



# COMMUNITY BEHAVIOR IN PRESERVING MANGROVE FOREST DEVELOPMENT IN PARI CITY VILLAGE, PANTAI CERMIN DISTRICT, SERDANG BEDAGAI REGENCY

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## ABSTRACT

*Mangrove is a type of ecosystem typical of those found along the coast that are affected by tides. Mangroves grow on sheltered beaches or flat beaches, usually along the wind-sheltered side of the island or behind coral reefs off protected shores. The community around mangroves in Pari City Village, Pantai Cermin District, Serdang Bedagai Regency has long been utilizing the various mangrove potentials around the community. In general, people use mangroves for their economic potential income. The utilization is generally in the form of looking for firewood from mangrove forests, ponds, food from mangroves and tourism. Mangroves are also the main ecosystem supporting important life in coastal and marine areas. In addition to having an ecological function as a nutrient provider for aquatic biota, spawning and caring places for various kinds of biota, coastal abrasion resistance, the risk of typhoons and tsunamis, waste absorbers, and preventing seawater interusion. Due to the high damage to the mangrove area in the Pari City Village area, Pantai Cermin District, Serdang Bedagai Regency, it can cause several problems, including reducing the productivity of natural resource ecosystems biologically, increasing pollution and the most disadvantaged are the people around the coastal suburbs who have a source of income from fishermen Where their livelihoods are declining due to fish caught already scarce.*

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## INTRODUCTION

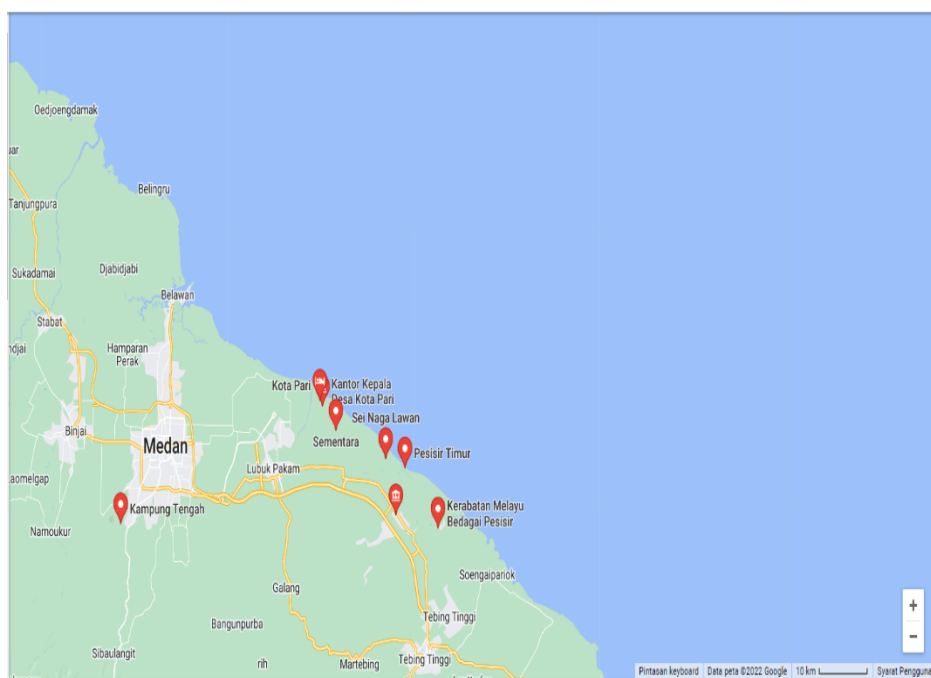
Indonesia is the largest marine country that has the largest expanse of mangrove forests in the world. Mangrove is a forest area located in tidal areas. Menurut (Presidential Regulation No. 73 of 2012, n.d.) Mangrove ecosystem is a collection of mangrove vegetation communities that are closely related to fauna and micro-organisms that cause these living things to grow and can develop along the coast. Mangrove forests or mangroves contain mangrove vegetation or mangroves located near the sea. Mangrove forests are biological natural resources that can be renewed with their constituent vegetation, namely approximately 60 types of trees and shrubs and more than 20 types consisting of additional types which are mangrove associations, in addition to the vegetation contained in the mangrove forest, there are also more than 2,000 aquatic biota that depend on the existence of the forest aforementioned in (Kustanti, 2011). Mangroves with their physical properties are able to play a role as a system unit in managing the environmental impacts caused, such as being a wave arrestor and resisting marine abrasion intrusion and others. The management of coastal areas and existing natural resources is only carried out by the central government, but when it (Law No. 22 of 1999, n.d.) has been issued, the authority to manage coastal areas and natural resources shifts to the provincial and regional governments respectively. This condition is in accordance with the provisions contained Article 10 which (Law No. 22 of 1999, n.d.) states that in the management of existing



national resources the regions are given the authority to be responsible for maintaining environmental sustainability in accordance with regulations.

Regional autonomy is a strong foundation for local governments in the context of implementing the development of marine areas as a whole starting from the development of aspects of planning, utilization, supervision and control of marine resources in the context of sustainable development. Direct implications (Law No. 32 of 2004, n.d.) about Local Government the process of transferring existing authority. The transfer of authority in the process of determining development and management policies in the regions so that the benefits obtained by the regions arise in the form of prospective opportunities in managing resources with a focus on the boundaries that have been set. Mangrove forests are also known as a very potential natural resource, and usually grow and develop well in tropical areas, especially in relatively protected coastal areas. Mangrove forests have various roles and benefits, both in terms of ecological, social and economic aspects. The large role of mangrove forests for the life of marine life can be known from the many types of fish, shrimp, crabs and even humans who live around mangrove forests and their lives depend on their existence. Mangrove forests need to be maintained and maintained. This requires the management of coastal areas with the attention of sustainable prinsip to the function of mangrove forests. Therefore, community contributions are indeed important in order to maintain and conserve coastal blood. This contribution can be made by preparing programs, implementation, monitoring, so that the community feels responsible for conservation and environmental maintenance so that sustainable coastal areas can be realized.

It is hoped that synergy and communication between the government (facilitators) and the community (actors) are needed to streamline community contribution / involvement (Raharjo et al., 2015). The success of the program cannot be separated from the role and empowerment of the community. The purpose of this study is to identify the role of community behavior in preserving the development of mangrove forests located in Pari City Village, Pantai Cermin District, Serdang Bedagai Regency. The research location is the coastal area of Serdang Bedagai Regency which is part of the North Sumatra region.



**Figure 1.** Research Location

Based on Figure 1, it can be seen that the research location is a coastal area adjacent to the mangrove area resource.

## LITERATURE REVIEW

Mangrove forest is a forest formation that is influenced by tides, with anaerobic soil conditions. Although the existence of the forest does not depend on the climate, but generally mangrove forests grow well in protected coastal areas (Hardjosentono et al., 1995). Mangroves are trees or shrubs that grow



between the boundaries of the highest tide surface and slightly above the average sea level (Chandra et al., 2011). Mangrove forests are coastal wetland forests consisting of intertidal zones of estuaries, brackish water, deltas, creeks, lagoons, marshes and mud from the tropics and subtropics. Mangrove forests will grow optimally in areas that are inundated at any time and not flooded by seawater. Mangrove trees have respiratory roots that can operate when flooded by water. This is what makes him able to live in the area. Furthermore, the Directorate General of Forestry defines mangrove forests more specifically, namely plants that develop in tropical and subtropical coastal areas between the boundaries of the tide surface and slightly above the average of the sea level (Directorate General of Forestry, 1982). Because mangrove forests or mangroves are inundated by brackish water, it used to be called mangrove (Soerianegara, 1993) forest is a common designation used to describe a variety of tropical coastal communities dominated by several typical trees or shrubs that have the ability to grow in salt waters.

The characteristics of this mangrove are mainly capable of being in a saline and unsalted condition. Mangrove forests are found in muddy coastal tidal areas that are protected from wave movement and where there is a supply of fresh water and fine sedimentary particles through surface water (Kusmana, 1997). According to (Bann, 1998), the ecological functions of mangrove resources include coastline stability, sediment containment, habitat protection and diversity, biomass productivity, plasma sources, recreation or tourism, fishing and forest products. The economic value or total economic value of mangrove forests can be broadly grouped into two, namely the use value and the intrinsic value (Bann, 1998). It can further be elaborated that the usage value can be subdivided into direct use value, indirect use value and choice value. The value of use is related to the value that people take advantage of or hope to take advantage of in the future. The value of direct use is related to outputs that can be directly consumed such as food, biomass, health, recreation while the value of indirect users is obtained from the benefits of environmental services as support for production flows and consumption for example mangrove forests as storm and wave protection. The value of choice is related to the future use of the environment. While the intrinsic value is twofold, namely inheritance and the value of existence. Heritage value relates to a willingness to pay to protect environmental benefits for generations to come, so it represents potential use. The value of existence arises due to the presence of satisfaction with the existence of resources, although there is no desire to take advantage of them.

## METHOD

This research was carried out in Pari City Village, Pantai Cermin District, Serdang Bedagai Regency. The approach to this study uses descriptive qualitative. Qualitative research is a research method used to examine the condition of natural objects where the researcher is a key instrument (Sugiyono, 2019). With research strategies and techniques used to understand the subject in collecting as many deep facts as possible, the data is presented in verbal form. This descriptive research is carried out with the steps of collecting, classifying, and analyzing or processing data, containing conclusions and reports with the main objective of making an objective picture of a state of affairs in a description of the situation. The subjects of this study are communities that have contributed to efforts to develop mangrove forests. The research began with field observations with preliminary survey activities to obtain a research location in the hope of representing the condition of the mangrove forest area of Pari City Village, Pantai Cermin District, Serdang Bedagai Regency.

This research is useful to determine the behavior of the community in preserving the development of mangrove forests in coastal areas to be studied. In this study, qualitative interactive analysis techniques were used with components that can be explained, as follows (Miles et al., 2014):

1. Data Reduction

The data obtained by researchers in the field through documentation is reduced by selecting and focusing data on things that are in accordance with the research objectives. At this stage, researchers reduce data by sorting, categorizing and abstracting from the documentation.

2. Data Presentation

Data that has been reduced, next is the presentation of data. The presentation of data is carried out in the form of a brief description. Data reduction is carried out by researchers by systematically compiling data, followed by writing data obtained from the field in the form of narratives. Preparation is carried out by entering the results of the analysis into notes based on the findings obtained from observations, interviews and documentation in the field.

3. Conclusion, Withdrawal or Verification

The next step in the qualitative data analysis of interactive models is the drawing of conclusions from verification. Based on the data that has been reduced and presented, the researcher makes conclusions that are supported by evidence at the time of data collection.



## RESULTS AND DISCUSSION

### Mangrove Forest Condition, Pantai Cermin District, Serdang Bedagai Regency

The mangrove area in Serdang Bedagai Regency is spread across 5 (five) Kecamatan areas, namely Districts, Mirror Beach, Perbaungan, Mengkudu Bay, Tanjung Beringin and Bandar Khalipah. Of the entire area, the mangrove area is 3,691.6 hectares located in the Serdang Bedagai Regency. The condition of the mangrove area covering an area of 919.89 hectares is still in good condition. Other parts of the mangrove area have suffered damage to different levels. The area of 576.49 hectares falls into the category of moderately damaged and an area of 2,204.22 is in a severely damaged condition.

The mangrove area located in Pari City Village is close to the Pantai Cermin District area covering an area of 1,041.27 hectares. Of the entire mangrove area in Pantai Cermin District, all of them experienced damage to varying degrees. The area that is included in the moderately damaged category covers an area of 242.51 hectares, while the remaining 798.76 hectares of area is in a severely damaged condition. The potential of mangrove forests can be viewed from two aspects, namely ecological potential and economic potential. Ecological potential is emphasized more on its ability to support the existence of the environment as a windbreak, wave resistance, flood control and as a hiding place, foraging, and a place to keep various kinds of aquatic animals. While the economic potential can be in the form of firewood, cosmetics, medicines, building materials and others (Dahuri et al., 1996). In recent years, mangrove forests have been targeted by humans to be used as various kinds of activities, both directly and indirectly. Related to the interests and sustainability of coastal water areas, the destruction or reduction of mangrove forest areas has an impact on several components that eventually all biota living in the waters around the mangrove forest will become extinct. Excessive exploitation of mangrove forests carried out for the purposes of wood, firewood, paper, plywood, tatal, pulp, charcoal or intended as agricultural land, anchorage, mining and settlement ultimately has a negative impact on these natural resources, and will result in a low level of economy of the community in the village. Excessive use of mangrove forests such as logging to be taken into firewood, logging / taking for the manufacture of house building materials, taking mangrove tree bark for the manufacture of net preservatives and for other purposes by fishermen excessively and irregularly as well as taking by certain communities irresponsibly for sale which is carried out excessively, has had an impact on the condition of mangrove debt which is decreasing its quality and damage which has an impact on decreasing the quality of coastal resources in general including their habitats.

A condition that often occurs is the dependence of local people's lives on mangrove forests as their source of livelihood. Related to the description above, local community activities will eventually utilize mangrove forests in an environmentally unfriendly manner and the impact is that mangrove forests will be degraded and damaged, even these natural resources will become extinct. Actually, the local community already knows about the role and benefits of mangrove forests on their environment, but they have no other choice because to maintain their lives with their families, they must use the forest, so the damage to mangrove forests that occur in Pari City Village, Pantai Cermin District is quite a lot.



**Figure 2.** Mangrove Condition of Pari City Village, Mirror Beach



Based on Figure 2, it can be seen that mangroves are the potential of Pari City Village, one of which is a source of income in the beach area so that it attracts tourists to come to visit to enjoy the suasana a.

### **Condition of Coastal Communities in Pari City Village**

The majority of the ethnic groups that inhabit the settlement are ethnic Javanese, the rest are ethnic Malays, Chinese and Batak. With conditions like this, the atmosphere of cultural diversity in the activities carried out by residents is increasingly apparent. That is to say the homogeneous condition of the population, reflected there that gives birth to the plurality of sociocultural conditions of the population. The village community of Pari City, with the support of natural resources capital, is used as a recreational park center with facilities such as a Theme Park. This is one of the social capitals in developing the local area. With the relationship of community cooperation in cooperation and mutual tolerance, such an attitude provides sufficient feasibility in creating a harmonious atmosphere in society. The emergence of a problem or conflict of interest, can be resolved peacefully and openly through a deliberation on the achievement of peace in society. Judging from the conflicts that often occur in the community, it is always about the land boundaries of the residents. Regarding the livelihood conditions of the villagers, most of them are fishermen, farmers and business actors from the potential of the village. The rest are merchants and smart people. The existing smart people have been established for a long time in this village and that knowledge has been passed down for generations. Until now, these traditional medicine experts are still engaged in as a typical and very appropriate treatment. There are also many people outside the village who like this smart person. The rest are crafters such as baskets, lemangs, rumbia roofs, and builders. Not to forget also because the people in the village of Pari City are Javanese beretrnikkan, jamu is a typical drink of the community, especially during times when traditional ceremonies are very popular with local villagers. With so many herbs found in this village as a vehicle for residents to meet their daily needs.

### **Community Behavior in Preserving Mangrove Forest Development**

Mangrove plants that have many types also have many benefits and uses. One of them is that mangroves can be processed into food. This management turned out to have been carried out by the community in Pari City Village, Pantai Cermin District, Serdang Bedagai Regency. Food management with mangrove basic ingredients has several kinds. The awareness possessed by the community to maintain mangroves is quite visible from their active care for mangroves in tourist areas in the Village area. As an effort they make arrangements by giving the responsibility to monitor the condition of mangroves. In planting mangroves, they do not have a special time, when there are mangroves that have been damaged or died, they will be able to insert the mangroves. The people of Pari City Village do mangrove breeding independently. The mangrove seedlings they breed are used privately and are also traded. Mangroves are also used as ecotourism. Many tourist attractions offer vacation spots for people to refresh their minds from daily work activities. Each tourist attraction offers its tourist attractions with various facilities and infrastructure that differ from one tourist attraction to another.

The mangrove forest in Pari City Village is a unique and vulnerable ecosystem. Mangrove ecosystems have ecological and economic functions, including:

1. Fishery Products  
Fishery products are generally the most important economic resource in mangrove areas. In general, it can be seen that the ponds in the mangrove area of Pari City Village, Pantai Cermin District, Serdang Bedagai Regency use intensive ponds. Where in intensive ponds all mangrove plants are cleaned, mangrove plants are only left in ponds, especially those bordering rivers to prevent abrasion. Meanwhile, if you use a trench empang system, the area of the pond and the area of mangrove vegetation that is set aside are relatively the same so that it is still possible to grow mangrove vegetation
2. Feed  
The use of mangrove plants for animal feed is not found along the mangrove area of Serdang Bedagai Regency. It seems that the orientation of the community in the use of mangroves is more towards the use of firewood and nipah processing. By maintaining mangrove sustainability, mangrove processing in the development of animal feed becomes an opportunity for the community around the mangrove area.
3. Tourism  
The use of mangrove areas as tourist sites has long been developed. With its various types, mangrove forests can be used as environmentally friendly natural tourism. One of the mangrove tours in Pari City Village is Wong Polo Mangrove Beach.



#### 4. Education

Mangrove awareness can also be a location for conservation education, both from students, students who conduct research and other general public by utilizing and developing these mangroves.

### Discussion

Conservation efforts on mangrove forests have an important meaning related to the function and role of mangroves, because it is a unity that includes physical, biological, ecological and socio-economic functions. The management of mangrove forests in Pari City Village has caused a significant influence on the ecosystem. Therefore, the mangrove forest area must be studied in detail, in depth and as quickly as possible, because it is well known that various development activities carried out in the mangrove forest area have caused many problems that are quite complicated and worrying. Activities in order to manage natural mangrove forest resources and their ecosystems, according to must be carried out on the basis of the wisdom outlined in Indonesia's nature conservation strategy which is based on three principles, namely: (Law No. 5 of 1990, n.d.)

1. Protection of life support systems by ensuring the maintenance of ecological processes for the continuity of development and the welfare of society.
2. Preserving the diversity of plasma resources by ensuring the preservation of genetic sources and their ecosystems for the benefit of mankind.
3. Preservation of utilization of both types and ecosystems by regulating and controlling more prudent ways of utilization, so as to obtain optimal benefits and sustainability.

The research conducted (A. M. Harahap et al., 2021), shows that in order to produce a sustainable management policy for the East Coast of North Sumatra, it is necessary to pay attention to aspects of socioeconomic, institutional, socio-cultural conditions and conditions of damage to mangrove ecosystems. The results of the study (R. H. Harahap, 2010) recommend the need to increase the capacity of coastal communities in the sustainable use of natural resources. Furthermore, research conducted by those related to regional planning capacity development efforts in integrated coastal ecosystem management on the East Coast of North Sumatra revealed the need for training development on understanding coastal ecosystems, efforts to improve the economy that does not damage coastal ecosystems and institutional development of coastal communities. The development of community participation in order to manage mangrove resources is expected to improve the community's economy in a good and environmentally friendly manner.

### CONCLUSION

The community in Pari City Village, Pantai Cermin District, Serdang Bedagai Regency, actively manages coastal natural resources to support the economic condition of the community both personally and in groups. The people of Pari City Village are mostly economically dependent on coastal natural resources. The people of Pari City Village form and manage business groups as a forum in utilizing coastal natural resources. A form of diversification of coastal area management by fishermen is by working as a farmer or managing tourist attractions. Fishermen also maximize their efforts to go to sea by diversifying fishing gear according to the seasons at sea. The pattern of coastal natural resource management carried out by the community in Pari City Village is the use of coastal resources by capturing marine life by fishermen, the management of coastal areas into tourist attractions, and the management of mangroves planted in coastal areas to be used as food and drink. The importance of mangroves in coastal areas must be balanced with public awareness to continue to preserve these mangroves. Thus, efforts to protect and manage fisheries and marine resources are not only the responsibility of the government. Coastal communities actually also have an equally big responsibility, considering that their daily activities and livelihoods depend heavily on existing resource services and the impact of community activities is quite large in their influence on coastal resources and oceans. For this reason, a pattern of coastal and marine resource management is needed that aims to improve the welfare of all communities in a sustainable manner.

### REFERENCES

- Bann, C. (1998). *ECONOMY AND ENVIRONMENT PROGRAM FOR SOUTHEAST ASIA. The Economic Valuation of Mangroves: A Manual for Researchers.*
- Chandra, I. A., Seca, G., & Abu Hena, M. K. (2011). Aboveground Biomass Production of *Rhizophora apiculata* Blume in Sarawak Mangrove Forest. *American Journal of Agricultural and Biological Sciences*, 6(4), 469–474. <https://www.thescipub.com/pdf/ajabssp.2011.469.474.pdf>



- Dahuri, R., J. Rais, S.P. Ginting, & M.J. Sitepu. (1996). *Pengelolaan Sumberdaya Wilayah Pesisir dan Lautan Secara Terpadu*. PT Pradnya Paramita.
- Direktorat Jenderal Kehutanan. (1982). *Status Hutan Bakau di Indonesia dan Pemanfaatannya bagi Kesejahteraan Manusia*.
- Harahap, A. M., Harahap, H., & Kusmanto, H. (2021). Pola Pengelolaan Sumberdaya Alam Pesisir yang Berkelanjutan. *Open Access Journals UMA*, 10(2), 515–526. Harahap file:///C:/Users/Maia%20Macia%20Sari/Downloads/admin,+20.+Abdi+muliawan++515-526%20(1).pdf
- Harahap, R. H. (2010). *Pengembangan Kapasitas Perencanaan Daerah dalam Pengelolaan Pesisir secara Terpadu di Pantai Timur, Propinsi Sumatera Utara*.
- Hardjosentono, Wajito, M., Rachlan, E., Badra, I. W., & Tarmana, R. D. (1995). *Mesin-Mesin Pertanian*. Bumi Aksara.
- Kusmana, C. (1997). *Metode Survei Vegetasi*. ITB Press.
- Kustanti, A. (2011). *Manajemen Hutan Mangrove*. IPB Press.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Quantitative Data Analysis A Methods Sourcebook* (Edition 3). USA: Sage Publications, Terjemahan Tjetjep Rohidi, UI-Press.
- Peraturan Presiden Nomor 73 Tahun 2012. (n.d.). *Tentang Strategi Pengelolaan Mangrove*.
- Raharjo, P., Setiady, D., Zallesa, S., & Putri, E. (2015). Identifikasi Kerusakan Pesisir Akibat Konversi Hutan Bakau (Mangrove) Menjadi Lahan Tambak Di Kawasan Pesisir Kabupaten Cirebon. *Jurnal Geologi Kelautan, Volume 13*(1). <https://media.neliti.com/media/publications/230458-identifikasi-kerusakan-pesisir-akibat-ko-f850e29e.pdf>
- Soerianegara, I. (1993). *Kebijakan dan Strategi Nasional dalam Pemanfaatan dan Pelestarian Ekosistem Mangrove di Indonesia*. Yayasan LPP Mangrove (LIPI).
- Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. CV Alfabeta.
- Undang-undang No. 32 Tahun 2004. (n.d.). *Tentang Pemerintahan Daerah*.
- Undang-Undang Nomor 5 Tahun 1990. (n.d.). *Tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya*.
- Undang-Undang Nomor 22 Tahun 1999. (n.d.). *Tentang Pemerintahan Daerah*.