

Impact of ICRMP on the Socio-economic Status and Participation of Fishing Households in Mati, Davao Oriental

**Enrique G. Oracion¹, Dave E. Marcia¹,
Jessie V. Alzate, and Roland A. Dalagan**

¹Professor, and Instructor, Silliman University, Dumaguete City

rdc@yahoo.com.ph; Assoc. Professor²

Davao Oriental State College of Science and Technology,

City of Mati, Davao Oriental 8200

jvalzate2000@yahoo.com;

Abstract

Employing quota sampling technique, 240 fishing households were interviewed in six sites along Mayo Bay (Dahican), Pujada Bay (Tamisan, Lawigan), and Balet Bay (Dawan, Mamali, Macambol) all in the City of Mati, Davao Oriental. These areas have established, or yet to be delineated as Marine Protected Areas (MPAs). Poverty incidence among households in all sites was high since their income fell below Php 7,000.00 per month. More men (64%) were engaged in agricultural enterprise than women. They had low (15.42%) participation in organizations which were engaged in coastal resources management. They participated in decision-making processes that were relevant to coastal resource management but majority (59.96%) had less influence especially in policy making. Social facilities and services the households availed of included pre-school, elementary and high schools. Only few (10%) had collegiate education. Health centers were present in almost (92.92%) all sites. Safe sources of water were available in the form of communal faucets and public deep wells. Few (38.75%) availed of productive loans and financial assistance (25.42%) respectively. The distance of the respondents' house from ICRMP interventions and enforcement landmarks were not significantly related to household income. Only household income and distance of fishing from MPA was significantly related. This means that those who fished near the MPAs were catching more due to "spill over" effects (i.e., mature fish get out of the MPA and caught later by fishers). Thus, it was the direct utilization of fishery and marine resources that posed impact rather than the distance of their domicile.

Keywords: Decision-making, Empowerment, Enterprises, Marine Protected Areas, Participation

Introduction

The Integrated Coastal Resources Management Project (ICRMP) is a management system designed to regulate human activities for preserving ecosystem functions and services so as to achieve environmental and economic sustainability and other social goals of sustainable development (Alcala 2011, cited in Chua 2006).

Management Of coastal resources in the country through the establishment of marine reserves (MR) can be traced back in the 70's due to the clear rapid depletion of these resources (Alcala and Calumpong 2008). One of the strategies of MR in the country is the establishment of Marine Protected Areas (MPAS) now reaching to more than 1,000.

MPAs are considered not simply a conservation tool, but a development tool, as well. It is an equity tool that designed to contribute to the long-term livelihoods of island people, their culture and their economies (Lutchman 2005, p 11).

Thus, Lutchman (2005 p 12) wrote that although there were various reports on the positive ecological benefits of MPAs, there was less knowledge about their socioeconomic effects. It is not clear that a well. managed. well-designed and enforced MR increases the size and number of fishes within its borders that increases catches of fishermen living near these MPAs.

It is not clear whether the improvements of coastal resources have further impacted to socio economic wellbeing's of the communities, Hence, both the improvement in the quality of marine and coastal ecosystems and the improvement on the quality of life or well-being of coastal communities covered by ICRMP are essential to analyze its overall impact

Based on the Design and Monitoring Framework (DMF) of ICRMP, the specific socio-economic indicators to be monitored and evaluated include: income, engagement with, or employment in enterprises outside of actual fishing as supplemental livelihoods, participation in policy decision-making related to coastal resource management, and access to social services of fishing households. Conceptually, if ICRMP interventions are successful, these will lead to greater economic opportunities to fishing households in immediate communities as compared to those located farther from the interventions.

It is expected that due to the improvement of their income, it will Offer them greater Opportunity to participate or influence decisions and policy making processes regarding coastal resources. Women are expected to be more productive as a result of increasing livelihood opportunities.

Objectives

This baseline study was conducted to ascertain the socio-economic status and participation of fishing households within the areas covered by ICRMP where marine protected areas were established or yet to be established. Specifically, the study aimed to:

1. Establish the Current income of fishing households. their sources of income. and types of enterprises they were engaged in;
2. Determine the proportion of female household members working or involved in enterprises;
3. Establish the involvement of households in organizations engaged in coastal resources management and the extent of their influence in coastal resource management decision making processes;
4. Prove their availment of social facilities available in the communities where they live; and
5. Analyze the relationships between the distance Of the MPAs and income of the respondents.

Materials and Methods

The communities surveyed in the City of Mati covered the established, or yet to be delineated marine protected areas (MPAs) and where enforcement is to be enhanced. Specifically, these sites are along the Bays of Mayo (Dahican). pujada (Tamisan, Lawigan), and Balet (Dawan, Mamali, Macambol).

Employingquotasamplingtechnique, a sample of 40 fishing households per site was randomly identified or a total of 240 households were interviewed in six sites through on-site sampling technique by determining first the shoreline center of the MPA and the direction of the survey. From the center, the first household that was interviewed was randomly determined from numbers 1 to 5 and the subsequent households followed with an interval of two or every second household from the previous household. The respondent was either the husband or the wife. He/she was replaced by the next household if not qualified or the probable respondents were not present during the survey. A structured questionnaire was used in gathering data, conducted from December 16 to 20, 2011 by locally hired interviewers through the Region XI ICRM Center (RIC) located at the Davao Oriental State College of Science and Technology (DOS CST).



Figure 1. Map of the study sites, City of Mati, Davao Oriental

Results and Discussion

Fishing household income

Majority (77.5) of the fishing households had an income below PHP 7,000.00 per month (Table 1) which fell below the poverty threshold of PHP 7,017. The male household members across all sites had higher mean monthly income (PHP26,572.34) compared with their female counterparts (PHP 5,269.85). As a whole, 58.62% households derived their income for a family of six members (Virola, 2012) from fishing.

Table 1. Percentage range, and monthly income (Php) of fishing households in Mati, Davao Oriental

Income Cohorts	Dahican	Tamisan	Lawigan	Dawan	Mamali	Macambol	Mean
< 7,000	72.5	87.5	77.5	62.5	85.0	80.0	77.5
7,001-14,000	17.5	10.0	12.5	27.5	12.5	12.5	5.4
14,001 +	10.0	2.5	10.0	10.0	2.5	7.5	7.1
Sex							
Male	4,747.6 (80.4)	3,212.5 (79.6)	4,702.5 (81.4)	5,131.0 (75.4)	3,990.0 (91.3)	4,788.8 (96.8)	26,572.3 (83.5)
Female	1,158.1 (19.6)	821.3 (20.4)	1,075.0 (18.6)	1,675.0 (24.6)	380.0 (8.7)	160.5 (3.2)	5,269.9 (16.6)
Source							
Fishing	3,246.2 (55.0)	2,531.25 (62.8)	2,634.95 (45.6)	4,178.75 (61.4)	2,877.50 (65.9)	3,197.50 (64.6)	18,666.1 (58.6)
Non-fishing	2,659.6 (45.0)	1,502.5 (37.3)	3,142.5 (54.4)	2,627.3 (38.6)	1,492.5 (34.2)	1,751.8 (35.4)	13,176.1 (41.4)

Engagement in enterprises and types of enterprises.

Majority (57.5%) of the households in all the sites did not have members who were employed or engaged in enterprises (Table 2). Enterprise refers to any economic activity that involves the processing, packaging or marketing of natural products such as those harvested and cultured from the seas, ponds or farms. Servicing other people for fees, particularly tourists, is also considered a form of enterprise presumably resulting from the effective management of coastal and marine resources. Thus, direct catching of fish is not considered as enterprise but the drying of fish, making of salted fish, processing of crab meat and other related activities are examples of Majority (77.7%) of the enterprises which involved members of fishing households were agricultural and only 29% came from fishery and least (18.01 from tourism services. MPA establishment will draw some issues like absence or poor availability of alternative or supplementary livelihood opportunities due to loss of customary access to traditional fishing grounds among others (Pomeroy, 2010 p 31). Thus. EMPAFISH

(2006 p 17) asserts that part of the compensatory measures of MPA establishment is the development of livelihoods as alternative to fishing activities.

Involvement Of female household members in enterprises.

There was low mean percentage (36.1%) of women engagement in various types of enterprises. As a trend, MPAs empower women financially in the form of cash transfer provided by the implementation of the project and not directly from enterprises as a result of establishment Of MPAs. Hence, to ensure the sustainability Of MPAs, financial support from outside sources is one of the necessary resources to be provided (Aswani and Weint, 2004 p 316).

Table 2. Percentage engagement in enterprises and type of enterprises

If Employed or Engaged	Dahican	Tamisan	Lawigan	Dawan	Mamali	Macambol	Mean
Yes	40.0	45.0	40.0	65.0	30.0	35.0	42.5
No	60.0	55.0	60.0	35.0	70.0	65.0	57.5
Type							
Agricultural	60.0	70.4	87.5	88.6	100.0	66.7	78.9
Fishery	32.0	29.6	12.5	11.4	0	18.2	17.3
Tourism services	8.0	0	0	0	0	15.2	3.9

Table 3. Involvement (%) of households in environmental organizations

Information	Dahican	Tamisan	Lawigan	Dawan	Mamali	Macambol	Mean
Involvement							
Member	7.5	32.5	7.5	15.0	27.5	2.5	15.4
Not a member	92.5	67.5	92.5	85.0	72.5	87.5	82.9
Organizations							
Fishers' associations	0	7.7	0	83.3	27.3	0	19.7
NGO-sponsored organizations	0	7.69	0	0	63.6	0	11.9
BFARMC	67.7	46.4	67.7	16.7		100.0	49.8
Bantay dagat	33.3	38.5	33.3	0	9.1	0	19.0

round-off error

Involvement of households in organizations engaged in CRM

The participation of the households in organizations that were engaged in activities related to the conservation and protection of marine and fishery resources as well as community development projects was not significant. Only 15.4% of

the households across the sites had members who were affiliated with these types of organization (Table 3). This finding signifies that there is a need to enhance the involvement of households in organizations so as to conform to the reports of Lutchman, (2006 p 17) and EPAFISH (2006 p 17) that in an

Participation and Influence in Decision Making Processes

Majority (66.7%) of the fishing households participated in decision making process (Table 4). But despite their participation to issues concerning coastal resource management, they had less influence especially in policy making (60.0%). These data imply that people's organizations are not yet empowered which can be traced from the unstable statuses Of MFAs where most of these were not yet fully legitimized- MPA contributes to the political aspect that will include participation in decision-making (Vicente, 2010 p 479), cases, meaningful participation of MPA However, the finding that fishing household's stakeholders will be critical to Success. have less influence contradicts the very core concept of effective MPA i.e., peoples' participation in decision making matter most to ensure its Success (Pomeroy 2010 p 43).

Table 4. Participation and influence in decision making processes

Parameters	Dahican (%)	Tamisan (%)	Lawigan (%)	Dawan (%)	Mamali (%)	Macambol (%)	Total (%)
Participation							
Yes	72.5	72.5	47.5	85.0	70.0	52.5	66.7
No	27.5	27.5	52.5	15.0	30.0	47.5	33.3
Policy making							
Strong influence	58.6	13.8	36.8	20.6	21.4	19.1	28.4
Fair influence	34.5	20.7	42.1	38.2	57.1	57.1	41.6
Less influence	6.9	65.5	21.1	41.2	21.4	23.8	30.0
Resource allocation							
Strong influence	44.8	10.3	42.1	14.7	28.6	33.3	29.0
Fair influence	44.8	27.6	31.6	44.1	53.6	47.6	41.6
Less influence	0.3	62.7	26.3	41.2	17.9	9.1	26.3
Budget allocation							
Strong influence	41.4	13.8	31.6	17.7	25.0	33.3	27.1
Fair influence	27.6	27.6	42.1	47.1	57.1	33.3	39.1
Less influence	20.6	58.6	26.3	35.3	17.9	33.3	32.0
No response	10.3	-	-	-	-	-	1.7

Availment of, or access to social services

In general, majority of the households availed of educational services such as early childhood (56.7%) and elementary (75%) schools; very few availed of collegiate school (10.42%). For those that had enjoyed it, the distribution was biased to Dahican (25%) - The households' access to primary health care was mostly through

health centers (93.0%) and public hospital (64.4%). One-half of the respondents had communal faucet and some (46.7%) with public deep well as source of safe drinking. Chi-square test showed that the distance of respondents' house from ICRMP interventions and enforcement landmarks was not significantly related to household income. But it was only household income and distance of fishing from MPA that were significantly related. Therefore, those that fished near or within the impact areas of the MPAs benefited from spillover effects (i.e., mature fish get outside the MPA and caught by fishers).

Meanwhile, the absence of significant relationships between the location of water. Others owned piped water. Ninety- the respondents' house from ICRMP three percent of the households also interventions and enforcement landmarks availed of loans that yielded income. MPA suggest that it is the direct utilization of contributes high to the social well-beings of fishery and marine resources that matter fisherfolks in Lingayen Gulf (Vicente, 2010 most in measuring impact rather than simply P 279,489) which generally supports this the domicile. finding in Mati.

Table 5. Percentage of household availment of social facilities

Social Facilities	Dahican	Tamisan	Lawigan	Dawan	Mamali	Macambol	Mean
Educational							
Early childhood school	47.5	67.5	82.5	42.5	57.5	42.5	56.7
Elementary school	75.0	75.0	92.5	70.0	72.5	70.0	75.8
High school	60.0	37.5	67.5	47.5	27.5	22.5	43.8
Collegiate school	25.0	12.5	-	7.5	5.0	12.5	10.4
Health							
Primary health center	90.0	95.0	92.5	95.0	95.0	90.0	92.9
Rural health unit	40.0	40.0	25.0	65.0	30.0	10.0	35.0
Public hospital	70.0	57.5	57.5	72.5	77.5	57.5	65.4
Private hospital	15.0	22.5	27.5	27.5	25.0	25.0	23.8
Water							
Public deep well	47.5	10.0	85.0	92.5	42.5	2.5	46.7
Communal faucet	17.5	92.5	12.5	20.0	82.5	75.0	50.0
Own piped water	10.0	17.5	2.5	7.5	10.0	37.5	14.2
Financial							
Productive loans	30.0	52.5	42.5	37.5	22.5	47.5	38.8
Financial assistance	17.5	35.0	5.0	52.5	27.5	15.0	25.4

Table 6. Relationship between estimated monthly household income and distance from ICRMP interventions

Variables	Chi-square		Remarks
	Computed	Tabular	
a. Income cohort and mean distance of fishing ground from MPA	23.2	9.5	ignificant
b. Income cohort and mean distance of house from MPA	4.4	9.5	Not significant
c. Income cohort and mean distance of house from marine mangrove reforestation	6.4	9.5	Not significant
d. Income cohort and mean distance of house from bantay dagat guard house	6.1	9.5	Not significant
e. Income cohort and mean distance of house from barangay hall	3.2	9.5	Not significant

Degrees of freedom= 4

Conclusions and Recommendations

The fishing households had an income below 7,000_00 per month which fell below the poverty threshold of 7,017 for a family of six members. The males had higher monthly income (26,572.34) compared to their female counterparts (5,269.85). As a whole, 58.6% of the households derived their income from fishing.

Women engagement in various types of enterprises was low (36.0%) and only 15.4% were affiliated with organizations related to coastal resource management. Although majority (66.7%) of the fishing households participated in decision making process they (60%) had less influence in making policy. Majority availed of elementary (75%) and early childhood schools (57%) but very few (10.4%) availed of collegiate school.

Access to primary health centers was availed through primary health centers (92.9%) and public hospital (64.4%). One half of the respondents had communal faucet and some with public deep well (46.7%) as source of safe drinking water while others Owned piped water. Most (93 %) had availed of productive loans while only 25.4% were provided with financial assistance.

The distance of the respondents houses from ICRMP interventions and enforcement landmarks was not significantly related to their income. It was only household income and distance of fishing area from MPA that were significantly related.

Since most MPA sites were not fully legitimized and functional, it is recommended that LGUs, NGOs, DENR, BFAR and other stakeholders should pool their resources like legislations, funding and other logistics to make these operational. If MPA sites were well established and managed it is hoped to trigger the establishment of enterprises as alternative sources of income of fishing households, especially women.

Equally important in managing MPAs is an empowered people's organizations. Hence, it is recommended that concerned agencies including the academe should assist in organizational development of POs to enhance their participation and encourage them to be involved in decision-making relative to coastal resource management.

Literature Cited

Alcala, A.C. 2011. A National Integrated Coastal Resources Management and Marine Biodiversity Research Agenda for the Philippines, DENR-Protected Wildlife Bureau, Ninoy Aquino Parks and Wildlife Center, Quezon Avenue, Diliman 1101 Quezon City Philippines. 3-5 p.

Alcala, A.C. and calumpong. HIP. 2008 Siliman University Marine Protected Area (MPA) Program, 1974 to 2006. In: Miclat RI, Gonzales ROM and Alina PM (Editors). Coastä Zones Philippines2 Sustainable Financing and Marine Protected Areas

Congress. MSN. ME&R Foundation, Inc., and Marine Science Institute. up Diliman, QC. Philippines. 71 p.

Aswani, S., & Weiant, P. (2004). Scientific evaluation in women's participatory management: monitoring marine invertebrate refugia in the Solomon Islands. *Human organization*, 63(3), 301-319.

European Marine protected Areas tools for fisheries Management & Conservation (EMPAFISH) 2006. Economic Analysis of Marine protected Areas: A Literature Review <http://www.urn.empafish>. Auster M. eta (Ed.). 51 pp.

Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2009). Handbook on impact evaluation: quantitative methods and practices. World Bank Publications.

Lutchman, I., & Aalbersberg, W. (2005). Marine protected areas: benefits and costs for islands. WWF the Netherlands.

Pomeroy, R. (2010, November). People Matter: Social Impacts of Marine Protected Areas. In MPA Advisory Committee Meeting, Sta. Barbara CA http://www.mpa.gov/pdf/fac/10mtg_nov02_04/people_matter_bob_pomeroy.pdf.

Vicente, J. A., & Cerezo, R. B. (2010). The Socio-Economic Contributions of Marine Protected Areas to the Fisherfolk of Lingayen Gulf, Northwestern Philippines.