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Parapalutang's Fishlores, Awareness, and Attitude on Marine Wildlife Conservation: Basis for Information Education Campaign Program

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Abstract

Gillnet bycatch of marine wildlife such as sea turtles, dolphins, whales, and a shark is a significant conservation problem worldwide. As a response to this concern, the study was conducted, which generally aims to investigate gillnet fishers' fishlores, awareness, and attitude towards marine wildlife conservation. The study employed mixed methods research using key informant interviews and a researcher-made survey questionnaire. There are 32 skippers from randomly selected coastal communities bordering Lagonoy Gulf who participated in the survey. The results reveal that the participants have a high level of awareness, and most of them have a positive attitude towards marine wildlife conservation. However, qualitative findings show a threat to other shark species, and notably, there was no fishlore related to their conservation. More so, the correlation coefficient shows that the fishlores and awareness are both significantly and positively correlated to attitude. The findings demonstrate that the higher the awareness level and the more respondents believe in fishlores, the more they have favourable attitudes towards marine wildlife conservation. The study recommends that increasing awareness and echoing fishlores in various education initiatives will raise a positive attitude for effective and successful marine wildlife management and conservation.
Key words: Fishlores, Awareness, Attitude, Information Education Campaign Program, Marine Wildlife Conservation

Introduction

Non-targeted species bycatch, or marine bycatch, is a fishery problem around the world (Soykan et al., 2008). According to Komoroske and Lewison (2015), it is an imminent threat to ocean species worldwide. It is often referred to as one of the world's primary conservation issues, mainly for threatened and endangered species. Based on Kaledjian et al.'s (2014) report, a huge number of whales, dolphins, and sharks have been killed because of global bycatch. Additionally, Wallace et al. (2010) indicate that an estimated 85,000 sea turtle bycatch was reported worldwide from 1990 to 2008.

The World Wildlife Fund has linked high marine bycatch to types of fishing gear. One of the fishing gears that harms marine life is the drift gillnet. According to Soykan et al. (2008), the drift gillnet blocks the pathway of larger organisms, which results in the entanglement of non-targeted species such as sea birds, turtles, sharks, dolphins, whales, and other marine mammals. Along some of the coastlines around Lagonoy Gulf, smaller-scale fishermen (locally known as *parapalutang*) use drift gillnets to catch blue marlin (locally known as malasugui). Fishing usually begins in March and goes on until June.

National and international government and non-government organizations are taking action to the global threat of bycatch through various management and conservation strategies. For example, there are laws for managing bycatch and even incentive mechanisms that could potentially reduce bycatch mortality and conservation of marine wildlife (Lent & Squires, 2017). To support these efforts, the researchers felt it necessary to conduct this study, which looked at the awareness and attitude of the *parapalutang* towards conservation of marine wildlife, which includes sharks, dolphins, whales, and sea turtles (locally known as pating, lumod, balyena, and pawikan respectively). In addition, the researchers also recognized the important role of public awareness and attitude, as well as fishlores in resolving wildlife management and conservation problems. This study will have a significant impact on the body of literature that establishes the connection between fishlore awareness and attitudes of parapalutang with regards to marine wildlife conservation. The findings will also serve as baseline data that will aid in the development of education initiatives for promoting marine wildlife conservation in Lagonoy Gulf, Philippines. Results obtained will also help inform policymakers and enforcers so that their wildlife management and conservation strategies in coastal communities will be improved.

Objectives

This study investigates the fishlores, awareness, and attitude of the respondents towards the conservation of marine wildlife, including *pating, lumod, balyena, and pawikan*. Specifically, this aims to:

1. Determine the awareness level of the respondents in marine wildlife conservation;
2. Determine the attitude of the respondents towards marine wildlife conservation; and
3. Examine the implications of respondents' fishlores to marine wildlife conservation.

Hypothesis

There is a significant relationship between respondent's attitude and (a) their attributes, (b) awareness level, and (c) fishlores towards marine wildlife conservation

Methodology

The study employed a mixed-method research design. Five people who had been fishing for at least 15 years were interviewed as key informants. The survey was also conducted with 32 boat skippers who were selected at random from coastal communities along the Lagonoy Gulf, Philippines. To easily facilitate the discussions, the researchers used codes such as R1 to R31 for respondents and K1 to K5 for key informants.

There are four sections to the survey questionnaire that were developed. The first section of the questionnaire focused on the attributes of the respondents. The second section used five indicators, three of which were derived from Rajakaruna et al.'s (2009) report, to determine respondents' attitudes toward marine wildlife conservation. The third section contains indicators that were used to assess respondents' knowledge of marine wildlife protection. The final section includes fishlore, which are stories, beliefs, and knowledge about catching malasugui. The key informants were the ones who identified the fishlores.

The constructed questionnaire was validated and translated into Bicol dialect, and presented to the key informants. The researchers conducted the survey while reading the questionnaire to the respondents and then recording their responses. Once the survey was completed, the researchers organized and summarized the responses. Statistical computations of the weighted mean, percentage technique, Pearson's r, and Chi-square were done using the Statistical Package for Social Sciences.

Results

1. Respondents' Attributes

As shown in table 1, the average age of the respondents is 45, the oldest is 66, and the youngest is 18. The average household size is 6 having the lowest members of 2 and the highest members of 12. Most of the respondents graduated in high school (31.25%), and their highest educational attainment is vocational (6.25%). The respondents engaged in gillnet fishing for 15 years, the lowest number of years is 4, and the highest is 30. More than half of them (56.25%) are non-owner skippers. The average net length they used is 4x371.4 meters with stretched- mesh size of 3-4 inches. Last gillnet fishing season, their average catch of blue marlin is 22.6 kg, the lowest catch is 18 kg, and the highest is 35 kg. Their average monthly income during the fishing season is Php13, 156; the lowest is Php3, 000, and the highest is Php50, 000.

Table 1. Profile of the Respondents

	Statistics				
Category	Min	Max	Average	f	%
Age	18	66	45		
Household size	2	12	6		
Monthly income during fishing season *(peso)*	3,000	50,000	13,156		
No. of Years as *parapalutang*	4	30	15		
stretched-mesh size *(inch)*	3-4	3-4	3-4		
Net length *(meter)*	2.1x140	6.3x770	4x371.4		
Average Catch of blue marlin *(kg)*	18	35	22.6		
Educational Attainment					
High School Graduate				10	31.25
High School level				4	12.5
Elementary Graduate				8	25
Elementary Level				8	25
Vocational				2	6.25
Type of Ownership					
Owner Skipper				14	43.75
Non-owner Skipper				18	56.25

2. Awareness Level of the Respondents on Marine Wildlife Conservation

The grand mean from Table 2 demonstrates that the respondents are highly aware of marine wildlife conservation. The two indicators that received the highest weighted means and were marked as very high are: *it is unlawful to catch and slaughter marine wildlife such as sharks, whales, sea turtles, and dolphins* (3.81) and *Marine wildlife has a vital role in the balance of the marine ecosystem and the natural world as a whole* (3.65). The findings show that respondents are remarkably aware of the critical role that marine wildlife plays in maintaining the balance of the marine ecosystem, and they are aware that catching and slaughtering marine wildlife is illegal. This is contrary to result of the study conducted by Kelly et al (2004) where UK people found to have lack of awareness regarding the existing marine protection legislation. Nevertheless, the indicators that earned the lowest mean-weighted values are: *drift gillnet creates risks of entanglement to marine wildlife and can kill them* (2.97) and *turtle species, sharks, whales, and dolphins are threatened by human activities, which could lead to their extinction* (2.52). The results reveal that the respondents are not fully aware of the significant dangers that drift gillnets pose to marine wildlife. According to the Food and Agriculture Organization of United Nations (2021), drift gillnet bycatch is one of the most critical threats to the endangered marine wildlife species. Braga (2013) likewise concludes that mortality of sea turtles in Southern Bahia is caused by fishing nets.

Table 2. Respondents' Awareness level on Marine Wildlife Conservation

Indicators	M_w	Description	Awareness Level
1. It is unlawful to catch and slaughter marine wildlife such as sharks, whales, sea turtles, and dolphins	3.65	Extremely Aware	Very High
2. Drift gillnet creates risks of entanglement to marine wildlife and can kill them	2.97	Aware	High
3. Turtle species, sharks, whales, and dolphins are threatened by human activities, which could lead to their extinction.	2.52	Aware	High
4. Bycatch is a global problem causing the deaths of thousands or millions of whales, sea turtles, sharks, and dolphins around the world.	3.19	Aware	High
5. Marine wildlife has a vital role in the balance of the marine ecosystem and the natural world as a whole.	3.81	Extremely Aware	Very High
Grand M_w	3.23	Aware	High

3. Attitude of the Respondents towards Marine Wildlife Conservation

This study used five indicators to assess respondent's attitude towards marine wildlife conservation. All respondents (100%) agreed that it is necessary to conserve marine wildlife, as shown in Table 3.1. According to them, selling meat from marine wildlife does not provide villagers with a good income source (81%). Even though they have no food to eat, they believe that eating marine wildlife meat is not right (72 %). They also believe that the conservation measures will not lead to economic losses for the villagers (81%). However, it is alarming that most respondents believed that the net they are using is not a threat to marine wildlife (72%). A few of them stated that drift gillnet is not harmful because they set free any marine wildlife which they happened to catch, especially the ones which were still alive, like sea turtles and whale sharks (R9, R18, R19, R23, R26, R30,

and R31). They also added that most of the time, *"matagal ang buhay kan pawikan saka butanding, kaya binubuhian an pag buhay pa… pero ang lumod, nagagadan yan tulos" (Sea turtles and whale sharks are tougher than dolphins that is why we set them free if we accidentally capture either one of them. However, in the case of the dolphins, they die immediately.)* (R9, R12, R29, R18, and R25). Also, respondents mentioned that although big sharks can tear through the net to escape, it is alarming to learn that some of them admitted that they capture and kill small sharks because they die quickly (R7, R9, R21, and R26).

Table 3.2 further shows the clustering of the positive and negative attitudes of the respondents. As shown in the table, the majority of the respondents have a positive attitude towards marine wildlife conservation (71.9%). It has been shown that attitude plays a critical role in marine wildlife conservation. Hariohay et al (2018) and Mir et al (2015) both believe that the attitude of the public towards wildlife conservation is critical to the success of any wildlife conservation effort. According to Dalum et al. (2013), fostering positive attitudes could increase tolerance to marine wildlife conservation.

Table 3.1. Respondents' Attitude towards Marine Wildlife Conservation

Indicators	Yes		No	
	f	%	f	%
1. Do you think it is necessary to conserve marine wildlife such as sea turtles, sharks, whales, and a dolphin?	32	100	0	0
2. Do you think that selling meat of marine wildlife provides a good income source for the villagers?	6	19	26	81
3. Do you think that because of the marine wildlife conservation legislation, some people lost their sources of income?	15	47	17	53
4. Do you think that your fishnet can be a threat to marine wildlife?	9	28	23	72
5. Do you think it is alright to eat marine wildlife meat if you do not have any catch or food to eat?	9	28	23	72

Table 3.2. Percentage Distribution of Respondents with Positive and Negative Attitude towards Marine Wildlife Conservation

Attitude	F	%
Positive	23	71.9
Negative	9	28.1
TOTAL	32	100

4. Implications of Respondents' Fishlores to Marine Wildlife Conservation

Key Informant Interview was utilized to obtain respondents' fishlores, which may help with marine wildlife conservation. Thematic analysis derived six fishlores. As shown in Table 4, respondents have a very high level of belief in the identified fishlores. A high level of belief in these fishlores could help develop conservation education initiatives for marine wildlife. According to Jimoh et al. (2015), efforts to adapt such beliefs and taboos could be useful for wildlife conservation, especially in protected areas.

Table 4. Respondents' Level of belief on the Fishlores

Fishlores	M_w	Description	Level
1. Eating the meat of sea turtles can trigger illness	3.61	Most of the time	Very High
2. Slaughtering and eating sea turtles and dolphins can bring bad luck to fishers	3.00	Some of the time	High
3. The meat of whale sharks melts when cooked, so it is not good to eat	3.26	Most of the time	Very High
4. Fishing of marlins is hard during a full moon	3.45	Most of the time	Very High
5. Whale sharks and whales save people, so they should be released when caught	3.81	Most of the time	Very High
6. The sea turtle and dolphin give back a catch of fish when they are released and ask them to give you something in return	3.45	Most of the time	Very High
Grand M_w	3.43	Most of the time	Very High

Eating the meat of sea turtles can trigger illness. The respondents believe in this fishlore most of the time (3.61). According to the key informants, they have long believed that eating sea turtles' meat could trigger chronic illness. The informants said:

"Ang karne kang pawikan siring kang karne ning karabaw… nakakalubat ini (K1& K4). "..Dahil digdi takot ang mga gurang saka may mga kamatean na magkakan kaan(K4)." (Meat of sea turtle is similar to carabao meat; when eaten, it can cause an illness to worsen or a previously contracted disease to recur. That is why older and sick people are afraid to eat sea turtle dishes.)

Slaughtering and eating sea turtles and dolphins can bring misfortune to fishers. This belief has been most of the time agreed upon by respondents (3.00). All the informants agreed that slaughtering and eating oceanic turtles and dolphins will bring bad luck to fishermen. The informants reported:

"Pag nakadakop ning pawikan o lumod man tigbubuhian ta dimalas sa hikot pag nagbuno kaan" (K2). "Ang pagbuno kang pawikan saka lumod nagdadara ning kadimalasan sa parapalutang (K3).'' (When sea turtles and dolphins are caught, they are released back to the sea because it brings bad luck to fishing when you slaughter them.)

"Ang sabi… subok na ini huli ta dakol na parapalutang ang nabidahan kaini kaito" (These stories of our elders were passed down to the present generation because many fisher folks have proven these stories by themselves.) (K1).

The meat of whale sharks melts when cooked, so it is not good to eat. All the informants agreed that whale shark's meat is melted when cooked. They went on to say that the taste of meat is disgusting (K2 & K5). They shared:

"*Ang karne kaiyang butanding natutunaw pag kinunot na…" (The meat of whale shark melts when cooked) (K1).* The second informant supported this statement and added: *"…Saka malain ang namit niya…makasuka, ta so pinsan ko kaito nakakua sinda ning butanding, nakua ninda gadan na. Nagtabang ngani ako kaito pag gilid. Kadakula na maray halos dakula pa sa*

motor ming pig gamit…Kinarne so butanding, di nagpubar kami pagluto…ay halos garo kami magsuruka …saka nakaka-LBM siya sir ta sobrang taba…saka mapas-it ang parong niya...kaya kung buhay mag gadan dai kami kaan minakua" (The meat of whale shark melts when cooked or prepared as kinunot (local dish).
And it tastes bad, and it has a nauseous smell and taste. One of my cousins previously found a dead whale shark. I even helped bring the fish on the shore; it was large — even larger than the fishing boat we were using. It was slaughtered, the meat was distributed, and we tried to cook it. But it tasted and smelled bad, and we were close to throwing up; you probably would have Lose Bowel Movement (LBM) because of the fatty meat. That's why whether it's alive or dead, we do not eat whale sharks.) (K2).

Fishing of marlins is hard during a full moon. The respondents said that they believed in this fishlore most of the time (3.45). Every informant claims that they do not go fishing when the moon is full, as fish can see their net.

"*Mga duwang banggi bago magbilog minapahingalo na kami kaiyan…maluya man ang sira kaan" (About two nights before full moon, we do not go out anymore because we will not get much fish anyway) (K2) …"garo naheheling man kan sira kaan ang hikot…garo kaya aldaw kaan ang iraraom kang dagat,maliwanagon" (It is like the fish can see the net because it is very bright under the sea) (K5).*

At least one respondent noted the value of not fishing on a full moon. The respondent mentioned, *"…tubod ako diyan…saka nakakabuwelo diyan ang mga sira magpataw-pataw…lalo na so mga nag-uurugbon" (I believe it… during a full moon, the fish and other marine species are free to swim and float, especially the females) (R19).*

Whales and whale sharks save people, so they should be released when caught. The mean of 3.81 shows that the respondents believe in this fishlore most of the time. One of the informants said:

"*Ang butanding saka balyena, nakakasalbar ning tawo. Sa Sorsogon ngani baga may sinalbar ang butanding, kaya dapat ingatan mo. Pag nakua mong buhay dapat dae mo sinda pag-gadanun asin buhian mo sinda. Arog man sa pawikan." (Whale sharks and whales save people. In Sorsogon, stories abound of people caught in the sea being rescued by whale sharks. So once you catch one, you have to take care of it, release it back to the sea—same with sea turtles.) (K2)*

Some respondents told the same story about whale sharks saving people. He said:

"Garo may boot ang butanding…dakol na ako nadangugan ning estorya nagsalbar an ning buhay kang tawo" (Whale sharks are sentient creatures. I hear a lot of stories of whale sharks saving people.) (R23)

The sea turtle and dolphin give back a catch of fish when they are released and ask them to give you something in return. According to the informants, once you catch a sea turtle or a dolphin and you release them and ask them to give you something in return, they usually give back a catch of marlins. During the survey to the respondents, they said that they believe in this fishlore most of the time (3.45). Some of them shared:

"*May binuhian ako pawikan kaito…"sinabi ko bako ka ang hanap me...tawan mo kami malasugui (R31)." "Ibubuhi taka…taw-an mo man kami ning malasugui(R23)." (I once caught a tortoise. I talked to it, "You are not the one we are looking for. I will release you, give us marlins instead.)*

5. Correlation between respondents' attitude and (a) their profiles (age, no. of years in palutang, monthly income during paralutangan, and educational attainment), (b) awareness level, and (c) fishlores towards marine wildlife conservation

This study analyzed the correlation between attitude and (a) the demographics of respondents, (b) awareness level, and (c) fishlores towards marine wildlife conservation. The results, presented in Table 5.1, revealed the variables with statistically significant correlations as follows: awareness and attitude (r = .669, p<.01); fishlores and attitude (r = .545, p < .01); age and fishlores (r = .571, p<.01). Based on the findings, it can be concluded that the more people are aware of fishlores and believe in them, the more they become positive towards marine wildlife conservation. While this was the case, no significant relationship was discovered between attitude and all the profiles. The findings demonstrate that awareness and fishlore are critical components for elevating respondents' attitudes toward marine wildlife conservation regardless of their profiles.

Table 5.1 Correlation Matrix of Respondents' Attitude, Awareness, Fishlores, and Profiles (age, no. of years gillnet fishing, monthly income during fishing season, and educational attainment)

		Variables						
		ATT	FIS	AWR	AGE	YEA	MON	EDU
ATT	Pearson Correlation	1						
	Sig. (2-tailed)							
FIS	Pearson Correlation	.545**	1					
	Level of Correlation	Moderate						
	Sig. (2-tailed)	.001						
AWR	Pearson Correlation	.669**	.463*	1				
	Level of Correlation	Moderate	Moderate					
	Sig. (2-tailed)	.000	.004					
AGE	Pearson Correlation	.261	.571**	.204	1			
	Level of Correlation	Weak	Moderate	Weak				
	Sig. (2-tailed)	.74	.000	.131				
YEA	Pearson Correlation	.266	.174	.201	.314*	1		
	Level of Correlation	Weak	Weak	Weak	Moderate			
	Sig. (2-tailed)	.070	.171	.135	.040			
MON	Pearson	.128	.149	-.048	.305*	.343	1	
	Level of Correlation	Weak	Weak	Weak	Moderate	Moderate		
	Sig. (2-tailed)	.243	.208	.397	.045	0.027		
EDU	Pearson		-.261	-.195	.015*	.221	-.073	1
	Level of Correlation		Weak	Weak	Moderate	Weak	Weak	
	Sig. (2-tailed)		.075	.143	-.383	.112	.346	
	Chi-Square	.185						

Variables

Note: *Strength of Correlation:* 0.00-±0.30 Weak Correlation; ±0.31-±0.70 Moderate Correlation; ±0.71-±1.00 High Correlation. *Variables*: ATT Attitude; FIS Fishlores; AWR Awareness; YEA Years in gillnet fishing; MON Monthly income during fishing season; EDU Educational Attainment, *p < 0.05, **p < 0.001.

Conclusion and Recommendation

According to the findings, it can be concluded that the majority of respondents have a positive attitude toward marine wildlife conservation. Qualitative findings, however, indicate that other shark species are at risk. Additionally, respondents' awareness and attitudes toward conserving marine wildlife were both correlated to respondents' fishlores. Therefore, the researchers recommend that efforts be undertaken to raise awareness and to echo fishlores through various education initiatives to foster a positive attitude for successful and effective management and conservation of marine wildlife. Programs like theatrical plays and creating and distributing Information Education Campaign (IEC) materials like pamphlets, comics, brochures, and audio and video clips may be utilized for the education initiatives.

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