

Marine Sanctuary Establishment: The Case of Baliangao Wetland Park in Danao Bay

by

Arjan Heinan, SNV Marine Biologist

Aida Laranjo, BWP Staff Member

Using the fast-track “enlightened leadership” approach (the enlightened leaders being Iglorioso Agodolo, a fisher and lay leader, Father Quarisma, local parish priest, Agapito Yap Jr., former Baliangao mayor, and PIPULI), the PIPULI Foundation, with funding aid from the Foundation for the Philippine Environment (FPE), physically established a 70-hectare sanctuary in Baliangao within a one-year period. After three years of defending and maintaining the sanctuary, positive results are evident, forming the bases for a sustainable “community-maintained” sanctuary which serves as a symbol of a strictly enforced marine management measure. Building on this symbol, the PIPULI Foundation is now engaged establishing community-based coastal resource management (CBCRM) for the whole of Danao Bay.

Site Profile

Danao Bay is located on the Northern shore of Mindanao in the province of Misamis Occidental (see Figure 1). Ninety percent of the bay is located in the municipality of Baliangao while the remaining 10% belongs to the municipality of Plaridel. It encompasses an area of 2000 hectares. The fisheries resources of the bay are heavily exploited by some 400 resident fishers. Like in other coastal areas in the Philippines, fish catch in Danao Bay has been decreasing.

Danao Bay is shallow with a large intertidal zone. About 54 % of the bay area is composed of mangroves, mud flats, reefs and seagrass beds – considered to be among the most productive ecosystems in the world (see Table 1 and Figure 2).

Table 1: The ecosystems in Danao Bay and their relative size

Ecosystem	Area Hectares	Percentage
Rivers (3, with a total of 8 km length)	1	0
Mangroves	218	10
Fishponds (including abandoned)	587	25
Reef flat (sand with little seagrass)	603	28
Reef flat (mud with seagrass)	320	14
Corals (estimated 100 m wide x 5 km)	50	2
Open sea (1 km seaward from the reef slope)	500	21
TOTAL	2279	100

Source: Landsat data June 29, 1992. (Courtesy of NAMRIA)

Danao Bay is surrounded by five coastal barangays namely Tugas, Misom, Landing and Sinian, all in the municipality of Baliangao, and Danao in Plaridel town. These villages have a total of around 1,300 households, or a population of 6,000 persons. Aside from fishing, other sources of income are agriculture (coconut, rice, cattle, mango) salt making, dried fish trading, and some local tourism.

Migration

The population of Baliangao consists of a large majority of Visayan settlers who arrived in the early part of this century. More than half of the immigrants came from Siquijor, an island within sight of Baliangao. The other immigrants came from Bohol (22%), Cebu (5%), and other parts of the Visayas (5%). The descendants of these people form the majority of the farmers and fishers in Baliangao. To complete the picture of Baliangao as a society of immigrants, it can be stated that Filipinos from Spanish and Chinese origin are the main political and economic actors in Baliangao. Descendants of the original Subanen population can no longer be found in the area.

Economic and Social Conditions

Fisheries play a major role in the municipality of Baliangao. The municipality is surrounded by the sea on three sides: the Visayan Sea in the north, Danao Bay in the East and Mercialagos Bay in the west.

Baliangao has no large industries and is not a major trading center since the highway connecting the cities of Oroquieta and Dipolog runs 12 kilometers south of this municipality. The rural character of Baliangao is also reflected in the rather feudal relationships that govern its agrarian sector. The sharing system in coconut farms is still $1/3 - 2/3$, one part for the tenant and two parts for the landowner, with the tenant paying for the costs of production. Also in politics, a lot of people follow their leaders instead of taking initiatives by themselves.

Majority of the people in Baliangao are Roman Catholic, although there are other religious groups like the United Church of Christ in the Philippines, Iglesia ni Kristo and Seventh Day Adventists.

There are several small non-political organizations in the area. Recently, the Department of Agriculture (DA) and the National Irrigation Administration (NIA) organized some cooperatives connected to the new irrigation network in the municipality.

World Vision provides a savings and scholarship program which ensures the future schooling of the members' children. As of now, these organizations are still very weak. In recent years, the church has been active in organizing ecological ministries, something very helpful to the resource management program.

Though the barangays exercise certain powers as a local government unit, most political decisions are made at the municipal level.

Fisheries in Danao Bay

In 1994, PIPULI conducted a survey to determine the number of fishers who use parts of Danao Bay as their fishing ground. Table 2 shows the results of the survey. A total of 763 fishers were counted. There is a possibility that some fishers were counted twice since a fisher may utilize several fishing gears on a part-time basis. A better estimate is probably 400 full-time and part-time fishers.

The intertidal zone and the nearshore areas (from the lowest low tide mark to seven kilometers offshore) are exploited by most fisher. Majority of them (67%) are engaged in part-time fishing. A smaller group of fishers (called strikers) comes from the neighboring municipality of Lopez Jaena to fish in Danao Bay.

Fishing on the seaside of the reef crest (nearshore and offshore fishing) is seasonal. During the months of *Amihan* (or the northern monsoon, from December to April), fishing in the open sea is too dangerous for small, non-motorized boats. Only a few fishers in Danao Bay own motorized boats (wooden boats with 4-16 HP built-in engines), and even these boats have to stay on shore for most of the time during *Amihan*. The intertidal zone and the mangrove areas are exploited year-round.

The destruction of the mangroves, the heavy damage wrought on the reef and the increase in fishing pressure brought about by more fishers and the use of more efficient technologies have contributed to the decrease in catches, as observed by the fishers. Ninety-four out of 100 fishers interviewed from Danao Bay experienced a decrease in catch.

The fishers catch various fish species, but one species is especially important. This is the rabbit fish or danggit (*Siganid* sp.). To protect this species from overfishing, the municipal

government introduced a **ban period** on harvesting in 1988 (see “Resource Management Measures” for further explanation).

Table 2: Composition of the Fishers Sector in Danao Bay

Ecosystem	No. of Fishing Techniques Used	No. of Full-time Fishers	No. of Part-time Fishers	Strikers	Total
Mangroves	3	32	42	55	129
Intertidal Zone	9	57	191	55	303
Nearshore	12	101	152	44	297
Offshore	4	5	17	13	35
TOTAL	28	194	402	167	763

Most of the fish caught in Danao Bay are sold to fish buyers in Barangay Landing. They, in turn, bring the fish to Calamba town. Only big mangrove crabs, and occasional live lobsters, groupers and *maming* (*Cheilinus undulatus*) are transported to Manila. Dried sea cucumbers reach the international market through traders based in Zamboanga City. However, extensive harvesting of the high-priced sea cucumbers resulted in the collapse of the stocks.

Declining Fish Catch

Fisheries were abundant in the early part of this century. The name Baliangao was derived from the Cebuano phrase *balay sa langaw* meaning “house of flies”. According to folk tales, the place was called as such because of the multitude of flies living off the decomposing fish which just lay on the beach. Old residents claim that Baliangao used to have mangrove forests so thick that “even dogs found it difficult to get in and out of the forest”.

During the Second World War, Japanese soldiers introduced blast fishing in the area. In 1960, people from Bohol came to Baliangao to harvest the *tungog* the bark of a mangrove tree (*Ceriops tagal*), which they used to coloring and preserving *tuba* (local coconut wine). The bark was harvested in such a way that the trees died. This was also the time when Union Carbide acquired a mangrove concession. All big trees were cut and processed into charcoal. After the logging and bark-gathering activities by outsiders, the local population was left with a denuded forest. A big part

has now been converted to fishponds and only 218 hectares of the original 800-hectare mangrove forest is left. Most of this is secondary growth of only three tree species which are widely spaced. An exception is a seven-hectare area in Barangay Misom, where only small-scale harvesting was practiced by the “owner”. This area still harbors 17 species of mangrove trees and is now included in the Baliangao Wetland Park.

The PIPULI Foundation

The PIPULI Foundation grew out of an agro-socio-forestry program with the Subanen tribal people of Mount Malindang, the watershed of three provinces. The term PIPULI is a Subanen word meaning, “put it back”. This program started in 1988.

PIPULI Foundation was officially formed in 1989 for funding requirements, and in an effort to broaden support for its ecological thrust. At present, PIPULI is active in the creation and operation of the Mount Malindang National Park, protecting the watershed and the wildlife of one of the last remaining primary forests in the Philippines. Besides this biodiversity conservation program, PIPULI continues to assist the Subanen in transforming their lifestyle from a slash-and-burn farming system to one that will enable them to live within the capacity of the ecological system which God created. At the same time, PIPULI encourages them to keep the positive aspects of their culture and be proud of it. This work involves the development of organic farming systems, basic education, and organization building. Its goal of working for the protection of nature and sustainable use of the earth’s resources in the mountains of Misamis Occidental led PIPULI to also get involved in the protection and management of Baliangao’s coastal resources.

In 1991 the PIPULI Foundation chose Danao Bay as the site for a marine ecosystem protection program. Through the joint efforts of the foundation, some local fishers, the church and the local government, a 74-hectare sanctuary was established in 1991. The set-up of the sanctuary has improved the fisheries in Danao Bay. Mangroves have been replanted, blast fishing has diminished and the catch of the fishers has increased.

PIPULI chose for its approach the early establishment of a sanctuary, with secondary focus on organizing the fishers. The success of the project merits a closer look at the approach used.

The Project

The Misom Sea Sanctuary is one of the many sanctuaries established in the 1990s to address the problem of environmental degradation. The project offers a unique approach in terms of conceptualization and implementation.

One of PIPULI's regular activities was a two-week seminar on ecological awareness with participants coming from all over the Philippines. In 1990, a lay-leader from Baliangao attended this seminar. A part of the seminar was a visit to a mangrove area near Ozamis City. The lay leader observed that the mangrove areas near Ozamis are in very poor condition compared to a real mangrove forest, still intact, near his residence in Misom, Baliangao.

The PIPULI staff later paid a visit to Baliangao and were impressed, with the beauty not only of the mangrove area but also of the beaches, seagrass beds and coral reef. In the succeeding training, PIPULI made Baliangao an exposure site for participants where they helped replant mangroves in some of the deforested areas. In 1990, a workshop on mangrove ecosystems, jointly sponsored by the Netherlands Development Organization (SNV) and the British Volunteer Services Overseas (VSO) was held in Misom. Observations from the experiences in other coastal areas as well as sharing sessions with some of the fishers and the SNV/VSO fisheries development workers helped concretize the idea of designing a sanctuary area in Misom. Meetings were held with fishers from the four barangays closest to the sanctuary area. Half of them thought that the sanctuary is a good idea but the other half was against it. Although community support was not very high, the PIPULI Board decided to go on with the implementation phase and garner community support in the process. It helped that the Mayor of Baliangao was very much in favor of the project. On 31 July 1991 a municipal resolution was passed declaring a 150-hectare sanctuary in Barangay Misom. Thus began the Misom Sea Sanctuary project.

Project Objectives

Together with lay leader Dodong Agodolo and Baliangao parish priest Father Quarisma, PIPULI formulated the objectives for its program in the municipality.

The overall objectives of the program are:

1. To protect the unique mangrove forest in Barangay Misom from small-scale logging. The area could become a major source of seedlings for deforested mangrove areas in the region.

2. To restore the reef flat and coral reef as sources of life. Intensive fishing with explosives, poison, and compressors left the fisheries in Danao Bay with no place to spawn and grow. A sanctuary keeping the different ecosystems intact could help improve the fish stocks in the whole bay.
3. To remind the people within and outside the project area to live in harmony with nature. PIPULI believes that only if humans live in harmony with nature and see themselves as part of it can they survive and enjoy the beauty of the earth.

The specific objectives are:

1. To establish a marine sanctuary in coordination with government agencies, local officials and the community;
2. To effectively implement sanctuary rules through rigorous guarding; and
3. To organize the local communities around the issues of coastal resource protection and management.

Project Implementation

Initial Steps

Before its entry to the area, PIPULI had limited contact with the community and the local government. The parish priest helped introduce the non-government organization (NGO) to concerned groups and individuals. Through the church lay leaders, PIPULI started working in the barangays and established its own contacts. The local government welcomed PIPULI's presence, facilitated the public hearings in the barangays and later approved a resolution declaring the Misom Sea Sanctuary.

Sanctuary Establishment

There were 11 fishers who operated a *bungsod* (fish coral), within the area targeted for the sanctuary. These *bungsods* had to be moved outside the area. PIPULI negotiated with the fishers for this purpose. Nine of them agreed with the conditions that they would be hired to put up bamboo markers demarcating the boundary of the sanctuary, they would be hired as guards and they would get P150.00 for the work involved in transferring the *bungsods* outside the boundary of the sanctuary. The other two *bungsod* owners were not willing to cooperate. They received P3, 000.00 as compensation and eventually also moved outside the area.

In 1991, the boundaries of the sanctuary, officially called the Misom Sea Sanctuary, were demarcated by bamboo stakes. Some fishers and barangay officials from Barangay Landing, after being confronted with this new reality, approached the mayor, claiming that the area occupied by the sanctuary was much too big. The Mayor himself conducted an ocular visit after which a new agreement was made resulting in a 70-hectare sanctuary and a 25-hectare buffer zone. No fishing is allowed inside the sanctuary while only reef gleaning during daytime is permitted inside the buffer zone.

Two core areas were created within the sanctuary, one in the mangrove swamp and the other at a natural depression inside the intertidal zone. This place was called the locals as *lumlumay*, which literally means hatchery. This place served as a place for fish to hide during low tide. The core areas are off-limits to all human beings, including the project staff.

To demarcate the sanctuary, the bamboo stakes are anchored in the ground and placed 1.25 meters apart. A few centimeters above the high tide mark, a horizontally placed bamboo pole ties these stakes together. This pole serves as an effective fence against outrigger boats since they cannot pass in between two stakes.

Also in 1991, five local project staff and several guards were hired. These people underwent seminars on ecological awareness (two weeks), marine ecosystems (two weeks), and training facilitation.

Guarding the area became a difficult job at the start of the implementation of the sanctuary law. Anyone who entered the area had to be confronted, informed about the ordinance, persuaded to respect the vital role of the sanctuary. This demanded a lot of patience from the guards. Still, after several attempts at explaining the sanctuary's function and ordering people to leave the area, there were a few stubborn fishers who continued violating the municipal ordinance. These violations were reported to the police and the town mayor. They handled these cases in such a way that the violators no longer repeated their actions.

Towards Organizational Sustainability

With the sanctuary legally established and protected by hired guards, PIPULI next concentrated by hired guards; PIPULI next concentrated more on organizational sustainability. For this purpose four strategies were followed:

1. Gaining more community support to facilitate guarding and recruiting volunteer guards.
2. Formation of a sanctuary management board consisting of concerned citizens.

3. Formal recognition of the Baliangao Wetland Park by the national government as an Integral Protected Area System (IPAS).
4. Establishment of income-generating projects from which the people who looked after the sanctuary maintenance could gain a living

Gaining More Community Support

With the help of PIPULI, the church of Baliangao organized groups of lay leaders and church members actively involved in environmental rehabilitation in the four barangays around the bay. PIPULI conducted three-day seminars on ecology in these barangays, discussing the different ecosystems in the bay, the interrelationship between all creatures, the role and place of humans in these ecosystems, problems related to the over exploitation of the marine animals and possible solutions to these problems. The leaders of these groups also attended a two-week seminar on Ecological Awareness at the Bukagan Ecological Association (BEA) in Ozamis City. During this seminar ecological issues were explained further and related with one's own personal lifestyle and ambitions.

Funds were made available for local groups who were interested to put their knowledge into practice. These were used for the establishment of a mini-sanctuary in Barangay Tugas, a pottery project in Misom and seaweed and oyster culture project in Sinian. One group engaged in mangrove reforestation without any financial assistance from outside. The seaweed and oyster culture area also served as a mini-sanctuary since fishing is prohibited inside.

Towards the latter part of 1993 the Misom, Tugas, Sinian and Landing Multi-Purpose Cooperative (MITUSILA) was formed with assistance from PIPULI. MITUSILA is still in the process of registration but a lot of its members are now engaged in voluntary guarding of the sanctuary.

Formation of a Sanctuary Board

In the initial stage, the PIPULI Foundation played a major role in managing the sanctuary. But from the start it already had a vision that in the long run the management of the sanctuary would have to be placed in the hands of the community. Hence, a sanctuary management board was eventually formed in March 1994 to operationalize this vision. The board consisted of 15 people, namely the Municipal Mayor, one Department of Environment and Natural Resources (DENR) representative, one community representative, four guards, four barangay captains, one

staff of PIPULI Foundation, one church parish representative and one representative of the Baliangao School of Fisheries. During a five-day workshop in April 1994 this board developed their own vision, mission and goals. (In 1995 the number of board members was reduced to nine, with the number of guards reduced to one, and the number of barangay captains to two).

The sanctuary-board members meet once a month and guide the four persons in charge of the daily operations of the sanctuary. The board members are also active in bringing sanctuary-related issues to the attention of the municipal government. Recently, the board members began soliciting support for the sanctuary from private individuals.

Recognition of the Sanctuary by the National Government

Realizing that the Misom Sea Sanctuary will gain further protection and generate needed funding from national government, PIPULI applied for the recognition of the project as an Integrated Protected Area Systems (IPAS). The Department of Environment and Natural Resources (DENR) facilitated this request. Upon DENR's suggestion a mangrove-lined river close to the sanctuary was included in the proposed IPAS. A new name, the Baliangao Wetland Park, was also given to the project. Upon approval by Congress, the IPAS area will again change its name into Baliangao Seascape and Landscape but presently the name Baliangao Wetland Park (BWP) is used.

Income-Generating Projects

A fourth strategy to ensure organizational sustainability is developing income-generating projects related to the sanctuary. This is particularly important after external funding ended in March 1995.

Four former PIPULI staff formed a working collective which manages various income-generating projects that include:

- Collecting fees from BWP visitors (Since June 1991, more than 5,200 people have visited the BWP.)
- Crab fattening project
- Fish marketing project (still to start)
- Ecotourism

The Ecotourism project is envisioned to become the main income-generating activity. Tourists will be guided through the mangrove. They can ride a boat and snorkel inside the

sanctuary, accompany fishers on their fishing trip, stay overnight in a nice cottage inside the mangrove and experience the tranquility of nature around them.

Resource Management Measures

Even prior to the introduction of the sanctuary two resource management measures were already being implemented in the municipality. One management measure prohibited the cutting of mangrove trees without permission from the mayor. As a result, harvesting of mangrove trees was only allowed for construction of local houses, no longer for selling outside the municipality. The ordinance prohibiting the cutting of mangroves was instigated by new DENR administrative orders covering mangroves.

A second management measure was specifically intended to protect the rabbit fish (*Siganid* sp.) or *danggit*. This fish constitutes half of the catch of the fishers from Danao Bay. In the week following new moon this fish is caught in great numbers. In 1988, the catch of rabbit fish was almost nil for two consecutive months. The fishers and the government believed that this was due to the overfishing of *danggit*, notably during its spawning time (recruitment overfishing). Hence, they thought that imposing a fishing ban (locally known as ban period) would help solve this problem.

To protect the rabbit fish, a fishing-ban period was introduced in 1988. The **ban period** starts at 8 a.m. of the third day after new moon and ends 48 hours later. It protects the *danggit* during its spawning period when this fish is most vulnerable since it migrates over big distances to and from spawning areas. Absolutely no fishing (even of other fish species) is allowed within this period. This management measure is enforced in the municipalities of Baliangao and Plaridel. No harvesting is permitted even inside the fish corals during the ban period. Rabbit fish that gets inside the *bungsod* will still spawn before being harvested.

Unfortunately, these management measures are all in the hands of the mayor who sometimes revokes the measure without prior notice. Although this seldom happens, a fiesta (village celebration), tax payments or elections can be a reason for a suspension of the management measures. Blast fishers can also be pardoned by the mayor, out of “compassion for their families”.

With the arrival of the PIPULI program in Baliangao, new management measures were introduced in the form of a marine sanctuary and mangrove reforestation. These measures were enforced by the PIPULI staff with the help of the sanctuary guards and cooperating community members. PIPULI believed that a community-based approach might achieve better results than a government approach. Through community organizing and exposures, the fishers are able to gain

confidence so they can start working on a truly community-based coastal resource management (CBCRM). PIPULI recruited a fisher-organizer who worked with the staff in the communities. Through their efforts, a coastal resource management (CRM) seminar and a general management planning seminar were conducted in the barangays in which the participants formulated a Danao Bay management plan. A cooperative and a Citizens Crime Watch group were also formed. An exposure trip to Apo Island near Dumaguete City was arranged for the graduates of the CRM seminar. Here they learned more management measures to regulate the fisheries, like mesh size regulations and agreements on the kind of nets to be used and fishing intensity.

Table 3: The Number of Species, Number of Individuals and Length Size of Fishes Encountered During Surveys in 1993, 1994 and 1995 (Silliman University Marine Laboratory)

Criteria	1993	1994	1995
Number of Fish Species	43	75	85
Number of Individuals per 400 m ²	364	617	692
Length of Size of the Fishes (cm)	3-15	2-36	n.a.
Macrofauna (shells, seacucumbers, Sea-urchins, etc.), number of species	28	48	74

Present Situation

As of March 1995, guarding the sanctuary is done on a voluntary basis. Until now, six fish coral owners are engaged in guarding for two nights a week. They are assisted by a group of 40 volunteers who have committed to guard the sanctuary once or twice a month. During nights when the tide is lowest and a lot of fishers are out fishing these guards are assisted by the four BWP staff (formerly PIPULI staff).

Impact of the Sanctuary

The Marine Laboratory of Siliman University undertook a resource assessment of the BWP in March 1993, May 1994 and March 1995. The results of the surveys show an increase in the number of species encountered during a diving survey, an increase in number of individuals and a threefold increase in macro fauna species found inside the BWP (see Table 3). All these indicate that the sanctuary has been effective in restoring the coastal environment.

Based on observations of the fish coral users in 1995, their catches have doubled and species they have not caught within the last 10 years have reappeared.

Besides improved catches, the effect of the sanctuary on the self-esteem of the fishers involved is very positive. The guards have become active community members and the sanctuary has given them new hope. Before the establishment of the sanctuary some fishers saw their catches dwindling and the environment degrading. With the sanctuary they see a restored environment and an increase in catch. Also, visitors to the project site see it as a sign of hope and the idea of a sanctuary has been duplicated in several other municipalities in the province.

Fishing with explosives has decreased in Danao Bay. Before the establishment of the sanctuary, several explosions could be heard on a calm day. Now, blasts are heard only once in a while. Several blast fishers have been arrested by the BWP-guards and their cases forwarded to the mayor.

Difficulties Encountered and Lessons Learned

The Need for Community Participation

PIPULI's approach was to proceed directly with the establishment of the sanctuary, without much community support in the beginning. This allowed for fast project implementation and demonstrated visible results quickly. There were several reasons why PIPULI chose this somewhat top-down approach:

1. The people of Baliangao have a feudal sense of hierarchy and almost nothing gets done without the approval of the mayor. In this sense the method is adapted to the local situation.
2. It is very hard to organize people around an abstract idea of coastal resource management or sanctuary.
3. With the physical set-up of the sanctuary, people would soon see the results.

The project has shown that, although this approach can be useful at first, at a certain stage community support and involvement has to be generated for the sanctuary to become sustainable.

Organizing fishers around the issues of better resource management was, in PIPULI's view, not the biggest problem. Most problems surfaced during implementation. At this stage, the staff encountered animosity from outsiders, lukewarm participation of the local law enforcers and problems among the people themselves. It was during the implementation that PIPULI learned the most. In-depth resource assessments and community analysis were not given emphasis. Instead, the staff tried to improve community participation while implementing activities. This sometimes created animosity at the start but it also prevented endless series of meetings without a clear agenda. Meanwhile, extra efforts were exerted in solving problems that came up every now and then. It was

observed that most of these problems were a result of misunderstanding and were by means of dialogue either directly or through intermediaries.

At a later stage, with the long-term sustainability of the project in mind, organizing and education became a bigger component of the program. This increased the acceptance of the sanctuary among the fishers. Education focused on the relationship of people with their (marine) environment. Some of the participants were blast fishers who, after the seminars, stopped fishing with explosives.

In the coming years, PIPULI will work towards CBCRM in Danao Bay. Specifically, the Foundation will try to organize fishers around a specific resource or group of resources which they will manage. The existing sanctuary will be of great help in the organizing process. The sanctuary is a symbol of strict law enforcement by local people. It can give the fishers the assurance that, once they have made resource management agreements among themselves, these will also be enforced.

Limitations of the Sanctuary

Equity of Benefits

As the fisheries increased in the sanctuary it also increased the catch of the *bungsod* owners who have their traps close to the sanctuary. However, the effects and benefits towards the fishers in the whole of Danao Bay are minimal. Dynamite fishing has decreased but beginning 1992, trammel net fishing, locally known as *triply*, which uses very small mesh-sized inner nets dramatically increased. These fishers often fish close to the sanctuary boundaries, catching a lot of juvenile fish. These activities might very well negate the positive effects of the sanctuary on the fish catch further out in the bay.

Fishers who do not use trammel nets are now asking for regulations on the use of these nets. It is the fishers themselves who clearly express the need for improved management (see Table 5). They, however, look up to government to manage the coastal resources.

Law Enforcement

At the start, the project experienced difficulties in keeping fishers out of the sanctuary area. Community consultations had not been very extensive and some organizing only took place in Barangay Misom, the barangay in which the sanctuary is located. Due to the efforts of the guards and especially the BWP-manager, individual violators were warned and as a result they left the area. Several times during the first year, groups of violators entered the sanctuary. They could not be

handles by the BWP-manager and guards. These violators had to be handled by the municipal government and after a talk with the Mayor; they no longer repeated their actions.

Since the municipal ordinance creating the BWP did not have provisions on penalties for violation, the guards did not have any power. Still the sanctuary could be maintained through “talking” people out of the area. The fact that the mayor was supportive of the project was essential in this case. In August 1995, a Municipal Ordinance specifying penalties for violation of rules regulating the sanctuary has been promulgated and approved by the Municipal Council. This will hopefully facilitate the guarding of the sanctuary.

Long-term Sustainability

At the moment, the BWP is not yet self-sustaining. The income from the projects is still too small to pay for a staff of four. Congress has not yet approved the IPAS status of the BWP and the board of the BWP is not yet very assertive in protecting the sanctuary although monthly meetings are regularly attended.

Income may increase with the establishment of ecotourism facilities. The number of staff may still have to be decreased. The crab-fattening project will degenerate more income once the supply of mangrove crabs increases.

Voluntary guarding will continue. In a sense guarding has become easier in the last few years, since more and more fishers (90%) accept and appreciate the sanctuary. Guarding, however, will always be needed. The value of fish and shellfish in the area is so high that the temptation to harvest the fisheries will always be there. With the integration of the BWP into a management plan for the whole of Danao Bay, the guarding of the sanctuary and enforcement of resource management agreements in the bay could be done simultaneously, reducing the costs for guarding the sanctuary.

A small budget will be allotted in the 1996 Baliangao municipal budget of the Department of Agriculture (DA).

Critical Factors for the Success of the Program

Local government support in law enforcement, and moral support for rallying popular community support is very important. The guards of the sanctuary have as their only weapon their ability to explain the role of the sanctuary to fishers fishing inside the sanctuary. When, however, faced by armed fishers or groups of violators refusing to leave the area, there is

nothing left to do but to report the violators to the municipal authorities? And of course, these should support the guards and punish the violators. Because of the rather feudal relations in the community, projects initiated with the consent of the mayor are easily accepted by the community.

Committed leadership of the people in-charge. Without the efforts exerted by the manager of the sanctuary, Iglorioso Agodolo, the sanctuary would already have collapsed under the pressure of the fishers looking for a bountiful catch. Work for the sanctuary is oftentimes is a 24-hour a day job, requiring real commitment from those in-charge. In case of violations, the actions of the main person in-charge would set the example for the other guards. Being rather strict and straightforward, the main person-in-charge set the right example in dealing with violators.

Outside funding for 3-5 years. The fishers are not in the position to spend money on organizing themselves, even if the need is felt. Given the approach used, guarding of the sanctuary has to be done by paid guards. Voluntary guarding as experienced by other programs is probably easier in the case of island communities and small sanctuaries and even then it takes a lot of time before the sanctuary actually functions. In the case of easily accessible, mainland coastal areas with no experience in sanctuary maintenance (specially big sanctuaries), guarding by paid guards could be a solution. Like in the case of the BWP, initial two or three years of outside assistance. The results of the sanctuary in terms of increased catch could be the bass for future voluntary guarding.

Remaining Question

The fishers themselves now see the need for fisheries management as shown in the answers given to the question: “If you experienced a decrease in catch, what would be the reason for this decrease?” (see Table 4). Although only six fishers mentioned specifically “**no management system**” as a reason for the dwindling catches, the other reasons given like: “too many fishers”, “use of destructive gears”, and “intrusion of large-scale fishing boats”, can also very well be grouped under ‘no management system’.

Table 4: Reasons Mentioned by the Fishers for the Decrease in Catch

Reasons for Diminished Catches	Number of Respondents
Too many fishers	32
Use of explosives and poison	18
Gear with small mesh sizes	16
Large-scale fishermen	14
No management system	6
Other reasons	10
Total	94

Source: Fisher's response to a questionnaire handed out during a management seminar in December 1994.

Table 5. Suggestions Made by the Fishers to Improve the Fisheries Situation

Suggestions for Improvement of the Situation	Number of Respondents
Stopping of fishing with dynamite and poison	51
Mangrove reforestation and protection	24
Banning the use of small-meshed nets	18
Organizing and uniting fishers	13
Banning fishing by outsiders	13
Artificial reef and coral reef protection	6
Making other sanctuaries	6
Stopping of harvesting of shells in mangrove areas	1
Fishing farther into the ocean	1
Continuing ban period	1
New fisheries laws	1
Others	5
T o t a l	140

Source: Fishers' responses to a questionnaire handed out during a management Seminar in December 1994.

Also the suggestions made on how to improve the fisheries situation show a clear quest for improved management of the resources (see Table 5).

This request for improved management seems to be in contradiction with an existing notion that fishers are concerned only with what they are going to eat today, and do not worry about tomorrow's catch.

One explanation for this contradiction might be that the fishers' quest for management is directed at the other fishers, not at themselves. Another explanation is that a section of the fishers see the need for improved management but, since the government is not capable of strictly implementing management measures, they see not authority which can provide this management. Without this authority, there is not much more they can do than to struggle for their daily catch.

If the second explanation is correct then it would be enough for the intermediary organization (PIPULI) to provide an authority (community-based) that is capable of implementing management measures. This task is difficult enough. In case the first explanation is correct, a cultural change would be needed. We believe that a good portion of the fishers, working close to nature, see the long-term effects of short-term decisions on the future fish catch. In Baliangao, a shift from an outside authority to a community-based authority would require a major and even difficult change, but one that is not impossible to make.

Reference:

Siliman University. "Report on the Conduct of the First, Second and Third Resource Assessment of Baliangao Wetland Park, Baliangao, Misamis Occidental. Siliman University Marine Laboratory, Siliman University, Dumaguete City.