Household/Stakeholders Knowledge, Attitudes and Practices Towards Conservation, Protection, and Sustainable Management of Mt. Malindang Range Natural Park, Philippines

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A R T I C L E I N F O

A B S T R A C T

This study assesses the knowledge, attitudes, and practices (KAP) of households surrounding the park in the province and sustainable management of Misamis Occidental, Philippines, regarding the sustainable management, conservation, and protection of MMRNP. The study covers seven municipalities and three cities benefiting from MMRNP's water ecosystem services. A total of 1,875 respondents were interviewed face-to-face from July to September 2023. Statistical tests were performed using STATA version 17. The findings disclosed that most of the respondents are female, married, with several educational backgrounds and employment status. However, the average residency of age is high, indicating a long-term connection to the park. The economic heterogeneity observed in monthly income emphasizes the importance of considering socioeconomic factors in conservation strategies, plans, and programs.

INTRODUCTION

Biodiversity is the foundation of healthy and functioning ecosystems, the fountains of opportunity for all people. Rich soils, clean air and water, and abundant forests - the complexity of nature and the myriad species they support - are essential for stable and thriving societies (Ong et al., 2002; Catibog-Sinha, 2006). Yet few people realize its value and continue to face serious challenges and a global decline, particularly with the loss of natural habitats and reduced species distributions and populations (Butchart et al., 2010). The Philippines, the world's second-largest archipelago, covers an area of approximately 300,000 km² (Punongbayan et al., 1998). It is one of 17 mega-diverse countries, housing 70 to 80 percent of the world's biodiversity (Heaney and Mittermeier, 1998; Pelser et al., 2011; DENR-BMB, 2016). The Philippine rainforest is home to over 1130 terrestrial wildlife species and 10,000-13,000 plant species, of which more than half are found nowhere else on Earth (Ong et al., 2002). Like many developing countries, the extent of biodiversity loss in the Philippines has become alarming - so much so that some international experts have proposed declaring it a global biodiversity disaster area (Terborgh, 1999; Linden, 1998). In response to these concerns and to demonstrate to the global community that the Philippines is working to reverse these trends, an initiative was undertaken to set priorities for the Philippines' biodiversity conservation.

One of the Philippine government's efforts to address the conservation of biological resources was the development of Protected Areas (PA). Mt. Malindang Range Natural Park (MMRNP) is a protected area in the province of Misamis Occidental, located in the Northwestern part of Mindanao, Philippines (RA 9304; RA 7586). It is considered one of the Key Conservation Sites of the Philippines (Mallari et al., 2001). In October 2011, the protected area (PA) was declared an ASEAN Heritage Park (AHP) by the Ministers of ASEAN Member States due to its unique biodiversity, ecosystems, and outstanding universal values. The recognition of MMRNP as an important conservation area is responsible for upholding its integrity as a representative of the ASEAN region by preserving the park and maintaining its scenic, educational, research, recreational, and tourism values. (Amoroso et al., 2006; Pito et al., 2020; Alaman et al., 2020; Alaman et al., 2021; Calago and Diola, 2022)

The role of people in any conservation action is very important (Gemeda et al., 2016). On the one hand, people play a key role in successful conservation plans; on the other hand, they are often the cause of many threats to biodiversity. Therefore, knowing the knowledge, attitudes, and practices (KAP) of local people towards conservation is a prerequisite for conservation action (Ebua et al., 2011). Local community participation in conservation activities can be key to protecting remaining biodiversity and ecosystem services (Sophat et al., 2019), which may be influenced by the local population's knowledge, attitude, and practice (Jacobsen et al., 2021). The success of conservation depends on people's attitudes toward conservation (Brandon, 1995); thus, environmental education is essential for changing the community's attitude toward wildlife (Kahan and Ali, 2015). Additionally, households are one of the key stakeholders in the MMRNP's conservation efforts. Their knowledge, awareness, attitudes, and practices

towards conservation issues can significantly affect the success or failure of conservation programs.

Knowledge refers to the local people's ability to identify behavioral and ecological aspects (local naming, color, size, and feeding habits). This illustrates how knowledge of nature and its interactions with the surrounding social/human system is becoming important due to the abundance of resources that can provide significant welfare to communities. It means that the loss of ecosystem services will have a proportionate impact on people (Hoegh-Guldberg et al., 2019). This knowledge is related to the new idea that the basis of resource economics is no longer capital, natural resources, or labor; it is the knowledge that comes first. The contribution of local people's knowledge to effective conservation practices has been widely accepted (Kotschwar Logan et al., 2015). Therefore, it is essential to understand the level of knowledge of households about conservation and management issues to identify knowledge gaps that need to be addressed. The findings of this study can help in designing appropriate information, education, and communication materials and strategies to improve household knowledge about conservation.

On the other hand, environmental awareness has gained increasing attention due to the need to promote sustainable development and biodiversity conservation (Rillig et al., 2015; Hossain et al., 2018). Environmental awareness also mean of being aware of the natural environment and making choices that benefit from it, rather than harm it. This awareness is directly linked to environmental knowledge, attitudes, and actions and is the initial step leading to people being able to carry out responsible environmental stewardship behavior and actions. It is widely recognized that disseminating information and enhancing the knowledge of rural communities is essential for biodiversity conservation (van der Ploeg et al., 2011; Ogunjinmi et al., 2012; Choudri et al., 2016). Information sharing and environmental awareness raising have been identified as key areas for working towards sustainable development (Hossain et al., 2018).

Identifying attitudes towards conservation plays a critical role in shaping the behavior of households. Understanding the attitudes of households toward conservation issues can help in designing strategies to influence positive attitudes and behaviors toward conservation. Examining current household practices towards natural resource management and conservation can identify strategies to promote sustainable practices that are beneficial for both households and the environment. Many factors affect the relationship pattern between KAP (knowledge, attitude, and practices) and the quality of the ecosystem, both directly and indirectly. The most important socioeconomic and demographic factors must be taken into consideration. Therefore, to examine the dynamics of the local knowledge system in the community, it is necessary to study the level of KAP. This is an important factor to be used as input for MMRNP's management policy. Thus, this research study was conceptualized to assess the knowledge, awareness, attitude, and practices of households in MMRNP.

This study aims to assess the knowledge, attitudes, and practices of households towards issues concerning the conservation and management of Mt. Malindang Range Natural Park. Specifically, to determine the profile of the respondents, compare the KAP by municipality/cities and determine the significant relationship of the KAP under municipalities/cities demographic profile.

METHODOLOGY
Study Area
The study area covers the barangays of the three cities of Ozamiz, Tangub, and Oroquieta and seven municipalities, namely Clarin, Tudela, Sinacaban, Jimenez, Pana-on, Aloran, Calamba, all in the Province of Misamis Occidental (Fig 1). These municipalities/cities directly benefited from the water ecosystem services from Mt. Malindang Range Natural Park (MMRNP), Philippines. MMRNP is one of the protected areas and an ASEAN Heritage Park in the Philippines. The park covers 53,262 hectares, encompassing the province of Misamis Occidental. As a major watershed, the park sustains the economic activities and livelihood of more than a million inhabitants, including agriculture, industries, and communities within the province and neighboring Zamboanga del Norte and Zamboanga del Sur provinces.
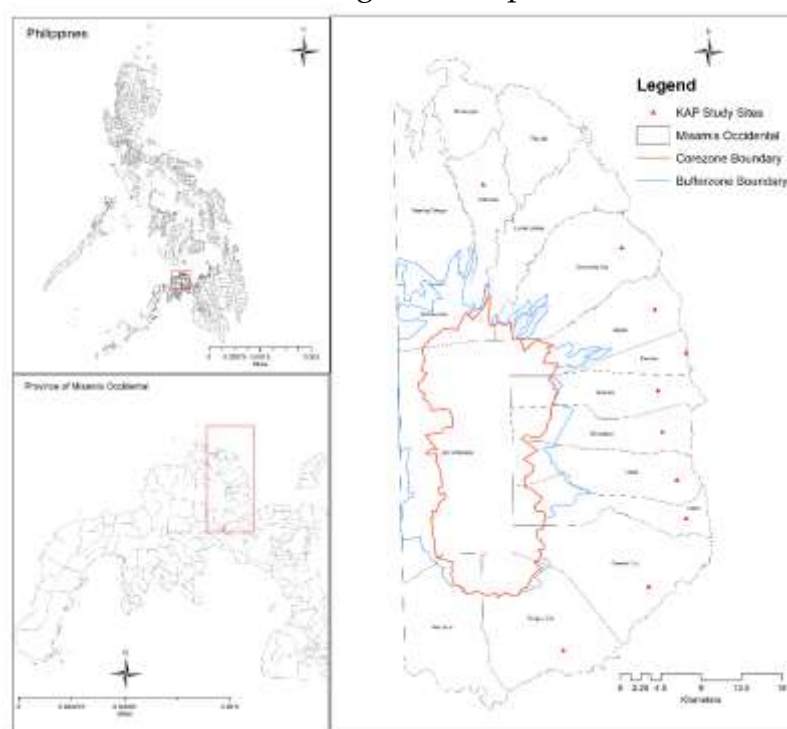

Figure.1 Map of the location of the study area in Mt. Malindang, Misamis Occidental, Philippines

Sampling Design
The study adopted the simple random to choose 1,875 households from the ten municipalities/cities who are main water users from the target population. Simple random sampling is often used in selecting a sample size, where each member of a population has an equal chance of being selected (Noor, 2022). This sampling method relied solely on chance, ensuring that every

participant had an equal opportunity to be included in the study. The advantage of employing simple random sampling is its ability to provide an impartial representation of the study population.

Slovin's formula was utilized to determine the sample size. This formula was chosen since it considers the size of the population.

$$n=N/(1+Ne^2)$$

Where n=sample size

N=population size

e-acceptable margin of error (0.07)

Using a confidence level of 95%, with 0.07 margin of error, and a population size (N) of 47,127 , the estimated sample size (n) was purged at 1875. The table below represents different municipalities/cities, the population and the desired sample size obtained with the Slovin's formula (Table 1).

Table 1. Sampling Size using Slovin's Formula of Each Municipalities/Cities for the Household Survey Connected to Water Utilities

Study Area	No. of HH's served	Slovin (0.07)
Aloran	1500	180
Calamba	4500	195
Clarin	3996	194
Jimenez	3786	194
Oroquieta City	9096	200
Ozamiz City	16332	202
Panaon	1200	175
Tudela	1291	176
Sinacaban	836	164
Tangub City	4590	195
N=	47,127	1,875

Survey Respondents

The respondents of the study are the household head or next decision-maker of the family, at least 18 years old at the time of the interview, and served as the representative of the household.

Research Instrument

A researcher-made questionnaire is a crucial tool in collecting information and data for analysis. In this study, a researchers-made questionnaire was employed during the survey. The questionnaire consists of 5 main parts focusing on the following main aspects: Part 1 is the informed consent and respondents' contact information, Part 2: the Knowledge of the households on MMRNP, which consists of 12-item questions, using a 5-point Likert-type scale (*1=Very unknowledgeable, 2 = Moderately unknowledgeable 3= Knowledgeable, 4=Moderately Knowledgeable, and 5= Very Knowledgeable*). Part 3 consists of 13-item questions on the attitudes of households towards MMRNP conservation and management. Part 4: 8-item questions for households' practices towards MMRNP conservation and management. Responses for attitudes and practices were rated on a 5-point Likert-type scale, with "*1 strongly disagree, 2 = Moderately disagree, 3= Agree,*

4=Moderately agree, and 5 strongly agree". Part 5: Socio-economic and demographic characteristics of respondents includes age, gender, marital status, educational attainment membership of any environmental organization in the community, occupation, while the socio-demographic characteristics of the household include ownership, length of stay, number of earners in the households, household size, , and monthly income were also gathered in this study.

Instrument Validity/Reliability

The process commenced with the review of the researchers' questionnaire by the three experts, and the items were revised based on their comments. Subsequently, a pilot test was conducted involving 60 households in Ozamiz City, Misamis Occidental, and the Cronbach alpha coefficient was computed. The coefficient for knowledge was 0.0824, while for the attitudes and practices was 0.705 and 0.789, respectively. These results confirmed the reliability and acceptability of the instrument.

Data Collection

After checking the validity of the questionnaire, interviews were personally administered by the researchers. The research instrument employed in this study was a researcher administered KAP questionnaire. The questionnaire was developed in English but was translated into the Visayan language understood and spoken by all respondents. The survey was conducted from July 2023 to September 2023 for the nine municipalities /cities.

Data Analysis/Statistical Treatment

Descriptive statistics were used such as, frequency, percentage, standard deviation, minimum and maximum value, and means to analyze the socio and demographic characteristics of households and compare the knowledge, attitudes and practices of households by municipalities/cities. Inferential statistics were used such as Pearson correlation to determine the relations among the knowledge, attitudes and practices. All the data were encoded through excel and were analyzed in STATA version 17. In interpreting responses, the following scales were used.

Tabel.2 Verbal Interpretation

Scale	Mean	Verbal Interpretation		
		Knowledge	Attitude	Practices
5	5.0	Highly knowledgeable	Very positive	Excellent practices
4	4.0 –		Positive	
3	4.9	Very knowledgeable	Moderately positive	Very good practices
2	3.0 –		Moderately negative	
1	3.9	Knowledgeable	Negative	Good practices
	2.0 –	Moderately		Fair practices
	2.9	knowledgeable		Poor practices

	1.0 – 1.9	Slightly knowledgeable		

Ethical Considerations

The project team secured approval in each municipalities/cities prior to the conduct of the household survey. Upon the approval of the municipal/city mayor, face-to-face interviews were conducted, assigned enumerators serve as interviewer who inform the respondents about the purpose of study, and the respondents may opt to discontinue answering if they feel uncomfortable of the questions and ensure that the data gathered were treated with utmost confidentiality.

RESULTS AND DISCUSSION
Socio-Demographic Profile of the Household Respondents

In total, 1,875 respondents across ten (10) municipalities /cities in the province of Misamis Occidental, geographically located in the downstream barangays surrounding Mt. Malindang Range Natural Park (MMRNP), participated in the household survey. The socio-demographic profile of the respondents is provided in Table 2. Among the total number of household respondents, the majority were female, 76.48%, much higher than the proportion of male respondents, 23.52%. This indicates that the time of the survey influences the number of female respondents. Most of the male respondents were at work during the conduct of the interview (Ureta et al., 2014). The age of the respondents was between 18 and 89, with an overall average of 49.72.

Table.3 Demographic Characteristics of the Respondents in the Province of Misamis Occidental

Demographic Characteristics	Variable	Frequency	Percent(%)
Gender	Female	1,434	76.48
	Male	441	23.52
Civil status	Married	1,330	70.93
	Single	288	15.36
	Widow/er	257	13.71
Educational attainment	College graduate	323	17.23
	College level	372	19.84
	Elementary graduate	172	9.17
	Elementary level	146	7.79
	High School graduate	477	25.44
	High School level	288	15.36
	Master's degree	20	1.07
	Technical/vocational school	64	3.41
	No formal schooling	13	0.69
Occupation	Employed (government)	343	18.29
	Employed (private sector)	124	6.61

	Self-employed /business owner	523	27.89
	Unemployed	756	40.32
	Agriculture/Fisheries Sector	129	6.88
Ownership of the house	Owned	1495	79.73
	Rented	109	5.81
	Living with relative	252	13.44
	Living with non-relative	19	1.01
Member of Environmental Organization	Yes	60	3.68
	No	1806	96.32

Data on civil status showed that the majority were married, 70.93%, while single consisted of 15.36%, and widows/er 13.71%. In terms of educational attainment, the respondents revealed that college graduates constitute 17.23%, college level 19.84, elementary graduates is 25.44%, elementary level 7.79%, high school graduate 25.44%, High School level 15.36, Masters degree 1.07%, Technical/Vocational: 3.41, No Formal Schooling: 13 0.69%. The average number of people per household is 4.5.

The socio-demographic characteristics emphasize the importance of tailored conservation approaches that consider age, household size, economic status, and education levels. The study reveals a higher proportion of female respondents (76.48%) compared to males. This finding aligns with existing research emphasizing the importance of gender-sensitive conservation programs (Gadgil *et al.*, 1993). Studies suggest that involving women in conservation efforts can lead to better outcomes, as they often play crucial roles in natural resource management and household decision-making (Agarwal, 2000). The predominant female population suggests the need for gender-sensitive conservation programs to ensure inclusivity and effectiveness.

The high average (33.74 years) residency age indicates a long-term connection to the area. Long-term residents can be advocates for conservation and should be involved in decision-making processes (Table 3). Long-term residents often exhibit stronger ties to local ecosystems and can be influential advocates for conservation (Wells and McShane, 2004). Social factors influencing practice in resources management included length of residency and household size. Length of residency is associated with better knowledge and understanding of the local environment due to interactions with ecosystems over the years (Oremo et al., 2019) . Involving these residents in decision-making processes can enhance the success of conservation initiatives.

Sociodemographic Profile of the Households in Misamis Occidental
Table.4 Socio-demographic profile of household in the province of Misamis Occidental

Ownership of the house	Owned	1495	79.73
	Rented	109	5.81
	Living with relative	252	13.44
	Living with non-relative	19	1.01
Number of family member	1-3 members	588	31.36
	4 members	408	21.76
	5 members	325	17.33
	6 members	200	10.67
	7 members up	354	18.88
Household Income (Philippine Peso)	500.00-9000.00	1,143	1,143
	9001-18000.00	408	408
	18001-36,000.00	228	228
	36,0001-61000	65	65
	61001-100,000.00	23	23
	100,001-131,000.00	6	6
	131,001 above	2	2

The average number of earners among the household is 1.40. This indicates that most households have at least one earner, indicating a potential economic influence on conservation attitudes. The mean length of stay of respondents in the community is relatively high, with an average of (33.74 years), suggesting a long-term connection to the area. Long-term residents may have stronger ties to local ecosystems, making them key stakeholders in conservation initiatives. The respondent's ownership of the house was 79.43%, (rented 15.81%), living with a relative 13.44, and living with a nonrelative (1.01).

Regarding employment status, 18.29% are employed in government, 27.89% are self-employed or business owners, 756 (40.32%) are unemployed, and 129 farmers (6.88%). The average household monthly income of the respondents is PHP 11,926.61 in the three cities and seven municipalities. The majority of the household was unemployed. They were dependent on the member of the household who, at the time of the survey, was at their respective work. According to Virola, 2009, at the national level, a family of five needed PHP 4,896 monthly income to sustain food for the household. The majority (96.32%) of the

households are not affiliated with any environmental organization in the community.

The varied income levels underscore the importance of considering economic factors in conservation strategies. Economic incentives or affordable conservation initiatives may enhance community participation. The diverse income range among respondents underscores economic heterogeneity in the area. Attitudes are greatly influenced by economic issues. towards conservation (West *et al.*, 2006). Tailoring conservation initiatives to accommodate varying income levels may increase community participation, as demonstrated by the positive impact of economic incentives on conservation behaviors (Ferraro and Pattanayak, 2006). Civil statuses and household sizes necessitate a nuanced understanding of family structures. Conservation programs should adapt to different family dynamics. The diverse educational backgrounds of respondents call for tailored communication strategies. Clear and accessible messaging can improve understanding and garner support for conservation initiatives. Educational attainment has been linked to environmental awareness, making it crucial to address different literacy levels within the community. Diverse educational backgrounds call for customized communication strategies. Clear and accessible messaging can enhance understanding and support for conservation initiatives. Employment status influences capacity for conservation involvement. Strategies should consider engaging both employed and unemployed individuals. The high percentage of property ownership indicates a potential sense of ownership and responsibility for the environment. Property owners can be key partners in conservation efforts.

Knowledge, Attitudes, and Practices (KAP) of Households in the Province of Misamis Occidental Towards the Conservation, Protection and Sustainable Management of Mt. Malindang Range Natural Park

The level of knowledge, attitude and practices of household among the three cities and seven municipalities of Misamis Occidental on Mt. Malindang Range Natural Park as shown in table 4. presents the average household scores among ten municipalities/cities in the downstream barangays surrounding the Mt. Malindang RNP for their knowledge, attitudes, and practices pertaining conservation, protection, and sustainable management of Mt. Malindang RNP. The computed weighted mean per municipalities and cities of their knowledge, attitude and practices. Majority of the household in the study area are very knowledgeable of the about Mt. Malindang RNP as watershed, protected area , source of livelihoods and protect from calamities of the household in Misamis Occidental with Oroquieta of 4.99, Jimenez 4.94, Tudela-4.91, Tangub 4.89, Calamba-4.87, Aloran-4.83, Clarin 4.77, Pana-on 4.75, Sinacaban 4.64 and Ozamiz City-4.63   Data shows that majority of household respondent in the study area have positive attitude of the prohibitied acts , prevention from calamities if properly managed, protection of watershed, friendly park volunteers and destruction of the park resources . Oroquieta City- 4.47, Tangub-4.39. Tudela-4.37, Jimenez-4.33, Calamba-4.30, Pana-on-4.26, Aloran-4.17, Sinacaban-4.07, Ozamiz-4.03, Clarin-4.01 Regarding the attitudes of the household respondents towards MMRNP majority are very good practice among the study areas.

Weighted mean scores Oroquieta City- 4.98, Tudela-4.97, Jimenez-4.95, Calamba-4.90, Tangub-4.90, Aloran-4.77, Pana-on-4.72, Clarin-4.64, Sinacaban-4.39, Ozamiz-4.36

Table.5 Weighted Mean and Verbal Interpretation on the level of Knowledge, Attitude and Practices of Households of the three cities and seven municipalities in the Province of Misamis Occidental (N=1875)

Study Area	Knowledge Score	Value Interpretation	Attitudes Score	Value Interpretation	Practices Score	Value Interpretation
Aloran	4.83	Very Knowledgeable	4.17	Positive Attitudes	4.77	Very Good Practices
Calamba	4.87	Very Knowledgeable	4.30	Positive Attitudes	4.90	Very Good Practices
Clarin	4.77	Very Knowledgeable	4.01	Positive Attitudes	4.64	Very Good Practices
Jimenez	4.94	Very Knowledgeable	4.33	Positive Attitudes	4.95	Very Good Practices
Oroquieta City	4.99	Very Knowledgeable	4.47	Positive Attitudes	4.98	Very Good Practices
Ozamiz City	4.63	Very Knowledgeable	4.03	Positive Attitudes	4.36	Very Good Practices
Panaon	4.75	Very Knowledgeable	4.26	Positive Attitudes	4.72	Very Good Practices
Sinacaban	4.64	Very Knowledgeable	4.07	Positive Attitudes	4.39	Very Good Practices
Tangub City	4.89	Very Knowledgeable	4.39	Positive Attitudes	4.90	Very Good Practices
Tudela	4.91	Very Knowledgeable	4.37	Positive Attitudes	4.97	Very Good Practices
Overall Average Weighted Mean	4.82	Very Knowledgeable	4.24	Positive Attitudes	4.76	Very Good Practices

Among the 10 study areas in the Province of Misamis Occidental, Oroquieta City garnered the highest weighted mean among the other study sites in terms of Knowledge, Attitude, and Practices compared to Tangub City, ranked 4, and Ozamiz City, ranked 10 among the three component cities and municipalities in the province. This support of the previous studies (Ureta et al., 2016; Manlosa et al., 2013;Calderon, 2013) on valuation of ecosystem services of Layawan Watershed influence on the level of KAP among household in Oroquieta City, IEC of City ENRO Office Oroquieta City, the flooding incident of Layawan river of 2022, that heightened their understanding about Mt. Malindang Range Natural Park that need to be conserved, protected and sustainably managed. In the case of Households in the Municipality of Jimenez rank 2nd on knowledge scores, 4th in attitude and 3rd in practices. The average score for attitudes across municipalities/cities is 4.24, with highest score coming from Oroquieta City at 4.47 and the lowest at 4.01 in Clarin. Households in Jimenez and Oroquieta City are often more supportive of MMRNP conservation initiatives. Across nine municipalities/cities, the average practice score is 4.76; scores range from 4.36 (Ozamiz City) to 4.98 (Oroquieta City).

The notable high knowledge and attitudes scores in Jimenez and Oroquieta City indicate intervention of the LGU through the ENR Office institutionalized. Studies (Adenle et al., 2015; Cosquer et al., 2012) revealed that raising knowledge mostly depends on the media's high level of involvement (print, radio, television, social media), and it has the power to influence how people view biodiversity conservation. Among the fundamental ideas of environmental and enhancing the current generation's quality of life is through biodiversity education without leaving future generations with a deteriorated environment (Erkal and Gürsoy, 2013; Hambler and Canney, 2013). This strategy must be implemented early enough in the lifespan of an individual spans from the preschool years to the university years and beyond. This has been proposed as a means of enhancing communication in both developed and developing nations, with nature among people and cultivating a pro-conservation mindset (Cosquer et al., 2012). Therefore, education about the environment or conservation could aid residents understanding biodiversity conservation. This is due to the fact that it takes a more comprehensive approach to biodiversity protection, considering ecosystem services and quality of life as well as the inherent value of every species. It has been argued that using an anthropocentric approach is one way to draw in the relevant stakeholders, particularly political officeholders who are active in biodiversity conservation policies and decision-making (Hambler and Canney, 2013; Adenle et al., 2015). The public may also come to understand the idea of ecosystem/environmental service (PES) payment, which has been implemented in certain nations through environmental education.

Relationship of Knowledge Attitude and Practices (KAP) of Households in the Province of Misamis Occidental, Philippines

Table 6 shows the correlation coefficients between knowledge, attitudes, and practices of households who directly benefited from the water ecosystem services of Mt. Malindang Range Natural Park. The correlation between knowledge and attitudes is 0.5268, between knowledge and practices is 0.6182, and between attitudes and practices is 0.6142. All these correlations are significant at the 0.01 level (2-tailed). This indicates that there are significant positive relationships among knowledge, attitudes, and practices of households. In other words, higher levels of knowledge are associated with more positive attitudes and better practices, and positive attitudes are associated with better practices. This confirms the idea that a collective integration of environmental knowledge and attitudes with other external factors could promote higher levels of sustainable environmental practices as highlighted by Aini et al., (2006). These findings are consistent with various studies that have examined the relationships between knowledge, attitudes, and practices in different contexts, such as the COVID-19 pandemic, malaria, and pro-environmental behavior.

Table 6. Significant Relationship Among the Knowledge, Attitudes and Practices of Households

	Knowledge	Attitudes	Practices
Knowledge	1.00		.
Attitude	.5268* (0.000)	1.000	
Practices	.6182* (0.000)	0.6142* (0.000)	1.000

** Correlation is significant at the 0.01 level (2-tailed)

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the household has the knowledge, attitudes, and practices (KAP) of households surrounding Mt. Malindang Range Natural Park (MMRNP) in Misamis Occidental, Philippines. It reveals that diverse socio-demographic characteristics among respondents and highlights the need for custom-made conservation approaches considering these variations. The findings indicate a positive correlation among knowledge, attitudes, and practices, suggesting that improving knowledge can foster more positive attitudes and practices towards conservation. Oroquieta City stands out with the highest KAP scores, indicating a potential model for effective conservation engagement.

To sustainably manage MMRNP's ecosystem services, it is recommended to:
1. Strengthen community engagement and education programs tailored to the diverse demographics and needs of surrounding households.
2. Implement targeted conservation initiatives focusing on areas with lower KAP scores to bridge knowledge gaps and foster positive attitudes and practices.

3. Foster partnerships among local government units, civil society organizations, and communities to develop and implement comprehensive conservation strategies.

4. Continuously monitor and evaluate the effectiveness of conservation efforts, adapting strategies as necessary to address emerging challenges and threats to the park's ecosystem services.

By prioritizing community involvement and knowledge enhancement, MMRNP can continue to provide essential ecosystem services to its surrounding populations while ensuring the long-term sustainability of its biodiversity and natural resources.

ACKNOWLEDGMENT

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