MGA HITABO SA PAGPALAWOD: THE ETHNOCLIMATOLOGY AMONG FISHERFOLKS OF GIGANTES ISLANDS, PHILIPPINES

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ABSTRACT

To understand the weather is one of the significant tasks in any fishing activity; this is to save lives and protect properties. This ethnoclimatological study explored the culture-based knowledge of fisherfolks in predicting weather conditions using nature signs and indicators, the practices upon their prognoses, and the natural phenomenon they encountered. Thirty fisherfolks from Gigantes Island, Carles, Iloilo, Philippines (11° 35' 39" N, 123° 20' 11" E) participated in the interview, observation, and focus group discussion. Themes were identified using Creswell's (2012) steps for data analysis and were triangulated. Results revealed that fisherfolks use wind, clouds, mountains' appearance, the scent of mud, and burned cogon grass to determine weather conditions. They believed that fishing is relative to weather. While venturing the sea, they encountered natural phenomena such as Pugada *and typhoons, which put their lives and properties in danger. Hence, fishing in safe settings is dependent on the state of nature, which requires fundamental knowledge and practices. Thus, government and non-government organizations may uncover indigenous knowledge and practices in weather forecasting, evaluate their efficacy, and integrate them into natural disaster management systems to create a holistic program that addresses the long-term future of the fisherfolks.*

Keywords: Ethnoclimatology, Fisherfolks, Indigenous Knowledge, Natural Phenomena, Practices, Weather Forecasting

INTRODUCTION

Rural and coastal communities are dependent on weather conditions, specifically the agri-fishery sectors. Fisherfolks are in peril as a result of inclement weather and risky events. With the climate changes, oceanic storms and cyclones are inevitable to upsurge in frequency and intensity (Mendelsohn et al. 2012).

Indigenous knowledge is critical in assisting local efforts to prognosis and understanding global climate variability (Radeny et al., 2019). They primarily used atmospheric and astronomic conditions (Bonny & Anju, 2019) and espied bio-physical entities (Wiston & KM, 2018) to predict the weather. The accuracy of predictions was dependent on the accurate interpretation of signs (Bonny & Anju, 2019), which developed through experience, skills, and understanding of people over cohorts (Alvesa et al., 2018; Bonny & Anju, 2019). Understanding and predicting changes in weather are essential for them, whose livelihoods rely directly on it. They observe climatic changes which influence their livelihood decisions (Balehegn et. al., 2019). Thus, traditional forecasting remains the most convenient and reasonable basis for weather and climate data (Balehegn et al., 2019) and can only be utilized for temporary predictions and not for a long-term intermittent (Risiro et al., 2012).

Several studies worldwide have shown the usefulness and importance of indigenous weather forecasting. In the agricultural sector, it is used for decision-making in farming and lessening susceptibility to environmental threats (Chand et al., 2014; Diona et al., 2020; Losloso et al., 2020;

Cinco et al., 2020; Balehegn et al., 2019; Launio et al., 2020), predict weather condition (Bonny & Anju, 2019; Nkuba et al., 2020), envisage the agricultural season and patterns of the climate changes (Muguti & Maposa, 2012; Radeny et al., 2019), and suggest social rectitude perspectives among farmers for interventions addressing climate change (Camacho-Villa et al., 2021). Other literature correlated indigenous knowledge and practices to disaster risk reduction (Quilo et al., 2015; Dube & Munsaka, 2018; Mirandilla, 2020), resiliency (Irene & Abadiano, 2017), and prevention (Galacgac & Balisacan, 2009).

In fishing, studies of Idiku et al. (2020) in Nigeria, Risiro et al. (2012) in Zimbabwe, Jabali et al. (2020) in Kenya, Salim & Monolisha (2019) in India, and Alves et al. (2018) in southeastern Brazil discovered the role and relationship of indigenous knowledge to weather forecasting. In the Philippines, Galacgac and Balisacan (2002) examined whether lore as a guide in any fishing operations and for self-help disaster preparedness in Ilocos Norte. More so, Quilo et al. (2015) uncovered the indigenous knowledge and practices on disaster among the Subanen community in the Zamboanga Peninsula. However, there was no documentation in the case of Gigantes Islands, Carles, Iloilo, Philippines, elucidating the ethnoclimatological knowledge, practice, and experiences of the fisherfolks. Thus, this study considered the geographical settings and the different fishing activities adopted in the community.

OBJECTIVES OF THE STUDY

This study aimed to unveil fisherfolks' knowledge, practice, and experiences. Specifically, it sought to answer the following: 1) identify the nature signs and indicators in weather prediction, 2) determine the practices after the prognoses, and 3) ascertain the encountered natural phenomena while fishing.

METHODOLOGY

This ethnographic study explored the ethnoclimatologic knowledge, practice, and experiences of the fisherfolks in Gigantes Islands, Carles, Iloilo, Philippines. According to DePoy & Gitlin (2016), it is a systematic approach to conceptualize people's and communities' culture and belief systems.

Thirty fisherfolks were the participants of the study. They were identified through purposive sampling and were chosen based on nativity and the number of years spent in different fishing activities. Non-residents and those with fewer than ten years of fishing experience were not included in the study.

In the data gathering procedure, the researcher sought letters from the Local Government Unit (LGU), Municipal Inter-agency Taskforce, and barangay officials asking permission to commerce the data collection. After receiving the permission, participants were identified through the assistance of a key insider. They were oriented to the processes and informed of the ethical considerations about their rights and anonymity. An in-depth interview was initiated to unfold the indigenous knowledge of the fisherfolks on the nature signs and indicators in weather prediction, their practices after prognosis, and their encountered natural phenomena while fishing. It was conducted to uncover in-depth details of fisherfolks' experiences and perspectives on weather forecasting in a culture-based context (Showcat & Parveen, 2017). Furthermore, observation was used to gather additional details by employing one's senses, particularly gazing and hearing, in a methodical and meaningful mode (Smit & Onwuegbuzie, 2018). Focus group discussion was adopted to elicit participants' perspectives, knowledge, experiences, and practices, which they intercommunicated while conversing with other fisherfolks (Eeuwijk & Angehrn, 2017). All the gathered data were transcribed. It was given to the participants for validation. Then, it was translated and interpreted for thematic analysis.

In the data analysis, the researcher used thematic analysis (Peterson, 2017) to determine the themes in the interview, observation, and focus group discussion. It adopted the six steps of Creswell (2012) for data analysis in qualitative research, namely:

1. prepare and arrange the data
2. read all the data comprehensively

3. commence the thorough analysis with a coding method
4. make a description as well as classifications or themes for analysis
5. advance how the description and themes are represented in the qualitative narrative
6. create interpretation or meaning

Results were given to the participants to assess the veracity of the results. They confirmed that the identified themes reflected their ethnoclimatologic knowledge, practice, and experiences.

RESULTS AND DISCUSSION

1. Nature Signs and Indicators of Fisherfolks in the Prognoses of Weather Condition

Traditional weather forecasting is done by monitoring atmospheric, biological, and astronomic conditions and relief characteristics over short and long periods (Irumva et al., 2021). It entails knowledge based on the accumulated experience of the observer who has lived for a long time.

Weather and other climatic factors must be understood, predicted, and anticipated for pastoral communities whose livelihoods are dependent on them because they influence their livelihood choices (Balehegn et al., 2019). Accordingly, the progression in technology in weather forecasting is of great help to the participants' lives, as it provides fast, accurate, and reliable information. Nevertheless, not all of them have the resources such as television, radio, and mobile phones. Most of them are average and low earners. They prefer to prioritize the needs of their family rather to purchase those technologies.

Subsequently, their reference was word of mouth from their neighbors, colleagues, friends, and relatives (Otolo, 2015). As a result, participants used their indigenous knowledge in determining weather conditions to guide them in deciding whether to go fishing or not. The basis of their prediction was nature which was anchored on transgenerational information and accumulated experiences.

1.1. Wind

The participants considered the behavior of the wind in predicting the weather condition before going fishing. They observed its direction whether it favored inclement or not. Some of them living near the mountainside used biotic indicators such as trees to determine the movement of the wind. They also believed that if a strong wind struck in the morning, it followed terrible weather. However, it symbolized clemency for the following day when it struck in the afternoon onwards. Also, they monitored the two (2) monsoons, namely *Habagat* (Southwest monsoon) and *Amihan* (Northeast monsoon), which dictated the wind pattern. During the season of *Habagat*, when the wind altered its pattern, it connoted good weather conditions. It was similar to when the wind of *Salatan* (a west wind) struck during *the Amihan* season.

1.2. Cloud Formation, Color, and its Distance

Participants considered cloud formation in determining the weather condition. The existence of cumulonimbus in the sky manifested rain. However, it possibly depended on its volume and density. In terms of color, darker clouds symbolized heavy rain, while lighter ones meant clemency and unlikely. When the clouds were white or dirty white, it did not impede rain; dark clouds did. Also, in the case of the appearance of clouds, they calculated their distance to the mountains. If it was near, there was a greater chance of rainfall.

On the other hand, it would not rain if it was far. This indicator was one of the factors in fishing, for it brought coldness and ambiguous vision. Hence, participants did not pay attention to this in a few cases because clouds were contingent on the wind.

1.3. Appearance of Mountains

Participants believed that inclement weather could be forecasted when there was a clear vision of mountains far from the islands. Mount Sibuyan of Romblon could not be seen regularly due to its proximity. Its distance rounded off to 123 km. It was symbolically associated with days of storms or

typhoons when it appeared. Therefore, they secured their fishing boats and stocked enough goods since they could not fish.

1.4. The Smell of Mud and Burned Cogon Grass

Another indicator was the smell of the mud and burned cogon grass. Participants encountered these while they went to their fishing sites. They believed that there was an impending storm ahead once they perceived these. It was usually followed by a *Pugada*, a native term for a sudden change of weather that brought strong wind and waves and sometimes heavy rain. Their options were to go back home or travel fast to reach their destination before it came.

2. Practice of Fisherfolks upon the Prognoses of Weather Condition

2.1. Weather is relative to fishing

Fishing at sea is regarded as the world's most dangerous activity (Smith & Basurto, 2019). Fisherfolks who risked their lives at sea deserved a better life, while the reality is frequently different (Suresh et al., 2018). In their fishing efforts and collecting information for their livelihoods, they encountered several difficulties and problems (Davis, 2012; Otolo, 2015). One of which was the weather condition that hindered their voyage. It became a significant consideration in deciding (Chand et al., 2014) whether to fish or not. It was part of their culture to observe early in the morning and use indicators for their prediction. It was the routine of the fisherfolks in the community. After the initial prognosis, they went to the seashore for confirmation. When they observed that there was no weather disturbance, they went fishing. They explored different sites and even traveled far places to catch more. They mouthed, "*When there is good weather, we fished. It is the source of our daily needs. Sometimes, we go to other places to catch more."*

However, some participants did not go during inclemency and preferred to stay in their respective homes. They did not force themselves to dive into the sea, for they considered their safety and the security of their fishing materials. It was rooted in the incidents of some fisherfolks who tried to fish despite the lousy weather, which resulted in deaths and injuries (Idiku et al., 2020). Others found alternatives to earn income, such as driving motorcycles and *kaingin* (swidden). They expressed, "*If the weather was inclement, we do not force to go fishing, just like one of the families who fished despite the bad weather condition. It resulted in the loss of his children*. *During the whole year, not all the time, it is stormy. It has clemency."*

On the other hand, some participants went fishing despite the danger. Most of them are low earners and merely dependent on the sea. They had no other sources of income since the community had limited livelihood opportunities. Their experience and exposure were enough to compensate for the risks brought by inclement weather. So, they gone fishing in the nearest sites but did not go further. They took what was needed for the day and eventually went home. They uttered, "If we do not fish, we have nothing to feed our family. We do not have other jobs. We have no choice. Nevertheless, sometimes, we fish near the seashore when the weather is not good. We get what is needed, which can make us survive in one day."

3. Natural Phenomena Faced by the Fisherfolks

Fisherfolks are highly vulnerable to severe weather occurrences at sea (Malakar et al., 2018), making fishing the most perilous line of employment, especially for traditional fisherfolks (Suresh et al., 2018), who rely on what the sea has to provide. They are especially vulnerable due to the unpredictable nature of the movement of water and storm surges in the open sea lane and tidal variations, and flooding in the absence of rain in their communities (Ancheta et al., 2019).

Natural catastrophes are a significant issue for Southeast Asian countries due to their geographical location, and their effects can already be seen in many regions. Disaster threats mainly impact the properties and lives of coastal residents. The Philippines, with over 7,100 islands and 36,289 kilometers of coastline, is very vulnerable to natural disasters (Yoshioka et al., 2021). It is

specifically vulnerable to natural risks such as cyclones, flooding, rainfall-induced erosion, sea-level rise, and severe weather occurrences because it is an archipelagic country close to the sea (Bernardo, 2015). While fishing for several years, the participants agreed on these themes. They were exposed to various natural phenomena at sea, which resulted in accidents, deaths, and property destruction.

3.1. Pugada

The commonly encountered natural phenomenon of the participants was *Pugada*. It was a native term for a sudden change of weather that brought strong wind, waves, and rain. They could not predetermine it before diving into the sea. However, they identified it when heavy clouds and a strong wind were approaching, sometimes with a tornado. Most of them experienced this while traveling to their fishing sites or during and after fishing. They rushed to get their fishing materials, including their catch, and went home. Others would wait to calm down since it did not last long and continued fishing. These were their usual response which they anchored on their experiences, teaching from their elders, and sharing from other fisherfolks. They said, "*We have experienced Pugada many times. We do not know when it will take place since it appeared quickly. We can do nothing but get our materials and go home. It is difficult to be stricken in the middle of the sea."*

However, this phenomenon was dangerous and destructive, especially for participants who were using small Bangka (Banca) boats (locally known as *baroto*) and Paraw boats. These boats were traditional, non-engine, and used pads and *layag* (triangular clothes, mats, or plastic) to operate. Since both boats used light materials, it was vulnerable to shipwreck during *Pugada*. The *layag* of paraw boats blocked the passage of the wind, which fell when struck. Outriggers of both boats loosened the nylon rope because of the waves. This resulted in its separation from the main hull. One of them said, *"Because of Pugada, my outriggers loosen. My boat sinks. In order for me to go home, I get those and put them back. Sometimes, it is fearful."*

On the other hand, participants who used motor boats were not excluded. Since it brought heavy rains and waves, it watered the engine and malfunctioned. This caused them to drift in dangerous places, especially when they reached the shoreline with big rocks. To cope, they used their indigenous risk management, such as using pads to navigate in a safer direction. They mouthed, "*Pugada* does not choose any boats. Even with the engine, it brought troubles because of the strong wind and waves."

3.2. Typhoon

A typhoon was one of the natural disasters encountered by the participants while fishing. It resulted in the deaths of people and the destruction of property. It happened when they forced themselves to fish despite the warning given by the concerned authorities and even in the forecast broadcast on different media. They paid no attention to the announcement because they preferred to rely on what they understood about weather forecasting and ignore scientific predictions. Their deep relationship over their culture resulted in a series of unforeseen events. Like the case of one of the participants, his two brothers and his father were nowhere to be found. According to him, the whole crew knew an incoming typhoon. However, they perceived the normality of the wind, sea, and clouds which made them dive into the sea. They were stranded because the engine was wet and could not be started during the hit of the typhoon. Their boat shipwrecked and caused others to separate from one another. Those who survived stayed in the floating shipwrecked boat for four days and four nights until they were rescued in Masbate. One of them explained, "*My two brothers and my father died. I was young when it happened. I could not even remember the name of the typhoon. We did not expect it to happen because it was just gustiness. Because of it, I do not go if there is inclement weather."*

The community's beliefs have nothing to do with scientific weather prediction. Its goal is not to obliterate the preserved culture and replace it with knowledge based solely on science. It fills in the gaps and uses technology to deliver accurate,

precise, and up-to-date prognoses to warn early and avoid sea mishaps. However, due to the typhoon's dynamic nature, there are times when the forecast does not match the actual weather. Other participants fished since they had not seen any danger signs. As a result, one of them experienced the wrath of a typhoon where his paraw boat was shipwrecked. He tried to fold his *layag,* but it was too late when strong wind and big waves struck him. He spent three days in the middle of the sea. To survive, he ate stale fish and drank the salty water until he reached the neighboring island and asked for help. He expressed, *"Sometimes, the forecast on the radio is different from what is happening here. I have to go fishing because I have to feed my family. I cannot do anything, or else my family will starve."*

CONCLUSION

Fishing in safe settings is dependent on the state of nature, which requires fundamental knowledge and practices. It helps to prevent the loss of lives and the destruction of properties. Hence, fisherfolk observe the wind, the clouds, the appearance of the mountains, and the smell of mud and burned cogon grass as signs and indicators in the prognoses of weather conditions to make crucial decisions. It enables them to address challenges, most significantly extreme weather variations. This observation is based on standard fishing traditions and permits the compilation of precise knowledge, which is used to make forecasts and assess changes along the coast.

Furthermore, fishing traditions have grown locally, passed down from generation to generation, and honed over many years of experience. However, this cultural knowledge and practices are not scientific and sometimes exemplify a high degree of uncertainty, since fishing remains the most death-defying line of work, particularly for traditional fisherfolk. Thus, they were in peril to drastic weather occurrences in the sea, such as *Puga* and Typhoon, which most encounter and put their lives and their companion in danger. However, poverty and a lack of alternative sources of income urge fishermen to go fishing. Additionally, many of the catastrophes could have been avoided if local authorities had to follow the Philippine Atmospheric, Geophysical, and Astronomical Services Administration's (PAG-ASA) consistent campaign of warnings.

RECOMMENDATION

Fisherfolks are particularly vulnerable to severe weather events at sea. Hence, community-specific advisories directing residents not to fish during such situations can significantly lessen the risk to their lives and property.

Government and non-government organizations can help by uncovering indigenous knowledge and practices in weather forecasting, evaluating their efficacy, and integrating them into natural disaster management systems to create a holistic program that addresses the future of the fisherfolks.

Indigenous practices and knowledge are disregarded, resulting in the demise of these systems and traditions. Thus, it is critical to advocate for this culture and equip indigenous people with the necessary skills to ensure the long-term preservation of their knowledge.

Moreover, scientific and indigenous knowledge can coexist in which scientific explanations assist indigenous traditions. Consequently, recognizing, preserving, and disseminating traditional knowledge can help to improve harmony between humans and nature and ensure global sustainability.

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