Implementation of Area-Specific Action Plans (ASAP) for community-based MPAs in Cagayancillo, Palawan, Philippines: funded versus not funded

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ABSTRACT

The Area Specific Action Plan (ASAP) for community-based MPAs serves as an outline of the framework for the purpose, design, and implementation of MPAs. The funding from the US Department of the Interior (USDOI) through Tanggol Kalikasan (TK) was used for the planning, training, and implementation of the Area-Specific Action Plan (ASAP) through Tanggol Kalikasan (TK). Two barangays from the Municipality of Cagayancillo were chosen as beneficiaries of the funding. This study aimed to assess the level of implementation of the ASAP on coastal resource management (CRM) and law enforcement in the community-managed MPAs in Cagayancillo Island, Palawan, through a comparison of the results of the perception survey interviews of the respondents from the control sites and funded sites. Four marine protected areas (MPAs) in the Cagayancillo region were selected as study areas: the MPAs in Barangays (Bgy.) Sta. Cruz (C1) and Nusa (C2) which did not receive additional funding from TK served as control sites; while Bgy. Mampio (F1) and Bgy. Talaga (F2) which received funding from TK, served as the funded site. The results showed that all CRM indicators were fully implemented (4.0) in C1, C2, and F2. The F1, on the other hand, had moderate implementation (2.0) of conducting seminar-workshops on MPA and poor implementation (1.0) of posting tarpaulin, signage, and other infographics. In terms of law enforcement, I1 had significantly moderate implementation (2.0) compared to other barangays. The implementation of ASAP in F1 was badly affected by Typhoon Odette in December 2021. Taking all factors into consideration, personal interview results revealed that the key to the effective implementation of MPAs' CRM and law enforcement activities significantly depends on the leaders of a barangay. Well-established leadership can efficiently and responsibly implement projects within their areas.

Keywords: ASAP, Barangay, CRM, law enforcement, MPA

INTRODUCTION

Marine protected areas (MPAs) are considered one of the best coastal management strategies and have gained worldwide recognition as an effective fishery management tool (White et al. 2006; Day et al. 2019). They are also recognized as one of the most powerful and effective methods to rebuild, protect, and sustain fisheries and ocean ecosystems (IUCN 2019).

A study on monitoring MPAs in the Philippines was conducted by Russ and Alcala as early

as 1989, and several studies on the assessment and management of marine resources in Palawan can be found in the works of Gonzales et al. (2014a), Gonzales et al. (2014b), Gonzales et al. (2014c), Palla et al. (2015), Gonzales and Gonzales (2016), and Gonzales et al. (2021).

There are various guides available for the assessment, monitoring, and evaluation of MPAs. These include monitoring water quality, monitoring changes in fish stocks, and measuring the level of impact from tourists as visitor numbers grow, as well as other related socio-economic factors (Russ and Alcala 1999; Pomeroy et al. 2001; Pomeroy et al. 2005). However, it is important to note that these indicators and parameters should be based on the specific objectives of each MPA (Russ and Alcala 1999).

Sustainability should be given due importance, as little to no attention to the sustainability of MPAs can hinder efforts to accomplish the objectives of protective management projects (Russ and Alcala 1999). To determine the success of MPAs, a functional monitoring and evaluation scheme must be in place, and scientific assessment of marine resource development within MPAs is crucial (Gallacher et al. 2016). However, the lack of funds or availability of qualified personnel, which often restricts these efforts (Sanders et al. 2013). Therefore, adaptive monitoring, which integrates science and monitoring, is necessary. This involves identifying new questions, introducing new monitoring methods, continuously developing indicators, and synthesizing information to ensure the integrity of long-term records on MPA management is maintained. In addition, local knowledge should be integrated into the monitoring and evaluation scheme.

Tanggol Kalikasan (TK) is a non-stock, non-profit public interest environmental law office based in the Philippines. Tanggol Kalikasan established the Institute of Environmental Governance Program (IEG) to enhance the capacity of Barangay, municipal, and provincial officials in the Philippines in environmental management, including MPAs (Gonzales et al. 2021; Tanngol Kalikasan, 2024). One of TK's projects is the Environmental Justice Sector Reform Program, which receives support funding from the United States Department of the Interior and Technical Affair Program and the International Narcotics and Law Enforcement Affair Bureau (USDOI-INL). Under this project, TK provides seed funding for the implementation of Area-Specific Action Plans (ASAP) for community-based MPAs. The ASAP serves as a framework outlining the purpose, design, and implementation of MPAs. Currently, in Palawan, TK provides seed funding for implementing ASAP for MPAs in the municipalities of Jose P. Rizal, Culion, and Cagayancillo.

Cagayancillo is an offshore island municipality of the province of Palawan (Dedace

2015). It consists of 30 islets and one main island, with land area of 26.29 km^2 inhabited by a population of 6,348 people. There are 12 barangays in Cagayancillo, with an estimated population of 7,000 (WWF 2020). The common livelihood and sources of income in the municipality are fishing, seaweed farming, livestock, rice and corn farming, cottage industries, and tourism (WWF 2020). Approximately 1,013,340 ha of Cagayancillo waters are protected as a coastal marine area, including 528,000 ha of municipal fisheries and an ecotourism zone, as well as about 485,000 ha of open water that connects Cagayancillo and the Tubbataha Reefs Natural Park (WWF 2020). Cagayancillo is an archipelagic municipality in Palawan, located in the northeastern part of the Sulu Sea, about 130 km from Tubbataha Reefs Natural Park and 300 km from the city of Puerto Princesa.

The control sites (C) for this study are the MPAs in Barangay (Bgy.) Sta. Cruz (C1) and Bgy. Nusa (C2), which have been operating for 14 years and did not receive additional financial assistance from TK for the implementation of their ASAP. On the other hand, the funded sites (F) are the two newly reactivated MPAs in Bgy. Mampio (F1) and Bgy. Talaga (F2), which have been operating for less than 10 years, received financial assistance from TK for the implementation of their ASAP.

This study aimed to assess the implementation of ASAP in local community-based MPAs in Cagayancillo Island, Palawan. Specifically, the objectives of this study are to: (1) evaluate the level of implementation of ASAP activities in four barangays in Cagayancillo; and (2) compare the level of ASAP implementation among barangay MPAs that received financial assistance and those that did not receive financial assistance.

The control sites for this study are the MPAs in Bgy. Sta. Cruz and Bgy. Nusa, which have been operating for 14 years and did not receive any financial assistance for the implementation of their ASAP. The funded sites are the two newly reactivated MPAs in Bgy. Talaga and Bgy. Mampio, which have been operating for less than 10 years and received financial assistance for the implementation of their ASAP.

METHODS

Study Site Description

This study was conducted in the municipality of Cagayancillo, Palawan. Cagayancillo is located at 9'55 latitude and 121'14.5 East longitude, 84 nautical miles from Puerto Princesa City, and approximately 56 nautical miles to Panay Island (Google map 2023). Four marine protected areas (MPAs) in the Cagayancillo region were selected as study areas: MPAs in Bgy. Sta. Cruz (C1) and Bgy. Nusa (C2), served as control sites while Bgy. Mampio (F1) and Bgy. Talaga (F2), served as the funded sites (Figure 1 and Table 1).
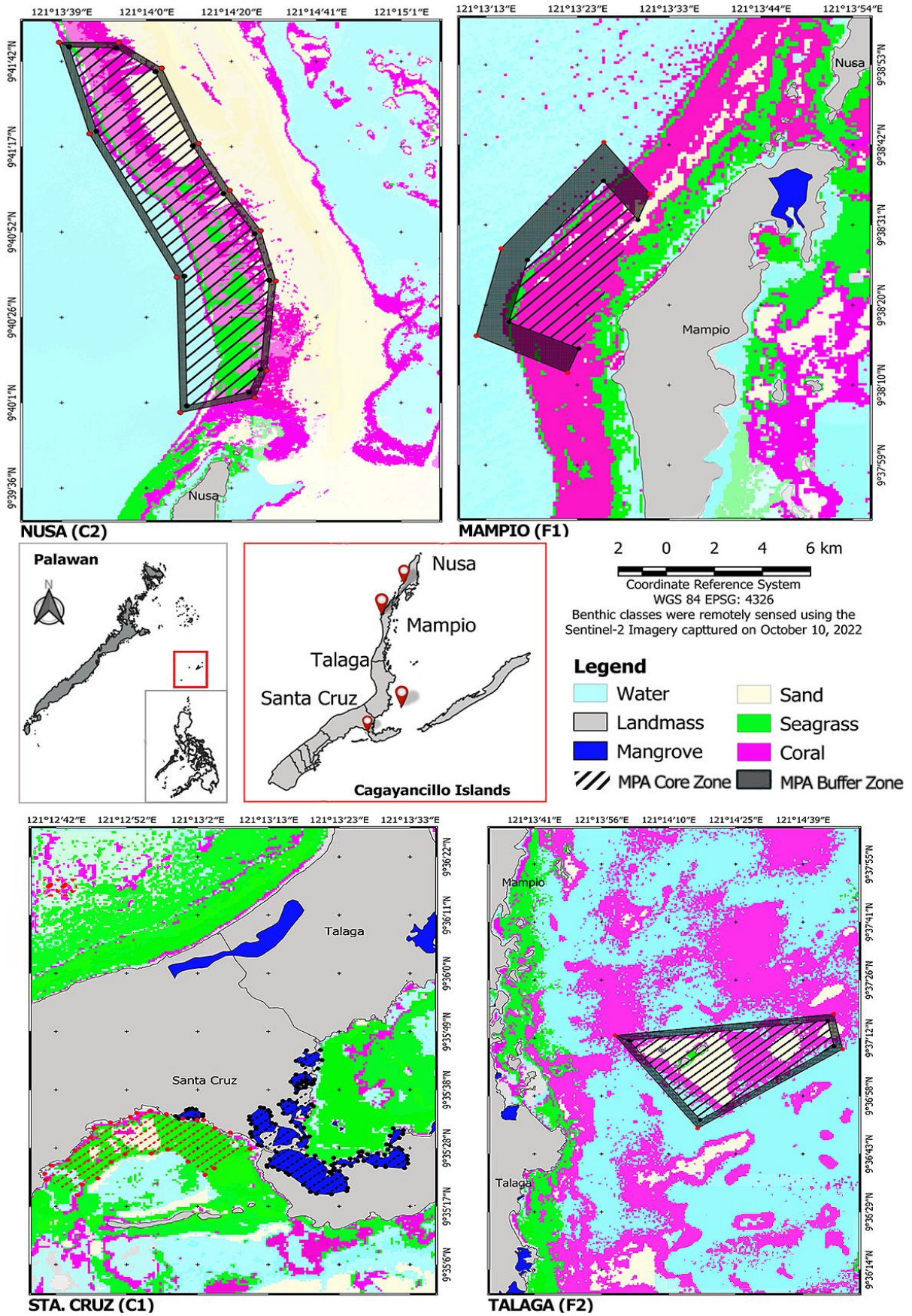
Figure 1. Map of Cagayancillo, Palawan indicating the locations of the four Marine Protected Areas.

Table 1. Information on the MPAs in Cagayancillo.

MPA sites	Total area (ha)	Core (ha)	Buffer (ha)	Year established	Descriptions
Sta. Cruz (C1)	33.51	18.91	14.62	2009	Harbors relatively large seagrass area
Nusa (C2)	237.51	77.25	36.58	2004	Mostly occupied by coral reefs
Mampio (F1)	29.52	16.06	13.46	2009	Abundance of marine life such as turtles, fish, and clams
Talaga (F2)	70.56	52.27	18.29	2004	Presence of two types of habitats, seagrass, and corals.

The C1 MPA covers an area of 33.53 ha and is located in Nipay, Balugo, Kimbang, Tegbengan, and Tiosan. This MPA is the largest seagrass area in the region and was launched in November 2009 (Figure 1 and Table 1). On the other hand, C2, which covers an area of 197 hectares, is located north of Barangay Nusa. The MPA is home to various marine resources, such as corals and oysters. It was launched in May 2004 and is currently carrying out projects for the conservation and preservation of marine resources (Figure 1 and Table 1).

One of the newly reactivated MPAs in the area is F1 MPA, which covers a total area of 29.52 ha in the western coastal part of the Barangay. The MPA is divided into a core zone covering 16.06 ha and a buffer zone covering 13.46 ha. The MPA is home to different types of marine life, such as turtles, fish, and clams. It was established in March 2009 (Figure 1). Lastly, the F2 MPA is located in the Leek Islets and covers an area of 70.56 ha, with 52.87 ha designated as the core zone and 17.69 ha as the buffer zone with a depth of 5 to 8 m. The F2 covers two types of habitats, seagrass and corals, and is home to various marine creatures such as fish and corals. The MPA of F2 was established on June 21, 2004 and expanded in July 2009 (Figure 1 and Table 1). Both the F1 and F2 MPAs have been laid low due to a lack of funding.

Respondents of the Study

The respondents of this study were selected based on their participation in the implementation of the MPAs in Cagayancillo who are mostly members of the community (37%); NGO/ PO/ Association members and officers (23.53%); Barangay officials (21.57%); Bantay Dagat personnel (3.92%); Barangay captains (0.98%); and various locals (12.75%). Most of them are male (57.56%), between 36 and 45 years old (30.84%), married (84.62%), and have finished secondary education (54.78%) (Table 2).

Survey Questionnaire and Data Collection

The developed survey questionnaire has three sections: the socio-demographic profile of the respondents; the assessment of the level of ASAP implementation on coastal resource management and law enforcement; and the open-ended questions on the issues and barriers that the community has encountered in their ASAP implementation.

A 4-point Likert scale was used to assess the level of implementation of ASAP in the two funded sites: 4-fully implemented (FI), 3-strongly implemented (SI), 2-moderately implemented (MI), and 1-poorly implemented (PI). All respondents were asked to assess the implementation of their proposed CRM and LE projects by rating each identified indicator as Poorly Implemented (PI) (if around 0–25% of the proposed activity was implemented); Moderately Implemented (MI) (if around 26%–50% of the proposed activity was implemented); Strongly Implemented (SI) (if around 51%–75% of the proposed activity was implemented); or Fully Implemented (FI) (if around 76%–100% of the proposed activity was implemented). The scores were then tallied and implementation levels were measured using the average of the scores: 3.26-4.0 = fully implemented; 2.51-3.25 = strongly implemented; 1.76-2.50 = moderately implemented; and 1.00-1.75 = poorly implemented.

The survey focused only on the Coastal Resource Management (CRM) and law enforcement projects indicated by the stakeholders and MPA managers in their ASAP. Indicators used to assess their level of implementation include the activities in the approved ASAP, such as their Coastal Resource Management project, that was focused on activities relating to the reactivation of their MPAs. Proposed CRM activities such as the drafting of MPA Management Plan, delineating and marking of MPAs, creating information and education campaign materials, and conducting community meetings were used as indicators for the CRM survey instrument. On the other hand, law enforcement activities such as the conduct of training and orientation of Bantay Dagat personnel, monitoring of MPAs, patrolling activities of Bantay Dagat personnel, and the maintenance of law enforcement facilities were used as indicators for the LE survey instrument. The researchers also added issues/barriers to the implementation as open-ended questions to further evaluate the experiences of the respondents.

Table 2. Socio-demographic profile of the respondents (n=120).

Profiles	Number of respondents (n)	Percentage (%)
Social Status		
Community Member	38	37.25
NGO/PO/Association	24	23.53
Barangay Official	22	21.57
Bantay Dagat	4	3.92
Barangay Captain	1	0.98
Others	13	12.75
Sex		
Male	67	57.76
Female	49	42.24
Age		
18-25	8	7.48
26-35	19	17.76
36-45	33	30.84
46-55	28	26.17
56-65	14	13.08
66-Above	5	4.67
Civil Status		
Married	99	84.62
Single	15	12.82
Co-habiting	2	1.71
Widow	1	0.85
Highest Educational Attainment		
Elementary	39	33.91
Secondary	63	54.78
Vocational	4	3.48
College	9	7.83

Personal interviews were conducted on the island of Cagayancillo in March 2022. Consent from the stakeholders who served as respondents to the study was secured before the data gathering started. The researchers read the instructions and informed the respondents to indicate their answers to the questionnaires. All respondents were given ample time to answer the questionnaire. A total of 120 respondents (30 respondents from each barangay) were composed of the municipality's administrative official, Municipal Planning and Development Officer (MPDO), Planning Officer, Bantay Dagat personnel, Philippines National Police (PNP) personnel, Bgy Captain, Bgy. Kagawads, and community members who were mostly fisherfolks and residents of the four barangays being studied. The municipal and PNP personnel, as well as the barangay chairman and barangay kagawads who served as respondents, were purposefully chosen based on their designations as implementers of the projects. On the other hand, the fisherfolks, both from the funded barangays and the not-funded barangays were randomly chosen to objectively compare their assessment of their MPA activities.

Data analysis

Evaluation of the ASAP implementation used a descriptive design and analysis, and the researcher added qualitative data to enhance the discussions. The current study utilized the Kruskal-Wallis H test and the Dunn-Bonferroni post hoc test to determine variations in the level of implementation of coastal resource management (CRM) and law enforcement (LE) per barangay. The mode was employed as the

measure of central tendency in analyzing the Likert scale data. All the data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.

RESULTS

Level of Implementation of MPAs' ASAP Activities

Based on the findings of this study, the Kruskal-Wallis H test ($P = 0.91$) reveals no significant difference in CRM implementation across Barangays. As shown in Figure 2, the four barangays have the same level of implementation (i.e. 3.26–4, equivalent to fully implemented), despite funded interventions in F1 and F2. However, for law enforcement, a significant difference exists across barangays (Kruskal-Wallis H test: $P = 0.002$), with F1 exhibiting moderate implementation (1.76-2.50) of law enforcement activities despite funding (Figure 3).
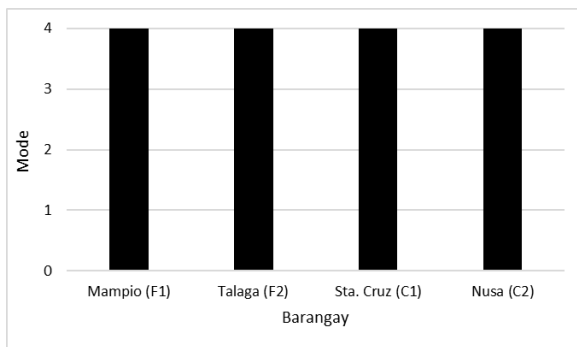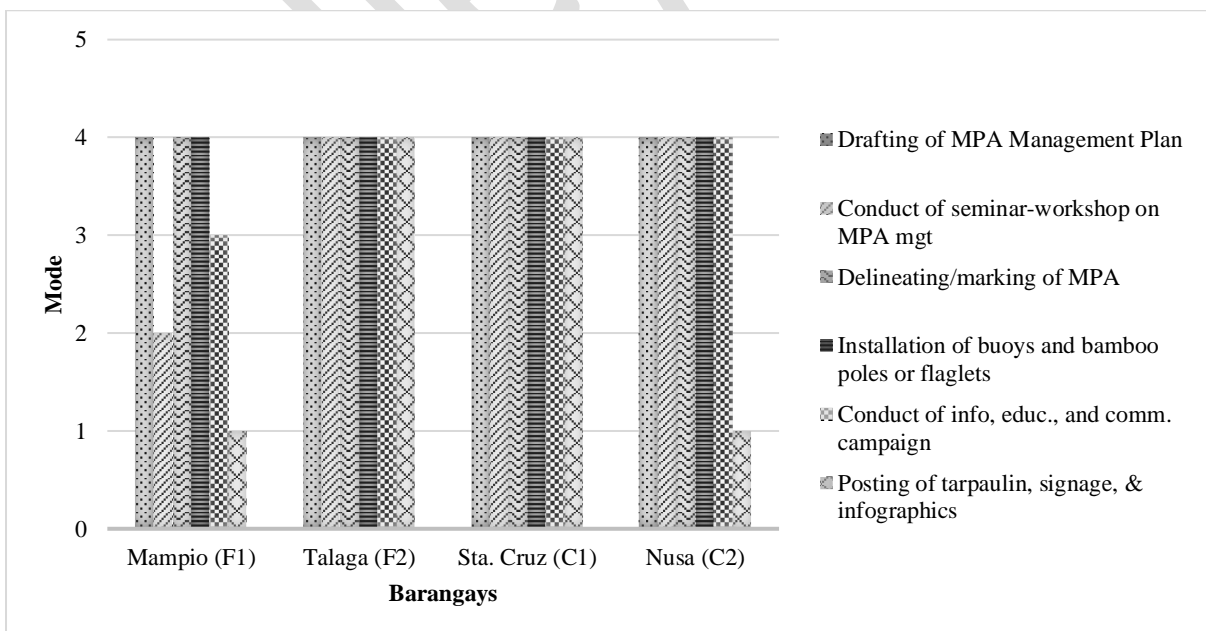
Figure 2. Costal resource management implementation level in each barangay in Cagayancillo.
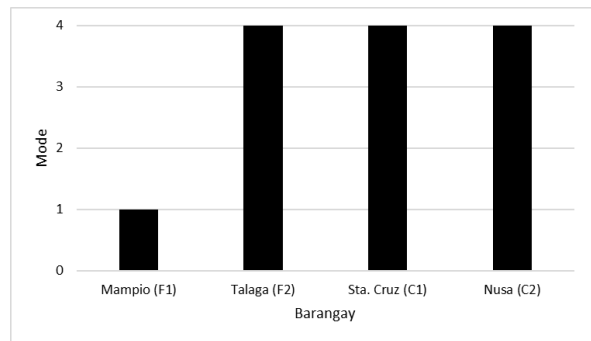
Figure 3. Law enforcement implementation level in each barangay in Cagayancillo.

Most CRM indicators were fully implemented (4.0) in C1 and F2 (Figure 4). The F1 had a low level of implementation of indicators such as conducting seminar-workshops on MPA management (2.0) and conducting information, education, and communication campaigns (3.0) compared to the other three barangays. The C2 and F1 had low scores (1.0) for posted tarpaulins, signage, and infographics.

Regarding the performance of each barangay in terms of law enforcement, C1, C2, and F2 had full implementation (Figure 5). The F1 had poor implementation (1.0) for conducting training/orientation for Bantay Dagat, conducting biophysical monitoring of MPAs (2.0), conducting MPA patrolling by Bantay Dagat (2.0), and enforcing MPA policy/ law (1.0).

Figure 4. Performance indicator of each barangay for Coastal Resource Management implementation.
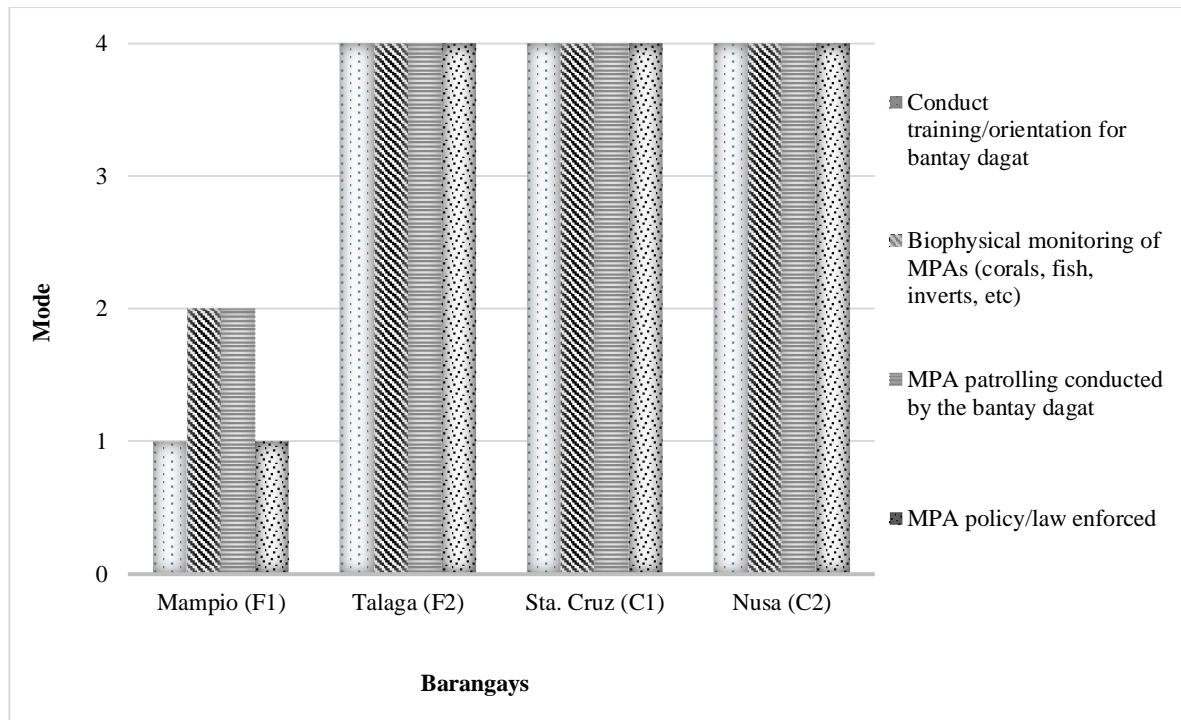
Figure 5. Performance indicator of each barangay for law enforcement.

These findings were supported by the results of personal interviews conducted by the researchers among the LGU officials in the municipality and by photos and videos taken during the ocular inspections conducted at the actual project sites. According to the respondents, most of the signage and markers were installed as part of their ASAP activity implementation. However, when typhoon Odette wreaked havoc on the island, all installations were destroyed (Miranda 2021). Consequently, during the ocular inspection, the researchers personally saw the destruction caused by typhoon Odette. All uninstalled sinkers and markers were still stored in their warehouse.

DISCUSSION

The locally-managed MPAs were primarily co-managed by the community/stakeholders and the local government. The extent of their management roles varied, including areas such as funding, marketing, and research. These differing levels of involvement can have various impacts on the co-management of the MPAs (Berkes 2015). Previous implementations of ASAP in barangays and municipalities were reported to be effectively carried out in Palawan (Gonzales et al. 2021).

In the current study, all study sites were able to implement CRM and law enforcement activities except for F1. Regarding awareness campaigns, the scheduled information dissemination campaign activities were adversely affected by a series of lockdowns related to COVID-19 in the area.

Consequently, these circumstances had an impact on the ratings of locals for this indicator. The poor implementation rate related to the posting of tarpaulin, signage, and infographics in C2 and F1 was due to several factors, such as the inaccessibility of the island from the mainland during COVID-19 lockdowns and the effect of Typhoon Odette in December 2021. Furthermore, C2 is an islet near F1 and is only accessible through a pump boat, affecting the procurement process of the materials needed for the CRM ASAP plan of the barangay.

Law enforcement was also fully implemented in C1, C2, and F2. The integration of the kind of leadership that F2's barangay captain has and the support and participation of its constituents played a significant role in why the level of implementation in their barangay was high in both their CRM and law enforcement activities.

According to Ferrer and Nozawa (1997), when policies in the barangay are already in place, collaborative and credible efforts for effective enforcement may just continuously be carried out. On the other hand, factors such as lack of participation and engagement, lack of accountability, low transparency, lack of awareness of active citizens, weak role of civil society, gender inequality, quality of decision making, locals' attitude and participation, political will, legislation, and priority of outsourced funds can greatly affect the success of the implementation of environmental management at the ground level (Gonzales 2011; Taylor 2016; Cameron 2016; PIN 2017). At the barangay level, the establishment of a law enforcement office requires budgetary allocations

and manpower support to have a successful implementation (DENR et al. 2021).

The current study indicates that the key to effective implementation of CRM and law enforcement activities in the MPAs lies significantly in the leaders of a barangay. Well-established leaders can efficiently and responsibly implement projects within their areas because they have the support and participation of their constituents.

FUNDING

ETHICAL CONSIDERATIONS

Prior informed consent, data privacy, and the confidentiality of the respondents were ensured by the researcher prior to the conduct of the survey.

DECLARATION OF COMPETING INTEREST

The authors declare that there are no competing interests among any of the authors.

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