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Maritime Tradition Knowledge in Agrarian Communities on The North Coast of Belitung

Aryandini Novita[1] , Dadang Hikmah Purnama[2], Edward Saleh[3] and Ari Siswanto[4]

Abstract

This article discusses knowledge of maritime traditions in agrarian communities on the North Coast of Belitung. The research method uses qualitative research through observation and interview techniques. Purposive sampling techniques are used to determine informants. For the validity of the data, triangulation of techniques and sources was conducted to check the correctness of the data and the researcher's understanding of the use of marine resources by agrarian communities on the North Coast of Belitung. The conclusion of this article underscores the profound influence of maritime tradition knowledge on the daily lives of agrarian communities on the North Coast of Belitung. Moreover, it illuminates the crucial role of this knowledge in upholding environmental sustainability and local cultural heritage. The implications of this research are significant, emphasizing the necessity of understanding and preserving this knowledge for maintaining harmonious relationships between humans and the marine environment.

Keywords: *Traditional Knowledge, Cultural Ecology, Adaptation Strategy, Environmental Resource Utilization, Maritime Tradition*

INTRODUCTION

Humans actively interact with their environment (Abdoellah, 2017; Mairs, 2007; Sutton & Anderson, 2010). They always try to find the locations of environmental resources closest to their settlements to meet their needs (Ashmore & Sharer, 2007; Noerwidi, 2013). The geographical condition of an area is generally one reason for choosing the resources utilized. This understanding raises the assumption that inland areas provide agricultural resources while coastal areas provide fishery resources.

This general view does not occur in the northern coastal area of Belitung; communities in this region tend to utilize more land resources such as agriculture as their subsistence system. However, even though they are farmers' livelihoods, they also conduct fishing activities to increase their daily needs. Thus, in fulfilling their needs, the people of Belitung's north coast utilize resources not far from where they live, consisting of land and sea ecosystems. Based on this uniqueness, this article aims to understand how the knowledge system of maritime traditions was developed, passed down, and maintained by the agrarian community on the north coast of Belitung.

TRADITIONAL KNOWLEDGE

Traditional knowledge is a system a group of people has about their environment, how to adapt to it, and the norms that govern their lives (Bruchac, 2014). Traditional knowledge is closely related to the socio-cultural life of a community group and its main activities to maintain life (Nalau et al., 2018). This system of knowledge is passed down from generation to generation, both individually and together, and preserved in collective memory (Augustine, 1997; Nicholas & Markey, 2015). Thus, each community group knows how to interact with its environment, which determines adaptation strategies to overcome the limitations contained in its environment.

[1] Department of Environmental Science, Postgraduate School University of Sriwijaya, Palembang, Indonesia, Research Center for Environmental Archaeology, Maritime Archaeology, and Cultural Sustainability, National Research and Innovation Agency, Palembang, Indonesia; E-mail: novitaaryandini@gmail.com

[2] Department of Sociology, Faculty of Social and Political Sciences University of Sriwijaya, Indralaya, Indonesia; E-mail: dadanghikmahpurnama@unsri.ac.id

[3] Department of Agricultural Engineering, Faculty of Agriculture University of Sriwijaya, Indralaya, Indonesia; E-mail: edward.saleh@fp.unsri.ac.id
[4] Department of Architecture, Faculty of Engineering University of Sriwijaya, Indralaya, Indonesia; E-mail: ari_sisw58@yahoo.co.id

Traditional knowledge refers to integrated principles and practices perpetuating the relationship between humans and their environment (Gratani et al., 2016; Nicholas & Markey, 2015). By using traditional knowledge, people respond and use it to adapt to their environment (Arzaman et al., 2021; de Echeverria & Thornton, 2019; Holly et al., 2022). This knowledge includes knowledge of geographical conditions, technological systems, relationships between members of community groups, and supernatural forces (Bruchac, 2014). It can be said that traditional knowledge is a guideline for the community in utilizing its environmental resources.

The technological system is knowledge of activities that meet the needs of human life and produce changes in their lives (Childe, 1954). Technology includes artifacts of everyday life and machines and social phenomena in a community related to processes and ideas in solving physical and social problems in their environment (Mitcham, 1979; Salomon, 1984). In technology systems, traditional knowledge is reflected in local terms based on how environmental resources and equipment are processed. Technology is a means for humans to adapt to their environment for survival as part of human efforts to solve environmental problems.

MARITIME CULTURE

Maritime Culture refers to the values, norms, and practices developed in the maritime community (Carol-Dekker, 2018). In addition, maritime culture also includes the role of the sea in shaping the identity and thinking of its supporting communities. Maritime culture encompasses the physical aspects of life at sea. It involves a rich and diverse heritage of local knowledge that shapes the identity and life of coastal and island communities. In maritime culture, the role of the sea in shaping human identity can refer to the emotional, spiritual, and social relationships established between humans and the sea (Mentz, 2009).

Maritime Culture creates a distinctive social environment among its supporting communities, with values applied in everyday life. This culture includes aspects such as language, traditions, and shared experiences experienced by its members (Carol-Dekker, 2018). Language aspects in maritime culture are reflected in specific terms used in the maritime environment for communication between community members, including technical terms in marine activities. Aspects of tradition in maritime culture are reflected in values passed down from generation to generation among the maritime community, such as the ritual of surviving the sea. This tradition also strengthens the social bonds and identity of the community supporting the maritime culture. Aspects of shared experiences are experiences commonly experienced during sea, such as dangerous weather and natural phenomena (Carol-Dekker, 2018; Mentz, 2009).

In maritime culture, traditional knowledge reflects a deep understanding and interdependence between the maritime environment and the supporting community of maritime culture. This knowledge is manifested in the form of cultural practices passed down from generation to generation. In addition, traditional knowledge is also obtained through direct observation and personal experience in interacting with the aquatic environment. Through years of experience, maritime communities develop a deep understanding of fishing locations, seasonal changes, and other natural behaviors on which their traditional knowledge is based. The maritime community has a social structure that supports intergenerational knowledge exchange and collaboration in resource management. Thus, maritime culture is not only a place where traditional knowledge is generated but also a sturdy foundation for the maritime community's understanding of marine ecology and sustainable practices to meet the needs of life (Deb & Haque, 2014).

CULTURAL ECOLOGY APPROACH

Cultural ecology seeks to explain how humans adapt to their environment, whether through specific forms of behavior or flexible adjustments (Geertz, 2016; Sutton & Anderson, 2010). When interacting with the environment, environmental factors are not a determining factor, and culture is a means of adaptation to the environment. The decision-making process of society adapting to the environment is based on cultural values (Lapka et al., 2012; Piccardo & Canepa, 2021). Cultural ecology discusses the interaction of life forms in an ecosystem and how humans manipulate and shape it.

Cultural ecology theory observation focuses on the relationship between production technology and the environment and human behavior patterns in exploiting their environment with specific technologies.

Technology reflects human environmental behavior in utilizing environmental resources (Abdoellah, 2020; Moran, 2000). Human behavior related to the environment can be seen from cultural elements related to subsistence and economic relations. Observing technological systems is helpful in understanding how humans interact with their environment to meet their life needs.

Traditional knowledge is a vital component of cultural ecology. Local knowledge of environmental resource management can be used to understand the utilization of environmental resources in an area. This is because traditional knowledge is deeply rooted in the ecosystem in the region. Cultural ecology provides a framework for understanding how traditional knowledge systems can provide insights into sustainable resource utilization practices. The framework aims to understand how a community group develops, derives, and maintains traditional knowledge systems. This understanding is obtained by analyzing the relationship between cultural practices and environmental conditions and the knowledge systems that arise from these relationships (Mascari et al., 2009; Mbebeb et al., 2019; Piccardo & Canepa, 2021).

LITERATURE REVIEW

Research on traditional maritime knowledge in Indonesia tends to focus on maritime culture support communities that live in coastal areas and small islands. Likewise, research on maritime traditional knowledge outside Indonesia tends to focus on maritime culture support communities. Overall, these studies also address a wide variety of themes. The first theme discusses the issue of the contribution of maritime traditional knowledge to policymakers (Holly et al., 2022; Manrique et al., 2018; Proulx et al., 2021; Tambas et al., 2017). Manrique et al. (2018) state that traditional knowledge can contribute to policymaking, especially in disaster risk mitigation and climate change adaptation. This can help policymakers understand the challenges faced by local communities and design policies appropriate to local conditions to strengthen community capacity to deal with disaster risk and climate change. According to Proulx et al. (2021), Traditional knowledge includes a holistic understanding of the relationship between humans and their environment. It can help policymakers look at problems from multiple points of view and consider the long-term impact of decisions. At the same time, Tambas et al. (2017) and Holly et al. (2022) added that traditional knowledge also plays a role in maintaining cultural identity and local values. By understanding and respecting traditional knowledge, policymakers can ensure that implemented policies do not damage people's cultural heritage.

The second theme discusses maritime traditional knowledge issues related to adaptation strategies (Bethel et al., 2021; de Echeverria & Thornton, 2019; Rakib et al., 2019). The adaptation strategy is reflected in the response of the maritime culture support community to climate change. According to Rakib et al. (2019), maritime traditional knowledge has a significant role in developing adaptation strategies for climate change and disaster risk in coastal areas. This knowledge includes a deep understanding of marine ecosystems, weather patterns, ocean currents, and other natural behaviors so coastal communities can identify and adapt to environmental changes. de Echeverria and Thornton (2019) stated that coastal communities have utilized traditional maritime knowledge for generations and developed it as an adaptation strategy considering marine ecosystems' sustainability and long-term well-being.

Meanwhile, Bethel et al. (2021) combine traditional maritime knowledge with modern science and technology, such as geographic information systems (GIS), to strengthen coastal communities' adaptation strategies and increase their resilience to climate change impacts. Traditional knowledge that has proven effective in dealing with environmental changes can be enhanced with modern scientific knowledge, thus providing more effective solutions in facing the challenge of climate change. This integration allows communities to develop more resilient adaptation strategies based on their needs and cultural values.

The third theme discusses maritime tradition knowledge issues related to technology systems (Cheung, 2019; Ó'Sabhain & McGrath, 2019). According to Cheung (2019), maritime tradition knowledge helps the community choose the right location to cultivate marine resources. This knowledge is based on historical experience and understanding ideal environmental conditions. Traditional knowledge preserves cultural heritage and can provide a solid foundation for innovation and technological development in the marine resource aquaculture industry if integrated with more advanced technological systems. For Ó'Sabhain and McGrath (2019), maritime tradition knowledge plays a crucial role in developing and maintaining traditional technology systems. In

addition, this knowledge also plays a significant role in safe and efficient navigation in often unpredictable water areas. Thus, maritime tradition knowledge not only influences aspects of community culture and identity but is also directly connected to the development and use of traditional technological systems integral to coastal communities' daily life and living heritage.

Utomo (2010) discusses the fourth theme, namely the role of traditional community social organization systems in maintaining the sustainability of fishery resources. According to him, the wealth of traditional knowledge possessed by coastal communities, especially in fisheries resource management, has proven effective in maintaining the balance of marine ecosystems. Traditional knowledge has a crucial role in maintaining the sustainability of fishery resources. Management systems based on local customs can provide sustainable and practical solutions for maintaining marine ecosystems (Utomo, 2010).

The fifth theme discusses maritime tradition knowledge issues related to coastal area management (Arzaman et al., 2021; Hutton & Allen, 2020; Kadir et al., 2021; Maulidyna et al., 2021). Hutton and Allen (2020) argue that maritime tradition knowledge can help identify priorities and strategies to overcome disasters in coastal areas. In addition, maritime traditional knowledge can also be used to enrich the understanding of oral history and the cultural context of maritime communities in decision-making related to coastal area management. Likewise, Arzaman et al. (2021) and Kadir et al. (2021) stated that the role of traditional knowledge in coastal area management can help conserve marine resources. Using traditional knowledge, coastal communities can manage coastal areas holistically and sustainably, paying attention to resource conservation, economic development, and environmental sustainability (Maulidyna et al., 2021).

Research on agrarian culture in coastal areas is the sixth theme conducted by McKinley et al. (2022). The agrarian culture found in the study area is agriculture and animal husbandry in the saltmarsh's environment. In his research, McKinley discusses the traditional knowledge of communities in the research area, especially in the context of social, cultural, economic, and environmental values related to raising livestock on the coast of Wales. The study highlights the relationship between coastal communities and salt marsh ecosystems and the social and cultural values inherent in land management. Geographically, the study area is located on the coast with an ecosystem of swampy land periodically flooded by brackish water. McKinley argues that the environment of these salt marshes has shaped the traditional knowledge of coastal communities of growing grass and other animal feed for their livestock purposes.

This literature review shows that studies on maritime tradition knowledge owned by agrarian communities in coastal areas have never been conducted. This situation is unique for the people on the north coast of Belitung, who are agrarian but also have additional livelihood resources derived from marine resources. So, the north coast community of Belitung is an agrarian community with knowledge of maritime tradition.

RESEARCH METHODOLOGY AND DATA SOURCE

The method used in research is qualitative. The stages of research refer to the qualitative research steps proposed by Creswell (2012), namely observing activities to meet the community's needs in the research area, conducting face-to-face interviews about maritime tradition knowledge in the research area, and documenting information from observations and interviews through diaries and audiotape recordings. Then, the researcher analyzes the data collection results by creating categories of information obtained and interprets the data by comparing research results with literature sources.

In the interview process, informants are determined by purposive sampling techniques. In determining the informant to be interviewed, researchers refer to the considerations stated by Sugiyono (2017) as follows

Related to the focus of the problem under study.

Have the capacity to understand the problem's context and explain the data needed in this study.

Engage in the activity under study.

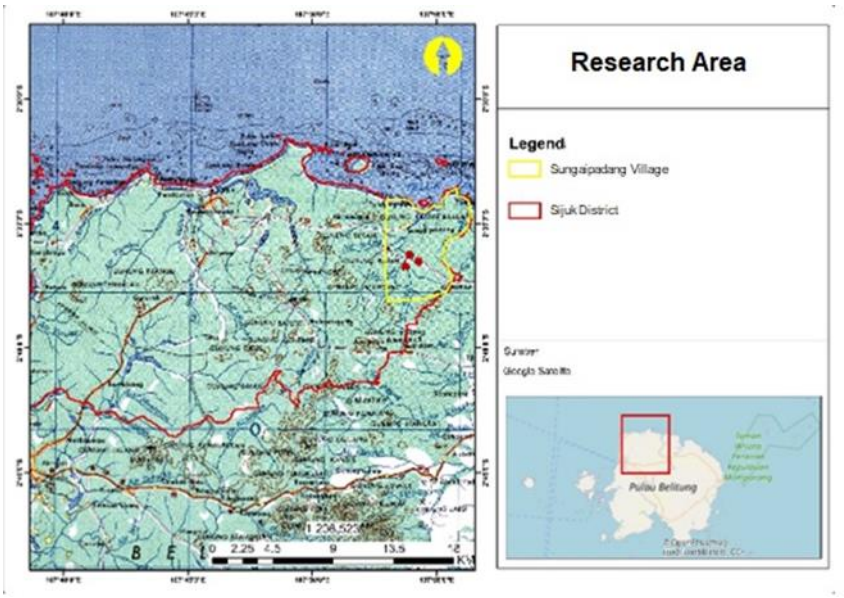
Have adequate time to be asked for information.

Based on the criteria outlined above, researchers determined that informants in this study were village heads, traditional figures such as traditional leader and other traditional officials, culturalists, and historians. This selection was based on the fact that the informants were considered to know and be competent about the social and cultural system in the research area, particularly the Belitung Malay community in general.

To evaluate the validity of this research data, the work step uses triangulation, which aims to check the correctness of the data. Triangulation is done in two ways, namely engineering triangulation and source triangulation. Triangulation techniques are performed using different data collection techniques to obtain data from the same source. At the same time, source triangulation is conducted by utilizing several diverse sources of information with the same technique to evaluate the correctness of data regarding understanding the researcher's object about using environmental resources in his daily life. Triangulation is conducted during its implementation using the steps proposed by Sugiyono (2017), namely comparing observational data with interview data and comparing interview data by asking the same questions to different informants.

RESEARCH AREA

The research area is in Sungaipadang Village, Sijuk District, Belitung Regency. Sungaipadang Village is located in the northern part of Belitung Island, in the lower reaches of the Padang River Basin. This village is the last village of Belitung Regency, directly adjacent to East Belitung Regency (Fig 1).



The Sungaipadang community are Indigenous people who have settled in this village. Like most Belitung Island people, the original inhabitants of Sungaipadang are Malays. Vordeman (1891) referred to it as Billiton Maleisch or Belitung Malay. It is also mentioned that the Belitung Malay community has a Malay dialect but differs from other Malay tribes. The settlement in Sungaipadang has a linear pattern that follows the road that connects the village with Tanjungpandan City. The road was one of the infrastructures the Dutch East Indies government built during the tin exploitation period. The location of community garden of Sungaipadang Village is generally located about 500 m from the settlement upstream, while people who seek as fishers generally go to the sea up to a distance of fifteen nautical miles from the coast of Sungaipadang Village (Novita et al., 2019).

Geographically, the location of the fulfillment of the lives of the Sungaipadang community is in the coastal area consisting of two ecosystems, namely land and sea ecosystems. Land environmental resources utilized by the community are cultivating land into pepper and oil palm plantations. While marine resources are utilized in the form of fish, squid, shrimp, shellfish, crabs, and sea cucumbers (Novita et al., 2019).

There are two differences in the distribution pattern of the two environmental resources. Pepper production is harvested for wholesalers, while palm oil production is sold to palm oil mills. The system of selling both

products is conducted with an intermediary trader system, where the harvest is sold to collectors to be resold to wholesalers or palm oil mills. Unlike agricultural products, seafood is only distributed in the family environment and is not for sale. The people of Sungaipadang Village produce two types of consumption patterns. Agricultural products are used for resale, while seafood is only used for daily food needs. But at certain times, seafood is abundant so that it can be sold (Novita et al., 2019).

RESULT AND DISCUSSION

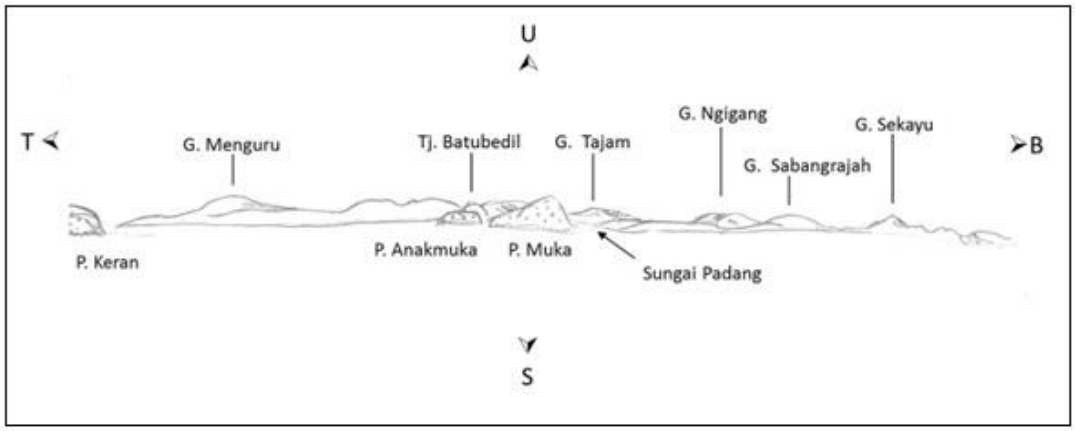
Geographically, Sungaipadang Village has a varied topography. The settlement in this village tends to have a flat topography. To the north of the settlement, gently sloping hills protect the settlement from the waters north of Belitung. The condition of the waters in the study area is that there are many fringing coral reefs, rocks, and sandbars. These waters are also affected by tides. At low tide, in some places, the depth only reaches 40 cm to 2 m below sea level, so it is land.

Ecologically, people in the study area have varied adaptation strategies. They utilize two ecosystems, namely land and sea. The adaptation strategy of the Sungaipadang community reflects the dynamic relationship between humans and their environment. This behavior also shows the ability of the community to face the limitations given by their environment. The community chooses marine resources as an alternative to meet the needs of life. This adaptive behavior is reflected in the knowledge of maritime traditions, which can be divided into four categories: navigation, equipment, sailing time, and boatbuilding technology.

NAVIGATION

Navigational knowledge is an adaptive behavior to the geographical conditions of the waters in Sungaipadang Village, where there are many fringing coral reefs. The results of an interview with Mr. Saruan (70 years old), who is called the people of Sungaipadang Village with Ki Tele, show that the people of Sungaipadang Village know sea navigation. People in Sungaipadang Village use this knowledge so that their boats do not hit reefs or run aground in sandbars.

The community believes that corals have a distinctive aroma. These scents can be smelled from a considerable distance, so if they are smelled, they will avoid the region from which the scent originated. To ensure the presence of corals, they use moonlight or other lighting devices, such as flashlights. The rays will make small fish hiding in the reef jump to the surface. This situation indicates that the area is dangerous and should be avoided. It can also use bamboo sticks or paddles to find out the presence of corals. This is done by dipping a bamboo stick or paddle, and then the ear is attached to the end of the bamboo or the top of the paddle handle. If there are corals, a buzzing sound will come from the cracks of the coral. Knowledge of the existence of coral reefs is also helpful for obtaining fish because coral reefs are the habitat of these fauna. Coral reefs also function as a place to tie bubu and nets to catch fish. In addition, the landscape is also used as a marker for navigation reference. Field observations show that the landscape is in the form of mountains that stretch across the



northern part of Belitung, such as Mount Mengguru, Tanjung Batu Bedil, Mount Tajam, Mount Ngigang, Mount Sabangrajah, and Mount Sekayu (Fig. 2).

Fig 2: The Landscape of Sungaipadang Village which is a Navigation Reference

Source: Documentation of Author's Research, 2022

EQUIPMENT

Some terms used in the fishing tradition are based on equipment when catching fish. Based on an interview conducted with Mr. Syahrani (50 years old) usually catches fish using bubu, nets, and fishing rods. Bubu installation is conducted by tying it with a rope and ballast, then sinking at a depth of 15 m to 20 m below sea level. This method is known as digandeng. In addition, the installation of the bubu is done by diving. The activity of installing bubu in this way is known as nyelam.

The activity of catching fish with a net is called mukat. Fishing activities using nets are conducted around coral reefs. This activity is conducted by connecting the end of the net to the coral. The community calls this activity ngempang. At low tide, people use this time to catch fish, crabs, shrimp, and squid using spears known as nyulok. This activity involves sticking a spear into the body and then lifting it with a tool called a sauk or tanggok.

Shrimp-catching activities are usually conducted using nets. The type of net used to catch shrimp differs from the net for catching fish. Nets for shrimp resemble thin cloth-like mosquito nets (Fig. 3). The activity of taking shrimp is known as ngancau. Meanwhile, the activity of taking shells is called ngeremis. In this activity, the collected shells are accommodated in a rattan basket called ambong.

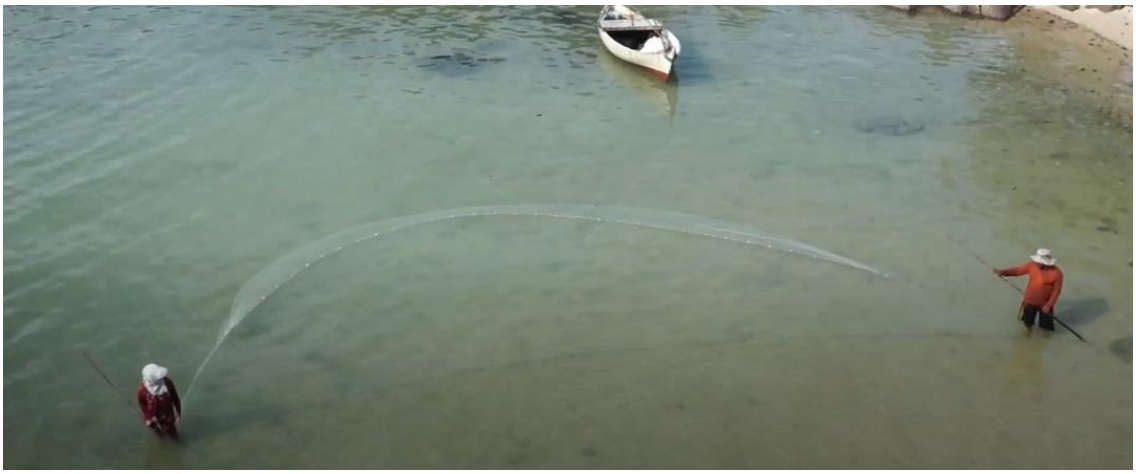


Fig. 3: Shrimp Catching Activity (Ngancau)

Source: Documentation of Author's Research, 2022

FISHING TIME

Knowledge of fishing time and avoiding sea accidents is also helpful in getting maximum results. They believe the night is the time to eat squid and fish. Usually, they prepare the boat to go to sea in the afternoon. The time taken to sail from the pier to the fishing location ranges from 45 to 90 minutes. Unlike squid and fish, the time to catch shrimp is noon. As for clams and crabs, there is no particular time because collecting these animals is only done in leisure time.

The community knows the term west wind season lasts November, December, and January. In those months, the wind blows so hard that the sea waves are remarkably high and dangerous to navigate, so they do not go to sea. According to them, the right time to go to sea is between February and October. In these months, the wind is generally not strong enough and could be more robust due to windy conditions. Sunny weather is also

a suitable time to go to sea. Nevertheless, even though it is not the season of westerly winds, sunny weather can turn into rainstorms at certain times.

During the interview, one of the informants, Ki Anjang (69 years old), said there would be a storm at sea, characterized by enormous lightning followed by small lightning. In addition, the distance between the clouds and the horizontal line of the sea is close. Although he has yet to obtain fish, he will return to the village if these signs appear. If the storm has already come but he is still in the middle of the sea, he will take refuge on Mulut Island, which is at the mouth of the Padang River, to wait for the storm to finish.

BOATBUILDING TECHNOLOGY

Generally, people in the study area have built boats of their own. The types of trees that become raw materials for boats are gelam (Melaleuca Leucadendron), seruk (Schima wallichii), and bulian (Eusideroxylon zwageri). In contrast, other materials, such as nails and paint, can be purchased in Tanjungpandan. Knowledge of boatbuilding technology shows the Sungaipadang community's knowledge of using plants that grow in the Belitung area. Bulian wood (Eusideroxylon zwageri) is used for keel and ivory boats, rib wood (Schima wallichii) for boards, and gelam wood (Melaleuca Leucadendron) for coating joints between boards. A journal on industrial and agricultural products published by the Dutch East Indies Government noted that these types of wood are one of the commodities produced in Belitung to be traded for domestic purposes and to other regions (Verstege, 1874).

The boats in the study area were made by combining Southeast Asian boatbuilding traditions and Chinese boatbuilding traditions (Fig. 4). Southeast Asian boatbuilding tradition is characterized by the use of wooden pegs to connect the hull planks and between the hull planks and ivory. The joints between the boards are closed by foam rubber sheets and coated with waterproof paint. The traditions are also seen in the tapered bow shape with a circle that blends with the keel. Nails, pegs, and screws have replaced tambuku that characterize Southeast Asian boatbuilding traditions.

Chinese boatbuilding tradition can be seen in steering fins placed behind propellers. In Southeast Asian boatbuilding traditions, boats generally do not use fins but paddle-shaped wood placed on the back of the left and right sides of the boat. The boats in the study area no longer have sail pole support beams because they no longer use sails but oil-fueled engines.

Fig. 4: Boatbuilding in Sungaipadang Village

Source: Documentation of Author's Research, 2022

The Process of Transmission and Preservation of Maritime Traditional Knowledge

The observations and interviews show that the behavior and activities of agrarian communities in utilizing marine resources are motivated by traditional knowledge they have acquired for generations. Knowledge transfer is one form of communicating traditional knowledge conducted orally and continuously for generations. This knowledge transfer can be conveyed formally and informally among kin groups and communities through various social gatherings, oral traditions, rituals, and other activities. The traditional knowledge transfer process is generally a one-way form of communication in which the communicator, as a source of knowledge, communicates the experience and knowledge he has to the recipient of that knowledge (Bruchac, 2014).

The Sungaipadang community acquires knowledge of maritime traditions in informal forms and specific situations. They get such knowledge orally from their parents or relatives. Generally, the community when going to sea is conducted by people with kinship, such as father and son, brother and sister, husband and wife. If a child is considered capable of going to sea, he will be involved in helping so that he can observe and directly practice the activity. The inheritance of this knowledge is also an effort to preserve maritime traditions owned by the community.

Preserving knowledge of maritime traditions is an effort by the Sungaipadang community to adapt to their environment sustainably. Besides being beneficial to the community, applying traditional knowledge is also valuable for maintaining ecosystem balance. Traditional knowledge tends to have practices not exploiting environmental resources to maintain ecosystem sustainability. This conservation effort is reflected in communities' simple equipment to catch fish and other marine animals. This simple equipment allows people to utilize marine resources according to their needs so that local species can breed well and that the sustainability of the ecosystem is maintained.

CONCLUSION

Agrarian communities on the north coast of Belitung have a rich and diverse knowledge of maritime traditions and the utilization of marine resources to meet their living needs. Knowledge of maritime traditions has become an inseparable part of the daily life of the agrarian community on the North Coast of Belitung. This traditional knowledge transfer process is conducted orally and hereditary. In addition, the community still preserves this traditional knowledge. Knowledge of maritime traditions provides practical insights into utilizing marine resources sustainably and strengthens the cultural identity of the northern coastal communities of Belitung.

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