

**SUMMARY**

of

Opportunities and Obstacles  
For Community-Based Fisheries Management in the United States:

A Report to the Ford Foundation

by

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and

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August 2004

## Section I: Introduction

Around the world, the decline of major and minor fisheries has triggered efforts to reform fisheries management institutions in both developed and developing countries. These institutions are generally based upon management principles and models fashioned in the 1950s. Under this “modern” model, fisheries management focuses upon generating maximum production, relies on traditional scientific approaches to analyzing fish populations and setting catch targets, focuses on conservation of fish, and centralizes decision making. With rare exceptions, the human dimension of fisheries is an afterthought, and is quite often confined to seeking maximum economic yield from a fishery, regardless of who benefits from exploitation.

This traditional model of fisheries management and development led to explosive expansion in fishing fleets and catches beginning in the 1960s and lasting into the 1980s. By the 1980s, the costs of this management and development paradigm became apparent in many developed and developing countries. Combined with the damage done to water quality and critical fisheries habitats by other coastal development activities, intense fishing had devastated vulnerable coastal fisheries in many parts of the world. Fishing communities that had relied on these fisheries as a source of income and employment as well as a critical source of high-quality animal protein found themselves fishing farther and farther from port and catching less and less. At the same time, the limitations of government management of fisheries had also become plain.

In the 1980s, these developments combined with campaigns for greater democratization and social and economic equity to foster experimentation with new approaches to the management of local fisheries in such countries as the Philippines, Thailand, and Indonesia. Other factors included loss of rights of access to traditional resources, poor living conditions, conflict among artisanal fishermen, and conflicts between fishermen and other sectors.

Among notable differences between these initiatives and the traditional fisheries management and development model is the central role given to people and communities in what has come to be called community-based fisheries management (CBFM). CBFM projects sought to enable and empower communities to manage local fisheries as part of a broader suite of community assets. Interventions included community organizing, training in management and data collection, alternative fishing practices, and establishment of small marine protected areas. Some projects went beyond the focus on fisheries management to include interventions in other aspects of community life such as health, housing, and social services.

Community-based fishery management is neither a defined nor a widely recognized regime for fisheries management in the United States. Even the notion of co-management, in which a government fisheries agency shares management authority and responsibility with a group of fishermen, continues to be met with skepticism among U.S. fisheries managers. The noteworthy co-management exception in the United States is the

arrangement between state and federal managers and the Indian tribes of the Pacific Northwest, who co-manage salmon and several other species.

### What Is Community-Based Fisheries Management?

In its purest form, CBFM is a system in which fishermen and their communities exercise primary responsibility for stewardship and management, including taking part in decision making on all aspects of management, such as harvesting, access, compliance, research and marketing.

Other features of CBFM include local control, a focus on the ecosystem rather than on specific species, power sharing, and a common interest in and responsibility for common resources.

A CBFM program in Nova Scotia uses a similar definition: community-based resource management is a development approach that emphasizes the interconnectedness of humans and the natural environment, and is geographically and ecologically based, giving the people who live in an ecosystem the primary responsibility to manage their activities in a way that fosters sustainability. This approach emphasizes the importance of collaborative and adaptive information, power sharing, transparency, fairness, and the embeddedness of resource use with the cultural, economic and social fabric of the community.

For several reasons, CBFM in its fullest form would be impossible in U.S. fisheries, with the exception of fisheries conducted by Native American treaty tribes. For instance, the American precept of public access to the coast, the ocean, and fishery resources hinders communities from excluding outsiders from access to local resources—a key element of CBFM abroad. Second, within regional economies and even most local economies, fishing does not play the significant economic role that it plays, for example, in the Philippines.

As a result of these factors and the pressures of declining resources, fishery management in the United States can be described as the opposite of CBFM. Fisheries management in the United States focuses on single species, not ecosystems. It places fishers in an adversarial role vis-a-vis resource managers. It rewards history of high catches and penalizes small, diversified fleets. It is federalized, not local. It is highly scientific and has only recently begun to embrace local ecological knowledge. Even the Federal regional fishery management council system, which was designed to take advantage of the knowledge of people who actually fish, has become politicized and professional. Indeed, one could identify what to change about the current Federal management system by comparing it with the principles of community-based management mentioned above.

Notwithstanding these constraints, several approaches can be used to promote sustainable, locally managed fisheries in the distinct conditions of the United States.

## Section II: Lessons Learned From CBFM Outside the United States

The practice and theory of community-based resource management, including fisheries, has evolved more extensively abroad than in the United States. Japan's management of its nearshore fisheries provides perhaps the purest example of community-based fisheries management in the world.

Briefly, prefectural governments in Japan grant tens of thousands of exclusive territorial rights for sedentary fishery resources for ten-year periods to Fisheries Cooperative Associations (FCAs). The members of an FCA hold these rights, which concern a specific type of resource in a specific adjacent nearshore area.

Within FCAs, fishermen are organized into groups based on the type of fishery and their residence. These groups are the main decision-making bodies for allocating catches and for resolving conflicts. The ultimate authority of each FCA resides in a General Assembly, although the General Assembly usually defers to local fishing groups. Larger FCAs have professional staff.

FCAs prepare management plans for their fisheries, which must be approved by the general membership and the appropriate regional regulatory commission, whose membership also is dominated by fishermen's representatives. Rather than emphasizing biological issues such as catch quotas, management measures focus on orderliness in fisheries. Generally, the goals of FCAs are optimal use of resources and equal opportunity for members. Within these goals there are broad objectives having to do with community stability, peace, order, and sustainable prosperity.

In pursuing these goals, FCAs carry out a number of functions. Besides allocating fishing rights to members, FCAs monitor the performance of fisheries through informal observations by fishing groups and through acting as marketing agents for catches. Sometimes, FCAs pool and allocate their profits based on catch records and non-paid contributions to the fishery such as habitat enhancement. FCAs fulfill a number of broader social functions, such as providing credit and supplies.

The FCA system in Japan has been remarkably successful in many respects. Japan's nearshore fisheries have persisted for more than a millennium, while many fisheries elsewhere in the world, which are more centrally managed, have declined, sometimes catastrophically. By catering to the fresh-fish market, FCAs enable fishermen to receive the highest value for their catches of any fisheries in Japan.

The FCA system has its shortcomings. Recreational fishermen feel excluded from desirable fisheries by the rights system. Nor does the FCA system provide protection for the broader public interest in nearshore ecosystems.

The success of FCAs in Japan reflect several factors:

- Fishing communities are highly dependent upon the resources in their areas and must live with the results of their decisions.
- Non-members are excluded from fishing by law.
- Members make decisions about sharing resources or benefits.
- Decisions about fishing and marketing are largely integrated from the dock level to the prefectural level.
- There are effective internal mechanisms for sharing information at all levels.
- Decision-making bodies are highly representative.
- The FCAs and their fishing groups tailor broad regulations set by government biologists to local conditions reflected in their own monitoring.
- The focus on small-scale enterprises avoids the government confusing the interests of the large and powerful for those of the many.

Government legal, technical, and financial assistance also is key to the success of this system, as is the shared cultural heritage and strong cohesion of coastal communities.

FCAs carry out nearly all the major functions of fisheries management, which Pinkerton and Weinstein describe as follows:

- **Policy-making and evaluation**, including scoping problems, setting objectives, conducting research and monitoring;
- **Ensuring the productive capacity of the resource**, including protection and restoration of habitat;
- **Regulating fishery access**, including allocating catches, transferring membership;
- **Regulating fishery harvest**, including assessing stocks, planning and monitoring fishing and catches;
- **Coordinating potential conflicting resource uses and management activities**, including coordinating different gears;
- **Enforcing or implementing rules**, and
- **Maximizing benefits to fishermen**, including marketing and maintaining product quality and diversity.

This description of management functions may serve as a useful framework not only for analyzing current management of fisheries but also for identifying where one might intervene in current management of fisheries in an area to promote greater community engagement.

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<sup>1</sup> Intervention in broader community issues such as health care, housing, and social services is beyond the scope of this paper. Our sense is that such interventions are likely to be unproductive in most instances in the United States since fisheries and fishing communities have become such a small part of the economy and social life of nearly all coastal communities in the United States. Nonetheless, it may be worthwhile to assist fishing communities in securing their share of benefits from such programs undertaken for other reasons. In New England and other areas suffering severe crises in their fisheries, Federal disaster relief funds were used to assist communities in adapting. Typical projects included education and training, family counseling, and development of employment options. The success of these projects was quite limited.

## Desirable Preconditions

Japan's management of its near shore fishery is unique, and an historical accident. Experience over the last two decades, particularly in the Philippines and Thailand, has led to the identification of factors that greatly influence the feasibility and success of CBFM initiatives. Some of these factors are significant enough to qualify as necessary preconditions, while others may require very careful consideration before investing in a CBFM project. Pinkerton and Weinstein concluded that communities that successfully managed their resources shared the following features:

- Highly dependent on the fishery,
- Highly vulnerable to non-sustainable use,
- Highly identified with their fishing place,
- Unwilling or unable to transfer access rights out of the area,
- Willing to use a mechanism for equitable resource access or sharing,
- Able to assert management rights on an informal, if not formal, basis,
- Willing to invest resources in management if they have a real voice in decisions,
- Sufficient human and financial resources,
- Absence of hidden agendas that prevent open evaluation of problems and identification of potential solutions, and
- Government willingness to level the playing field so that more powerful parties cannot dominate the process.

Other literature on CBFM initiatives identifies other factors, such as:

- Strong social capital, including effective organizations, trust within the community, community rules and networks,
- A decline in fisheries that generates sufficient concern among fishermen to provoke change,
- The technological or legal ability to exclude others from a fishing ground or fishery resource,
- Broad agreement on a problem to solve,
- Capacity to develop, agree upon, monitor, and enforce rules,
- Participation by several institutions, including local and provincial government agencies, donors, NGOs, local universities, community organizations,
- Government support, including a legal framework that legitimizes community rules, and
- Opportunity for user groups to see benefits quickly.

It is important to recognize that fisheries and community situations vary enough that some of these preconditions may not be critical. Indeed, a progressive fishing community may seek local management in order to maintain a sustainable fishery without the impetus of declining catches.

## Some Considerations in the Design of CBFM Projects

There appear to be a number of overarching issues in the design of CBFM initiatives, including the following:

Scale: A CBFM initiative should define the management unit—that is, the geographic area within which people cooperate to perform some management function. Criteria for determining scale include the characteristics of the fishery, such as whether the target species is sedentary or migratory, and whether the fleet is capable of fishing at great distances from their home port.

Level of Operation: An issue related to scale is level of operation—that is, whether the focus of action is local, regional, and/or national.

Definition of the community: In the case studies abroad that we reviewed, communities generally were geographic—that is, they included all of the people or fishermen living in one area. In a study of Oregon’s fishing communities, Jennifer Gilden identified several other types of communities:

- Communities of interest, based on common interests of members, such as clubs or business organizations.
- Occupational communities, such as trawl fishermen vs. gillnet fishermen.
- Natural resource communities comprised of people who live in an area and whose primary cultural existence is based on the use of certain renewable natural resources;
- A community as a dynamic whole that emerges when a group of people participate in common practices, depend on one another, make decisions together, identify themselves as part of something larger than the sum of their individual relationships, and commit themselves for the long term to their own, one another’s, and the group’s well-being.

Jennifer Langdon-Pollock combined a geographical definition with a community interest definition, so that a fishing community was a group of people living in a common geographic area who participate in the fishing industry.

Equally important to this issue of definition is whether the community includes only fishermen, only fishermen from the local area, or fishermen and other community members regardless of their activity. McCay and others have observed that without broad support from the entire community including non-fishers, it may be difficult to reach agreements with government to devolve authority.

Substantive Focus: The focus of CBFM projects varied, sometimes encompassing all coastal resources as well as other aspects of community life such as health and housing. Other projects focused much more narrowly upon fisheries.

Defining each of these issues in the particular situation is key to thinking about the potential for CBFM in specific areas or fisheries. Generally, the more expansive the definition of community or management unit, for instance, the more ambitious will be any CBFM project.

### Miscellaneous Obstacles to CBFM

Reports on CBFM projects mentioned a number of obstacles to successful projects that deserve mention. Good planning can probably address some of these obstacles, but others are likely irresolvable by a single such project.

- Dependency of Initiatives upon NGOs. Once funding ran out and NGOs left, many CBFM initiatives collapsed.
- Management vs. Development: Fishermen generally focus on short-term vs. long-term and development of fisheries vs. management.
- Lack of Education.
- Lack of a Crisis: Nearly all of the CBFM initiatives we examined arose only after a decline in fish populations and catches. Progressive leadership in a community may overcome this pattern and help a fishing community take on the challenge and opportunity of managing a healthy fishery rather than waiting to respond to a collapse.
- Time and Money: The premature withdrawal of funding is the single surest way to undermine a CBFM initiative.
- Unclear Authority: Lack of clarity in legal authority regarding just how much the management of fisheries may be decentralized can create confusion and controversy, thereby hampering a CBFM initiative.

### Attributes of Fisheries Susceptible to CBFM

We have distilled much of the preceding discussion into a series of questions that can be posed about a fishery in order to determine, in a general way, whether the fishery is a likely candidate for shifting toward community-based fisheries management.

#### Physical Setting of the Community

How isolated is the community? Fishing communities that are more isolated from other, larger communities are more likely to be highly dependent upon their fisheries, and therefore more likely to take responsibility for their management.

Is the fishery accessible to participants outside the community? The physical features of a fishery, such as oceanographic currents, or permitting requirements may limit access to the fishery to local fishermen, who as a group may be able to take greater responsibility for the management of the fishery if the benefits of good management are not dissipated among outside fishermen.

How near is the community to vessel maintenance, fish processing and shipping facilities? If fishing is an economic activity that is to bring returns to the community as a whole, fishermen need to have access to docks, repair facilities, ice houses, cold storage and transportation.

### Characteristics of the Fishery

To what degree are the species sedentary or highly migratory? Fisheries for species that are sedentary or resident, such as lobster or crabs, are in a stronger position to manage locally than are fisheries dependent on highly migratory species such as tunas.

Does the fishery occur near shore or offshore? In important ways, nearshore fisheries are easier to manage than are offshore fisheries.

What are the characteristics of the fleet? A fleet composed of relatively small vessels is more likely to be local and more likely to be dependent upon local resources than is a fleet of larger, more mobile vessels that is less dependent on local resources.

Are the vessels owner-operated? Besides being more dependent upon whatever fisheries they pursue, owner-operators are better able to bring first-hand knowledge to bear on management issues and to adopt and implement improved management.

Is the gear configured specifically toward the local species? A fleet that uses gear whose usefulness is narrow is more dependent on the fish it targets and the area in which it fishes.

Does the fleet participate in more than one fishery? A fleet that participates in more than one local fishery is, on the one hand, dependent upon those local fisheries, but on the other hand, is able to shift among target species in response to declines in abundance or management restrictions.

Do fishing operations occur daily or over days (does the fleet come back to port every day)? Generally, a day fleet will be more local than a fleet that is away from port for more than several days.

### Socio-Cultural Setting

How embedded is fishing in the fabric of the community? Where fisheries are a strong part of the local community, local management may be more likely.

Is the fishery part of the community's history, or a recent phenomenon? A fishery with a long history in a community will likely be more deeply embedded in the cultural life of the community than a fishery that is recent.

What is the role of peer pressure within the community to embrace and enforce rules? Given the difficulty of at-sea enforcement, community peer pressure can play a strong role in insuring compliance with management measures.

How diverse is the community? Studies of several fisheries have found informal community management is stronger in communities that are ethnically homogeneous.

### Economic Setting

What is the contribution of fishing and fishery related activities to the local economy? Where fisheries contribute substantially to a local economy, dependence on the sustainability of a fishery is likely to be stronger.

Do fishers have occupational mobility, i.e. other opportunities for employment? Where there are few occupational opportunities, as along the coast of Louisiana, fishing becomes the occupation of last resort. In these instances, fishermen will likely feel little attachment to the long-term health of the fishery.

### Management Setting

What rights do community members have to the resource? As a general principle, stronger rights to a fishery will make a community more capable of exercising key management functions. These types of rights include ownership, leases, access rights, other property rights, and treaty rights. In the United States, with few exceptions, fishing communities enjoy none of these rights.

What rights do community members have to manage the resource? The more rights a community enjoys in carrying out management functions the more likely it can move toward CBFM.

What responsibilities do community members have to manage the resource? These include investment in management, reporting catches, collection of data, insuring fair standards and equitable access, and making decisions in public.

What is the nature/role of information in the management system? A fishery in which information is developed in a collaborative fashion, is used to adapt management to new circumstances, encourages feedback, and is not the domain solely of technical specialists is more amenable to CBFM.

What is the incentive for pursuing CBFM? There must be a compelling incentive for communities to assume the burdens involved CBFM.



### Section III: Tools for Promoting Community-Based Fisheries Management

One of the chief challenges to CBFM is the widespread lack of community organization and capacity for carrying out basic management functions. In developed countries such as Canada and the United States, where government has intervened ever more forcefully in the use of natural resources in order to protect the public trust or to promote maximum yield, fishermen and fishing communities have allowed themselves to become ever more passive-aggressive and reactive. This trend has been reinforced by other factors, including the marginalization of commercial fishing in local economies, as coastal communities have gentrified, property values have exploded, and tourism, services, and other economic activities have grown.

CBFM projects around the world have employed a wide variety of tools for restoration of community capacity to engage actively in the management of local fishery resources. In general, these activities aim at increasing the knowledge and skills that a community can use to identify and prioritize its needs and problems, mobilize its resources to deal with the problems, and take action collectively.

- Quite often, it is an outside NGO that serves as a catalyst in overcoming inertia and, as a facilitator in developing knowledge and skills in a community. The manner in which an NGO enters a community is important to success.
- Yad Fon and others also have found that restoring a community's ability to work together best begins with small-scale projects that may or may not be related to coastal resources but are of importance to the community.
- Social, cultural, and economic, and biological profiles and histories can enable a community to move beyond impressions about their own community and coastal resources to a more analytical understanding of trends and causes. If such research involves local fishermen and others, this activity can also build confidence and capacity in a community.
- However homogeneous it may appear, any community is made up of groups of people with diverse backgrounds, interests, and livelihoods. Capitalizing upon a better understanding of the community and its coastal resources requires fostering the convergence of groups toward a common ground. Sultana and Thompson describe one technique for doing so called Participatory Action Plan Development.

Other means of building essential community capacity include the following activities:

- Providing venues for the regular exchange of ideas,
- Study tours,
- Workshops that help in redefining problems and solutions,
- Surfacing and resolving conflicts,
- Facilitating synthesis of divergent ideas, interests, and perception,
- Exploring and researching new ways of doing things,
- Identifying ideals and bases of friendship.

Besides these broader efforts at building community capacity, CBFM initiatives devote effort to building community-based organizations (CBOs), including fishermen's associations. CBOs are critical to enabling communities to work with government agencies and other institutions and to carrying out specific activities. Effective CBOs require an investment in building basic organization skills, ranging from organizing a meeting and preparing minutes to designing, funding, and implementing projects.

Building the capacity to participate in or carry out any of the fisheries management tasks listed above requires additional training. Besides overcoming the mistrust among fishermen of government management agencies, it is necessary often to confront the mistrust fishermen feel for scientists and their understanding of the world, which often is at odds with that of fishermen.

Even when fishing communities possess the capacity to carry out management tasks, the question often remains how the government agency with responsibility for fisheries management can devolve these functions in a way that ensures that the agency's legal responsibilities are met.

Several commentators also have noted the need to shift the interest of fishermen and communities from the short-term to the long-term and from an insistence upon rights to an acceptance of duties as well if community fisheries management is to succeed. The shift to a long-term focus is particularly important in many fisheries since the benefits of taking action often do not materialize for many years.

Finally, the success of CBFM can be greatly influenced by economic matters, including access to capital and access to markets. Initiatives to build community fisheries have foundered on the lack of access to capital that would make it possible to generate greater value by processing then shipping catches rather than shipping catches somewhere else to be processed, for instance.

### Lessons for CBFM Initiatives in the United States

There are striking differences and striking similarities between the situations that gave rise to CBFM initiatives abroad and the situations in which many fishing communities in the United States find themselves. While differences between communities in the United States and in developing countries are great, many coastal communities in the United States need reconstruction of their civic life as much as communities abroad, although for different reasons.

However little or much fishermen may be organized abroad, fishermen in the United States generally are extraordinarily unorganized. In addition, management agencies in the United States generally are ill-equipped to engage in, much less support CBFM. Addressing this obstacle will require changing not only policy but also staff,

since most staff in these agencies have been trained in the traditional paradigm of top-down, technocratic management of biological resources and protection of the public trust.

The difference with the greatest significance for CBFM in the United States has to do with the very limited authority of government agencies, much less fishermen and fishing communities, to exclude others from exploiting a fishery. The literature on CBFM emphasizes the fundamental importance of excludability to the success of CBFM initiatives. Without excludability, the hazard of free-riders undermining management and the benefits of management to local fishermen is very great.

#### Section IV: A Survey of U.S. Marine Fisheries

As inspiring and interesting as CBFM initiatives abroad may be, successful application of similar approaches and tools in the United States will depend somewhat upon taking account of the character of marine fisheries in the United States.

Fisheries in the United States are extraordinarily diverse in the species that are pursued, where they are pursued, the size and type of fishing vessels, types of fishing gear, the number of participants, the level of management and scientific knowledge, competition among different fishing gears or between commercial and recreational fishermen, and economic significance to local or regional communities and economies.

Like fisheries in other countries, U.S. fisheries have undergone dramatic changes in the last several decades, as fleets have grown together with the sophistication of fishing gear and equipment. Although fishermen in some fisheries have been able to work effectively within an increasingly complex and contentious regulatory process, most fishermen neither invest time and effort themselves participating in the management process, nor do they support others representing them.

#### Fishery Management Jurisdictions

Fishery management in the United States is spread among several jurisdictions: Federal, state, and international. Because fish populations often overlap jurisdictions, management often is shared among several states, between the Federal government and the states, or between the Federal government and other countries through bilateral or

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<sup>2</sup> Government statistics on fishing fleets use two major categories: fishing vessels and fishing boats. Fishing vessels are larger fishing craft that must be registered with the Coast Guard. Fishing boats are smaller vessels. Because fishing boats need not be registered with the Coast Guard, statistics on their numbers are very difficult to come by. It is clear, however, that the growth in fishing vessels during the late 1970s was mirrored in some areas by a growth in fishing boats, partly due to falling prices for such craft.

<sup>3</sup> The United Nations Food and Agriculture Organization defines a fish stock as follows: "The living resources in the community or population from which catches are taken in a fishery. Use of the term fish stock usually implies that the particular population is more or less isolated from other stocks of the same species and hence self-sustaining. In a particular fishery, the fish stock may be one or several species of fish but here is also intended to include commercial invertebrates and plants."

multilateral agreements. Ocean resources are considered public trust resources, and are open to access by all citizens.

Since 1976, the United States has asserted authority over all living marine resources within 200 miles of its shores. Within this larger zone, the Federal government has exclusive management authority for fisheries that occur in the so-called U.S. Exclusive Economic Zone or EEZ. The EEZ is that area of the ocean that extends from the seaward boundaries of the coastal states (3 nautical miles, in most cases) to 200 miles off the coast of the United States. (Texas, the Florida Gulf Coast, and Puerto Rico have fishery jurisdictions extending nine nautical miles offshore.) The individual states exercise management authority over fisheries that occur within their territorial waters, both fresh and saltwater. Interstate compacts and commissions on the Atlantic, Gulf, and Pacific coasts provide coordination for shared resources among the states.

Federal Fisheries Management: The U.S. Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA) has stewardship authority for coastal and marine resources, including living marine resources. Responsibility is further divided between the National Ocean Service, which is generally responsible for non-living marine resources, and the National Marine Fisheries Service or “NOAA Fisheries.” This responsibility extends not only to conservation of fishery resources, but to protection of marine mammals, protection and recovery of endangered marine species and protection and restoration of habitat.

Although the Secretary of Commerce, through NMFS, has final authority over fisheries in federal waters, the 1976 Magnuson-Stevens Fishery Conservation and Management Act established eight regional fishery management councils. Each regional fishery management council is made up of a dozen or more voting members.

In addition, each council has a Scientific and Statistical Committee (SSC) and Advisory Panels (APs) to help provide additional expertise. These committees do not have voting power; they only advise the council. The SSC assists in interpreting biological, sociological, and economic data for the council. The Advisory Panel members usually represent various interests -- commercial, recreational, environmental, and consumer -- and give additional information and perspectives on FMPs.

The councils develop Fishery Management Plans (FMP) that can include conservation measures such as size limits, bag limits, quotas, limits on the number of vessels, restrictions on net mesh size, closed areas and seasons, or any action to regulate fishing activity. Most FMPs are periodically modified by amendments that add management measures or change existing ones. A proposed FMP or amendment to an FMP, after it has been released for public comment and revised accordingly, is submitted to the Secretary of Commerce. The Secretary has the final authority to approve, partially

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<sup>4</sup> Interstate marine fisheries commissions are created by federal law and coordinate state regulations within their region. There is one for the Atlantic states, one for the Pacific states, and a third for the Gulf of Mexico states. These are not to be confused with state fishery management bodies, such as the Florida Marine Fisheries Commission, which regulate within state waters.

approve, or reject the FMP or amendment. If approved, the plan is implemented by the Secretary through regulations promulgated by NMFS.

The fishery management council process is open and participatory and provides a forum for all interested and affected parties. But the regional fishery management councils have been criticized for perceived conflicts of interest, voting self-interest, vote trading, and lack of diversity of members. In recent years agency decisions based on council actions have been increasingly subject to challenge in the courts—from all sectors, not just conservation advocates.

While the history of the council system has always included a share of contentiousness over allocation disputes or gear conflicts, the adversarial atmosphere has intensified. Efforts by resource managers to improve communication with constituents, engage fishermen more with collaborative research projects, and adhere better to procedural requirements have not done much to lessen the “us versus them” atmosphere that exists between the regulators and the regulated community.

State Fisheries Management: The fishery management systems of the 25 coastal states share some general features. The basic authority for management of fish and wildlife is in most state constitutions. State legislatures enact laws that delegate natural resource management authority to an agency (department of fish and game, natural resources or similar). Legislatures and general assemblies decide who can fish by enacting authorizations to open or close fishing, limit access and require permits or licenses. They can also enact specific measures such as seasons, bag limits, or size and gear restrictions as well as revenue measures including license, permit or landings fees and taxes. Statutes and referenda are vehicles for setting policy such as banning shark finning, banning certain gear types, protecting habitat or preserving biological diversity.

State laws and regulations are implemented by the state agencies. Most states also have political bodies called commissions or boards, which take advice from stakeholders, make allocation decisions, do some fishery management planning, and recommend or adopt regulations.

Treaty Tribes: The exception to the general rule that communities cannot exclude non-members from and manage local coastal resources is clearest in the case of Indian treaty tribes. While there are many treaties and many court cases affirming the rights of tribes to use and manage natural resources, the Northwest Indian tribes of Washington provide one of the best examples of tribal management of fish and shellfish resources on reservation lands.

The decision by Federal Judge George Boldt in the *U.S. v. Washington* in 1974 made clear that the tribes had an original right to the fish that they extended to white settlers, not the other way around. The decision allocated 50 percent of the annual catch to treaty tribes. As a result of this ruling, the tribes became responsible for establishing fishing seasons, setting harvest limits, and enforcing tribal fishing regulations on reservation fishing grounds for their 50 percent allocation. Professional biological staffs, enforcement officers, and managerial staff were assembled to ensure orderly, biologically

based fisheries. The tribes co-manage the other 50 percent of the resource with the state. In 1994, a Federal court found that the tribes had reserved harvest rights for up to half of all shellfish, as well as salmon, from all of their usual and accustomed places, except those areas "staked or cultivated" by citizens.

## Section V: U.S. Fisheries and Community-Based Fisheries Management

As elsewhere in the world, U.S. fishing communities face enormous challenges in pursuing fisheries that can be ecologically and economically sustainable. Because of such considerations as their size, the technical, political, and jurisdictional complexity of their management, most U.S. fisheries are unsuitable for the kind of CBFM initiatives described above. However, there are U.S. fisheries that we believe would benefit from applying CBFM approaches.

In the United States as in most of the countries we have investigated, the goals of CBFM are to improve the livelihoods of people in fishing communities, and to make management more sustainable. Possible objectives for achieving these goals include the following:

Reconnecting communities with their fisheries: Local management of fisheries for ecological and economic sustainability will require broader involvement and support than that of the fishermen themselves. Among other things, reconnecting broader local communities with their fishing communities can provide critical political and financial support for taking on specific management functions, and can also create a source for peer pressure that will promote compliance with management decisions.

Reconnecting fishermen with their communities: The life of a fisherman has never made it easy to participate in the life of a community as a salaried worker might. The connection of fishermen to their communities generally has been the work of wives

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<sup>5</sup> NMFS had been criticized for many years for its lack of capacity to conduct socio-economic impact analysis. Whether it was the demands of National Standard 8, recommendations of several external reviews, or a string of losses in litigation, the agency has since beefed up its staff and work in the areas of economics, sociology and anthropology.

<sup>6</sup> The United Nations Food and Agriculture Organization (FAO) defines a longline as follows: "A fishing gear in which short lines carrying hooks are attached to a longer main line at regular intervals. Longlines are laid on the bottom or suspended horizontally at a predetermined depth with the help of surface floats. The main lines can be as long as 150 km and have several thousand hooks (e.g. in tuna fisheries)."

FAO defines a trawl as follows: "Towed net consisting of a cone-shaped body, closed by a bag or codend and extended at the opening by wings. It can be towed by one or two boats and, according to the type, are used on the bottom or in midwater (pelagic). In certain cases, as in trawling for shrimp or flatfish, the trawler can be specially rigged with outriggers to tow up to four trawls at the same time (double rigging)."

FAO defines a gill net as follows: "Or Entangling net. With this type of gear, the fish are gilled, entangled or enmeshed in the netting, which may be either single (gillnets) or triple (trammelnets). Several types of nets may be combined in one gear (for example, trammelnet combined with a gillnet). These nets can be used either alone or, as is more usual, in large numbers placed in line ('fleets' of nets). According to their design, ballasting and buoyancy, these nets may be used to fish on the surface, in midwater or on the bottom."

and other family members. When fishermen do engage, it quite often is in a crisis situation where such skills and a previous investment in building connections to the non-fishing community can be critical.

The lack of connection between fishermen and their communities results in an incapacity to work collectively for the good of fishermen and the community as a whole. Bridging the gulf between fishermen and the broader community is a critical step toward building the capacity of communities to take on not only fisheries management functions, but also other community projects, such as wastewater treatment or watershed habitat protection, that contribute to the sustainability of marine resources for fishing as well as overall community quality.

Increasing the capacity of fishermen to participate actively in management: Besides rebuilding broader community capacity, CBFM techniques can also be usefully applied to building the ability of fishermen to participate actively in various management functions. In some cases, the objective might be to build technical capacity in research and assessment or in best management practices. In other cases, the focus might be upon building capacity of fishermen's organizations to function effectively, from managing organizational finances to intervening in government processes.

Increasing collaboration among fishermen and scientists: In many fisheries around the coast, one of the first steps regulators and the regulated community can take toward closer collaboration in management is by gathering information about the fishery. Fishermen who participate in data collection have more confidence in the results of the research, and its application to management questions.

Increasing the capacity of government agencies to support self-management: Devolving authority to manage public resources from federal and state agencies to local government or fisheries associations is not only practically and legally difficult, it goes against the grain of decades of fishery management policy and practice. This shift would also require substantial buy-in from constituent groups other than those that might participate in community-based management. For example, the conservation groups that advocated reforms in U.S. fishery management system in the mid-1990s might not be ready to turn that system over to user groups, nor to relinquish agency resources dedicated (only recently at higher levels) to stock assessments, regulatory reform, environmental assessment and management.

### Strategic Obstacles to CBFM in the United States

Perhaps the most fundamental hurdle to effective CBFM in the United States is the widespread aversion to rights-based systems, especially those that create exclusive rights for a few to public resources that are seen to be held in common. Conservation groups, for instance, are sceptical that "ownership" will necessarily instill stewardship, a belief that public resources should not be sold off or given away, and a fear that ownership and access will be concentrated in a few hands. Fishermen share some of these

reasons, but also have the view that those who earn their living from the sea by their own work have earned the right to fish, and do not want to see their access restricted.

The next question is from whom must the community seek management authority? A fishing community that wants to embark on CBFM might have to take it up with the state resources agency, the legislature, an interstate commission, the regional fishery management council, a federal agency, or some combination of the above. Jurisdictional issues become more complex with species and fisheries that are more mobile and cross jurisdictions among states, between state and federal waters, or between fresh and marine waters, or if the focus of management is the ecosystem.

Finally, fishery failures often are as much community failures as management failures or market failures. Communities often fail in their resource stewardship because they no longer have the “social bonds that connect them to each other and to their communities and where responsibilities and tools for resource management are absent.”

### Section VI: Case Studies of U.S. Fisheries

Section VI presents case studies of several U.S. fisheries in which CBFM techniques already are being applied or in which they might usefully be applied in the future. The case studies are structured around the list of attributes mentioned above, together with actual or possible CBFM activities. These fisheries are as follows:

- Gulf of Alaska Coastal Communities Coalition (GOAC3)
- The Quinalt Razor Clam Fishery,
- The Port of Port Orford Fishery,
- The San Diego California Red Sea Urchin Fishery,
- The Corpus Christi Bay Shrimp Fishery,
- The Gulf of Mexico Red Snapper Fishery,
- Chatham Hook and Line Fishery for Cod.

Summaries of these case studies may be found in the Appendix to this Summary.

### Section VII: CBFM Tools for Application in the United States

Earlier, we identified some major obstacles to applying CBFM in U.S. fisheries, such as the limited ability to exclude others, conflicts among different governmental jurisdictions, and the dispersed nature of fishing communities in the United States. Below, we describe several measures that may be helpful in overcoming these problems and increasing the capacity of fishing communities to manage fisheries for ecological and economic sustainability.

#### Use Rights Systems Generally

The degree of participation of fishermen in management and operation of a marine fishery flows from the types of use and management rights fishermen hold. In a general sense, use or access rights determine who can go fishing, while management rights determine who can participate in deciding how much fishing can go on. A use or access right might allow someone to catch a certain amount of fish of a particular species in a particular area during a particular period of time. A management right might allow someone to participate in formulating management measures to conserve species or in allocating quotas among fishermen.

Use rights offer a means of meeting a key precondition for CBF—the ability to exclude others from a fishing area or fish population. The degree of exclusion depends upon several characteristics of the right, which may be in the form of an annual license to fish, a right to a share of an overall quota, an exclusive right to fish in an area, a right to use a certain type of gear, etc. The more durable, exclusive, and secure a right is, the more likely it is that a group of fishermen can effectively exclude others so that they can take on management of a fishery. Unless transfer of rights is confined to the immediate community of fishermen, transferability may weaken excludability.

Conferring use rights raises a couple of broad policy questions. First, will the rights be held individually or collectively. Second, there is the question of whether holders of the rights—and therefore participants in the fishery—will be determined by the market or by multi-objective strategic planning. Each process has its advantages and disadvantages.

There are a number of common types of use rights in commercial fisheries. From those with lower to those with higher levels of exclusion of others, these types are as follows:

**License:** A license confers a right on a fisherman to catch and retain as personal property any fish that he can catch.

**Limited Licenses:** As a first step in reducing the race to fish, management agencies often limit the number of licenses issued to fish for certain species or in a particular area.

**Input Rights:** Managers may allocate the amount of time or gear, for instance, that fishermen may use in a fishery. A common reaction by fishermen to such restrictions is to increase other factors.

**Output Rights:** In many U.S. fisheries, managers set a quota for landings of fish, often called Total Allowable Catch or TAC. In some U.S. fisheries, the TAC is allocated among participants in the fishery or entire communities.

Several types of harvest rights promote the excludability required for effective community-based fisheries management.

## Individual Fishing Quotas and Similar Measures

In an IFQ program, fishery managers determine a total quota of catches for a fishery, then allocate shares of the total quota among eligible vessels, fishermen, or other recipients, based on initial qualifying criteria such as catch history. Generally, shareholders can rent, lease, or sell their shares, within restrictions, depending upon how much they want to participate in the fishery. In the United States, such shares represent a privilege to fish a public resource indefinitely, unless the government revokes the share or ends the program.

IFQ programs are intended mostly to improve economic efficiency and to conserve the resource. Economic efficiency is achieved by allowing fishermen to either fish or market their shares. By the mid-1990s, regional fishery management councils had developed and the Commerce Department had approved IFQ programs in the ocean quahog and surf clam fishery of the middle Atlantic, the wreckfish fishery off the south Atlantic coast, and the Alaska halibut and sablefish fishery. These programs operated more or less as anticipated. Among salient changes in the fishery were a reduction in the number of participating vessels, some consolidation of ownership of shares, and a more stable fishery.

Although IFQs enjoy widespread support among economists, fisheries managers, and some fishermen, they have generated significant opposition among many fishermen and most conservationists. The years-long controversy over IFQs in U.S. fisheries has led to a healthy discussion of measures that can reduce or eliminate most of the problems identified by critics.

Like any management measure, IFQ programs must be compared against alternative measures for their relative merits. Compared to other management approaches, IFQ programs offer a unique means for tackling a major obstacle to CBFM and to economic and ecological sustainability in many U.S. fisheries: too many fishermen chasing too few fish. As long as there is such a great imbalance in the number and size of fishing vessels on the one hand and the size and productivity of fish populations on the other, any kind of sustainability is unlikely for human or wildlife communities.

## Cooperatives

A 2004 GAO report on the impacts of IFQ programs on fishing communities also analyzed two fishery cooperatives that were established during the moratorium on IFQ programs. Both of these cooperatives involve large-scale fishing fleets that catch large volumes of white-fish, most of which is converted into frozen seafood products—Pacific whiting off Oregon and Washington, and pollock off Alaska.

Unlike IFQ programs established by the government, these cooperatives are contractual agreements among fishermen to apportion shares of a total quota among themselves. In both fisheries, a small number of fishing vessels accounted for all landings under a quota for a part of a somewhat larger fishery. Rather than racing against each

other for this “sub-quota,” participants in the cooperative agreed to allocate the quota among themselves beforehand, much as in an IFQ program.

In comparing existing IFQ programs with these two fishing cooperatives, the GAO made the following observations:

- IFQ programs take much longer to establish since they must be developed by fishery management councils in a public process. While the whiting cooperative for Oregon and Washington was established in a day, the halibut program took three years to pass through the formal administrative process.
- IFQ programs can manage more participants—3,500 in the halibut program, for instance. The whiting fishery cooperative has four participants and the pollock cooperative has eight.
- In both these cooperatives, large fishing and processing companies own the vessels, while the participants in the halibut IFQ program are owner-operators of the vessels.
- In the IFQ programs, NMFS allocates quota to individual permit holders who may trade shares on the open market. In the cooperatives, NMFS allocates quota to the cooperative, which allocates the quota among its members.
- In the IFQ programs, NMFS enforces quota limits on individual share-holders. In the cooperatives, NMFS monitors the overall quota of the cooperative, while the cooperative monitors its members. Cooperative members can bring suit against another member for breach of contract.

In its analysis, the GAO suggests as an alternative establishing a cooperative of share-holders within an overall IFQ framework. The GAO suggests that this approach would allow a large number of participants to organize into smaller groups to help manage fisheries collectively.

The two fishery cooperatives discussed here are quite different from other cooperatives organized under the Fishermen’s Collective Marketing Act of 1934 (15 USC 521), which exempts some activities of fishing cooperatives from anti-trust law, and allows them to jointly harvest, market, and price their product. The conservation benefits of such cooperatives are quite limited.

The courts have held that fishermen’s cooperatives that have entered into agreements to sell their catches exclusively to certain processors at certain prices were necessarily anti-competitive and were violating the Sherman Antitrust Act of 1889, although there were conservation benefits.

Professor Jonathan Adler argues that the courts should reconsider the prevailing rule of summarily dismissing such arrangements as anticompetitive. Instead, Adler argues that the courts should apply a “rule of reason” to such arrangements, in which the positive and negative effects of such arrangements would be weighed. However, the courts have yet to be asked to do so.

## Community Development Quotas

As the groundfish fisheries of the Bering Sea and Gulf of Alaska developed in the late 1980s, and transformed from mostly foreign to joint venture between foreign fleets and U.S. fleets to mostly American fisheries, there was one group of American fishermen who did not participate: Native Alaskan fishermen who lived on the Bering Sea.

Without any source of economic development, these remote communities did not traditionally participate in offshore groundfishing. In 1992, in an effort to provide some of the benefits of the rapidly growing groundfish fishery to these areas, the North Pacific Fishery Management Council created what is known as the Community Development Quota (CDQ) Program. The program set aside a portion of the total allowable catch for communities in western Alaska that met certain criteria. The aim of the program was to provide entry into the lucrative groundfish fisheries for coastal residents.

Today, 65 remote Alaska communities participating in the CDQ program hold a catch allocation of crab, halibut, groundfish and specially restricted species through six non-profit corporations. The program has enabled the communities to invest in vessels, processing, port and harbor facilities, developing local fisheries, job training, and fishing related businesses.

In a review of the CDQ programs in 1999, the National Academy of Sciences criticized the restriction of CDQ investment to fishery related projects, noting that “community development” might be broader than just “fishery development.” They also noted the perception on the part of CDQ participants that the assurance of a portion of the quota in the future was uncertain, and this uncertainty affected the kinds of investments the communities were willing to make. Another criticism of the program was the lack of communication between the CDQ programs and the people in the communities they purport to benefit. The Academy also had several recommendations on improving the governance structure of the CDQ programs to make them more inclusive.

## Angling Management Organizations

Recreational fishing presents enormous challenges to conventional fisheries management. Among other problematic features, the sheer number of fishermen, the diversity of their modes of fishing, and the general absence of requirements to report catches make marine recreational fishing quite possibly impossible to monitor and manage. It is largely the inefficiency of recreational fishing that reduces its potential impact on most fish populations. However, its impact can be significant for some types of fish populations and for fish populations also under pressure from commercial fisheries.

Understandably, the literature on CBFM has little to say about recreational fisheries, since CBFM has advanced in countries where recreational fishing is minimal if it exists at all. As a result, we have found few suggestions on how to apply CBFM approaches in fisheries where there is significant recreational fishing.

Recently, however, Jon Sutinen and Robert Johnston have presented an idea that provides a means for engaging recreational fishermen in CBFM. Their concept is to grant a share of recreational quotas in a fishery to angling management organizations (AMO)—community-based organizations composed of recreational fishermen. Sutinen and Johnston argue that by more fully involving recreational fishermen in management, AMO's would help reduce conflicts among recreational and commercial fishermen, the risk of depletion of favored species in local areas, and overcrowding. They also argue that AMO's would address major problems in Federal management of recreational fisheries, including cumbersomeness, inflexibility, and the application of the same management approaches over inappropriately large areas and to diverse groups of fishermen.

Sutinen and Johnston theorize that the authority to manage a portion of a fishery as a capital asset will provide an incentive to an AMO and its members to optimize the use of the asset for generating value in the recreational fishery. By requiring members to buy shares in an AMO and its quota, this approach arguably would also give members an incentive for enhancing the value of the fishery through management measures, habitat restoration, or other actions

### Eco-Certification and Other Marketing Tools

Until recently, government and industry marketing of seafood aimed at increasing demand among consumers largely by emphasizing availability, convenience, low price, and healthfulness of popular types of seafood such as tuna, shrimp, and various kinds of whitefish. There was little to no differentiation between foreign or domestic sources of seafood, nor between farm-raised or wild-caught fish.

In the late 1990s, as consumers became more concerned about the healthfulness of their foods, and as conservationists raised public awareness about the impacts of fishing on fish populations, other marine wildlife, and habitats, new marketing opportunities arose for fishermen. One of the clearest examples of these new efforts has been the promotion of salmon from the Copper River of Alaska. These and a growing number of similar efforts in other fisheries, large and small, have the potential for increasing the financial viability of small fishing operations, in particular, and of building a sense of pride among fishermen and their communities about the sustainable production of healthy seafood.

Still other efforts are attempting to actively engage consumers in fostering ecologically sustainable fisheries through their purchasing power. Environmental Defense, National Audubon Society, the Blue Ocean Institute, and the Monterey Bay Aquarium all have produced lists identifying which types of seafood to buy and which to avoid based on the sustainability of their fishing practices and other considerations.

The most ambitious and comprehensive of these types of programs is the eco-certification program of the Marine Stewardship Council (MSC). Established in 1997 by Unilever—a multinational consumer products corporation—and World Wildlife Fund, the MSC oversees the assessment of fisheries against standards for fishery and ecological

sustainability and responsible management. The MSC program is too recent to determine whether potential benefits of this program have materialized in some or all certified fisheries, including price premiums to fishermen and actual improvements in fisheries.

The MSC program also faces a more general challenge in the United States—the relatively weak demand for certified seafood in the marketplace, especially outside niche markets such as natural food stores. The MSC program also suffers from weak support to outright opposition from most environmental organizations.

### Collaborative Information Collection

Cooperation between federal and state scientists, university and government researchers, and fishermen has been part of United States fishery management since the 19<sup>th</sup> century. As a tool for CBFM, collaborative information collection holds promise for improved stock assessment, reduced record-keeping costs, improved knowledge, increased role in decision-making for fishermen, and enhanced relationships between managers and users. From the perspective of fishing interests, improved information can lead to liberalized quotas or allocations. From the perspective of managers, users who have greater confidence in scientific information used to govern fisheries are more likely to support management recommendations that flow from that information.

Lessons about what makes collaborative projects work drawn from a report by the National Research Council and an earlier set of case studies analyzed for the National Marine Fisheries Service include the following:

- True collaboration means that fishermen and agency personnel work together on all phases of the project from developing the question to be answered to communicating findings.
- Collaborative research must meet the same high scientific standards as other research; it cannot be “make work.”
- Each cooperative data gathering effort is a unique response to a specific problem and distinct set of circumstances and must be designed accordingly.
- Strong motivation is needed to overcome past history, mistrust or simply inertia. A combination of a threat of a loss in fishing opportunities and a potential opportunity for improved fishing provides the most motivation.
- Expectations about the purpose of the research, how it will be conducted, and how and when results will be published should be worked out in an open process among the parties at the beginning of the project.
- Because cooperative research can be more expensive and time consuming than agency research, it requires fiscal, administrative and leadership support as well as scientific staff with appropriate skills and demeanor for working with fishermen.
- In recognition of the limited availability of funds for all research, priorities for supporting cooperative research should be established based on the potential of the project to improve overall management of the fishery.

As a first step toward CBFM, collaborative information collection projects can help build relationships, improve the community's knowledge of its fishery and enhance skills such as planning and project management that are necessary for successful local action.

### Section VIII: Final Remarks

Our review of community-based fisheries management (CBFM) practices abroad and of fisheries management institutions and specific fisheries in the United States leads us to a number of observations about potential application of CBFM approaches domestically.

In many ways, basic conditions that inspired recent CBFM efforts abroad are very different from the conditions that prevail in the United States. For instance, in many cases abroad, fisheries are a principal source of employment, income, and protein for entire communities, while in the United States, most fisheries are minor players in communities that offer other sources of employment, income, and protein. Likewise, many communities where CBFM has been introduced abroad depend largely upon fisheries for their economic life, while the same dependency is rare in the United States. In the United States, there are highly developed administrative processes for setting and enforcing fishery management measures, and these processes provide opportunities for participation by fishermen that fishermen in many other countries, in contrast, would find remarkable.

There are also striking similarities between conditions in the United States and those found abroad where some form CBFM has been initiated. In almost all situations, the same fisheries management functions need to be carried out. In almost all countries, the boosterism of the 1960s and later decades led to a growth in fishing effort and fleets well beyond sustainable levels, and to chronic ecological, economic, and social pressures in fisheries. In most countries, the dominant paradigm for fisheries management has emphasized maximum yield and technocratic centralization.

Like fishing communities in many countries where CBFM has been introduced, most U.S. fishing communities are ineffective at actively and effectively representing themselves in fisheries management forums, much less managing their fisheries themselves. In the United States, this general feature of fishing communities is aggravated by a number of political factors.

First, like fisheries in most western European countries, fisheries in the United States retain a very strong attachment to the principle of freedom of the seas. For many fishermen, the ocean offers the only remaining space and resource that is not confined by private property, although it is increasingly confined by management regulations. The conflict between the freedom of the seas and the complex confinement of life on land, among many other things, often alienates fishermen from their communities and vice versa.

Increasing engagement by centralized government in the management of fisheries has further reduced the already weak investment of fishermen in the conservation of fisheries for future enjoyment. Over the last couple of decades, a kind of co-dependency has developed, in which the government plays the role of scolding parent, and fishermen play the role of child victims. As a result, fishermen often have become passive-aggressive, blaming fisheries managers for their woes and fisheries managers have gotten into their own rut.

The entry of conservation organizations and ecological scientists into fisheries management decision-making—once the sole domain of government managers, fisheries yield scientists, and fishermen—has further alienated many fishermen from broader society and management. (Others have taken up the challenge of the new approach conservationists and ecologists have pressed.)

These and other factors have eroded the already weak organization of fishermen in individual fisheries as well as regionally and nationally. Where fishermen do organize, they often organize to battle other interest groups, whether other gear types or recreational fishermen, over allocation of available quotas. The communities that surround communities of fishermen are at least as disengaged from conservation of local fisheries, and may intentionally or unintentionally undercut the financial viability of local fisheries through omission or commission.

In the end, introducing CBFM into most U.S. fisheries faces many of the same needs as found in fisheries abroad, beginning with building the capacity of fishermen to take on increasing responsibility for the long-term sustainability of their activities in an organized fashion that meshes with broader society.

Building the capacity of fishermen's organizations is a very tall order, for a number of reasons. First, there is the practical difficulty of getting a group of people who have little time after making a living to invest time in suffering through the slog of organizing themselves. Second is the need to deliver measurable change quickly in order to affirm the wisdom of investing in the slog. CBFM often is not a quick fix. Some of the domestic and foreign projects we reviewed have been going on for years without any concrete management action to show for the work, time and investment. Community organizing is not the kind of "campaign" activity that produces deliverables and reaches projected milestones.

Third, the skills that make for a successful fisherman are usually at odds with the skills needed to discuss, debate, disagree, and decide and then get on to the next issue. Fourth, neither management agencies nor conservation organizations are likely to welcome the risk inherent in strengthening fishermen's organizations. The question will be raised, How will fishermen's organizations use their strength? For conservation? Or for preventing necessary steps toward conservation? Above, we have mentioned the incongruity between the training that most fisheries scientists and managers receive and the skills that a more collaborative management approach will require.

In the United States, where the traditional paradigm is deeply embedded in the legal and political structures and norms, CBFM presents particular challenges. Unlike the traditional paradigm, CBFM does not aim at maximum production, focuses beyond marketable fish to the ecosystem, is not centralized, and does not hinge on reductionist scientific analysis. This very different approach presents challenges not only to government agencies but to fishermen and conservation organizations, whose debates revolve almost entirely around the traditional paradigm. Perhaps the largest challenges have to do with decentralization of decision-making and acceptance of other forms and sources of information and analysis than traditional scientific ones.

All of this is to say that there are obstacles to introducing CBFM in U.S. fisheries that may well be very deeply embedded and that may require considerable patience to overcome.

### Finding Candidate Fisheries in the United States

We have found that some of the same incentives as encouraged CBFM abroad are likely to do so in the United States, particularly in smaller scale fisheries. In our interviews, we found urgency in protecting the resource as a common impetus for change, but not the only impetus to move communities toward alternatives. Who gets the resource, and where the income goes are also important motivators. A shift from local to non-local fleets, consolidation of access to the resource, vertical integration of catching and processing, dependence of the rest of the community on healthy fisheries are also trends that have motivated communities to take a hand in their own fate.

In fishery after fishery, interviews with community fishing activists revealed a chain of circumstances in which small boat fleets, close to home, with flexible fishing styles were shut out of single-species fisheries once entry was limited. Because these fishermen fished for what was available, they had insufficient catch history on any one species to qualify for limited fisheries. Because they fished at the margins, they had insufficient capital to buy into licensed or quota fisheries. “Highliners” were rewarded with licenses, quota shares, days-at-sea, and even awards and recognitions from the fishing press. Speed, efficiency and volume were recognized by the management system.

Whether it is declining fish populations, competition with more powerful fishing or political interests, or some other crisis, there must be some significant incentive for fishing communities to organize themselves to take greater responsibility for their welfare and the long-term conservation of the fisheries they depend upon. Trying to organize fishing communities absent some such crisis is likely to be fruitless, however much sense it may make to an outside observer. In this respect, fishing communities are little different from most other communities who advance only when confronted with an undeniable crisis.

### Applying Community-Based Fisheries Management in the United States

At least in the beginning, CBFM initiatives in the United States should probably be narrower than practices abroad, both in form (compared to Japan, for instance) and in process (compared to the Philippines, for instance). We believe it more realistic and productive to use the approaches and tools of CBFM, most of which have been developed and refined abroad, to a set of goals and objectives that are consistent with CBFM. These goals are to improve the livelihoods of people in fishing communities, and to make management more sustainable. Recommended objectives are as follows:

- 1) Reconnect communities with fisheries,
- 2) Reconnect fishermen with communities,
- 3) Increase the capacity of fishermen to participate actively in management,
- 4) Increase collaboration among fishermen and scientists, and
- 5) Increase the capacity of government agencies to support community-based management.

As we have argued above, there are several key design considerations in identifying opportunities for applying CBFM in U.S. fisheries. The first of these is settling upon a definition of community. As we showed, definitions may range from simply a small group of fishermen pursuing a particular species with a particular gear in a particular area to a broader coastal community that includes a broader range of interests.

Both the literature and our interviews confirmed that CBFM depends upon the ability and authority of a community, however defined, to exclude others from access to a community-managed area or fishery. Even though “ownership” in the sense of community shoreline as it is in the Philippines, for instance, is not possible in the U.S., “exclusivity” is possible. Activists in the communities we’ve talked to have found ways around legal obstacles surrounding about property rights. They have figured out ways to carve out access rights, quota shares, closed areas and subsets of overall catch allocation in their efforts to try to do a better job locally than has been done by fishery managers at state and national levels. We have found a number of tools for creating exclusivity, such as cooperatives, harvest-rights of various types, and angling management organizations.

Likewise, the literature regarding CBFM abroad and our interviews emphasized the importance of the means and manner in which CBFM is approached in fishing communities, given the lack of organization and cohesiveness in these communities and the distrust toward other interest groups and outsiders. Subtlety, patience, and respect for local cultural, social, and political dynamics are key.

This lower-key approach contrasts with the prevailing approach to reform of fisheries management, which has focused on national or regional decision-making. At the risk of stating the obvious or generalizing, community-based management is much more specific and personal, while most current efforts at fisheries management reform are abstracted and formal.

Unlike the traditional fishermen's organizations that have historically been created to protect the interests that most business lobbyists deal with (allocation, keeping regulations at a minimum, avoiding taxes, getting government price supports or loans), community-based groups we interviewed have more in common with community development/social action and environmental groups. They do have an economic interest, but they have an interest in protecting the environment that supports and surrounds their home towns.

We also found both here and abroad that CBFM activists and advocates were convinced that they had to identify and hold fast to shared goals and vision or they would fall back on the old habits of competition. The constitution and mission of their groups, they said, had to have standards and principles that went beyond economic viability or community development, and certainly beyond the regulatory standards of conventional fishery management, which many of the interviewees admitted invited bad behavior.

These statements are not meant to suggest that the fishing communities most likely to benefit from CBFM do not have to engage in policy discussions at regional and national levels. Quite the contrary. If anything, the capacity of fishermen's and affiliated organizations to engage effectively in these discussions requires strengthening. Many interviewees noted the facility and financial resources of large, well-capitalized fleets to negotiate the ropes of the regulatory system. The "deep pockets" of corporate interests were contrasted with local efforts that had to raise money from one person at a time to make a case at a council or legislature or with a management agency. The costs of organizing, capacity building, advocacy, just "showing up" are a significant challenge to CBFM. When this work must be done among isolated communities such as the outer islands of Maine or the towns along the Gulf of Alaska, the time commitment and financial burden are substantial.

It is critical that managers in conventional settings—states, councils, NMFS—be brought along in their understanding and acceptance (or at least tolerance) of alternatives such as CBFM. Interviewees consistently pointed up resistance on the part of councils, regional managers, state managers and others in "the system" to allowing them to try their ideas. The adversarial relationship of regulator vs. regulated industry remains as the framework even in instances where activists have found a way to create management options. In one example, the CBFM group was allocated a set number of pounds of fish within the overall regulatory framework, which does not use a TAC, but rather days-at-sea and trip limits. Even though the CBFM group has a TAC, and it is fixed, and it is a tiny portion of the overall catch, and they will have to stop fishing when they reach it, managers were not willing to let them devise their own fishing operations, but were insisting that they comport with the days-at-sea and trip limit rules.

State and federal fisheries laws and institutions do not favor or foster CBFM. Nor do the people who work in this system. However, the federal fishery management plan process does provide some opportunity for applying CBFM in limited ways through so-called framework structures that identify general standards and processes for managing a fishery within which fishery managers may manage a fishery with some flexibility.

In addition, fishery management councils do sometimes work in the manner they were intended and respond to local concerns and needs, such as sector allocations and set asides for collaborative research and coops and community quota entities. However, the transaction costs for these responses are high, and the complexity of the steps that have to be negotiated is legion. It takes a stout heart, a corps of lawyers, and buckets of money. The Gulf of Alaska effort we describe depended upon generous federal funding secured over many years through the intervention of Senator Ted Stevens. The Chatham fishermen's association spent hundreds of thousands of foundation and individual donor dollars to carve out the sector allocation. This community stuff does not come cheap.

Even with fishermen's organizations that are effective within government decision-making, small scale fishing communities will remain vulnerable to decline and elimination, particularly if they remain divorced from the larger community. Rapid coastal development and a general lack of investment in research regarding coastal economies and communities, among other factors, have marginalized most fishing communities in the United States. One result of this marginalization is the difficulty in developing meaningful economic, social, and cultural profiles of fishing communities and their links to the larger community. Developing such profiles through collaboration among members of fishing communities and the broader community has proved to be an effective tool for obtaining this information and, as importantly, for reacquainting these communities with each other.

Women can lead in strengthening connections with surrounding communities. Attend any scientific or regulatory meeting on fisheries and the participant composition will be overwhelmingly male. However, attend a fisheries meeting about community organizing, education, outreach, or making a plan for the future, and the participants will be overwhelmingly female.

In describing the different communication styles of men and women, Deborah Tannen points out that women's communication styles tend to strive for building networks, minimizing differences, finding commonality and reaching consensus. In contrast, men's styles are more geared to establishing status, highlighting distinctions, telling others what to do.

Whether it is communication style or just the fact that while men are out on the water fishing the women are in the community making connections through schools, churches, or civic affairs, CBFM appears to benefit tremendously from the activity of women.

The Women's Fishery Enhancement Association of Guysborough County, Nova Scotia put it this way: "A good discussion starts with women. Women's history is essentially buried. This could change if this story is documented. This story could help others build on what was learned through our experience." They found in their project that the factors that enabled them to take leadership, participate and take collective action

for community change were personal interest, adequate free time, access to transportation, location, family supports and involvement of friends.