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**Institutional Arrangements for Common Property  
Fisheries Management: San Miguel Bay, Philippines<sup>1</sup>**

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**INTRODUCTION**

San Miguel Bay in the Bicol region of the Philippines is a large shallow estuarine fishery exploited by various fishing gear types, including trawl and non-trawl gears. San Miguel Bay is an important fishing ground which produces a variety of fish species, of which shrimp are the most important in terms of economic value.

The bay was the site of an intensive interdisciplinary research study conducted by International Center for Living Aquatic Resources Management (ICLARM) in the late 1970s and early 1980s (Pauly and Mines 1982, Smith and Mines 1982, Bailey 1982a, Bailey 1982b, Smith, Pauly and Mines 1983) which documented the high catches from the Bay, the extreme competition that existed between trawl and non-trawl gear types, and the concentration of benefits from the fishery in the hands of a few people. At that time it was clear that the institutional structure for fisheries management in the Bay had failed to address the growing problems of fishery overexploitation and conflict among different groups of resource users.

In 1986, San Miguel Bay was revisited by one of the authors of the earlier studies to assess progress towards the establishment of fishery management institutions in the Bay (Smith and Salon 1987). It was found that the Bay was still characterized by extreme competition from an even larger number of competing fishing gears and fishers. Progress towards an effective management program for the Bay was found to be slow.

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San Miguel Bay has recently (1992-1993) been restudied by an interdisciplinary research team from ICLARM under the auspices of the Fisheries Sector Program (FSP) of the Philippine Department of Agriculture. In order to provide a scientific/technical information base for the preparation and implementation of a management plan for San Miguel Bay under the FSP, a Resource and Ecological Assessment (REA) was conducted to document the conditions of the fisheries, including the ecological parameters and resource habitats of the Bay, and characteristics of fishers and fishing communities. The research has also evaluated the formal and informal institutional arrangements for resource management in the Bay.

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The primary objective of this paper is to provide an update on the prevailing biophysical, social and economic conditions in the Bay, with an emphasis on the institutional and organizational arrangements for fisheries management. The previous studies on San Miguel Bay have stressed the need for management, as well as the constraints to implementation of any comprehensive management strategy. Recent changes in public administration policy in the Philippines, which has devolved primary authority for nearshore fisheries management to local government units, provide a new institutional structure for fisheries management in the Bay.

The paper will begin with a profile of the biophysical and social conditions in the Bay. This will be followed by a summary of conclusions from the two previous studies on the Bay (early 1980s and 1986). The methodology for the current study will be described, followed by a discussion of current conditions. The institutional arrangements for management, both formal and informal, will be the focus of an examination of resource use and implications for management.

### CHARACTERISTICS OF SAN MIGUEL BAY

San Miguel Bay is one of the most important fishing grounds in the Bicol Region of the Philippines. It is bounded by seven municipalities and two provinces. The municipalities of Basud and Mercedes of the province of Camarines Norte and the municipalities of Calabanga, Cabusao, Tinambac, Siruma and Sipocot of the Province of Camarines Sur (Figure 1). Unlike other bays along the Pacific coast of the Philippines which are deep, San Miguel Bay is relatively shallow, with 89 percent of the Bay less than 7 fathoms (14 meters) deep. Siltation of the Bay is a serious problem, causing the Bay to become shallower and possibly having an impact on species composition (Pauly and Mines 1982).

There are 74 coastal barangays surrounding San Miguel Bay. These had a combined population of 92,716 in 1990. The residents of these coastal barangays derive their income primarily from agriculture, fishing and forestry. In 1989, the Bicol region had the lowest per capita GDP in the country. In 1988 it had the highest poverty incidence at 65 percent. Within the Bay area, it was assessed that during the early 1980's the vast majority of the fishing households were well below the Development Academy of the Philippines poverty threshold.

The most recent population statistics available from the Department of Agriculture's regional office in the Bicol reports that there are 18,640 municipal fishermen operating from the 74 coastal barangays surrounding San Miguel Bay, of which 80 percent are full time and 20 percent are part-time fishermen (ICLARM 1992). In comparison with the figures reported in the 1981 ICLARM study, the number of municipal fishermen has reportedly increased by 50 percent in the last decade (BFAR 1991).<sup>2</sup> The municipal fishing gears operating in the Bay include gillnet, lift net, filter net, fish corral, mini-trawl, hook and line, push net and fish pot. A large number of commercial fishing vessels

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2 It should be noted that there is not yet definitive proof that the numbers of fishers in the Bay has increased between 1981 and 1993. Preliminary data in a sample of coastal barangays suggest there has been no significant growth in the number of households in which the primary income earner is a fisher between 1981 and 1993.

(trawls and purse seines) operate out of the Bay, primarily from the municipalities of Mercedes, Cabusao and Calabanga. A total of 8,125 fishermen are reported to be employed in the commercial fisheries sector in San Miguel Bay.

Until World War 2, San Miguel Bay had been fished primarily by such fixed gears as filter nets and traps and a limited number of mobile fishing units, including Japanese beam trawlers. Over the last five decades, the level of fishing effort significantly increased. In part this was from motorization of much of the non-trawl fleet through credit provided by government programs and a steady 2 percent per annum growth in numbers of fishermen. However, most was from increases in the number of trawlers (Smith, Pauly and Mines 1983). The trawlers operating in San Miguel Bay can be classified into two categories:

- (1) Mini trawler gear, which includes one class of vessel only - the mini trawler or itik-itik. Mini trawlers are generally powered by 16 hp gasoline engines and have no outriggers, and
- (2) Small and medium trawl gear, which includes two classes of trawlers - small (< 3 GT) and medium (3-6 GT). These two trawlers are referred to as "baby" trawlers.

These "baby" trawlers are registered as "municipal" fishing craft, hence under Philippine law are considered small scale and can fish legally in waters deeper than 4 fathoms (7.3 meters). Including "baby" trawlers with their 100-125 hp diesel engines in the same category as unmotorized gill-netters masks the fundamental differences between these gear types and makes control over trawling activities extremely difficult, if not impossible.

### THE SAN MIGUEL BAY FISHERY IN 1981

The ICLARM project of the early 1980s documented prevailing biological, economic and sociological conditions, and also evaluated management options for the fisheries of San Miguel Bay. The study found that the historical increase in fishing effort in the Bay produced a situation characterized by:

- full biological exploitation;  
reduced profits in the fishery as a whole and even losses or some trawl and non-trawl gears;
- highly uneven distribution of catch and incomes in favor of trawlers; and
- outmigration of fishing community labor in search of higher incomes elsewhere (Smith, Pauly and Mines 1983).

Catches from the Bay were found to be three to four times higher than those reported in official statistics. About 60 percent of the catch, which in 1981 totalled 15,000 tons/year (excluding 4,000 tone of small shrimp), was taken by some 5,100 small-scale fishers, and the remainder by 95 trawlers of various sizes. There was considerable competition among gear types for the major species caught. Competition also prevailed between motorized and non-motorized gears, the latter making up the majority of non-trawler gears. Detailed stock assessments, using a variety of mathematical models, suggested that the Bay was overfished in the sense that an increase in effort by either the trawl or the small-scale fishery would not result in an increased catch from San Miguel Bay as a whole.

Extreme competition for use of the resource and uneven distribution of benefits were shown by the economic analysis. In 1981, small trawlers, representing only 3 percent of the Bay's fishing units and employing 7 percent of the fisheries labor force, earned the largest share of catch value and 50 percent of that part of the profits that accrue to fishermen. However, simple profitability of vessels is not an accurate indication of their efficiency in the case of San Miguel Bay because of differential taxes on the various grades of fuel used by the trawlers (diesel) and non-trawlers (regular gasoline). The national government taxes regular gasoline at a much higher rate than diesel fuel (Smith and Mines 1982).

In 1981, the ownership and earnings of baby trawlers were highly concentrated: five families owned over 50 percent of the baby trawler fleet. In contrast, the non-trawl fleet, consisting of approximately 2,300 fishing units, was dispersed among approximately 2,000 households. The research also found very limited alternative employment opportunities in the vicinity of the Bay. This explained the low earnings of labor both within and outside the fishery and the significant rate of outmigration from the Bicol region. Outmigration has not been sufficient, however, to offset population growth (Bailey 1982).

The fisheries of San Miguel Bay, like other coastal fisheries of the Philippines, were traditionally characterized by open access exploitation (Cruz 1986). Increased population growth and competition for fishery resources brought about more complex institutional arrangements for fishery management. In San Miguel Bay, as throughout the Philippines, the government took a formal role in fishery management. The public ownership of the fishery has been divided between the off-shore resource, which is directly under the national government's jurisdiction, and the near-shore coastal fishery, which is assigned to municipalities. Cruz (1982) reported that while a set of formal coastal fishery laws were in place, enforcement was difficult due to the limited resources available to most municipalities. Ineffective or arbitrary implementation of formal rules has tended to increase the conflicts between traditional and trawl fishermen. Informal rule systems in the Bay were not prevalent, although interaction within the traditional sector were characterized as cooperative (Cruz 1982, Cruz 1986).

In 1981, there was a prevailing view among fishers and other stakeholders in the fishery that the Bay was solely in need of more effective management. The increasing problems of overfishing and uneven distribution of benefits could only be minimized if steps were taken to limit the amount of fishing effort. Continued credit programs were unlikely to solve the problems of small-scale fishers unless steps were taken to limit the amount of fishing effort and to control those gear types with which they compete.

### THE SAN MIGUEL BAY FISHERY IN 1986

Five years later, in 1986, Smith and Salon (1986) reported only limited progress had been made in the form of efforts by small-scale fishers to organize themselves into groups. A petition had been presented to the national government by the local office of the Bureau of Fisheries and Aquatic Resources (BFAR) to restrict the activities of "baby" trawlers.

The 1986 research found that the number of municipal (small- and medium-scale) trawlers operating in the Bay had increased by approximately 50 percent since 1981, up to 150 vessels. The large-scale trawling fleet had not grown in size, due primarily to increased fuel costs.

The numbers of non-motorized gillnetters had increased, in part because increased fuel costs discouraged motorized fishing. A more important factor was the drying-up of credit sources, which has in the past assisted to make motorized fishing affordable to small-scale fishers. While the growth since 1981 in the number of trawlers implied that owners of these vessels still found fishing financially attractive, real incomes for most fishers was found to have declined.

Progress towards an effective management program for San Miguel Bay was found to be disappointingly slow. No formal, concrete steps toward management had been taken in the five year period. Barriers to progress included the fact that the seven municipalities around the Bay had not identified fisheries management as being in their common interest. Fisher and fisher community groups, however, were found to have become more active and organized in fishery management issues.

## THE SAN MIGUEL BAY FISHERY IN 1993

### Methodology

San Miguel Bay was chosen by the FSP as one of 12 sites for research in the Philippines because of major management issues/problems relative to fisheries and coastal resources in the area. ICLARM was selected to undertake the REA for the Bay due to its experience in San Miguel Bay. The REA is designed principally to provide the FSP with the scientific/technical information base for improved management of the fishery and of related coastal resources/habitats in the Bay area. There are five interrelated research components in the REA. These are: (1) situational analysis, (2) capture fisheries assessment, (3) ecological/habitats assessment, (4) socio-economic and policy analysis, and (5) assessment of management implications.

Component Four - Socio-economic and Policy Analysis, from which the data for this paper was generated - aims to describe and analyze the social and economic conditions of fishers and fishing communities in the Bay. A sub-objective is to describe and analyze the institutional and organizational arrangements of existing fisheries and coastal resource management systems. The primary data for this analysis were gathered through four surveys conducted during the first half of 1993. The four surveys include:

- (1) Socioeconomic survey of 508 households in 11 coastal villages (barangays) in the seven municipalities bordering the Bay. This survey provided information on fishers' perceptions and knowledge of formal and informal management arrangements in the Bay. Those interviewed were fishers randomly selected from a list of all fishing households in the barangay;
- (2) Survey of existing and dissolved fishers' associations. This survey provided information on organizational structure, purpose and operation of the association and knowledge of fishery management issues. Those interviewed included officers and members of the associations;
- (3) Survey of informal fisheries management strategies. This survey provided information on informal rules for fisheries management. Those interviewed were fishers and government officials.

- (4) Survey of the formal management system and of influential stakeholders in the management of the Bay. This survey provided information on the perceptions of both biophysical and institutional problems, and of issues and solutions related to resource management. Those interviewed included government officials, trawl owners, businessmen and other stakeholders.

Secondary data sources provided information on the legal and institutional framework for fisheries management. These sources included national, provincial, municipal and barangay fisheries laws and ordinances, and the role of national, regional and local agencies involved in management.

### **Biophysical, Social and Economic Conditions in the Bay**

While the data analysis from the FSP-San Miguel Bay project has not been completed, some preliminary generalizations about biophysical, social and economic conditions in the Bay can be made. These generalizations are based on personal communication with project component leaders. As in the 1981 study, the fishery can still be characterized by full biological exploitation, increasing levels of fishing effort and declining catch, reduced profits as a whole, and uneven distribution of catch and income in favor of trawlers. While fish stocks in the Bay appear to be highly resilient, it is still relevant to conclude that an increase in effort by either the trawl or small-scale fishery will not result in an increased catch from San Miguel Bay as a whole.

Smith and Salon (1986) reported that the number of municipal trawlers increased between 1981 and 1986. The tentative findings of the current study indicate that the number of municipal (small- and medium-scale) trawlers or motorized gillnetters operating in the Bay may have increased since 1986. Preliminary information indicates that the number of non-motorized small-scale fishing gears have increased. It is reported that the large-scale trawling fleet based in Naga, which fishes outside the Bay, has not grown in size in recent years. It is not possible to describe ownership patterns of fishing units and gear at this time, but it still appears that while small-scale gear ownership is widely dispersed, small- and medium-scale trawl ownership is still concentrated in the hands of a few families.

Competition and conflicts among motorized and non-motorized vessels and among trawler and non-trawler gears, is still an important issue in the Bay. "Baby" trawlers continue to operate in the Bay. As will be discussed later, however, these activities seem to have been reduced in recent months due to better law enforcement.

It is not possible at this time to describe the extent of reduction in profits, but preliminary information indicates that overall profits for the fishing gears used in the Bay have been reduced and that losses occur for some types of fishing gears. It is also not possible to describe the distribution of benefits from fishing but it appears that similar patterns exist as in 1981, where the largest share of catch value accrues to "baby" trawlers.

Siltation within the Bay and mangrove destruction for firewood and charcoal continue to be problems.

The number of fish traders operating in the Bay has increased dramatically since 1981, especially in Mercedes. The increase in the number of fish traders can be attributed to three factors: (1) the need for livelihood or for additional income sources, (2) method of sale, and (3) the suki system. The secret bidding or bulungan system, the common method of wholesaling fish at the major landing areas, allows anyone who wishes to, to compete in the bidding process. Capital requirements to enter the business in relatively low, thus making it easy to engage in fish trading.

Locally available income-generating activities other than fishing continue to be limited. Employment opportunities are neither available in sufficient numbers, nor supply sufficient income to provide significant employment for the steadily increasing population in coastal communities of the Bay. Outmigration of young people seeking better opportunities in cities continues.

It can still be concluded that improved management is needed to reduce fishing effort and to deal with allocation issues. As stated by Smith, Pauly and Mines (1983), "... effort reduction in San Miguel Bay is more a question of resource allocation among competing users than a question of biological overfishing."

### **Awareness of Fisheries Management Issues By Stakeholders**

At the beginning of the current study of the Bay, interviews were conducted with 46 municipal and barangay government officials to assess their awareness of environmental problems in the Bay. Almost 90 percent stated that productivity decline in the fishery, caused by trawling, illegal fishing and increasing numbers of fishers, was the most important marine-related problem. This was followed by, in ranked order, increasing numbers of fishers, coral destruction and nearshore pollution. A preliminary analysis of the household survey found that the majority of respondents felt that the volume of their catch was worse than it was two years ago. Trawlers and increasing numbers of fishers were reported to be the primary causes of the decline in catch. Thirty influential people, both governmental and non-governmental, with knowledge and interest in Bay management were asked, as part of the survey of formal fisheries management, to identify management problems in the biophysical setting of the Bay. The major problems identified, in ranked order, were trawling, the use of possibly illegal or inappropriate fishing methods (e.g., fine mesh nets, dynamite, cyanide, buli-buli) and too many people fishing. The results of the three surveys indicate that trawling is still considered to be the single most important fishery-related problem in the Bay. Too many people fishing a declining stock of fish is also a major problem. Both of these issues have led to increased problems of resource allocation among competing users.

The respondents in the fisher household survey were asked if they felt that the government does a good job in managing/ regulating the San Miguel Bay fishery to ensure that there is enough fish for the future. Preliminary analysis of the responses indicate that the majority of fishers feel that the government does a good job. The respondents felt that the government had recently increased patrols and enforcement in the Bay and had stopped or decreased illegal fishing and trawling. The respondents stated that this was due to the efforts of the mayor of Mercedes and the Vice-Governor of Camarines Sur. However, some of those who reported that the government does not do a good job in managing the fishery felt that bribery of government officials allowed illegal fishing activities to continue and that the fishers needed to become more united and involved in management.

The 30 respondents to the survey on formal fisheries management strategies were asked to identify possible institutional problems which might influence or limit the ability of the government to manage the San Miguel Bay fishery. The major problems identified, in ranked order, were lack of government funds, ineffective enforcement of laws and regulations, and lack of community influence on formal management. Some of the respondents felt that funding constraints hampered enforcement since, for example, there was no boat for regular patrols. Bribery of government officials by boat owners was noted by some respondents as leading to ineffective enforcement. While the survey represented a wide spectrum of stakeholders, many of those surveyed felt that the fishing community needed to take a more active role in fisheries management.

### **Institutional Arrangements for Fisheries Management**

Both formal and informal institutional arrangements (rule systems) are present in San Miguel Bay. Formal arrangements, through municipal government authority, are the dominant form of fisheries management. The San Miguel Bay fishery is not a common property regime, but rather is managed by the public sector, principally the seven municipal governments surrounding the Bay, as state property. Government management is based largely on centralized enforcement of municipal ordinances. This type of management has high enforcement costs. There has been increased governmental regulation of the Bay in recent years. Little attention has been given by the government to the abilities of local fishers to participate in management of the fishery, although this is changing.

Enforcement of policies, laws and regulations pertaining to management of fisheries resources in San Miguel Bay are divided between the national government and the local government units (LGU). This division of authority is implemented through Presidential Decree No. 704, otherwise known as the Fisheries Act of 1975. Under PD 704, the Bureau of Fisheries and Aquatic Resources (BFAR) has jurisdiction and responsibility for the management of all fishery resources in the country, except for those in municipal waters. Municipal waters, defined as 3 nautical miles from the shoreline, are under the jurisdiction of the municipal or city government concerned. The municipal government has the authority to enact ordinances for fisheries management. Municipal ordinances pertaining to fisheries must first be approved by the Department of Agriculture (DA) Secretary in order to take effect officially.

Licensing is one of the regulatory measures in PD 704. All persons who wish to engage in any fishing activity are required to secure a license. Commercial fishing operators obtain their license from BFAR, while municipal fishers secure their license from their respective municipalities. Licensing is designed to earn government revenues rather than to limit the number of fishing units or harvest. PD 704 disallowed commercial trawling (vessels of > 3 GT) in waters 7 fathoms deep or less. Later laws banned commercial trawls within 7 km of the coastline. PD 704 states that "baby" trawls, "may operate in areas of 4 fathoms deep or more if authorized by existing municipal ordinances".

In 1982 the Natural Resources Minister, upon the recommendation of the BFAR Director, issued Fisheries Administrative Order (FAO) No.136. This order established a closed season of five years for the operation of commercial fishing boats (>3 GT) in San Miguel Bay. The ban, however, only affected a small number of commercial operations and did nothing to restrict baby trawlers. With the impending expiration of FAO 136 in 1987, the DA Regional Director requested an extension of the Bay's closure to



commercial trawling. The request further recommended a closure to all forms of trawling regardless of vessel tonnage, including baby trawlers. No action was taken on this request, since it was reported that the copies of the legislation had been lost by BFAR. Since no new legislation has been passed, it could be interpreted to mean that the legal regime on commercial fishing has reverted back to the 7 fathom/7 km ban, which would allow commercial fishing at the northern part of the Bay.

As explained above, in accordance with PD 704, municipalities may permit trawling by vessels of less than 3 GT between the 4 fm and 7 fm marks. Such permission must be granted by municipal ordinance. If no ordinance is passed these trawlers must stay beyond the 7 fm mark. The ordinance must be approved by the Department of Agriculture.

All of the seven municipalities around the Bay have approved basic fishery ordinances. As stated in PD 704, a specific municipal ordinance approved by the Department of Agriculture, separate from the basic fishery ordinance, is necessary to permit baby trawlers to operate in municipal waters between 4 and 7 km. Calabanga and Siruma currently have municipal ordinances permitting trawling between 4 and 7 km. In addition to allowing baby trawlers to operate in municipal waters between 4 and 7 km, the municipality of Siruma permits commercial trawlers to operate between 4 and 7 km. Both Mercedes and Tinambac had approved municipal ordinances permitting baby trawlers to operate in municipal waters between 4 and 7 km, but both amended their municipal ordinances to prohibit trawling between 4 and 7 km.

Fisheries management in the Philippines changed radically with the passage of RA 7160 or the Local Government Code of 1991. The Local Government Code devolves specific powers, authority and responsibilities for a wide variety of regulatory and service delivery functions from the national government to the LGU.

The Code grants duly registered organizations and cooperatives of marginal fishermen preferential rights to certain fishery resources. These rights can be transferred to others if the marginal fishermen fail to exercise their rights. The sangguniang bayan (municipal council) may issue licenses to municipal fishermen and enforce fishery laws. The code has extended the boundaries of municipal waters from 7 km to 15 km from the shoreline. Thus, all waters of San Miguel Bay are now municipal waters where fishing may be regulated by municipal ordinances.

A factor complicating interpretation of this municipal authority to allow small and mini trawls to operate in San Miguel Bay is the increasing siltation of the Bay, and consequently increased shallowness. The available nautical charts showing Bay depth are out-of-date and information on the shallowness of the Bay from the current project is not yet available. Smith, Pauly and Mines (1983), in 1981, interpreted the laws as banning trawling in some parts of the Bay (Sipocot, Cabusao, Calabanga and Tinambac) and permitting it in others (Siruma and Mercedes).<sup>3</sup> The percentage of the Bay area having a depth of less than seven fathoms has increased from 79 percent in 1907 to 89 percent in 1992 (Cinco et al. 1992). This would leave an area around Mercedes, Basud and Siruma where trawling with vessels of less than 3 GT would be permitted. Through the extension of municipal boundaries to 15 km from shore and through the effects of increased shallowness of the Bay from siltation, the area for legal trawling has become more

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3 Basud was not included in the 1981 study due to the peace and order situation.

restricted over time. Based on the 1981 bathymetric chart of Bay depth, the extension of municipal boundaries, and existing municipal ordinances permitting trawling with vessels of less than 3 GT, trawling would only be allowed in some parts of the municipal waters of Calabanga and Siruma. More detailed analysis using bathymetric charts would be needed to confirm these findings.

The above discussion indicates the inadequacy of existing legislation and ordinances to deal with the special management needs of shallow bays and estuaries such as San Miguel Bay. The use of both depth and arbitrary distances from the shore as demarcation lines makes enforcement difficult. In addition, the present "municipal" and "commercial" distinctions are inadequate to deal with the case of trawlers less than 3 GT. It is also clear that in bay and gulf areas such as San Miguel Bay, where there are a multiplicity of governments and legislation, there is a need for coordination of fisheries management activities.

Regulations do not necessarily lead to enforcement. Enforcement is a function of political will and of the financial means of the government. Enforcement of regulations in San Miguel Bay has not been particularly effective.<sup>4</sup> Many mayors and government officials have either not given high priority to fisheries regulation or have allowed illegal activities to continue. Adequately functioning vessels to patrol the Bay are not readily available. Inadequate enforcement has brought about complaints to government by small fishers and violent confrontations between small fishers and trawlers. This situation seems to have changed, however, in recent months. The Vice-Governor of Camarines Sur and the Mayor of Mercedes have taken it upon themselves to personally support and involve themselves in regulation enforcement. Trawls have been stopped and fined and, in some cases, fishing gear has been confiscated. This has met with widespread support among fishers who use non-trawler gears.

Fishers' informal or traditional rights and rule systems are not prevalent in San Miguel Bay. The majority of informal management practices in the Bay are based on superstitions and beliefs of fishers. These include such practices as abstaining from fishing during Holy Week and during the full moon, when catch is reported to be poor. There are no senior fishers in the barangays who regulate fishing activities, except for stationary gears. The only informal rule system identified was that for stationary gears, particularly fish corrals. The job of coordinating the location and use of these gears was assigned to a senior fisher called an amonojador. The role of the amonojador has lessened in recent years. There has been a tendency for the role of the amonojador to shift from informal coordination to one of more formal regulation, and from management at the barrio level to management at the municipal level. Fishers reported that historically they have not had coordination or access problems in their fishing activities, and thus there was generally no need to develop informal rule systems. With increased government regulation of the fishery and with a lack of leadership and organizational capabilities within the barrio, no informal rule systems developed in recent times.

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4 Enforcement encompasses a variety of governmental levels and agencies including the provincial, municipal and barangay governments, BFAR, the Coast Guard, the Philippine National Police, and qualified individuals designated as deputized fish wardens.

## **Progress Towards Improved Fisheries Management**

Despite laws and legislation for fisheries management in the Bay, progress towards an effective and coordinated management strategy remains slow. In reviewing the reports of the earlier studies on San Miguel Bay, it becomes clear that no major new initiatives were undertaken for fisheries management. There are now two positive signs, however. The first is a move toward greater participation by fishers and fishing associations in fisheries management. Several multi-purpose fisheries associations and cooperatives have emerged in the last several years. The main purpose of these associations is to provide a mix of credit/marketing/alternative livelihood services to members. While none of these associations has fisheries management as its sole objective, all have more active participation in management as an objective.

Stakeholders in the fishery were asked, through both the formal fisheries management survey and the existing associations survey, to select among five different scenarios as to how the fishery should be managed in the future. The five scenarios ranged from the government having all the responsibility for management of the fishery, to equal sharing of responsibility between fishers and fishers' associations and the government, to fishers and fishers' associations having all the responsibility. Both surveys showed strong support for a shared responsibility between the fisher and fishers' associations on one hand and the government on the other. This is in contrast to the current system of fisheries management in the Bay where the government has most of the responsibility.

Several respondents remarked that they felt that since the fishers knew more about the biological and technical conditions in the Bay and were dependent on the Bay for their livelihood, they should have more responsibility for its management.

Several respondents to the surveys stated that one of the reasons that there has not been more active participation by fishers in management is a lack of leadership and organization. A local NGO, through the FSP, and one municipality are now actively involved in a number of coastal barangays in organizing fishers' associations and cooperatives. This is especially important in light of the increased rights given fishers' associations under the Local Government Code.

The second positive action toward improved Bay management is a plan to establish a San Miguel Bay Management Council (SMBMC). The multiplicity of local government units, laws and regulations in the Bay makes any type of coordinated management activity difficult. While PD 704 requires the Department of Agriculture to approve all municipal ordinances related to the fishery, this process is not used to coordinate such ordinances or Bay-wide management activities.

The San Miguel Bay Management Council, a joint effort by government and fishers' associations, is meant to improve Bay management. The current institutional structure for managing the Bay does not recognize the common property attributes of the Bay. It does not recognize the interdependent nature of the resource users. There is a need to formalize fishers' associations involvement in management and to specifically authorize their legal rights for management. The functions and powers of the SMBMC would be to develop and implement an integrated management plan for San Miguel Bay. The SMBMC would assess development activities and provide day-to-day policy guidance and administration. The SMBMC would coordinate with the local governments and other external institutions to assure that their plans and legislation complements that of the

SMBMC plan. The SMBMC would act as an advocate to the national government on matters requiring legislation and support to implement the plan. The SMBMC members will consist of people from provincial and municipal government, fisher's organizations, NGOs/POs, academe, military and police. A Technical Secretariat will serve as the regular professional support staff of the SMBMC. Municipal task forces will be organized to ensure local participation and action at the "field level".

### SUMMARY AND IMPLICATIONS

The preliminary findings of the 1993 research are that San Miguel Bay is still characterized by full biological overexploitation, increasing levels of fishing effort and declining catch, reduced profits, and uneven distribution of catch and income in favor of trawlers. Progress towards an effective management program for the Bay has been slow.

Institutional restructuring will be needed to improve management. This restructuring may already be occurring through plans for greater participation of fishers in management, and through plans for a coordinated management strategy which may recognize the common property attributes of the Bay.

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