFS 2004) has committed to:

- Completion of a national report on overcapacity, which it plans to finish in 2005/2006, and
- A process of detailed consultations with the Councils, the fishing industry, and other constituencies.

In particular, NOAA will:

- provide to the Councils the necessary data and technical tools, including capacity estimates of the federally managed fisheries under their jurisdiction, to help them determine specific overcapacity levels and develop appropriate quantitative capacity management objectives and plans,
- develop capacity management and capacity reduction targets, where appropriate, in the two Secretarially managed fisheries (which already have limited entry regulations), working with the relevant advisory committees and affected industry groups,
- work closely with industry groups interested in developing capacity reduction programs, in particular on the business plan required in Section 312 (e) of the Act,
- participate in the Councils' deliberations concerning which capacity reducing management measures/approaches are most appropriate in a given fishery, and
- provide assistance to the Councils to ensure that their capacity management programs are effectively coordinated with the relevant State fishery agencies, regional State marine fisheries commissions, and international (regional) fisheries management organizations.

The detailed consultations by NOAA Fisheries will have increased benefits to the Caribbean Council if the Council can develop a capacity to address the important issues it or the national report may identify. For example, the strong opposition by Puerto Rican fishers of programs to limit the number of commercial fishers will stymie progress in either State or Federal waters, unless serious consultation and outreach occurs. The current negative environment of opposition to and distrust of management actions by DNER and other agencies can best be addressed by developing an effective consultation/ communication mechanism for fishers and the agencies.

The Caribbean Council staff held a series of fact-finding meetings in May 1999 to collect information and exchange ideas with the recreational and commercial fishers and the general public on three issues that were presented to the Council. These issues were related to the possibility of gear reduction, i.e., traps, gillnets, and SCUBA gear. Participants at the meetings expressed strong opinions opposing efforts to eliminate traps, SCUBA, or nets in the US Caribbean EEZ. Rather, they recommended enforcement of the present regulations, and assurance that gears are in compliance with the applicable regulations. A majority of participants

also requested that the Council have more orientation meetings throughout Puerto Rico and the USVI.

The Heinz Center convened a roundtable September 1999 in Puerto Rico to identify problems the Caribbean Council is experiencing in implementing provisions of the Sustainable Fisheries Act, and to solicit recommendations to improve fisheries management in the region (http://www.heinzctr.org/NEW_WEB/PDF/Caribbean.PDF). Participants included members of industry, environmental organizations, academia, and government agencies. Participants generally agreed that that excess fishing capacity existed in the US Caribbean, and that fishers and fish would likely benefit from limited entry. They also agreed that limited entry would be contentious and difficult to implement, and recommended great care to communicate with the public about the impacts and benefits from limited entry. As many fishers depend on fishing, especially in times of economic downturn, the participants recommended socially acceptable alternatives to fishing for those eliminated.

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Table 1. Projected time line for project

Steps in the process	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Component 1 Stakeholders Positions																									
1. Identification of Stakeholders	X	X	X	X	X																				
2. Description of key issues	X	X	X	X	X																				
3. Identification of primary sources	X	X	X	X	X																				
4. Examination of secondary sources	X	X	X	X	X																				
5. Analysis of fishing community profiles			X	X																					
6. Interviews with selected individuals	X		X		X		X																		
7. Data analysis and classification of issues				X	X	X	X	X	X																
8. Preparation of a "white paper"								X		X															
9. Formation of stakeholders' panels											X	X													
10. Development of the consultation process												X	X	X	X										
11. Focus groups with a sample of fishers											X	X	X												
Component 2 Alternatives and Consensus																									
1. Preparation of a summary documents of the deliberations and agreements																	X	X							
2. Consensus steps:																									
3. Comments to the document by participants																		X	X	X					
4. Incorporation of comments to the draft																			X						
5. Conclave for the ratification of the document																				X					
6. Reports on the recommendations to policy and conservation measures													X	X	X	X	X	X	X	X	X	X			
Component 3 Implementing the Plan																									
1. Discussion with stakeholders for the team's participation in the process and the strategy for implementation																						X	X		
2. Implementation: MoU or Protocol for the incorporation of fishers in the consultation process																							X	X	X