Fisherfolk Awareness of Coastal Resources in Calabanga

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ABSTRACT

This study examines the awareness and perspectives of fisherfolks in Calabanga, Camarines Sur, Philippines, regarding coastal resources and their management. Using a mixed-methods approach—surveys, interviews, and focus groups—data were collected from 150 fisherfolks across three barangays: Bonot, Cagsao, and Sibobo. The research assessed fisherfolks' knowledge of sustainable fishing practices, their awareness of coastal ecosystems, the challenges they encounter, and their perceptions of coastal resource management (CRM) initiatives.

Findings reveal that while fisherfolks demonstrate reasonable awareness of marine life and fishing grounds, they lack sufficient understanding of coral reefs and their ecological functions. Although 98% reported avoiding protected areas, overfishing (49%) and declining fish stocks (43%) remain pressing concerns. Participation in CRM programs is high (85%), yet perceptions of effectiveness are mixed: 39% view them as effective, 32% as somewhat effective, and 23% as ineffective. This discrepancy between participation and perceived outcomes suggests a gap between program implementation and tangible benefits, potentially perpetuating unsustainable practices.

The study highlights critical gaps in educational efforts, particularly concerning coral reef conservation, which may undermine long-term sustainability goals. Recommendations include strengthening community involvement in coastal management, enhancing fisheries policy and enforcement, and promoting alternative livelihoods. Targeted training, stricter gear regulations, and awareness campaigns addressing coral reefs and climate change are emphasized. Ultimately, the sustainability of coastal resources and fisherfolk livelihoods in Calabanga depends on management strategies that align with the needs and concerns of the fishing community.

Keywords: Coastal Resources, Fisherfolks Awareness, Sustainable Fishing, Coastal Resource Management

INTRODUCTION

Coastal resources are among the most valuable natural assets of the Philippines, providing food, livelihood, and ecological services to millions of people. The country's extensive coastline and rich marine biodiversity make fisheries a cornerstone of rural economies, particularly in coastal municipalities. However, these resources face mounting pressures from overfishing, pollution, and climate change, which threaten both ecological balance and community welfare (de la Cruz et al., 2023). Sustainable management of coastal resources requires not only government intervention but also active participation and awareness among local fisherfolk, who are the primary users of these ecosystems.

The 1987 Philippine Constitution underscores the importance of protecting both human health and ecological integrity. Article II, Section 15 declares: *"The State shall protect and promote the right to health of the people and instill health consciousness among them."* Section 16 further emphasizes: *"The State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature."* Similarly, Article XIII, Section 7 affirms: *"The State shall protect the rights of subsistence fishermen, especially of local communities, to the preferential use of communal marine and fishing resources, both inland and offshore."* These constitutional provisions establish the legal and moral foundation for sustainable coastal resource management.

Awareness of coastal resources encompasses knowledge of their ecological importance, economic value, and the need for conservation. Prior studies indicate that fisherfolk awareness is closely linked to sustainable fishing practices, as informed communities are more likely to adopt responsible resource use and support conservation initiatives (Abalayan & Jastio, 2025). Conversely, limited awareness often results in unsustainable practices that accelerate resource depletion.

In Calabanga, Camarines Sur, fishing remains a major livelihood, particularly in barangays bordering San Miguel Bay—one of the country's richest fishing grounds. Despite this abundance, local fisherfolk continue to face challenges such as declining fish stocks, habitat degradation, and socio-economic insecurity (Philippine Sustainable Development Network, 2025). These realities highlight the need to evaluate fisherfolk awareness not only of coastal resources but also of sustainable fishing practices and the challenges they encounter.

This study seeks to provide insights that can guide local policies and community-based programs toward sustainable coastal resource management in Calabanga. By examining fisherfolk awareness, perspectives, and experiences, the research aims to identify gaps in knowledge, assess the effectiveness of current management initiatives, and propose strategies that align ecological sustainability with the socio-economic needs of fishing communities.

Objectives

General

To assess the awareness of fisherfolks on coastal resources and related challenges in selected barangays of Calabanga, Camarines Sur, and to explore their perspectives on coastal resource management.

Specific

1. Evaluate the local fisherfolks' awareness on coastal resources.
2. Assess the awareness of fisherfolks on sustainable fishing practices.
3. Determine the awareness of fisherfolks on the challenges they encountered.
4. Explore the perspectives of fisherfolks towards the effectiveness of coastal resources.

REVIEW OF RELATED LITERATURE

The 1987 Philippine Constitution provides the normative framework for sustainable development in the country. Article II, Section 15 emphasizes the right to health, while Section 16 underscores the right to a balanced and healthful ecology. Furthermore, Article XIII, Section 7 recognizes the rights of subsistence fishermen, thereby linking ecological protection with social justice and livelihood security (1987 Philippine Constitution). These constitutional provisions establish the legal and moral foundation for policies and programs that integrate environmental sustainability with human welfare.

The Philippines has consistently aligned its development agenda with the United Nations Sustainable Development Goals (SDGs). The Philippine Sustainable Development Network (2025) highlights the country's efforts in localizing the SDGs through collaborative partnerships and innovative statistical systems. The 2025 Voluntary National Review emphasizes transformation driven by inclusive governance and data-driven monitoring, reflecting the state's commitment to achieving the 2030 Agenda. This underscores the importance of institutional mechanisms that bridge national priorities with global sustainability frameworks.

De la Cruz, Magalong, and the Climate Change Commission (2023) stress the role of multi-stakeholder collaboration in advancing ecological sustainability. Their work illustrates how government agencies, civil society, and local communities collectively address climate change and environmental degradation. Such collaborative efforts are crucial in ensuring that ecological development is not only policy-driven but also community-centered, thereby enhancing resilience and adaptive capacity.

At the municipal level, the implementation of Republic Act 9003, or the Ecological Solid Waste Management Act, demonstrates the challenges and opportunities of translating national policy into local practice. Delacruz (2023) documents the case of Binalbagan, where compliance with RA 9003 has been uneven due to resource constraints and behavioral factors. Nevertheless, the study highlights the importance of local governance, education, and community participation in achieving effective waste management. This case illustrates the broader tension between legislation and implementation in the Philippine environmental governance landscape.

Community-based approaches remain central to sustainable development. Abalayan and Jastio (2025), in their UNDP–BIOFIN Philippines report, emphasize the role of community engagement in resource conservation. Their findings suggest that building resilient and sustainable communities requires participatory governance, capacity-building, and financial innovation. By empowering local stakeholders, resource conservation initiatives become more sustainable and socially inclusive, thereby reinforcing ecological stewardship at the grassroots level.

The reviewed literature reveals a multi-layered approach to sustainable development in the Philippines. At the constitutional level, the right to health, ecology, and livelihood provides the normative foundation. Nationally, SDG localization reflects the country's global commitments. Collaborative efforts highlight the importance of partnerships, while local case studies demonstrate the challenges of implementation. Finally, community engagement underscores the necessity of participatory approaches in resource conservation. Together, these strands of literature illustrate the dynamic interplay between law, policy, governance, and community action in advancing sustainable ecological development in the Philippines.

METHODOLOGY

Research Design

This study adopted a mixed-method design, integrating both qualitative and quantitative approaches to provide a comprehensive understanding of fisherfolks' knowledge, perceptions, and awareness of coastal resources in Calabanga. The qualitative component consisted of in-depth interviews and focus group discussions, which explored perceptions and awareness of coastal resource management. The quantitative component employed structured surveys and questionnaires to measure fisherfolks' knowledge of coastal biodiversity, conservation policies, and related governance frameworks. By combining statistical trends with personal insights, the study was able to capture both the breadth and depth of fisherfolk perspectives, consistent with Tolentino and Mancenido's (2024) mixed-method study on conservation attitudes in Quezon.

Research Method

The study utilized a stratified random sampling technique to ensure representation across different barangays in Calabanga. Barangays served as strata, allowing the research to control for possible differences in awareness levels among communities. Within each stratum, fisherfolks were selected using simple random sampling, thereby minimizing bias and enhancing representativeness (BMC Public Health, 2020; Atanda & Oparinde, 2023).

Data Collection

Data were collected through two complementary methods. For the qualitative strand, semi-structured interviews and focus group discussions were conducted to elicit detailed narratives and perceptions regarding coastal resource management. For the quantitative strand, standardized surveys and questionnaires were administered to assess fisherfolks' knowledge of biodiversity and conservation policies. This dual approach ensured that both subjective experiences and objective measures were captured.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics to identify patterns, trends, and relationships in fisherfolks' knowledge and awareness levels. Meanwhile, qualitative data were subjected to thematic analysis, allowing for the identification of recurring themes, perceptions, and contextual insights. The

integration of these analyses provided a holistic view of the fisherfolks' perspectives, enabling the study to triangulate findings and strengthen validity.

Validity and Reliability

To ensure the credibility and trustworthiness of the findings, several measures were employed. Triangulation was achieved by integrating qualitative and quantitative data, thereby reducing the risk of bias and enhancing the robustness of interpretations. For the qualitative component, credibility was reinforced through member checking, where selected participants reviewed and validated the accuracy of transcribed responses and thematic interpretations. Dependability was addressed by maintaining a clear audit trail of data collection and analysis procedures. For the quantitative component, reliability was ensured through the use of standardized survey instruments and pilot testing to refine questions for clarity and consistency.

RESULTS AND DISCUSSIONS

Local Fisherfolks' Awareness on Coastal Resources

Table 2. Frequency and Percentage of Fisherfolks' Awareness on Coastal Resources in Barangay Bonot, Cagsao, and Sibobo.

RESOURCE	**RESPONSE**	**BONOT (n=63)**		**CAGSAO (n=41)**		**SIBOBO (n=46)**		**TOTAL (N= 150)**	
		F	**P**	**F**	**P**	**F**	**P**	**F**	**P**
Familiarity with Marine Resources.	Completely familiar	54	86%	34	83%	31	67%	119	79%
	A bit familiar	8	13%	4	10%	15	33%	27	18%
	Not very familiar	1	1%	3	7%	0	0%	4	3%
	Not familiar	0	0%	0	0%	0	0%	0	0%
Knowledge of Fishing Grounds.	Yes	55	87%	39	95%	41	89%	135	90%
	No	8	13%	2	5%	5	11%	15	10%
Awareness of Fish/Marine Life.	Yes	57	90.5 %	36	88%	39	85%	132	88%
	No	6	9.5%	5	12%	7	15%	18	12%
Knowledge of Mangrove Importance.	Yes	62	98%	40	87%	45	98%	147	98%
	No	1	2%	1	2%	1	2%	3	2%
Awareness of Coral Reefs and Importance.	Yes	51	81%	32	78%	33	72%	116	77%
	No	12	19%	9	22%	13	28%	34	23%

The results concerning the awareness of coastal resources by fisher folk in Barangays Bonot, Cagsao, and Sibobo was shown in Table 2 (above). The information, gathered through a survey, intends to determine the level of understanding and knowledge by the local fisherfolks on diverse marine resources.

The information captures a strong sense of recognition with different types of marine resources by the fisherfolks under study. A large majority (79%) of the respondents indicated they were "completely familiar" with the various marine resources in Calabanga such as shrimps, tiger tooth. The famous and abundant in barangay

Sibobo were blood cockles, and the whale shark that is showing every summer part of the Sea of Barangay Bonot, Sta. Rosa, followed by (18%) "a bit familiar," and (3%) said they are not very familiar with this because of lack of knowledge in marine resources. Knowledge of the location of main fishing grounds is also high, with 90% of respondents answering "yes" because of the years of fishing experiences and most of them were fishermen while 10% answered "no" based on their age and lack of experiences on fishing and also few of them were vendors only. Similarly, a substantial proportion of fisher folk (88%) expressed awareness of the different types of fish and other marine life in Calabanga's waters such as whale sharks, tiger tooth, and shrimps, followed by 12% were not aware of this.

The awareness of mangroves being important is very high (98%), indicating a good grasp of their critical role in protecting the coast and 2% do not know. Although still majority (77%), awareness of coral reefs and why they are important is significantly lower than for other resources and the 23% of respondents who reported that they did not know the purposes of mangroves in the coastline. These respondents were elementary undergraduate. According to Alipio (2023), the very high level of overall marine resource awareness is in accordance with other studies on Philippine fisherfolks communities. These studies have also pointed out the critical role played by Local Ecological Knowledge (LEK) in local resource management. Nonetheless, differences in levels of awareness by types of resources (e.g., mangroves versus coral reefs) indicate the necessity of specialized interventions.

Studies by Haley et al., (2023) have already proven that specialized awareness campaigns directed towards specific ecosystems may be very successful in terms of raising the knowledge of fisher folk and inducing conservation attitudes. The outcomes of this study also highlight the necessity of adopting the same kind of specialized interventions in Calabanga, specifically towards coral reef ecosystems. This research backs the Social Learning Theory by Albert Bandura' Social Learning Theory in Psychology, (1977), that learning about coastal resources is well passed on within the community by observation and interaction.

Awareness of Fisherfolks on Sustainable Fishing Practices

This is the fisherfolks' awareness and practices of sustainable fishing in Barangays Bonot, Cagsao, and Sibobo. These practices should be understood for the long-term sustainability of coastal resources. In the Table 3 indicates the outcome of the second goal: quantifying fisherfolks' knowledge of sustainable fishing in coastal Barangays of Calabanga such as Cagsao, Bonot, and Sibobo.

This table presents the findings related to the second objective: Assessing fisher folk awareness of sustainable fishing practices in Barangays Cagsao, Bonot, and Sibobo, Calabanga.

To know the awareness and practices of fisherfolks regarding these are essential in the pursuit of sustainable fishing and the preservation of coastal resources in the long run. The Table 3 presented the percentage and frequency of responses by fisher folk to questions regarding awareness and self- proclaimed practice of sustainable harvesting practices. The table gives responses to four key questions on the familiarity with the sustainable practices, selective gear use, follow-through of closed season, and fish handling.

Table 3. Frequency and Percentage of Fisherfolks on Sustainable Fishing Practices in Barangay Bonot, Cagsao, and Sibobo.

PRACTICE	**RESPONSE**	**BONOT (n=63)**		**CAGSAO (n=41)**		**SIBOBO (n=46)**		**TOTAL (N= 150)**	
		F	**P**	**F**	**P**	**F**	**P**	**F**	**P**
Familiarity with Sustainable Methods.	Yes	63	100%	41	100%	42	91%	146	97%
	No	0	0%	0	0%	4	9%	4	3%
Use of Selective Fishing Gear.	Yes	58	92%	39	95%	42	91%	139	93%
	No	5	8%	2	5%	4	9%	11	7%
Awareness to Closed Seasons.	Yes	50	79%	41	100%	34	74%	125	83%
	No	13	21%	0	0%	12	26%	25	17%
Proper Fish Handling.	Yes	62	98%	41	100%	46	100%	149	99%
	No	1	2%	0	0%	0	0%	1	1%

The results indicate a high level of familiarity with sustainable fishing practices among fisherfolk in Calabanga, with 97% reporting knowledge of such methods. This finding reflects broader trends in Philippine coastal communities, where fisherfolk demonstrate strong awareness of sustainable practices due to their dependence on marine resources for livelihood. Gerasmio (2024) observed similar patterns in Panguil Bay, where local ecological knowledge shaped conservation attitudes and gear selection, underscoring the role of experiential learning in promoting sustainability. The small proportion (3%) who reported using dragon "bubu" nets were primarily vendors or individuals with limited formal education, highlighting how socio-economic and educational factors influence awareness and adoption of sustainable practices.

The widespread use of selective fishing gear (93%) suggests a positive trajectory toward reducing bycatch and promoting ecological balance. This aligns with Batino and Dizon (2020), who emphasized that fisherfolk families utilize traditional ecological knowledge to adapt gear and practices in ways that support climate-resilient fisheries management. The minority (7%) who lacked knowledge of proper practices prioritized immediate economic returns over sustainability, reflecting the tension between livelihood needs and conservation goals.

Awareness of closed seasons was relatively high (83%), yet compliance was lower (79%). This discrepancy highlights a critical gap between knowledge and practice. Respondents from barangays Bonot Sta. Rosa, Cagsao, and Sibobo reported the absence of closed seasons, suggesting either weak enforcement or lack of localized regulations. This finding resonates with the Congressional Policy and Budget Research Department (2025), which noted that uneven enforcement of fisheries policies across localities undermines national efforts to establish a coherent "blue economy" framework. Economic pressures and perceptions that closed seasons are unnecessary further contribute to non-compliance, reflecting challenges identified in recent fisheries governance studies.

Post-harvest handling practices were nearly universal, with 99% of respondents reporting adequate fish handling and storage to prevent spoilage. This demonstrates strong awareness of the economic benefits of quality preservation, as marketable catches directly translate into higher income. Similar findings were reported by Gerasmio (2024), who noted that fisherfolk prioritize practices that yield immediate economic rewards, such as proper storage, even when compliance with broader conservation measures is inconsistent.

The results can be interpreted through the lens of Social Learning Theory, which posits that individuals acquire knowledge and practices through observation, imitation, and social interaction. In Calabanga, fisherfolks' awareness of sustainable fishing practices is reinforced through peer learning, community dialogues, and shared experiences in focus group discussions. This suggests that strengthening peer-to-peer education and participatory training programs can enhance collective learning and foster more consistent adoption of sustainable practices.

The Social-Ecological Systems (SES) framework highlights the interconnectedness of ecological systems and human communities. Fisherfolks' awareness in Bonot, Cagsao, and Sibobo reflects not only ecological knowledge but also social dimensions tied to livelihood security and cultural identity. Their practices demonstrate adaptive capacity within a broader ecological system, where resilience depends on both ecological health and social cooperation. Applying the SES lens, the findings suggest that sustainable fishing cannot be achieved solely through ecological regulation; it requires integrated governance that combines local knowledge, institutional support, and community participation.

By situating the findings within these frameworks, it becomes clear that fisherfolks' awareness is not merely an individual attribute but a collective process shaped by social learning and embedded within a dynamic social-ecological system. The results affirm that sustainable fishing in Calabanga depends on reinforcing community-based education, fostering collaborative governance, and integrating fisherfolk knowledge into broader ecological management strategies. This holistic perspective underscores the long-term sustainability of coastal resources as contingent upon both ecological stewardship and social resilience.

Overall, the results suggest that fisherfolk in Calabanga possess substantial awareness of sustainable fishing practices, particularly in gear selection and post-harvest handling. However, gaps remain in the enforcement and compliance of closed seasons, reflecting broader governance challenges in Philippine fisheries. Integrating fisherfolk knowledge with formal policy frameworks, as recommended by Batino and Dizon (2020), offers a

pathway toward sustainable fisheries management that balances ecological conservation with livelihood needs. Strengthening enforcement mechanisms, coupled with community education, may help bridge the gap between awareness and practice, ensuring that sustainability is not only understood but consistently applied.

High awareness of practices of sustainable fishing in the Asche, Bellemare, and Roheim, (2018) study agrees with other research studies conducted with other fish communities in the Philippines. However, the gap between awareness and adoption of closed seasons highlights a crucial area for intervention. According to Asche, et al., (2018); Hilborn et al., (2021) harvesting more fish is not good for the health of stocks yet can lead to economic profits, while restricting the harvest in favor of promoting fish stocks may lead to reduce livelihoods of fishers who depend on fish for their income. Based on the study of Al-Rashid, (2024), closed fishing seasons are often implemented during the breeding period of harvested species with the expectation of enhancing annual reproductive output; however, the effectiveness of such measures depends on accurate timing and enforcement, and limited studies have rigorously modeled their long-term biological impacts.

Awareness of Fisherfolks on the Challenges They Encountered

The survey showed below (Table 4) that 99% fisherfolks avoided entering protected areas when they went fishing. This demonstrated high of awareness and concern for such protective measures. Among the most commonly reported challenges, overfishing (49%) and lack of fish (43%) were cited most frequently by the participants. Base on the respondents, this was their biggest challenge when it comes to fishing, in addition to that, they have reported several times that there were illegal trawling activities, but nothing had changed. Their livelihood were severely affected because trawling were depleting the fish stocks they rely on. As a result, some were forced to engage in illegal fishing practices to make meet ends. Damage to fishing equipment was another issue (17%), as per respondents it is because of during bad weather while they were fishing. Other challenges mentioned include water pollution (23%), lack of knowledge on sustainable practices (13%) most of the respondents are elementary undergraduate who answered this, high fishing costs (41%) due the depletion of fish stock, lack of government support (19%) this is particularly the case when it concerns the unjust treatment of small-scale fishers, who are most often disadvantaged by those who disregard sea laws especially the trawls.

Rather than gaining support for their complaints against commercial ships, their rights as fishers are being ignored, and climate change (41%) it is because sometimes they catches nothing.

The results of fisherfolks' perception of the challenges they face in fishing in Calabanga were shown in Table 4. Knowing these challenges is important in order to come up with effective interventions and support programs. The table shows the frequency and percentage of fisherfolks' responses on the challenges they face in fishing. The table indicates responses to two main questions: Not fishing in protected areas and the greatest challenge encountered.

The findings are consistent with the broader literature on the challenges faced by fisherfolks communities in the Philippines and globally. As Xiang (2024), and Pala, Cinner, and Graham, (2018) have shown, overfishing threatens not only aquatic ecosystems but also food webs and the aquatic food supply. The significant impact of climate change (41% reporting) also aligns with growing concerns about the vulnerability of coastal communities to rising sea levels, changing weather patterns, and ocean acidification (Willer et al., 2022).

The near-universal avoidance of fishing in protected areas indicates that these regulations are generally well-respected and adhered to by the fisher folk in Calabanga. This positive finding suggests that protected areas are likely playing a role in conservation efforts. The prominence of overfishing and fish stock depletion as major challenges underscores the urgent need for effective fisheries management strategies. These concerns likely reflect the lived experience of fisher folk who have witnessed declines in fish catches over time. The significant number of respondents citing damage to fishing gear suggests that access to affordable and durable gear is an important issue. The additional challenges mentioned, such as pollution, lack of knowledge, high costs, lack of support, and climate change, highlight the complex and interconnected nature of the challenges faced by the fishing community. These factors can exacerbate the problems of overfishing and fish stock depletion, creating a cycle of vulnerability for fisher-folks. The concern about overfishing and fish stock depletion were common findings in studies of fisherfolks communities in the Philippines and globally. According to Tahiluddin, & Sarri, (2022). Millions of people still relies on marine fisheries for livelihood and food even up to this date.

Table 4. Frequency and Percentage of Fisherfolks on the Challenges they Encountered in Barangay Bonot, Cagsao, and Sibobo.

CHALLENGES	RESPONSE	BONOT (n=63)		CAGSAO (n=41)		SIBOBO (n=46)		TOTAL (N= 150)	
		F	P	F	P	F	P	F	P
Avoidance of Fishing in Protected Areas.	Yes	62	98%	41	100%	46	100%	149	99%
	No	1	2%	0	0%	0	0%	1	1%
Challenges	Overfishing	25	40%	26	63%	23	50%	75	49%
they Face in									
Fishing.	Depletion								
	of fish stock	37	59%	17	41%	10	22%	64	43%
	Damage to								
	fishing gear	10	16%	4	10%	12	26%	26	17%
	Lack of								
	access to								
	fishing	1	2%	0	0%	1	2%	2	1.3%
	Grounds								
	Water								
	pollution								
		0	0%	0	0%	0	0%	0	0%
	Lack of								
	knowledge on								
	sustainable	2	3.2%	0	0%	0	0%	2	1.3
	practices								
	High								
	fishing costs								
	Lack of								
	government	11	17%	9	22%	14	30%	34	23%
	support								
	I. Climate	11	17%	5	12%	3	6%	19	13%
	change								
		29	46%	12	29%	20	43%	61	41%

However, due to the high demand, many fishers used illegal methods in order to catch fish faster and more profitably. Various forms of illegal fishing contribute to the depletion of fish stocks (Alvarico, Cuevas-Ruiz, & Dinsay, 2021). Globally, nearly 80 percent of fish stocks have been depleted or overexploited. Ocean scientist claims that overfishing threatens not only aquatic ecosystems but also food webs and the aquatic food supply (Xiang, 2024; & Pala et al., 2018). A destructive fishing practice is an illegal fishing activity that damages either the targeted fishing habitat or the surrounding ecosystems that support it (Marine Stewardship Council, n.d.). The term destructive fishing refers to fishing gears or methods that cause ecosystem components to be destroyed or cease to function normally (Willer et al., 2022).

Perspective of Fisherfolks towards the Effectiveness of Coastal Resources

The results of fisherfolks' views on the effectiveness of coastal resource management in Calabanga shows in Table 5. It is important to know these views in order to enhance CRM strategies. The table provides the results

pertaining to the fourth objective: Investigating fisherfolks' perspectives on the effectiveness of CRM in Calabanga. The knowledge of these perspectives is essential to enhance CRM strategies and ensure they are sensitive to the needs and concerns of the fishing sector. Fisherfolks' perceptions of effectiveness can determine their involvement in coastal resources programs and their willingness to abide by rules. Table 5 shows the frequency and percentage of fisher folk responses on their views about the effectiveness of coastal resources, program participation, the significance of community participation, and their satisfaction with the present condition of marine resources.

Table 5. Frequency and Percentage of level of Fisherfolks' Awareness towards the Effectiveness of Coastal Resources in Barangay Bonot, Cagsao, and Sibobo.

PERSPECTIVE	**RESPONSE**	**BONOT (n=63)**		**CAGSAO (n=41)**		**SIBOBO (n=46)**		**TOTAL (N= 150)**	
		F	**P**	**F**	**P**	**F**	**P**	**F**	**P**
Effectiveness of	Yes	21	33%	19	46.3%	18	39%	58	39%
Current Marine									
Resource	No	6	9%	2	4.9%	1	2%	9	6%
Management.									
	Somewhat	18	19.5%	8	29%	22	48%	48	32%
	Effective								
	Not	18	29%	12	29.3%	5	11%	35	23%
	Effective								
Participation in Ocean Resource Management Program.	Yes No	50 13	79% 21%	36 5	88% 12%	41 5	89% 11%	127 23	85% 15%
Importance of Community Participation.	Yes	63	100%	39	95%	45	98%	147	98%
	No	0	0%	2	5%	1	2%	3	2%
Satisfaction with Current State of Marine Resources.	Completely Satisfied	14	22.2%	9	22%	16	35%	147	98%
	Somewhat Satisfied	19	30.1%	12	29%	19	41%	50	33.3%
	Not Very Satisfied	24	38.1%	14	34%	9	20%	47	31.3%
	Not Satisfied	6	9.5%	6	15%	2	4%	14	9.3%

The findings reveal a split perception among fisherfolk in Calabanga regarding the effectiveness of marine resource management. While 39% considered current management effective and 32% somewhat effective, 23% viewed it as not effective, and 6% reported it as not effective at all due to weak policy implementation. This divergence reflects broader challenges in Philippine fisheries governance, where policies often exist but enforcement and localized application remain inconsistent. The Congressional Policy and Budget Research Department (2025) similarly noted that uneven enforcement of fisheries regulations undermines national efforts to build a coherent "blue economy" framework, particularly in coastal municipalities where compliance varies across barangays.

Participation in marine resource management initiatives was relatively high (85%), with fisherfolk actively engaging in seminars and programs. This suggests strong community involvement, which is consistent with Gerasmio (2024), who found that fisherfolk in Panguil Bay demonstrated high participation in conservation activities when these were linked to livelihood benefits. Moreover, the overwhelming consensus (98%) on the importance of community participation underscores the recognition that sustainable management of marine ecosystems is inseparable from the sustainability of fisherfolk livelihoods. Batino and Dizon (2020) emphasized that fisherfolk families rely on traditional ecological knowledge and community-based practices to adapt to environmental changes, reinforcing the value of participatory approaches.

Despite this, satisfaction with the present condition of marine resources was low. Only 26% were fully satisfied, while 33.3% were partially satisfied, and a combined 65% expressed dissatisfaction. Respondents attributed this

to dwindling catches, trawling activities, and non-compliance with regulations. This dissatisfaction reflects the tension between awareness and lived realities, where ecological degradation and weak enforcement diminish the perceived effectiveness of management. Similar findings were reported by Gerasmio (2024), who noted that fisherfolk often express gratitude for continued catches despite declining stocks, highlighting a resilience mindset but also a recognition of resource depletion.

The results can be interpreted through Social Learning Theory, which emphasizes that individuals acquire knowledge and practices through observation, imitation, and social interaction. In Calabanga, fisherfolks' awareness and participation in seminars and programs illustrate how collective learning environments reinforce sustainable practices. The high participation rate (85%) suggests that fisherfolk are learning not only from formal training but also from peer-to-peer exchanges and community dialogues. This supports the idea that social learning processes are critical in embedding sustainable fishing practices into everyday livelihood strategies.

The Social-Ecological Systems (SES) Framework provides a lens to understand the interconnectedness of ecological systems and human communities. The dissatisfaction expressed by fisherfolk despite high participation highlights the fragility of the ecological subsystem when enforcement is weak and resource depletion continues. At the same time, the strong consensus on the importance of community participation reflects the resilience of the social subsystem. These findings suggest that sustainable marine resource management in Calabanga requires integrated governance that strengthens ecological enforcement while leveraging social cooperation and local knowledge. The SES perspective underscores that ecological sustainability cannot be achieved without addressing the social dimensions of livelihood security, compliance, and collective action.

By situating the findings within these frameworks, it becomes clear that fisherfolks' perceptions of marine resource management are shaped by both social learning processes and the dynamics of a social-ecological system. Awareness and participation are high, but satisfaction remains low due to ecological degradation and weak enforcement. This tension highlights the need for policies that not only regulate ecological practices but also reinforce community-based learning and participatory governance. Ultimately, sustainable fishing in Calabanga depends on the synergy between ecological stewardship and social resilience, where fisherfolk are both learners and stewards within a broader system of resource management.

Overall, the results suggest that while fisherfolk in Calabanga are highly participatory and aware of the importance of sustainable management, perceptions of effectiveness are undermined by weak enforcement, trawling pressures, and declining catches. This mirrors national trends in Philippine fisheries governance, where policy frameworks exist but localized enforcement and compliance remain uneven. Strengthening enforcement mechanisms, ensuring equitable implementation across barangays, and integrating fisherfolk knowledge into management strategies—as recommended by Batino and Dizon (2020)—are critical steps toward bridging the gap between awareness, participation, and tangible ecological outcomes.

The success of Marine Resource Management programs was variable, with good participation and strong community support among fisher-folks. Low- ing satisfaction with current conditions for marine resources, then, suggests that current management schemes are not adequate to address their problems. The disparity suggests there is a call for a greater examination of the specific prob- lems fisherfolks confront and how CRM projects can more specifically be planned to address these problems. The strongest response rate (39%) could be an indicator of either guarded optimism or resignation, since improvement is noted but not to the extent one may desire. The conflicting opinions regarding CRM effectiveness are also reflected in other research conducted in the Philippines, where overwhelmingly similar magnitudes of discontent are reported among fisher folk despite being covered under management programs (Balilo et al., 2023).

Coastal Resource Management (CRM) involves a participatory process of planning, implementing, and monitoring the sustainable use of coastal re- sources. Community-based approaches engage local coastal communities in resource management, fostering local ownership and incentives. Effective com- munity-level management necessitates tangible and equitable benefits for the community. Recent studies highlight that the degraded condition of many coastal areas, low levels of public awareness, and the socioeconomic chal- lenges in coastal communities present significant obstacles to successful CRM implementation. Recognizing that local

fishers and community members are the primary day-to-day managers of coastal resources, organizing village-level groups to assist in CRM efforts remains a crucial role for local governments (Warguez, Gomez, Montiflor, & Aguinaldo, 2023; Balilo et al., 2023).

The study evaluates the awareness of local fisherfolks on coastal re- sources, finding high awareness of general marine resources and fishing grounds, but lower awareness for coral reefs. It also assesses fisher-folk's awareness of sustainable fishing practices, finding high familiarity with selective gear and proper handling, but a gap in adherence to closed seasons. The study also identifies challenges faced by fisherfolks, such as overfishing, fish stock depletion, and climate change, with high avoidance of protected areas. The study also explores fisherfolks' perspectives on the effectiveness of coastal re- sources, finding mixed perceptions, high participation, strong community in- volvement, and low satisfaction with marine resource conditions (Bergonio, 2023).

CONCLUSION

The study concludes that fisherfolks in the selected barangays of Cala- banga generally possess a strong awareness regarding coastal resources such as fish species, fishing grounds, and mangroves. However, a notable gap per- sists in their understanding of the ecological importance of coral reefs. This indicates a need for targeted educational campaigns to raise awareness about less familiar but ecologically critical resources like coral reefs.

Fisherfolks demonstrate strong awareness and application of sustaina- ble fishing practices, such as the utilization of selective gear and proper post- harvest handing. However, the inconsistency in compliance with closed fishing seasons reveals disconnect between knowledge and practices. This gap is likely driven by economic pressures and inadequate enforcement or clarity of policies, suggested a need for more practical and community-aligned strate- gies.

The study identified overfishing, declining fish stocks, and high fishing costs as the most critical challenges faced by fisherfolks. These are com- pounded by environmental issues such as climate change and structural issues like weak policy enforcement and lack of government support. This highlights the vulnerability of fisherfolks livelihoods and underscores the importance of integrated and well-supported solutions.

While fisherfolks show active participation and support for CRM initia- tives, many remain unconvinced of their effectiveness. The gap between pro- gram implementation and tangible outcomes has led to dissatisfaction with cur- rent resource conditions. Strengthening Coastal Resources Management (CRM) strategies through inclusive planning, better enforcement, and respon- siveness to fisherfolks concerns is essential for improvement outcomes.

RECOMMENDATIONS

The following recommendations are given based on the results of the study to help improve the management and protection of coastal resources in Calabanga.

1. Enhance Coral Reef and Climate Awareness Campaigns. Since the study revealed that 77% of fisherfolks were aware of the ecological value of coral reefs, which is lower than their awareness of other resources, it is suggested that local government units (LGUs), in coordination with the Bureau of Fisheries and Aquatic Resources (BFAR) and the Department of Environment and Natural Resources (DENR), launch specific awareness campaigns. These campaigns should highlight the role of coral reefs in marine biodiversity, the effects of their deterioration, and the overall influence of climate change on coastal ecosystems. Conducting community-based seminars, using local dialects, and visual materials were made the information available and easy to remember, especially among fisher folks with minimal formal education.

2. Promotes Community Awareness and Engagement on Closed Fishing Seasons. Findings from the study revealed that although 83% of fisherfolks are aware of closed fishing seasons, many did not observe them, citing the absence of formally enforced policies in Calabanga’s barangays such as Bonot, Cagsao, and Sibobo. Given this, it may be helpful for local authorities, in collaboration with Bureau of Fisheries and

Aquatic Resources (BFAR) and Environment and Natural Resources (DENR), to initiate educational campaigns and community dialogues focused on the purpose and potential benefits of closed seasons. Rather than immediate implementation, a participatory approach could be taken—engaging fisherfolks in discussions to assess feasibility, co-develop guidelines, and explore the implications for their livelihoods. This strategy would not only bridge the gap between awareness and practice but also support collective decision-making, aligning with the Social Learning Theory highlighted in this study.

3. Enforce Policy and Monitor Trawl Activities. The study found serious issues among fisherfolks on overfishing, depleted fish, and illegal trawling. With extensive involvement in Coastal Resource Management (CRM) programs, enforcement of regulations is still lax. Strengthening enforcement processes must thus be undertaken through the establishment of community-based monitoring groups assisted by LGUs. Supply of communication equipment to such groups and coordination with local police authorities will restrain illegal operations. This action also addresses the complaints raised by fisherfolks against the enforcement of current policies and ensures that their complaints are addressed and heard.

4. Support Participatory Coastal Resource Management (CRM). While 85% of the respondents are involved in CRM programs, only 39% perceive these to be effective. It requires more individuals' involvement in planning, execution, and evaluation of CRM programs. Barangay-level CRM councils made up of fisher folks, women, youth, and elderly must be established to serve as advisory and watch bodies. Their engagement creates ownership, promote greater trust in management interventions, and ensures that the solutions are based on local experience and traditional ecological knowledge. Such participatory governance is in accordance with the Social-Ecological Systems (SES) theory informing this study.

5. Develop Alternative Livelihood Programs. The research underscored that financial difficulty is a discouragement to practicing sustainable methods, leading some fisherfolks to illegal fishing or use of destructive practices. To break the reliance on fishing and offer financial stability, the government agencies like the LGUs, BFAR, and the DTI should implement alternative livelihood programs. These can be seaweed cultivation, aquaculture, fish processing, or ecotourism training. Offering assistance as start-up money, marketing advice, and shared development can enable these options and make them popular and feasible.

6. Conduct Policy Reassessment and Strengthen Legislative Support.With only 39% of fisherfolks confirming the effectiveness of current marine policies, there is a need for local and regional policymakers to review and reform current policies. Regular reviews through consultations with impacted communities will help ensure that the policies remain effective and responsive. LGUs and municipal councils should also ensure that fishing regulations and marine protection laws are realistic and enforceable, and that adequate resources are committed to their implementation.

7. Extend Research Scope to Other Coastal Area. The conclusions of this study are only applicable to three barangays in the municipality of Calabanga. Further studies may cover more coastal municipalities in Camarines Sur and the rest of the Bicol Region. This will allow for comparisons across communities, determination of region-wide patterns, and guidance toward the development of more integrated and responsive coastal management plans. Institutions of higher learning are encouraged to adopt the mixed-method approach used in this research to further investigate the confluence between fisherfolks' awareness and the sustainability of marine resources.

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