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The Economic Benefits of Marine Protected Areas

This paper argues that no-take marine protected areas (MPAs) can be sustainable if they offer direct and indirect economic benefits to all members, especially fishing households which have been displaced from their traditional fishing grounds. A majority of the respondents of the study agreed that the existing MPAs have brought them a number of benefits. Direct benefit comes from improved fish catch brought about by MPA spillover effects and monetary incentives derived from user fees paid by tourist divers; indirect benefits include alternative livelihood assistance. Non-fishing members of fishers' associations who manage and enforce the MPAs as well as non-member fishers also enjoyed these benefits. The findings of this study show that proper financial management and appropriation of the income of fishers' associations is necessary to sustain the economic benefits of MPAs.

INTRODUCTION

The effectiveness of fishery management and marine biodiversity conservation of MPAs, which consists of the no-take (core) zones from which nothing is removed, and the take zones in which fishing with non-destructive fishing gears are allowed, is widely acknowledged both in tropical and temperate countries (NRC 2001). For example, marine biologists have documented that fish yield in Apo Island, Dauin, Negros Oriental has significantly improved or has remained stable due to its MPA (Maypa et al., 2002; Russ et al., 2004; Alcalá et al., 2005). The Apo fishers who enforced their MPAs since 1982 are noting increased catch per unit effort while experiencing decline in fishing effort and change in fishing patterns (Maypa et al., 2002). They also enjoy tourism-generated benefits after the island has become a popular dive destination as a result of conserved marine biodiversity (Bernardo, 2001).

The experience of Apo Island highlights the findings of White and Cruz-Trinidad (1998, pp. 31-33) about the benefits of protecting the coral reefs and managing coastal resources for the sake of

biodiversity and the survival of coastal communities. White and Cruz-Trinidad argue that putting economic value to coastal resources will encourage local government leaders to put importance on their management and long-term protection. As a consequence, the municipal government of Dauin, inspired mainly by the success of Apo Island MPA, began establishing more MPAs off the mainland in the late 1990s. For the record, Dauin, despite a shoreline of only 10 kilometers, is the only municipality in the province that has enforced nine MPAs totaling to about 52 hectares (range=2 to 9 has) in seven of its eight mainland coastal barangays (see Fig. 1).

Historically, the CRM Plan of 2001 provided Dauin the legal basis for zoning its coastal areas and for establishing more MPAs (Municipality of Dauin, 2001). On January 3, 2005, the municipal council amended the Plan and incorporated this into its amended Municipal Revenue Code (Municipality of Dauin, 2005). The amendment does not only strengthen the regulations covering the use of the coastal zones and MPAs but also expands and increases the price of admission tickets for the touristic use of MPAs. The ticketing collection system was introduced by the Coastal Conservation Education Foundation, Inc. (CCEFI), a Cebu-based non-government organization working in Dauin, as an offshoot of the experience of Gilutongan MPA in Cordova, Cebu. Presently, this revenue-generating aspect of Dauin MPAs explains the incorporation of its amended CRM ordinance into the Municipal Revenue Code. What is more interesting about the amendment is how it enables the local government of Dauin to generate revenues from and for its protective conservation effort (Oracion, 2005, p. 152). Despite the central role this revenue-generating aspect of MPAs occupies in the field of marine biodiversity conservation and coastal and dive tourism, questions about its economic benefits for subsistence fishers continue to be asked.

Using the experiences of members of fishers' association of Dauin as basis for this study, this paper looks at the following issues: (1) which alternative livelihood programs are available to local fishers when they express approval or support of the establishment of MPAs; (2) whether they have enjoyed the economic benefits promised to them when the MPAs were being planned; (3) and whether they are willing to support MPA management given the benefits associated with such activity. However, this paper will focus more on the process and equity issues¹ rather than on the actual quantity of MPA benefits. Later in this paper, the discussion will examine how the financial management

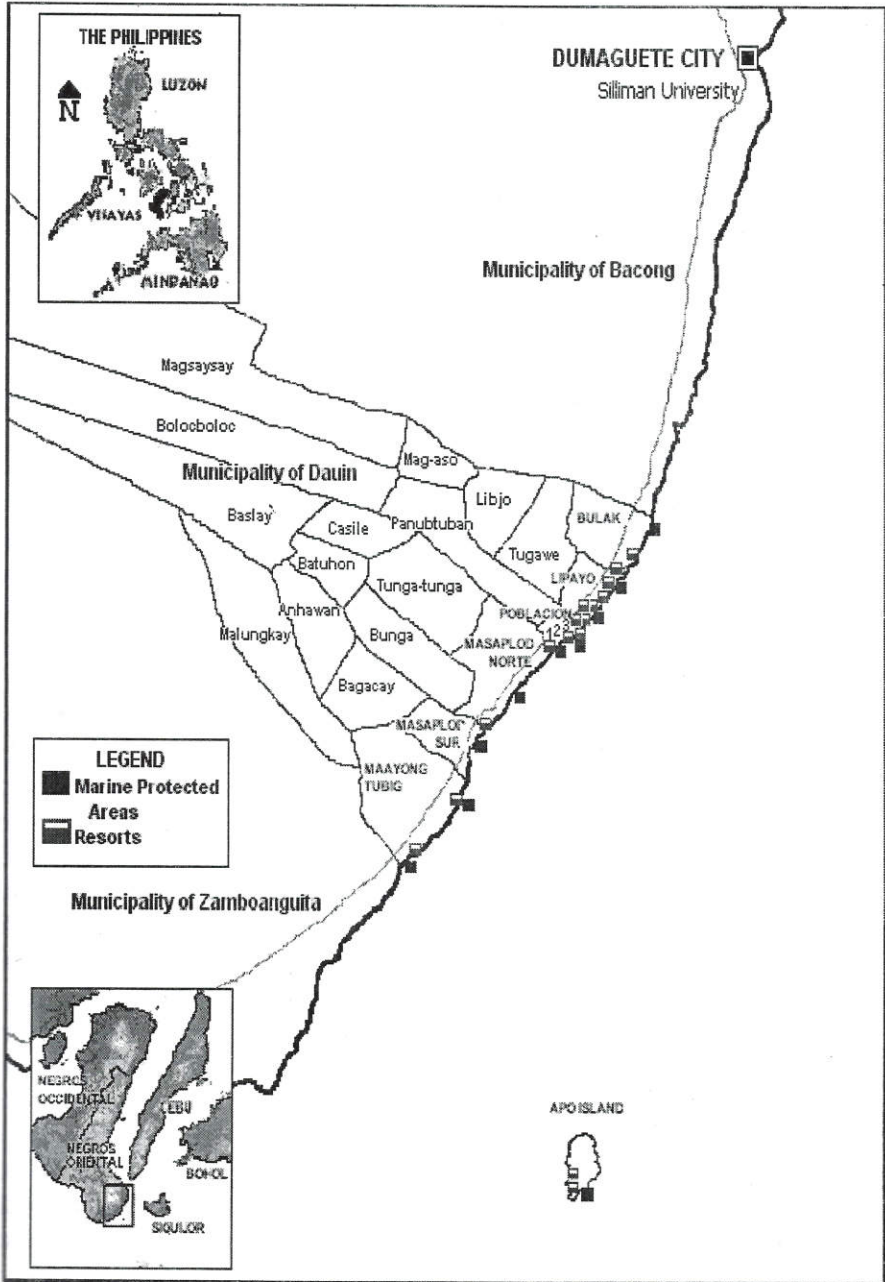


Fig. 1. The MPAs and resorts on mainland Dauin and Apo Island.

of fishers' associations may be improved in order to sustain the economic benefits that MPA members are currently enjoying.

THEORETICAL CONSIDERATIONS

Coastal resource management programs involving the establishment of no-take MPA as a tool necessarily alter the tradition of open and free access to a commons (NRC, 2001; White et al., 2002). For this reason, subsistence fishers who rely heavily upon the coral reefs for fishing initially find protective conservation program burdensome because this means giving away certain fishing access rights and privileges (Eder, 2005; Oracion, 2005). Trade-offs such as those between immediate and long-term gains make no-take MPA a controversial imposition on poor small-scale fishers who, unlike commercial fishers engaged in deep-sea fishing, struggle to make a living using limited fishing technology (Green et al., 2004; Luna et al., 2004; Eder, 2005).

Conflicting perceptions in resource use usually create tensions between those behind MPA management regime and those who cannot appreciate the delineation of certain marine space as protected for future community benefits (NRC, 2001; Oracion, 2003). These conflicts are more seriously felt when there are no management structures and procedures in place. Evidence has shown that in a free regime where everyone gets what resources they want in excess, deterioration of fishery and marine resources has been most conspicuous. Pomeroy et al. (2007) observed that as nearshore fisheries continue to decline because of overfishing, conflicts and social tensions increase requiring resource managers and decision makers to identify more appropriate governance and public policy mechanisms. This point had been raised by Luna et al. (2004: 349) who remarked that intersectoral and intrasectoral conflicts are the intertwining results of the lack of collaborative arrangements among stakeholders and inequitable distribution of benefits from resource use.

MPA co-management regime is generally accepted as a better option for resolving resource use conflict. Besides promoting a sustainable resource use, it also enables various stakeholders to take part in decision-making as well as allows them access to benefits (e.g., Katon et al., 1997; Alcalá, 2001). Thus, the development of an MPA should not be a purely technical process. To be successful and sustainable, it should balance ecological and socioeconomic considerations (Bernardo, 2001; NRC, 2001; Pomeroy et al., 2003; Mascia, 2005). This means MPAs must have ecological impacts without causing socioeconomic displacement. Studies have shown that when human well-being is set aside, the MPA will be meaningless to poor fishers whose main and immediate concern is food on the table.

Likewise, when the promised economic benefits of MPA are neither realized nor personally felt, or, if present, are not equitably distributed, MPAs will absolutely have no meaning for marginalized groups (Oracion, 2005, p. 153).

A World Bank Report (2006, p. 41) reiterates that although improvements in the ecological conditions of coral reef may influence the willingness of policy makers to support MPA projects, it is the equitable distribution of MPA benefits that is more important in gaining the long-term support of resource users. The report therefore concludes with an urgent call for MPA management to immediately create zoned areas as alternative to no-take MPAs as a way of addressing the socioeconomic needs of poor, marginalized coastal communities (World Bank, 2006, p. 91). In cases when the MPAs to be established are too small to be zoned, providing alternative income activities to those affected fishers is seen as a possible option to minimize trade-offs. Evidence has shown that affected fishers are willing to support MPA management when they find a better alternative to fishing in already depleted coral reefs, which can sustain their immediate needs while they wait to reap the rehabilitative effects of protective conservation through fish spillover. It should be underscored, however, that these alternative economic activities must be compatible with rather than antagonistic to the goals of MPA (e.g. seaweed farming, Sievanen et al., 2005). A World Bank Report (2006, pp. 85, 94) argues that,

MPAs cannot be sustained in the absence of alternative income-generating activities that can absorb the excess labor from areas newly closed to harvesting. Such activities do not need to be linked to the marine environment but they need to be something that fishers can and want to do... The channeling of excess labor formerly involved in resource extraction through the creation of new small and medium-size enterprises and demand for services will be essential to the success of any efforts to scale up governance regimes that restrict access or use for the poor.

In reality, however, this may be only easier said than done because there are other compounding social issues, such as the presence of free riders, involved in distributing MPA benefits (Eisma et al., 2003, p. 181). Free riders are individuals who eventually benefit, either directly or indirectly, from opportunities available to fishers' associations because of the MPAs. However, they have no investment in them in terms of management effort and the opportunity cost that results from fishing ground reduction. One of the free riders are private tourism brokers. They are often the first to benefit from no-take MPAs

which, although restricted to fishing, are open to recreational diving (Alcala & Cadeliña, 2004, p. 28; Oracion et al., 2005, p. 401). They sell the MPAs as dive destinations to tourist divers who are paying guests of their resorts and dive shops.

However, the issue of tourism sector as a free rider can be resolved by imposing user fees in exchange for access privilege to the MPA and the enjoyment of its biodiversity as spectacle (White et al., 2000, p. 599). This sector can substantially contribute in financing the maintenance and enforcement of MPAs given the limited budget of a host local government unit (Milne and Christie, 2005). MPA user fees can also fund the alternative-income generating activities for displaced fishers. Thus the tourism revenues and the fish spillover effects of MPAs can strongly motivate local government units to invest in CRM programs (White & Cruz-Trinidad, 1998).

Another group of free riders are the non-fishers who join fishers' associations managing the MPAs. They take away some of the benefits from actual fishers who are already burdened by fishing regulations and fishing ground reduction. They are considered free riders because they also stand to benefit from MPA spillover effects (Pomeroy et al., 2005, p. 376). Unlike the fishers, however, non-fishers have no fishing interest to protect or to sacrifice. They also constitute the group that shows eagerness to agree to the establishment of MPAs or to the prohibition of fishing within the buffer zone (Oracion, 2005). Fishers, on the other hand, tend to show more reticence in agreeing to join any group promoting MPAs unless they are convinced that this will be for their own good in the long run (Oracion, 2006). This difference in perspective often creates a rift within an association of mix-membership, causing internal division and undermining the success of MPA management. These potential problems notwithstanding, there is a positive side to accepting non-fishers into the association. For one their participation increases social cohesion in the efforts to protect a commons. Even though they are not involved in fishing for a living, they are also stakeholders of the community's coastal and marine resources, albeit they use them in different ways.

Compared to the technical delineation of a portion of a marine space as protected zone (Alcala, 2001; Oracion, 2005), the socioeconomic considerations of MPAs are far more complex to manage. Policy makers and various resource users, both fishers and non-fishers, have diverse interests to pursue and protect. Failure to consider trade-offs and to make compromises renders MPA success and sustainability uncertain (NRC, 2001). In order to generate popular

support from stakeholders, certain MPA benefits have to be offered. At the same time, it is imperative to convince policy makers as well as resource users about MPA's long-term ecological and economic gains. Providing alternative income activities can serve as initial drivers for resource users to support MPA establishment and management. Studies (White et al., 2000; Alcala & Cadelina, 2004) have shown that providing access to actual monitoring data on MPA long-term benefits is necessary for sustaining the enthusiasm of resource users. Knowledge of the workings of the MPA and its ecological and economic benefits is likely to convince resource users to support it, thus assuring its sustainability.

METHODS

The study covers only members of fishers' associations managing the MPAs located in the barangays of Poblacion 1, Masaplod Norte, Masaplod Sur, and Maayongtubig (see Fig. 1). Based on the year these MPAs were actually established (not when their respective ordinances were passed), the oldest is Masaplod Norte (1995), followed by Poblacion 1 (1996), Maayongtubig (2000), and Masaplod Sur (2002). At the time of the study, all these fishers' associations have 180 members based on the list provided by their respective officials. The fishers' association of Masaplod Norte has the highest percentage of membership (42.94%) followed by Poblacion 1 (24.54%), Masaplod Sur (17.18%), and Maayongtubig (15.34%) respectively. Seventy-four percent of all the members are males while the females comprised only 26 percent. The fishers' associations of Masaplod Sur and Maayongtubig are composed only of male members. While Masaplod Norte is predominantly male (84.29%), Poblacion 1 has 60 percent female members (see Table 1).

Considering the financial and time constraints in the conduct of the study, only 30 percent or 49 out of 163 respondents constituted the target sample size. Sampling was based on the list of association members and the required sampling quota was distributed proportionately per barangay. This means that more samples were derived from fishers' associations with higher memberships. Consequently, the sampling distribution of this study shows that more respondents come from Masaplod Norte ($n=21$) because it is the biggest association in terms of membership. The sample sizes of the rest of the barangays are as follow: Poblacion 1 ($n=12$), Masaplod Sur ($n=9$) and Maayongtubig ($n=7$).

During the sampling process, the names of all association members per barangay were assigned numbers and written on sheets of bond paper, though not arranged in alphabetical order. The samples were drawn using random start and interval to locate the number of the corresponding association members. This procedure was done per barangay until the required sample size for a particular barangay was completed. Substitutes were also drawn in cases where the original samples could not be located after several followups, or refused to be interviewed for some reasons.

Table 1. Information on the memberships of fishers associations

INFORMATION/ SAMPLE SITES	POBLACION 1	MASAPLOD NORTE	MASAPLOD SUR	MAAYONGTUBIG	TOTAL
Number of Association Members	40	70	28	25	163
Percent Relative to Total	24.54	42.94	17.18	15.34	100.00
Percent of Male Members	40.00	84.29	100.00	100.00	81.07
Percent of Female Members	60.00	15.71	0	0	18.93
Sample Size Based on Total	12	21	9	7	49

A structured interview schedule containing both close- and open-ended questions was used in data gathering and administered by two research assistants. The questions were originally written in English and later translated into Cebuano, the local dialect. Preliminary interviews with association officials were conducted and the information they provided served as basis for formulating the questions included in the questionnaire. The respondents were interviewed at home or at the guardhouse of fishers' associations located in front of the MPAs. The completed questionnaires were edited to ensure the consistency and completeness of entries as well as to check for possible data gaps. The research assistants were required to explain those entries that appeared dubious. When necessary, they had to go back to the field and re-interview the respondents. The data were encoded into the Microsoft Excel Program for descriptive statistical analysis.

RESULTS AND DISCUSSIONS

Demographic profile. The average age of the respondents is 45 years

old. The youngest is 20 years old while the oldest is 73 years old. About 82 percent are males while only 18 percent are females. Gender asymmetry characterizes the distribution of membership among fishers' associations because fishing has been traditionally viewed as a male occupation. Seventy-three percent are married while 27 percent are single. The respondents' households have an average size of 5.10, which is higher compared to the average household size of 4.42 in all coastal barangays of Dauin (SCFHP, 2004). The largest households have 12 members. On the average, all the respondents have nine years of formal education or have reached second year in high school. More specifically, 37 percent have attended or completed elementary education, 43 percent have attended or completed high school education, and only 20 percent have attended or completed college education.

Livelihood activities. The livelihood activities of respondents' households before and after 2000 were compared. The year 2000 is highly significant because it marked the passage of the first MPA ordinance for the mainland, specifically for Maayongtubig. Also in 2000 the original CRM Plan was prepared and subsequently approved and enforced in 2001. Therefore, the CRM Plan is presumed then to have affected those livelihood activities that have direct links with the utilization of coastal and marine resources. The changes in the number of households engaged in particular livelihood activities after 2000 may be partly due to the implementation of the CRM Plan, especially the establishment and enforcement of MPAs. However, it must be noted that not all households of members of fishers' association are involved in fishing as their source of livelihood.

Table 2 shows that while there is a decrease in the number of households engaged in farming, there is an increase in the number of households whose members engage in activities not directly related to planting as well as in off-farm employment like raising animals. The households engaged in fishing increased only a bit but the number of those with members employed as *bantay dagat* (sea wardens) increased significantly after 2000. As of April 19, 2005 all the coastal barangays in Dauin with MPAs employed a total of 54 deputized sea wardens (Oracion, 2006, p. 65). These sea wardens receive modest honoraria from the municipal government and barangay and fishers' associations where they are residents and members, respectively. Funds for the honoraria are taken from MPA user fees. It must also be known that those households engaged in raising animals like pigs and goats actually received support from the provincial government

Table 2. A comparison of household livelihoods before and after 2000

LIVELIHOOD	BEFORE 2000 (a)	AFTER 2000 (b)	DIFFERENCE (b-a)
Fisher	27	29	2
Farmer	26	21	-5
Raising animal	21	27	6
Carpentry	6	7	1
Sari-sari store	6	5	-1
Barangay official	4	4	0
Laborer	3	0	-3
Private employee	2	0	-2
Jeepney for hire driver	2	3	1
Motorcycle for hire driver	2	2	0
Government employee	2	0	-2
Fish trader	1	0	-1
Domestic helper	1	3	2
Charcoal maker	1	0	-1
Remittances from children	1	1	0
Bantay dagat	0	5	5
Coconut harvester	0	2	2
Soft broom maker	0	1	1
Caretaker of fighting cocks	0	1	1
Operator of a beach resort	0	1	1

that assisted the MPA program of Dauin. There were even households that joined the fishers' associations allegedly to avail of the animal dispersal program (Oracion, 2006, p. 69). Nonetheless, the alternative livelihood program has served as attraction for locals to rally behind the MPA management.

MPA impacts on fishing and livelihood assistance received.

Another study (Oracion, 2005, p. 152) conducted in two coastal barangays of Dauin has already established the fact that MPAs had negatively impacted fishing activities in terms of fishing ground and gear reductions. Respondents, who were members and non-members of fishers' associations, were asked to give the number of fishing grounds and fishing gears they used before and after the establishment of MPAs in their respective barangays. Table 3 shows negative percentage changes in both the number of fishing gear used and the number of fishing grounds when there were already MPAs. This suggests that the restriction of fishing activities by MPAs has resulted in reduced catch. Consequently, fishers were forced to spend more time in non-fishing endeavors, often as beneficiaries of alternative livelihood programs.

Understandably, the members of fishers' associations experienced the impact of fishing ground restrictions and gear reductions more immediately than the non-members.

But how many of the sample households in the present study

Table 3. Impacts of MPA on the number of fishing grounds covered and gears used

Fishing Information	MEMBER FISHERS			NON-MEMBER FISHERS			TOTAL
	Before MPA	After MPA	% Change	Before MPA	After MPA	% Change	% Change
Average number of fishing grounds	2.57	1.95	-24.12	2.52	2.38	-5.56	-14.84
Total number of fishing gear used	147	90	-38.78	123	120	-2.44	-20.61

(i.e. members of fishers' associations) who received livelihood assistance are directly involved in fishing? It is important to establish this fact so that those directly burdened by the reduction of fishing grounds as a result of MPAs are provided alternative livelihood opportunities. The data show that only 39 percent or 19 of the sample households enjoy livelihood assistance and 58 percent or 11 of these households are actually engaged in fishing. This indicates that not all

members of fishers' associations and beneficiaries of livelihood assistance engage in fishing as a main occupation. This suggests that these individuals have been strongly encouraged to become members fishers' associations mainly because of the benefits they stand to gain. In the animal dispersal project for instance, eight of all household beneficiaries availed of goats, seven availed of pigs, three availed of money, and one availed of fertilizer and seed assistance.

For members of fishers' associations, the Environment and Natural Resources Division's animal dispersal project is the number one source of livelihood assistance. ENRD also assists the local government of Dauin in organizing the fishers' associations and provides technical assistance in the establishment of MPAs. Seventy-four percent of the 19 beneficiaries of livelihood assistance included in the survey are recipients of the animal dispersal project. This is intended to compensate fishing households for possible loss of income resulting from the conversion of their favored fishing grounds into MPAs. Meanwhile, 26 percent have received livelihood assistance from the municipal and barangay governments, the Silliman University Angelo King Center for Research and Environmental Management (SUAKCREM), the Silliman University Extension Program (SUEP), and from a family member. The last three provided recipients financial assistance to purchase pigs to raise and to start a small (*sari-sari*) store.

Eighty-nine percent of beneficiaries received livelihood assistance in the form of animal loan. Eleven percent received various assistance either in the form of a donation of fertilizer and seed assistance from the municipal government or as cash provided by family members. None of the dispersed animal was bought with money from the funds of the fishers' associations. Meanwhile, those who received cash loans from SUAKCREM and SUEP were expected to pay back with a minimal interest. At the time of the study, the beneficiaries of money and animal assistance have been engaged in their livelihood projects for about two years (1.87 years) and expected to continue for a maximum period of five years.

Seventy-nine percent of the beneficiaries, of which 53 percent are from fishing households, claimed that this form of livelihood assistance had provided them alternative sources of income. For other respondents, the alternative livelihood activities had little impact in their household expenses. A respondent who had just started to engage in an alternative livelihood activity had, understandably, no conclusive response. In other words, time is an important element in determining whether or not the beneficiaries will find the alternative livelihood

programs of any significant benefit. It must also be noted that none of the livelihood assistance promoted the use of marine and fishery resources. Therefore, if more fishing households avail of alternative livelihood opportunities, this will mean a reduction of pressure on fishery and marine resources. This is particularly significant when the fishery impacts of the MPAs in terms of spillover are not yet significantly felt.

MPA direct economic benefits. Seventy-eight percent of the respondents reported directly benefiting from the MPAs while only 22 percent claimed otherwise. The direct economic benefits include improved fishery and tourism revenues in the form of taxes and MPA user fees. But the benefits can only be appreciated when these are personally felt or translated into real income by fishing households. About 37 percent said that the MPAs effectively work in preserving fish habitat and nursery. They explained that there are still enough fish (71.43%) caught in areas surrounding the MPAs, unlike in the past when the coral reefs were left open to all types of fishing activities. About 24 percent said that there is abundance of fish while only one said it is scarcer now due to the MPAs. Generally, this indicates the spillover effects of the MPAs, but whether or not fishing is carried out beyond the buffer zone remains a question. Another study observed that fishing activities continue within the buffer zone despite the restriction of all kinds of fishing gear. Almost half of those interviewed strongly objected to the buffer zone regulation (Oracion, 2006, p. 137).

The fees for the use of MPAs are collected in the form of tickets sold by the Office of the Municipal Treasurer to dive resorts. These tickets, presented to sea wardens on the day of the dive, allow resort guests to dive or snorkel inside the MPAs.² Transient tourists can also buy tickets from the fishers' associations managing a particular MPA. In 2005 and 2006 the total collected user fees from all the MPAs off the mainland of Dauin amounted to Php 5,134,989, or an average of about Php 214,000 per month. The collections per month per barangay are shared by the municipal government (40%), fishers' associations (40%) and barangay government (20%). The share of the municipal government goes to its CRM Fund while that of the barangays is used to finance their various projects. Both also contribute to the honoraria of sea wardens.

The monthly honoraria (43.48%) of the sea wardens and officials of fishers' associations as well as the cash loan (19.56%) to association members constitute some of the direct tourism benefits of MPA.⁴ In the case of two fishers' associations in Masaplod Norte and

Poblacion 1, an estimated 30 to 32 percent of their respective share from the user fees went to honoraria. The remainder was used for the maintenance of their MPAs and guardhouses (Oracion, 2006, p. 71). Funds were also allocated for meals and snacks for regular monthly meetings as well as for Christmas parties where all association members, including non-fishers, are expected to attend and enjoy the food.

The extension of cash loan derived from MPA user fee shares of fishers' associations started as a way of helping members who need money in times of emergency. But this became a sensitive matter when complaints were raised about the failure of some creditors to pay promptly. In one association, the members proposed ways to formalize the approval of loans especially when there is a queue of applicants wishing to avail of the financial assistance. These included the specific circumstances, the amount available for loan, the terms of payment, the amount of interest to be imposed, and who would be in charge in the collection. Since not every member of the fishers' associations are sea wardens who receive monthly honoraria, the extension of cash loan to qualified members who are in good standing is considered an acceptable way of democratizing the benefit from MPA user fees. This practice is expected to remain effective for as long as creditors promptly repay their loans so that others in need can also avail of such privilege.

Why some do not enjoy direct economic benefits? The 20 percent of the respondents who claimed that they have not benefited from the MPAs have their own stories to tell, and about 63 percent of

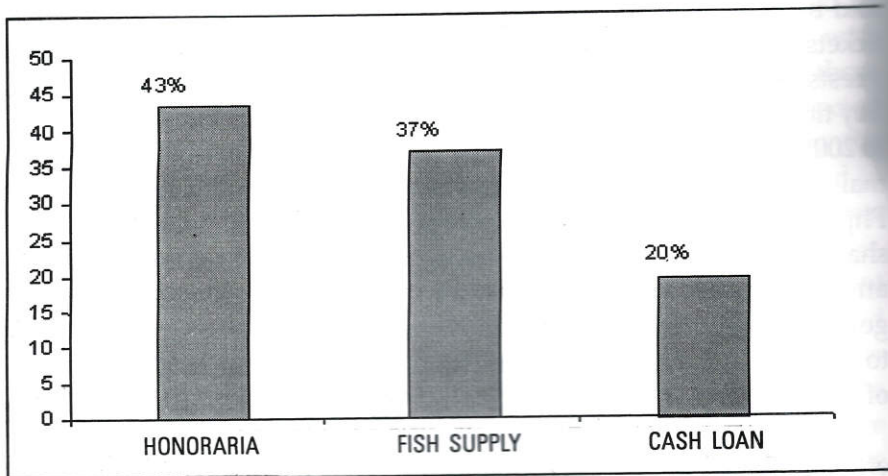


Fig. 2. Distribution of MPA direct economic benefits already enjoyed. The funds paid for honoraria and cash loan come from user fees.

their reasons are related to fishing. They said that since they do not fish or are no longer fishing, they do not see any direct economic benefit from the MPAs. Nevertheless, some of them are beneficiaries of the animal dispersal project. Others specifically said that they have been forced to stop beach seining because the MPAs also covered the sandy areas of the sea fronting their barangays. Although beach seining has been banned by the Philippine Fisheries Code of 1998 (RA 8550), this continues in Dauin as part of the community's fishing tradition. As part of his campaign to prohibit this practice, the incumbent mayor has proposed the use of scoop nets in catching *tugnos* (Family Engraulidae but genus and species unidentified), *tolakhang* (*Stolephorus* sp.) and *atay-atay* or *malobgas* (Family Clupeidae but genus and species unidentified), which are seasonal target species of beach seines. Beach seining is allowed only in one barangay in Dauin that has no MPA.

Meanwhile, a beach resort owner said that the MPA fronting the resort has prohibited his guests from swimming inside the protected area and stepping on the coral beds. Those who would like to go snorkeling inside the MPA are also required to pay. Because this payment is an addition to the entrance fees that the resort collects, the resort operator feared this may discourage more picnickers to come. Another respondent pointed out that it was too early for him to appreciate MPA-related benefits because he had just started his piggery project. Still another said that he was too new in the association to garner any form of benefit that older members have already availed of. Although these reasons may be linked with the MPA, either in a positive or negative way, they are not necessarily a direct outcome. It appears that membership in fishers' associations and the enjoyment of livelihood assistance in exchange for MPA management support are linked with the MPAs. Therefore, as the respondents see it, the lack of enjoyment of the available assistance also means the absence of MPA benefits.

Problems about association's share from MPA user fees.

Although providing affected local fishers alternative ways to earn in response to fishing ground reduction due to MPA establishment is problematic, the more sensitive issue that more often emerges, particularly involving community projects, is the management of association money. Money, or more precisely, the handling of association funds, is often a source of tension among members. In addition, complaints came from members who felt that only a few get to benefit from the association's funds and fewer still are involved in the decision regarding the appropriation of money. A study of two

mainland fishers' associations documented how the enthusiasm of some members has been dampened by alleged anomalies in the collection of user fees, poor accounting of funds, and mismanagement of their income from MPA user fees (Oracion, 2006, p. 152).

When the mayor heard of the money problems of fishers association, he immediately instructed the concerned officials to address the matter before things got worse. Subsequently, all fishers' associations of Dauin were required by the mayor's office to submit monthly work and financial plans before their MPA user fee shares could be released by the municipal treasurer. Although there were complaints regarding the time it took for the money to be released, it is clear that this requirement helps in monitoring the way the associations managed their financial resources.

About 77 percent of the respondents reported that they have no problems regarding the current management of their association's income from MPA user fee shares. That only 23 percent said there were problems is perhaps a result of the measure introduced by the mayor. These segment of respondents included association members who still observe the non-issuance of receipts to tourist divers when collecting MPA user fees, who poorly manage the cooperative store they just started to operate, and who have failed to account for some missing money. Some respondents pointed to leadership crisis in their respective associations as the source of money problems.

Suggestions to improve association's financial status. The experiences of Dauin show that besides their long-term impact to sustainable fishery, well-managed MPAs can generate substantial tourism revenues in the form of taxes and user fees. This additional income enables local governments to embark on CRM projects (Oracion, 2006). Tourism revenues are potential sources of capital for alternative income-generating activities of individual members of fishers' associations particularly those who willingly deviate from fishing in order to reduce pressure on the marine environment. The associations can also invest in small-scale ventures so that whatever MPA user fee shares they have will grow to benefit a good number of their members. But since the MPA user fee shares of fishers' associations are public funds, their proper investment requires participatory planning and decision making.

Based on key informant interviews and the results of the sample survey, however, the livelihood assistance to members of fishers' associations was generated solely from government agencies (i.e., ENRD and LGU) and non-government organizations (i.e.,

SUAKCREM, SUEP and others) rather than from the members' own MPA user fee shares. Needless to point out, in order to be self-reliant and empowered to manage their own resources in the event of a political turnover, these associations need to plan and implement their own small-scale enterprises. This will prepare them for the time when external agencies will completely withdraw their support. Following this argument, respondents were asked how their associations could best invest their shares from MPA user fees so that all of them could benefit as a group and as individual members.

Figure 3 shows that majority of the respondents (42.86%) suggested that their associations should set up a cooperative using a portion of their share from MPA user fees in addition to the respective amount individual members were willing to contribute for capital build-up. Other specific suggestions also related to the formation of cooperatives. When followed up on this issue, 96 percent agreed with the suggestion of starting cooperatives within their respective associations. There were, however, those who warned that the cooperatives should be properly managed to avoid the same problems they had in the past. Other suggestions included initiatives involving small-scale enterprises (14.30%) like selling souvenir T-shirts, building cottages or sheds for rent to tourists, renting out of diving gears, and opening a small pharmacy to sell medicine to the community. Others suggested engaging in animal dispersal project (12.24%), similar to what they are presently enjoying from the provincial government, and lending money to association members at minimal interest rate (6.12%).

The other suggestions of mainland respondents pointed to the need for improving the financial management of their associations. They said that the money should be immediately deposited in a bank to earn interest and to spend it wisely with proper planning. One suggested that money should be divided among members so that everyone, not only the sea wardens and association officials who received honoraria, will benefit from it.

Responses should MPAs be removed. In order to further establish or prove the links between MPAs and their impacts on the quality of life of the community, respondents were asked to react to the hypothetical removal of the MPAs. When this matter was brought up during a casual conversation, fishers' association officials and sea wardens said that if this happened the tradition of open and free access would be revived. According to them, all fishers will cast or throw all types of fishing gear on the once protected coral reefs and tourist divers

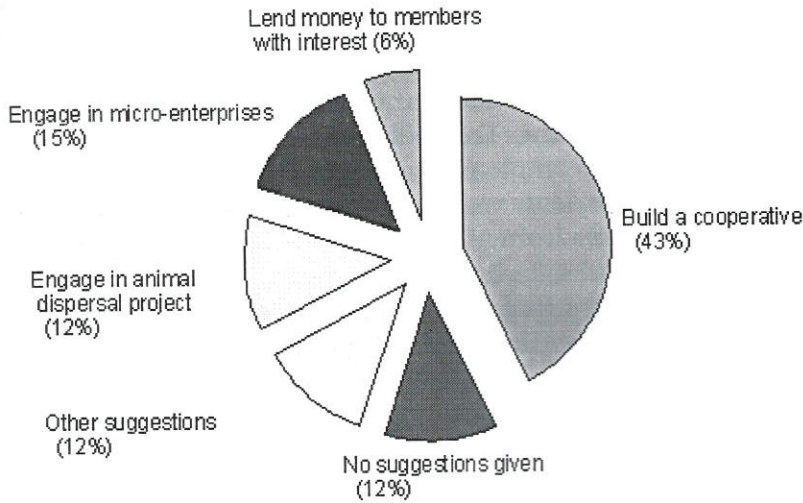


Fig. 3. Suggestions of fishers' association members how they can enjoy more from MPA benefits or income.

will refuse to pay user fees when diving in these areas. They concluded that subsequent over fishing will deplete the supply and predicted that the association will loss thousands of pesos that they used to earn from MPA user fees. Moreover, they pointed out that members of fishers' associations will cease to enjoy other associated non-fishing benefits of MPAs. It is possible that the same scenario was in the minds of the respondents when they reacted to the issue concerning the removal of the MPAs.

The survey shows that 94 percent of the respondents do not agree with the removal of MPAs because of the economic benefits derived from these MPAs and currently enjoyed by both fishing and non-fishing members of the association. They reiterated the fact that the MPAs will ensure the community fish supply in the future particularly for their children (46.66%) and contribute to the revenues of the municipal and barangay governments and the fishers' associations (45.00%). They added that the money the associations derived from MPAs has been a source of cash loans to some members in times of emergency, as well as for their basic needs (5.00%). Besides the local government has invested so much on these MPAs (1.67%). It is precisely for its MPAs that the municipality of Dauin has become well known not only in the Philippines but around the world (1.67%). Removing the MPAs now is a waste of money, labor and time resources,

and means the inevitable loss of all other opportunities associated with them.

Even those who felt marginalized by the MPAs held ambivalent positions about the removal issue. Their reaction implied resistance not to the MPA concept but to the manner of its enforcement and to the choice of site for its establishment. The respondents (5.55%) who agreed with the idea of MPA removal called for the closure only of those protected sites that they considered inappropriate, such as those located in sandy areas without coral reefs that may be threatened by human activities. Such places, they contended, should be reopened to fishing. But this is a gross misunderstanding of marine biology and therefore of MPAs because even seagrasses found in sandy areas are critical habitats of marine organisms. Nonetheless, the removal of existing MPAs on sandy areas, according to them, will leave enough space for beach seine fishing as well as for swimming for paying guests of beach resorts owned by local residents.

Issues related to the management of association funds.

Problems are always expected when an association does not have a proper system of managing its funds, such as procedures for recording, safekeeping, disbursing, accounting, and reporting. Absence of such opens opportunities for mishandling of association funds. Likewise, members' limited knowledge of their rights may account for their lack of vigilance on questions regarding money and financial status of their associations. Certain Philippine values and norms of behavior, such as the avoidance of conflict and preservation of interpersonal relationships, further inhibit members from confronting their officials about suspected anomalies involving association funds. These matters hinder effective and efficient financial management and equitable distribution of economic benefits generated from the MPAs. As already mentioned, association monies generated from MPA user fees are public funds and are therefore of public interest.

Therefore, in addition to being educated about the environment, fishers' associations also need to be well-informed about organizational and financial management, since this is at the core of MPA management, enforcement, and user fee collection. Fishers' association officials and members should vigorously practice transparency, accountability, and equity regarding MPA user fees because these are not private funds.⁵ A simple cash-out and cash-in flow system (*see* Mayer and Glave, 1999) of financial management has to be observed. Members are expected to know and carry out simple accounting procedures that will show the returns from any cash

amount expended so that they can wisely invest their income rather than to rely solely on incoming user fee shares. Moreover, association officials should learn to be open to queries and to be more transparent in their dealings with their constituents. Finally, because every member has the right to know the financial status of the association, it is the duty of the officials to keep them regularly informed.

The local government should vigorously continue its current effort of requiring fishers' associations to submit work and financial plans to effectively monitor how monies shall be and have been appropriated, or whether these have been re-invested in MPA maintenance and other income generating projects. Such report will show if they have indeed earned "a little something" (Mayer and Glave, 1999), which is necessary if they have to become self-reliant. The performance of the fishers' associations and the sea wardens has to be regularly evaluated by a designated CRM officer in order to redress shortcomings and deficiencies. At the end of each year, a performance and financial report should be required from them to prevent the occurrence or recurrence of any anomalies.

The municipal and barangay governments should likewise plan how a portion of their respective share from MPA user fees can be allocated for community projects and social services, aside from CRM-related projects, in order to democratize MPA benefits and further justify MPA establishment. Fishers need to see more tangible short-term returns. Constituencies should be informed that the money or a portion of the budget used for projects and services comes from MPA user fees. This will increase community appreciation of an MPA. Plans of fishers' associations to engage in income-generating projects, such as establishing a multi-purpose cooperative where they can wisely invest their shares from user fees should be pursued. But adequate education on cooperatives should be provided to prevent financial management problems.

Fishers who are not yet association members may eventually be motivated to join and to extend their open support for the MPAs when they find that these can indeed become sources of economic capital for non-fishing investment. Although displaced fishers are supposedly the target beneficiaries of tourism-generated MPA benefits, many remain uninterested in becoming association members because they do not see significant incentives for doing so. Democratization of non-fishing MPA benefits will discourage any growing perception that only some association officials and sea wardens, who regularly receive honoraria from user fees, benefit financially from MPA creation.

MPA maintenance, such as the repair of damaged boundary and mooring buoys and the removal of surface and underwater debris in MPAs, has to be regularly undertaken. This activity provides proofs that the user fees paid by tourists are used for sustaining MPA quality and enhancing aesthetic values, which in turn will encourage private tourism brokers to support the enforcement of MPA regulations among their guests. Private tourism brokers initially opposed the user fee rate hike because they did not appreciate how the money had been apportioned for MPA maintenance by the local government. In addition, issues on corruption within the fishers' associations (Oracion, 2005, p. 105) have also discouraged this group of stakeholders from openly supporting the proposed increase in user fees. Although problem regarding user fee shares is an internal matter for the association, it can discourage tourism brokers, who are the source of the money, from supporting the initiative. Because problems created by MPA user fees are critical issues influencing MPA management sustainability, they have to be sensitively addressed. A financially and structurally stable fishers' association does not have to be dependent upon the local government; it can continue to function despite a change of leadership in a future administration.

CONCLUSIONS

The lessons from Dauin show that the establishment of no-take MPAs in traditional fishing grounds and the accompanying restrictions in the use of inappropriate fishing gears necessarily alter resource use and economically impact those households dependent upon coastal and marine resources for their livelihood. Providing fishery-dependent households livelihood assistance as an alternative to fishing can cushion any consequent reduction in household income. This is also a means of discouraging illegal and destructive fishing activities until the time fishing in surrounding areas already offers improved catch as result of MPA spillover effects.

Generally speaking, MPA benefits are classified either as direct or indirect results of effective management. Fishers get direct benefits in exchange for supporting the establishment and management of MPAs. The direct benefits include improved fish catch due to MPA spillover effects, honoraria derived from user fee shares being paid to those directly involved in management and enforcement, and cash loans provided to members who need money during emergencies. The indirect benefits take the form of livelihood assistance through

animal dispersal project. Because of the aforementioned benefits they are already enjoying, fishers' association members are against the idea of removing the MPAs. However, proper management of their income, particularly from MPA user fees, is necessary in order to enhance their financial stability and sustain the MPA-generated economic benefits.

Results of the study, however, also revealed that not all the households that received alternative livelihood assistance were dependent on fishing. Consequently, there is a possibility that the original purpose of the assistance program might be undermined. It has been alleged that a number of non-fishing households have joined the fishers' associations mainly to avail of project benefits being offered to members. The problem, however, is that denying them membership in the association means causing a rift in the community, which can also jeopardize the outcome of the CRM program.

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END NOTES

¹ The works of White and Cruz-Trinidad (1998) and Bernardo (2001) are good examples of studies on how the economic benefits of coral reefs protection, in particular, and coastal resource management, in general, are quantified and distributed across types of stakeholders.

² In the animal loan scheme, a female pig or a female goat is given to a beneficiary to raise (Cebuano = *sagod* or *batnan*) until this bears offspring. The beneficiary is expected to give one offspring, preferably a

female, to the association. In return, the association gives this to another member who is willing to take care of the animal. This procedure continues so that other association members can also avail of the animal dispersal project.

³ This system does not apply to Apo Island because the local government of Dauin has ceased to have jurisdiction over its resources after the island was declared under NIPAS. Money collected from user fees is first remitted to the national treasury and only later 75 percent of it is sent back to fund the protection of the island's resources and the management of its various CRM projects. The money is managed by the Protected Area Management Board (Raymundo and White, 2004).

⁴ The growth of coastal and dive tourism in Dauin as a result of its MPAs also provides employment opportunities to locals. Currently 14 beach and dive resorts have opened on the mainland and Apo Island. About 64% of their employees are local residents (Oracion, 2005, p. 152). Incidentally, none of the members of the fishers' associations included in the study is employed in these resorts. Nevertheless, one respondent operates a beach resort in front of one of the MPAs.

⁵ Training was conducted by SUAKCREM on April 14, 2004 for members of fishers' association.

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