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Chapter 14

The Challenges and Rewards of Community-Based Coastal Resources Management:

San Salvador Island, Philippines¹

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The residents of San Salvador Island, off the coast of Masinloc, Zambales in the Philippines, face challenges typical of fishing communities in the Philippines. Lack of awareness and poverty have encouraged fishers to use unsound fishing methods such as explosives, sodium cyanide, and fine-mesh nets. Swidden upland agriculture and logging has resulted in the deforestation of much of the nearby Zambales Mountains, which contributes to the siltation of San Salvador's coral reefs. These factors have resulted in declining fish yields from the island's coral reefs beginning in the early 1980s, according to local fishers.

Social conditions common to many small Philippine communities had encouraged San Salvador residents to believe that such a downward trend in environmental quality was irreversible. Inclusion into a demanding and largely unregulated market economy and the influence of unscrupulous local leaders and government officials, who supported destructive fishing methods for their own gain, had created the perception among San Salvador fishers that management of the local coral reef and fishery resources was beyond their control. The financial and organizational limitations of the Philippine government prevented it from addressing these complex resource management problems. Furthermore, numerous case studies have demonstrated that complete reliance on the national government is rarely the most effective strategy in the Philippines (Christie and White 2000, Ferrer et al. 1996, White et al. 1994). There is a strong consensus among many observers that natural resources cannot be sustainably managed unless those who use the resources perceive it to be in their interest and are deeply involved in the planning and management process (Burkey 1993, Christie and White 1997, Korten 1990, Olsen and Christie 2000, Pomeroy 1995).

The concept of community-based development or resource management is based on the principal that people are capable of understanding and resolving many of their own environmental problems (Burkey 1993, Freire 1993, Korten 1990). Community-based resource management evolved in the Philippines from experiences in community development and community organizing projects (Deguit 1989, Ferrer et al. 1996). The impetus for the community-based development model began in the mid-1940s when the government was implementing top-down infrastructure development projects. This approach was found to be ineffective in terms of creating long term, holistic development. Consequently, the growing discontent over the socio-economic and political situation and the ineffectiveness of delivery of services from the government sectors led religious organizations and other community sectors to form groups to affect societal change through mass organizations or unions. These organizations were more effective in stimulating collective, long-term mobilizations and the community organizing approach—which includes education, capacity building, and implementation of concrete projects—was popularized and adapted by many Philippine organizations working for community-level economic development and resource management.

In response to largely unsuccessful attempts to sustainably manage marine resources throughout the Philippines, Silliman University initiated a community-based resource management approach on three islands: Apo, Pamilacan and Balicasag (Cabanban and White 1981; White and Savina 1986). All are highly successful examples of local people benefiting from active involvement in the management of their reef fisheries (Alcala 1998; White 1988), although recent research demonstrates limitations of relying solely on marine protected areas for fisheries management (Christie in press). The main objectives of this community-based resource management plan are: to empower the community to become active and functional as a self-reliant entity, to equip community members with knowledge and skills for sustainable resource management, and to build the capabilities of community members in establishing links with support groups (Ferrer et al. 1996).

The Marine Conservation Project for San Salvador (MCPSS) began in 1989 by encouraging the island community to address the problems of resource mismanagement through education, local organizing, and community involvement in the establishment of a municipal marine reserve and

sanctuary. Introduced by two community fieldworkers, this approach helped to reverse the decline of the island's coral reef and associated fishery. The island's culturally heterogeneous population, low per capita income, poor coral reef status, conflicts between legal and illegal resident fishers, and easy accessibility by nonresident fishers are typical of many Philippine islands. Therefore, a case study of the process and the results of the MCPSS provides useful information for furthering the tradition of community-based resource management.

Profile of San Salvador Island

San Salvador Island, with an area of 380 hectares, is approximately two kilometers west of Masinloc, Zambales. The hilly interior is approximately 30% secondary growth forest, 60% rice fields, and 10% mango tree groves. Off the northern, western, and southern coasts are wide reef flats dominated by seagrass (*Enhalus acoroides*, *Thalassia hemprichii*) and sargassum (*Sargassum oligocystum*) beds. The fringing coral reefs, routinely exposed to intense wave action during the monsoon season (July to October), exhibit deep spur and groove formations dominated by massive and encrusting coral types. Protected areas, with more delicate branching corals (*Acropora spp.*), were heavily damaged by decades of dynamite and sodium cyanide use prior to the MCPSS.

In 1988, surveys of the substrate cover documented a range of 5-50% living coral cover, with an average coverage of 23% for the whole island (Christie and White 1994). The average dead standing coral cover was 19%. Table 14.1 displays the results of the 1988 substrate surveys in the least damaged area, which was declared a sanctuary, and the surrounding traditional fishing reserve area. These findings are similar to those of Gomez and Yap (1982) where, out of 12 reef sample stations in Zambales, two were in good condition (50-74.9% living coral cover), three in fair condition (25-49.9%), and seven in poor condition (0-24.9%).

Table 14.1. Coral reef substrate cover and topography for San Salvador Island in 1988.

Parameters	Sanctuary		Traditional Fishing Reserve	
	(ST mean)		(ST mean)	
	%	(n=20)	%	(n=20)
Sand	8	(13)	13	(16)
Rubble	12	(16)	16	(18)
Blocks	36	(23)	9	(14)
Dead standing coral	9	(14)	29	(22)
Marine plants	9	(14)	13	(16)
Live hard corals	20	(19)	4	(9)
Live soft coral	6	(11)	16	(18)
Total coral cover	26	(21)	20	(19)
Topography (m)*	2.8			

ST Snorkel transect.

() 95% confidence intervals.

* Meters of additional surface area per horizontal 10 m. (a measure of surface contour).

Currently, approximately 1,620 people, comprising 284 families, live on San Salvador (Katon et al. 1999). This represents an 8 % increase from 1989. Four ethnic backgrounds are represented on San Salvador. Sambals comprise approximately 50% of the population, Ilocanos and Pangasinenses approximately 20%, and Visayans approximately 30% (Dizon and Miranda 1996). Each ethnic group tends to live separately from the others. Most people depend directly on the island's natural resources for their livelihood. About 64% of the residents derive their principal income from fishing, 23% from farming, 4% from trading, and 9% from service related occupations (Katon et al. 1999). In 1989, monthly incomes ranged from US\$44 to US\$66 for families who farmed or used traditional fishing methods. Family income from aquarium fishing was approximately US\$100 per month.

Most people live in one of four villages on the island's coast. Typical occupations, cultural background, and family linkages are fairly homogeneous within each village but there are major differences between villages in these regards. One group of people, the Visayan aquarium fish gatherers, has never fully integrated with the rest of the island's community. Their isolation is due, in part, to linguistic differences and resentment among other community members regarding the aquarium fish gatherers use of sodium cyanide. These population and economic conditions are prevalent in many Central Luzon fishing communities (McManus 1988).

San Salvador Island is a *barangay* of Masinloc, Zambales. The *barangay* is a smallest unit of local government in the Philippines. San Salvador has a *Barangay Council*, with one *Barangay Captain* and six Councilors, which is the island's formal governing body. Unlike many Filipino communities, religious organizations do not play a central role in local island social dynamics.

Informal fishing organizations revolve around activities that require joint effort. For example, informal social networks developed around the use of certain fishing gear that required a number of people to operate (e.g., beach seines) and transportation activities that required a high level of coordination (e.g., the transport of aquarium fish to Manila). However, as of 1987, no formal fishery-related organizations such as cooperatives existed.

In 1987, upon arrival of one fieldworker, many of the island's residents considered their *barangay* poorly organized and economically underdeveloped in comparison to other nearby *barangays*. Community members cited corruption, intense political rivalries between local leaders, and a general lack of interest from government agencies in this relatively remote *barangay*. Nonetheless, in comparison to other small islands in the Philippines, San Salvador's proximity to the mainland and Manila (approximately 250 km) makes it accessible to national-level government and non-governmental agencies which can potentially provide funding, facilities, and technical assistance.

Although the details of fishing traditions prior to habitation of the island (approximately three generations ago) are unknown, interviews with local people provide some insight as to customs and conditions after habitation. According to residents, the island was surrounded with rich fishing grounds that amply supported residents until the Second World War. With the threat of starvation, occupying

Japanese troops used explosives to catch fish, thus introducing blast fishing. In the late 1960s, families from the Visayan region of the Philippines began to arrive. By the early 1970s, these people were catching aquarium fish for a rapidly growing export market mainly in the United States. These aquarium fish gatherers used sodium cyanide, which damages the reef and kills juvenile fish, to collect these fish (Barber and Pratt 1997). Simultaneously, fishery development programs during the Marcos era provided loans to people for the purchase of motorized boats and highly efficient fishing equipment that contributed to overfishing. Local people maintain that their average daily fish catch declined from approximately 20 kg in the 1960s to only 1-3 kg in 1988 (Katon et al. 1999).

Currently, the San Salvador fishery is a complicated mosaic of subsistence and commercial activity on the family, municipal, national, and international scale. Approximately 75% of the San Salvador fishers rely on traditional methods such as nets and spears to catch fish. Most of their catch is sold in the local market in Masinloc, the nearest town, while any remaining fish is for family consumption. High quality fish, such as tuna or grouper, is often purchased in Masinloc by fish dealers who transport it to Manila for sale. Aquarium fish are transported to Manila by local fishers and then exported mainly to the United States and Europe.

Prior to the introduction of destructive fishing technology and the inclusion of these communities into an insatiable commercial market system, the fishery met the needs of the local people. Perhaps as a result of the abundance of the resources and the fact that the island area had been colonized mainly by farmers from the mainland without fisheries management traditions, strong local traditions to manage fish stocks did not exist. Open access to the resource coupled with destructive methods led to a desperate situation in which people continued to place ever greater stress on the resource. Complaints by local fishers about the lack of fish, the negative impacts of destructive fishing methods, and their concern for their future well-being were the impetus behind the MCPSS.

The Marine Conservation Project for San Salvador

The MCPSS was patterned after the Silliman University Marine Conservation and Development Program (White and Savina 1987). The approach is holistic and depends heavily on the community's participation. Table 14.2 outlines the specific objectives of the MCPSS. Considering the multifaceted

challenges the community and the fieldworkers faced, the MCPSS achieved significant results. A review of the methods, accomplishments, and limitations follows.

Table 14.2. Objectives of the MCPSS.

1. To enhance the institutional capabilities of local and national governmental and non-governmental institutions to implement a community-based resource management project, by increasing their understanding of basic marine ecology, fisheries dynamics, and resource management techniques.

2. To develop and implement a marine resource management plan based on the results of socioeconomic and environmental surveys that would establish a coral reef protected area that consisted of a sanctuary and a traditional fishing reserve area surrounding the island. The management plan's intention would be to discourage destructive fishing and to increase fish abundance, fish diversity, and long-term fish yields from the island's reef.

3. To encourage community development through the formation and strengthening of local community groups responsible for marine resource management and alternative income programs. To construct a guest/meeting house at the shore of the sanctuary for meetings, education programs, and tourism.

4. To train fishers using sodium cyanide in the use of barrier nets for the collection of tropical aquarium fish.

5. To initiate a small erosion control program along the island's heavily eroded dirt road by planting tree seedlings.

6. To replicate and extend the project to neighboring fishing communities and establish linkages with other local and national organizations concerned with marine management problems and their solutions.

A US Peace Corps Volunteer (the first author) spent one year assessing the community's needs and level of understanding of basic environmental/ecological concepts through informal interviews of residents. He studied the condition of the island's coral reef through snorkel surveys. With input from

select island residents, he prepared a proposal for a community-based resource management project for financial support. The vast majority of local fishers identified destructive fishing methods and declining yields as the most important issues to address. At this point, however, only a few community members were actively involved in the drafting of the proposal since certain community leaders were allegedly involved in illegal fishing, making the issue controversial.

Subsequent to securing financial support (US\$10,000) from the Netherlands Consulate in Manila, the Haribon Foundation, one of the largest environmental non-governmental organizations in the Philippines, became the implementing agency of the MCPSS. The MCPSS project was inaugurated in December 1988 and fieldwork began in January 1989. After moving to San Salvador, a Filipina community organizer conducted a socio-economic survey with the involvement of the community. Initially, only a few highly motivated individuals actively participated in the MCPSS while other community members expressed interest, though were reluctant to directly participate. The hesitance of some of the community members may be attributed to a historic failure of development programs on the island, the sensitive nature that the project addressed and distrust or disinterest in the environmentalist agenda. Education programs, which highlighted the poor condition of the island's resources and the potential increased fish yields and other benefits that the MCPSS might bring about, eventually convinced more community members to support its objectives.

The ongoing education program used formal and informal approaches. Monthly education programs used slide-shows, role-playing, and lectures to explore basic ecological and environmental concepts and highlighted reef survey results. Field outings with children and an environmental drawing contest were also effective means to engage these future resource users. Prior to any education programs, the average score on a basic ecology/environment questionnaire for randomly selected residents was 69%. Fourteen months later, the average was 86%.

A field trip to a successful sanctuary project on Apo Island, Negros Oriental by seven San Salvador residents was a key activity that allowed these residents to discuss the implications of marine conservation and protected areas with other Filipino fishers. As a result of their visit to the Apo Island sanctuary and discussions with residents there, the San Salvador residents formed the "Lupong

Tagapangasiwa ng Kapaligiran" (LTK) or the Environment Management Committee. The LTK was the core group that educated and encouraged other residents to participate in the MCPSS.

Toward a Marine Sanctuary Management Plan

During two well-attended general assembly meetings on San Salvador, community members drafted a resolution for the establishment of a 127-hectare marine sanctuary which was made off limits to fishing. Illegal or unsound fishing methods were also banned in a traditional fishing reserve area surrounding the rest of the island and the sanctuary. A large majority of the community also initially decided to ban aquarium fish gathering in the traditional fishing reserve, regardless of methods employed, because of the persistent use of sodium cyanide by some individuals. This act alienated aquarium-fish gatherers who claimed to use nets supplied by the MCPSS. At this time, the community organizer focused her attention on consulting with alienated community members and conflict resolution. Ultimately they chose to abide by the ban on aquarium fishing but continued to collect elsewhere with cyanide in most cases. Some spouses of aquarium fish gatherers became very active in the MCPSS.

In July 1989, the LTK and fieldworkers presented a *barangay* resolution to the Masinloc Municipal Council and the Mayor. This resulted in the unanimous approval of a municipal ordinance (Municipal Ordinance 30-89) legalizing the sanctuary and reserve. Masinloc's Mayor and Catholic priest were outspoken advocates for the sanctuary and MCPSS. This ordinance provided the necessary political and legal endorsement allowing community members to enforce their *barangay* resolution with the assurance that local agencies would support them. Further support for the ordinance was assured through the 1989 election of a supporter of the MCPSS as San Salvador's *Barangay Captain*.

Subsequent alterations of the ordinance through general assembly approval included a ban on a beach seine-type fishing technique (*kunay*), in which a long scareline of coconut fronds is dragged along the reef. The ruling on *kunay* required a series of assembly meetings and ultimately resulted in tensions between people for and against the method. The majority of the island's residents felt that the method caused overfishing and coral damage. This method, which also used very fine-meshed nets, collected primarily juvenile fish of only 15 cm average length. Following a petition by the *kunay* group for the intervention of the Mayor as mediator, a general vote was held which banned the method in the reserve

area. The one group of fishers who used the method resented the ban since they felt that their method was a traditional, non-destructive method. They also expressed frustration since they had originally supported the sanctuary resolution and now were being harmed by the agreement. While the *kunay* group stopped using this method around San Salvador, they continued to use the method on other nearby islands. Eventually, however, these surrounding communities also prohibited them from using this method in their waters, reportedly for the same reasons for which it was banned on San Salvador.

In 1990, one of the community fieldworkers applied for a Fisheries Administrative Order (FAO) from the Department of Agriculture on the community's behalf to further legitimize the municipal ordinance at the national level. At that time, Philippine law required a FAO, which is a specific regulatory statement signed by the Minister of the Department of Agriculture, for the establishment of any sanctuary. For reasons that are unclear, a FAO was never granted. Perhaps the San Salvador municipal ordinance was perceived as a threat to authority traditionally held by the national government agency. The Local Government Code passed in 1991, transferring control over waters out to fifteen kilometers to the municipal government, removed the need for a FAO and further legitimized the municipal ordinance.

Eventually, interest within the national government for community-based initiatives grew steadily through the early 1990s. A number of community-based marine protected areas (including Masinloc Bay and Apo Island) were declared as part of a National Integrated Protected Areas System (NIPAS) (Presidential Proclamation No. 231). In 1993, all of Masinloc Bay was named a National Protected Seascape with zoning for different uses of the marine environment. San Salvador was declared a protected area within this zoning. Designation as a NIPAS site necessitated the establishment of a multi-sectoral managing board with local government, regional government, private sector, and community representation. This declaration legitimated these small marine protected areas, however it also took some control away from communities and bureaucratized decision-making processes.

The sanctuary was marked by buoys and signs written in the national language. However, the loss of buoys has been a perennial problem and enforcement of the sanctuary/reserve ordinance has been challenging. Initially, there was no regular patrol of the sanctuary since it was thought that the proximity

of the sanctuary to houses allowed for easy surveillance. Typically, once a violator had been spotted a member of the LTK or the *Barangay Council* was notified. Most community members felt that it was more effective if these authority figures confronted violators. Community fieldworkers refused to become directly involved in the enforcement of the ordinance feeling that it was an inappropriate role. If local authority figures from the island felt unable to confront a violator, they would contact the municipal government for support. A graduated sanctions system, ranging from warnings, to monetary fines, to boat impounding, was established and enforced depending on the severity of the infraction.

Of 39 violations, during the first eight months after the establishment of the protected area, 35 were by non-resident fishers from the southern Philippines. Local residents who violated the sanctuary claimed that they did so out of economic need or temptation when large schools of fish were spotted in the sanctuary. These violators were warned and did not repeat their violations. Almost all non-resident violators claimed ignorance of the ordinance. These violators, as recommended by the municipal government, were only identified and warned. Second-time violators (all of which were non-residents) were fined by the community environment management committee, the LTK. If violators refused to pay the fine, the case was forwarded to the municipal government's judicial system. If violators were unable to pay a fine, their catch was sold with the proceeds used by the LTK for the maintenance of the sanctuary. In one case, local people reported a group of divers from the southern Philippines for collecting lobster from a large vessel inside the sanctuary at night. The municipal mayor ordered the confiscation of the boat until a fine was paid. Community members did not confront the violators directly, fearing that firearms were onboard.

Based on records kept by local residents who enforced the ordinance, most violations (72%) after 1989 involved fishing in the sanctuary (Katon et al. 1999). Other violations included aquarium fish gathering in the reserve (10%), the use of air compressors to dive in the reserve (10%), blast fishing (4%), and the use of fine mesh nets (4%). Non-residents continued to be the main violators. Violators were warned (49%), fined (19%), asked to surrender the boat and fishing gear (13%), and imprisoned (7%). In other cases fish catch was confiscated (4%), live fish were returned to the sea (4%), and an individual was shot in the leg for failing to heed the warnings of marine guards (Katon et al. 1999).

On occasion, the ordinance was not enforced. When the sanctuary and reserve were not regularly patrolled, some violators were not confronted. Also, if a person of authority was not readily available, other residents commonly chose not to confront the violator, either out of fear, apathy, or deference to those in positions of authority. It is uncertain, however, that a more formalized enforcement procedure would be consistently more effective. When a police detachment was assigned by the municipal government at the request of the LTK to protect the sanctuary, officers were bribed to tolerate violations (Dizon and Miranda 1996). The final, seemingly most effective, approach to enforcement has been the formation of a deputized group of wardens from the municipality in 1993. This group, named *Bantay Dagat* or protectors of the sea, have received training and are legally authorized by municipal authorities to apprehend violators of the protected area. The municipal government has provided the *Bantay Dagat* with funds to cover food, fuel, and a patrol boat.

Instances of dynamite and cyanide fishing have declined dramatically. Prior to passage of the MCPSS ordinance, an average of 3.2 dynamite blasts per day during the calm season in 1987 were heard along the island's western coast. Since passage of the ordinance, dynamite fishing is rare. The local aquarium gatherers accepted and respected the ban on gathering in the reserve area. The ordinance was subsequently amended to allow only free diving for aquarium fish with the use of fine-mesh nets. However, few divers collect in the reserve possibly due to their continued reliance on sodium cyanide, which they use elsewhere. Local aquarium fish gatherers have commented on the return of valuable aquarium fish to the reserve and sanctuary areas.

Through the efforts of the International Marinelife Alliance-Canada, fifty-four, of the San Salvador aquarium fish gatherers (approximately 95%) participated in two week-long training courses on the use of barrier nets in 1990. A Haribon Foundation community organizer facilitated the formation of an active aquarium-fish gatherers association whose purpose was to police its own ranks, explore potential alternative income projects and develop marketing network for net-captured aquarium fish. These community groups, however, are no longer active since the demand for net-caught fish has never been consistent and the use of cyanide results in higher yields according to local divers. In some instances, the gatherers declare that exporters demand the use of cyanide to ensure high yields.

Enforcement of the marine sanctuary and reserve has been problematic. The sanctioning of local people for violations has, at times, created considerable controversy. From 1989 to 1997, the emergence of the *Barangay Captain*, who is also the President of the Masinloc-wide *Bantay Dagat*, as the main advocate for strict enforcement of fisheries laws and the San Salvador ordinance has led to complaints by some that he is overly rigid and autocratic. Other residents appreciate this person's and the *Bantay Dagat's* staunch commitment to enforcement. Participation in enforcement is undoubtedly dangerous. One Bantay Dagat member from Masinloc was murdered, reportedly as a result of his strict enforcement of the ban on the use of cyanide in Masinloc Bay.

The strategy used on San Salvador, founded on local participation, eventually attracted considerable national attention and resulted in the awarding of a prestigious national award in community development to the MCPSS in 1996. The *Barangay Captain* was awarded a national *Barangay Captain of the Year* award for his role in community development and resource management.

Impacts on the Marine Resource Base

Underwater censuses, using a method developed by Russ (1984) and refined by White (1988), to determine fish abundance and diversity (in 19 families) within the sanctuary and reserve confirmed that San Salvador's reef was in poor condition prior to the protected area's establishment. San Salvador had on average only 322 fish per 500 m² in May 1989 (prior to ordinance passage), followed by 431 fish for the same area in March 1990 (figure 1). Fish densities increased to 460 fish per 500 m² in April 1991 and peaked at 1200 fish per 500 m² in April 1998. A decline to 777 fish per 500 m² in June 1999 is likely due to the passage of a typhoon days prior to the survey and natural seasonal fluctuations in reef fish abundance. When only high valued target species (in 11 families) are considered, the trend is a gradually increasing one. The average fish density for the time period 1989 to 1991 period was 373 per 500 m² as compared to an average fish density of 1041 per 500 m² for the time period 1998 and 1999. This represents a significant increase in fish density between the 1989 to 1991 period to the 1998 to 1999 period (Christie and White 1994, Garces et al. 1998, Katon et al. 1999). Species richness has increased from 126 species belonging to 19 families in 1988 to 138 species belonging to 28 families in 1998 (Christie and White 1994, Garces et al. 1998). Although detailed yield studies ceased in 1990, local

fishers have noted an increase of fish catch, especially of those species that are schooling and were the preferred target of dynamite fishers (e.g., fusiliers), since the initiation of the MCPSS. The coral reef itself has also begun to recover. Living coral cover increased from 23% in 1988 to 57% in 1998 (Christie and White 1994, Garces et al. 1998). While not yet quantified, the coral bleaching event of 1999 has temporarily reduced living coral cover in some areas, particularly where water circulation was minimal and warm water was trapped.

In comparison to Apo Island's sanctuary, where on average 1,427 fish were counted per 500 m² in 1985 followed by 3,899 fish in 1986 (White and Savina 1986), overall fish abundance are still considerably lower on San Salvador. San Salvador's lower fish density in comparison to Apo Island's is possibly due to the heavy damage incurred in the past and differences in natural productivity between the sites.

Community Development and Organization

Community residents and fieldworkers also worked to establish associated activities to support sustainable resource management. Considerable effort was expended on the establishment of alternative income projects for residents as a means to reduce fishing effort and increase incomes. Early in the MCPSS, small groups of people on the island took out small loans to start income generating projects. Ten families started swine-rearing projects. A fish-vending scheme involved another five families. All of these early attempts at alternative income development failed to be sustained, principally because local mechanisms for the management of these programs were very weak. Pigs were butchered at fiesta times or sold to meet immediate financial needs. Similarly, most of the small loans were never paid back (Dizon and Miranda 1996). Considerable effort by Haribon workers to this aspect of the MCPSS never resulted in effective alternative income development.

Community members constructed a sanctuary guest/meeting house on the shores of the sanctuary. It serves as a center for MCPSS-related activities and shelter for project visitors and tourists. Within the first five months from the initiation of the sanctuary, donations of more than 2,200 pesos (\$100) were collected from guests and used for the continuation of the conservation efforts. Donations continue to be collected.

Community organizing, leadership skill development, networking with outside organizations, and the principle of community involvement at almost all stages of the MCPSS comprised the overall approach to implementation. The initial output of this process was the formation of the LTK, which, as mentioned, grew directly out of the Apo Island field trip experience. Participants on the fieldtrip were those community residents most concerned with local marine resource issues. Upon their return to San Salvador, they began to assist the fieldworkers with mobilizing other residents to become involved in the MCPSS. One year after the fieldtrip, LTK elections were held with subsequent regular elections for seven years. The size and gender balance of this committee changed continuously. Some of the most committed members were women.

The responsibility of the LTK, as designated by its own members, was to develop MCPSS plans, introduce them to the community, and to encourage their involvement and support. Most MCPSS activities relied on considerable dialogue between the fieldworkers and the LTK members. For example, most of the fieldworkers' project ideas were discussed and reviewed by the LTK before actions were taken. As the leadership skills of the LTK members improved, they developed ideas independently. The LTK did not, however, make decisions for the wider San Salvador community. All regulatory decisions were made at the community level through general assemblies that were called with the support of the *Barangay Council*.

Certain key events seemed to have been decisive in reaffirming the residents' commitment to marine conservation, a phenomenon common to many social organizations when faced with adversity (Morris and Mueller 1992). One such event was the decision in 1990 of the national government to construct a large, coal-fired power plant on the mainland only approximately three kilometers from the San Salvador sanctuary. Thermal and air pollution were of immediate concern to local people and the municipal government. The municipal government and residents active in the MCPSS jointly led a movement in opposition to the plant. Rallies were organized and San Salvador leaders spoke on the issue before the national congress and ministry heads. After prolonged negotiations, the plant was approved by the Department of Environment and Natural Resources on the grounds of national economic development, but only after strict regulations and monitoring procedures involving local leaders were

established as part of the environmental clearance certificate in 1993. Nonetheless, this monitoring body is only sporadically active and violations of the certificate reportedly have not spurred further action.

Besides key events such as the energy plant controversy, the participation of San Salvador residents in national and local-level environmental networks has solidified commitment. The opportunity to exchange experiences with others facing similar challenges appears to strengthen leaders' resolution. Furthermore, frequent visitation by study groups and the perception of San Salvador as a role model for community-based coastal resource management has also instilled some level of pride in island residents.

Throughout its existence, the LTK has gone through periods of relative activity and quiescence that seem to be related to member commitment, support from project staff, and local government backing (Dizon and Miranda 1996, Morris and Mueller 1992). After the formal withdrawal of fulltime fieldworkers from the area workshops in 1993, Haribon occasionally organized workshops focusing on the development of new leaders, while reinforcing the commitment of the original leaders. These occasional interventions seemed to have successfully solidified resident commitment to the LTK, at least temporarily. Eventually, however, the LTK's role in marine conservation was subsumed by the *Bantay Dagat*, which focused on the enforcement of the sanctuary and reserve's regulations. Since 1997, the LTK has been largely inactive. The inactivity of the LTK has probably resulted in lowered participation in marine conservation efforts. Nonetheless, enforcement of the reserve/sanctuary ordinance continues.

Establishing a Resilient Resource Management Regime

In 1997, the local political conditions changed considerably with the elections of a new *Barangay Captain* for San Salvador and a new Mayor for Masinloc. The current *Barangay Captain*, who is the individual that held the office prior to the elections in 1989, is a social and political rival of the one that had been supportive of the establishment of the reserve and sanctuary. During interviews conducted in 2000, the current *Barangay Captain* expressed his support for marine resource management and wished that marine sanctuary enforcement was subsumed by the *Barangay Council*. The *ex-Barangay Captain* and many local residents characterized this as a ploy to relax enforcement of the sanctuary/reserve ordinance. The *ex-Barangay Captain*, who is currently the President of the *Bantay Dagat*, is unwilling to coordinate his enforcement efforts with the current *Barangay Council*.

The current Mayor has come forth to help resolve this issue. In June 1999, he convened a meeting of the opposing factions and made it clear he is committed to marine conservation, that the enforcement of the ordinance will continue, that the *Bantay Dagat* will oversee this enforcement through their coordination with law enforcement agencies, that the *Bantay Dagat* will be required to coordinate with the *Barangay Council* in enforcement, and that the personal rivalry between the current and *ex-Barangay Captains* should not stand in the way of ordinance enforcement.

Clearly, the past fourteen years of marine resource management on San Salvador Island is best described as a complex process that highlights the challenges of introducing resource management in difficult conditions. As a process that attempted to simultaneously address multiple development and resource management issues, such mixed responses should be expected. Research by external investigators (Katon et al. 1999) confirm this conclusion and suggest that the establishment of a co-management process involving the community and local government has been fundamental to any sustained successes. Based on extensive survey research, these investigators maintain that the following factors have supported a co-management regime: (1) stakeholder recognition of resource management problems, (2) supportive and committed local leadership, (3) specification and enforcement of user rights, (4) provision of legal and policy support and effective enforcement, (5) capacity building, (6) participation of partners and sense of ownership of co-management arrangements, (7) clarity of objectives, (8) positive attitude among partners towards rules and collective action, and (9) dissemination of tangible benefits.

The establishment of a strong co-management regime, which involves both community and municipal leaders, is probably the best mechanism to ensure the continuation of marine resource management in the face of constant challenges, such as the current local political rivalries. It is important to recognize that the establishment of this co-management process required that considerable attention be paid initially at the community level in order to raise awareness, to reach agreement about resource issues, and to strengthen community-level organizations. Attention at the community-level improved the ability of the community to effectively interact with relatively powerful government agencies with some degree of parity. Thus educational and community organizing efforts, which are the cornerstones of

community-based resource management, were crucial for the development of local capacity for co-management. Co-management, based on the interaction of groups of individuals with grossly unbalanced levels of influence and power, is likely to result in inequitable social arrangements (Christie 1999, Christie et al. 2000). Eventually, inequities tend to quickly erode local support for resource management regimes, thus making their continuation unlikely.

Lessons Learned

Social and environmental problems in a community such as San Salvador are complex and deep-seated. The MCPSS, despite its successes, has also had considerable difficulties meeting all of its objectives. Table 14.3 summarizes some critical issues that have arisen and some potential solutions, some of which have been implemented. Such an analysis is not meant to suggest that such responses are necessarily appropriate in all contexts.

San Salvador provides students of community-based resource management and protected areas a rich case study by which to improve their practice. The following are some lessons that may be drawn from this case.

(1) Addressing multiple issues simultaneously is challenging, but possible

At its initial stages, the primary difficulty of the MCPSS was the occasional inability of the project leaders (LTK, *Barangay Council* members, and fieldworkers) to coordinate activities among themselves and with the community. Too many activities were attempted at once and/or plans were not carried through to completion. Sometimes, these leaders took too much responsibility upon themselves without the full support of the community's residents. This may be the result of the inexperience of leaders combined with the limitations of the fieldworkers.

Membership in the voluntary community organizations requires a strong commitment to community development. While direct monetary gain is not an incentive, members do, however, enjoy some prestige through their association with the MCPSS. However, over-reliance on a small group of leaders can result in "burn-out" and the narrowing of community participation.

(2) Local political processes are influential

Local political rivalries and social dynamics in the community have strongly influenced the implementation of the MCPSS. Prior to the MCPSS, the *Barangay Council* was largely inactive. The tensions between the group of community residents interested in marine resource management and the relatively disinterested *Barangay Council* was resolved when supportive individuals were elected *Barangay Captain* and Mayor. The election of a new *Barangay Captain*, who is the political and personal rival of the supportive *ex-Barangay Captain*, may eventually undermine the management regime. External assistance with conflict resolution by Haribon or the Mayor may be necessary if the management regime is to continue.

(3) A degree of alienation is likely

Considering the profound change in attitude and behavior with the MCPSS encouraged, some degree of alienation, especially by illegal fishers, was probably unavoidable. Differing opinions toward the MCPSS has stressed what little community unity existed prior to the MCPSS. To the degree possible, resource management plans should provide training in alternative livelihoods to destructive fishing, before alienation occurs. With this approach, alienation of the aquarium fish gatherers and *kunay* fishers from the MCPSS may have been avoided. In addition, workshops for local leaders stressing conflict resolution skills may be helpful. In the end, however, difficult decisions that negatively affect some people may be necessary if sustainable resource use is to be attained.

(4) Rapid resource recovery is possible

Although the severely degraded environment of San Salvador precludes a rapid return to full productivity, the relative improvement in reef condition and fish abundance is dramatic. Furthermore, local fishers are encouraged by the numbers of fish in the area and the return of formerly rare forms of marinelife, such as sharks, rays, and marine turtles. The continued realization of tangible benefits by fishers will likely heavily influence the future of the resource management plan.

(5) Initial focus on the community is critical

Community organization and education have been effective approaches in meeting the objectives of the MCPSS. It is apparent that once a community fully understands the status of its resources and

begins to feel confident to act through its own institutions, meaningful and lasting achievements can be made. The process is slow since new resource management traditions are in essence being developed. In a context without any strong resource management traditions, the introduction of unsustainable fishing methods and the inclusion of the fishers into a demanding market system has led to rapidly declining fish stocks. New traditions that allow for the sustainable harvesting of resources provide a valuable and frequently welcomed alternative to these communities.

(6) Co-management arrangements are vital to sustainability

The long-term sustainability of the resource management regime will depend, in part, on the support of local and national governmental institutions. Their involvement provides legitimacy, a supportive policy-making environment, and, in this case, has helped lessen the potential for personal dynamics to derail the process.

(7) External personnel and financial support is instrumental to progress, but problematic for sustainability

Full-time fieldworker and institutional support from external agencies for the MCPSS lasted five years. This external support was instrumental in introducing new options to the community, in conducting resource and social assessments, in establishing an educational program, and supporting community organizing processes (Katon et al. 1999). It's likely that the original project duration of two years is too short a period of time for substantive changes in resource use patterns. Although it is difficult to predict exactly how long is sufficient for such change to take place, it is important for the implementing agency and fieldworkers to strike a balance between premature termination of support and community dependency on outside assistance. The proper point of termination of formal relations should be the result of a dialogue between the community, the fieldworkers, and external supporting agencies. As might be expected, the strength of community organizations developed by the MCPSS waned after withdrawal of external support. Nonetheless, the management of the area's coastal resources has dramatically improved when compared to the late 1980s. Furthermore, co-management mechanisms have been established that seem to be addressing local conflicts and rivalries. These mechanisms are

based on a level of interest by government institutions in resource management not previously demonstrated prior to the MCPSS.

Conclusion

The MCPSS is an example of a community-based program that successfully addressed the problem of a declining fishery on San Salvador Island by using a participatory process to establish and manage a marine protected area. In as complex a community as San Salvador, many difficulties arose during MCPSS implementation and after formal project termination. The strength of co-management mechanisms, which grew out of the original work at the community level, is likely to determine the long-term sustainability of this resource management regime. Whether this approach to resource management is appropriate in other less-isolated communities or will withstand the continuing pressures from an economic and social system that places continually higher demands on coastal resources has yet to be determined.

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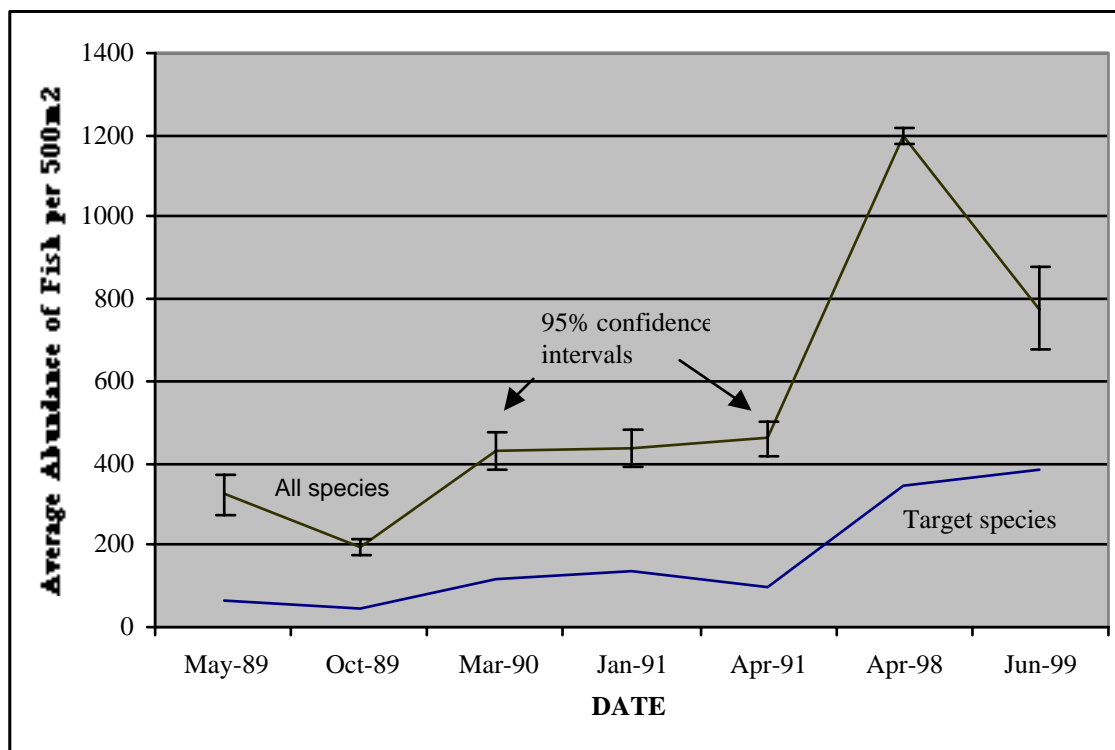
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Figure 14.1. Temporal Changes in Fish Density in the Marine Sanctuary and Reserve of San Salvador Island.



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