



Pengembangan Peraturan Desa untuk Perlindungan Hutan Mangrove di Desa Paluh Kurau, Provinsi Sumatera Utara

Village Regulation Development to Protect Mangrove Forest in Paluh Kurau Village, North Sumatra Province

Meilinda Suriani Harefa^{*1}, Nur Rohim^{2,3}, Muhammad Ridha Damanik¹, Muhammad Farouq Ghazali Matondang¹

¹Geography Department of Social Sciences Faculty, Universitas Negeri Medan, Deli Serdang, 20371, Indonesia

²Aquatic Resources Management Department, Universitas Sumatera Utara, Medan, 20155, Indonesia

³Yagasu Aceh Foundation, Medan, 20154, Indonesia

*Corresponding Author: meilindasuriani@unimed.ac.id

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ABSTRACT

Paluh Kurau Village is one of the villages in North Sumatra Province which has good mangrove forest potential and needs to be managed in a sustainable manner because it is also potentially threatened by the activities of the surrounding community. This study aims to determine the understanding of Paluh Kurau Community about the conditions and benefits of mangroves in Paluh Kurau and to draft village regulations to protect mangroves. The method in this study is descriptive qualitative and uses two types of data, namely primary data (field observations and interviews) and secondary data (literature review). Based on 30 respondents who were interviewed, 25 people (83%) answered that the condition of the mangrove forest in Paluh Kurau village had decreased due to changes in land use, namely, to become oil palm plantations, rice fields, settlements, and intensive ponds. The benefits of mangroves that are known to the community are as a water filter, oxygen producer, abrasion prevention, barrier to the entry of sea water into the mainland, and fish habitat as a source of livelihood. The development of village regulations includes agreements, policies, rights, obligations, prohibitions, and sanctions for protecting mangroves that refer to the national regulations of the Republic of Indonesia. The results of this study are important as a reference for protecting mangrove forests in Paluh Kurau Village and as a model for village-level mangrove forest protection policies that can be implemented in other areas.

Keyword: Village, Mangrove Protection, Social-Ecology

ABSTRAK

Desa Paluh Kurau merupakan salah satu desa di Provinsi Sumatera Utara yang memiliki potensi hutan mangrove yang baik dan perlu dikelola secara lestari karena juga berpotensi terancam oleh aktivitas masyarakat sekitar. Penelitian ini bertujuan untuk mengetahui pemahaman masyarakat Paluh Kurau tentang kondisi dan manfaat mangrove di Paluh Kurau serta menyusun peraturan desa untuk melindungi mangrove. Metode dalam penelitian ini adalah deskriptif kualitatif dan menggunakan dua jenis data yaitu data primer (observasi lapangan dan wawancara) dan data sekunder (kajian pustaka). Berdasarkan 30 responden yang diwawancarai, 25 orang (83%) menjawab bahwa kondisi hutan mangrove di desa Paluh Kurau mengalami penurunan akibat perubahan penggunaan lahan yaitu menjadi perkebunan kelapa sawit, persawahan, pemukiman, dan tambak intensif. Manfaat mangrove yang diketahui masyarakat adalah sebagai penyangk air,



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penghasil oksigen, pencegah abrasi, penahan masuknya air laut ke daratan, dan habitat ikan sebagai sumber penghidupan. Pengembangan peraturan desa meliputi kesepakatan, kebijakan, hak, kewajiban, larangan, dan sanksi perlindungan mangrove yang mengacu pada peraturan nasional Republik Indonesia. Hasil penelitian ini penting sebagai acuan upaya perlindungan hutan mangrove di Desa Paluh Kurau dan sebagai model kebijakan perlindungan hutan mangrove tingkat desa yang dapat diterapkan di wilayah lain.

Keyword: Desa, Perlindungan Mangrove, Sosial-Ekologi

1. Introduction

Indonesia is the archipelago with the largest mangrove forest in the world. Based on data from the Ministry of Maritime Affairs and Fisheries (2021), the area of mangroves in Indonesia is 3,364,076 ha, equivalent to 20.37% of the world's mangrove area. The restoration of mangrove forests has become a global concern because the damage to mangrove forests is at a high rate. This is due to the shift in the function of mangrove forests, and the use of mangrove wood without regard to environmental balance which is detrimental to the existence of mangrove forests in their habitat. The existing mangrove area continues to experience threats to woodcutting for charcoal, and land-use changes, including the conversion of mangrove forests into intensive ponds, oil palm plantations, and other consumptive uses.

The world's attention is currently focused on efforts to protect mangroves. Mangrove forests are one of the tropical natural resources that have broad functions and benefits in terms of ecological to economic aspects (Asbi and Rouf, 2019). The relationship between humans and the environment needs to be deepened better so that it can provide benefits to society but also not damage the environment (Marlianingrum et al., 2021).

One of the efforts to maintain mangroves is to provide awareness to people in the mangrove ecosystem to protect mangroves with a shared commitment. The mangrove protection agreement can be contained in village regulations synergized with Presidential Regulation of the Republic of Indonesia Number 73 of 2012, which stipulates a presidential regulation on national strategies in managing mangrove ecosystems, is an effort in the form of policies and programs to realize sustainable mangrove ecosystem management and prosperous communities. To maintain the existence of mangroves in carrying out their functions, an understanding to protect mangrove forests can be performed collaboratively with the parties (village officials, residents, and facilitators) to develop a protection strategy so that the role of mangroves in a sustainable manner can function as life support (Sulistyaningsih et al., 2014).

Sumatra Island is a large island in Indonesia that has a large mangrove ecosystem (Yuniastuti et al., 2018). North Sumatra Province is one of the provinces on the island of Sumatra that has mangroves on the east coast. Based on the National Mangrove Map in the Ministry of Maritime Affairs and Fisheries (2021), the distribution of mangroves in North Sumatra Province has the highest rare cover condition, which is an area of 8,877 ha.

Paluh Kurau Village is one of the villages in North Sumatra Province, which has excellent potential to be developed into a leading tourist attraction for mangrove areas generally located in coastal areas that are currently threatened by the surrounding community's needs. There are five villages (Karang Gading Village, Telaga Tujuh Village, Sei Baharu Village, Belawan Sicanang Village, Belawan I Village) surrounding Paluh Kurau Village and as a buffer zone for the Karang Gading Wildlife Sanctuary area. The population in Paluh Kurau is 5,746 people from 15 hamlets. Most of the residents' livelihood in Paluh Kurau Village relies on mangrove ecosystems such as fishermen, ponds, and crab catchers. Paluh Kurau Village is also one of the areas of the mangrove restoration program carried out by YAGASU. Yagasu is an Indonesian Foundation (NGO) with over 22 years of practical experiences on land-based climate actions. The Foundation was established to fulfill a unique role—providing innovative space and finance for long term programs that would enhance climate mitigation and adaptation, nature-based solutions, and community development on green livelihoods.

Over time, mangrove forests experience a lot of pressure both directly and indirectly (Utami et al., 2021). The area of mangrove forests in North Sumatra, including Paluh Kurau Village, already decrease. As happened in Karang Gading Village which experienced the threat of damage due to various illegal activities, such as wood theft and encroachment (Barus and Kuswanda, 2016). This study aims to determine the understanding of the people of Paluh Kurau Village about the condition and benefits of mangroves in Paluh Kurau and compile a draft village regulation on mangrove protection to maintain mangrove sustainability in Paluh Kurau Village and support the success of the mangrove restoration program.

2. Methods

This research was conducted in July-October 2021. The study was conducted in Paluh Kurau Village, Hampan Perak District, Deli Serdang Regency, North Sumatra Province. Paluh Kurau Village is geographically located at a position of 3°52'44.416" North Latitude to 3°46' 35.685" North Latitude and 98°41'44.703" East Longitude to 98°37'43.239" East Longitude (Figure 1). Based on its location, the north faces Karang Gading Village, the south faces Belawan I Village, the west faces Telaga Tujuh Village, and the east faces the Malacca Strait. The determination of the location of the study was carried out using purposive sampling technique, which is a sampling technique based on certain characteristics or traits that are considered to be closely related to the characteristics and traits of the population (Hadi, 1993). The determination of Paluh Kurau Village as the research location was due to consideration of the potential of the mangroves in the village, the diversity of community activities involved with the mangrove ecosystem, and the existence of the YAGASU mangrove restoration program area. Meanwhile, a sample of 30 respondents selected for the interview were representatives of the Paluh Kurau Village community (population) who have various backgrounds but are still involved in the use and management of mangrove ecosystems. The number of 30 samples is the minimum number of samples for research, according to Lestari (2014), for research using statistical data analysis, the minimum sample size is 30.

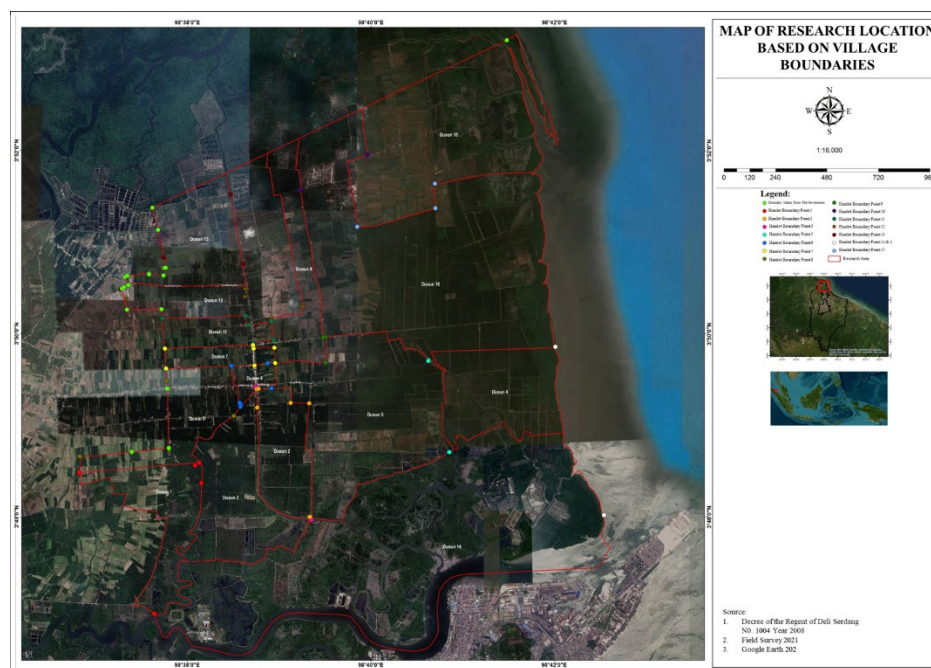


Figure 1. Studied Sites

This research procedure consists of 3 stages, namely the preparation stage (determination of research locations, selection of respondents and preparation of research tools and materials in the form of stationery, laptops, and data processing software), the data collection stage (interviews and data analysis) and the stage of analyzing and preparing a draft village regulation.

This study used two types of data: primary and secondary data. Primary data is data obtained through field observations in the form of physical observations of mangrove ecosystems and interviews with the community. Meanwhile, secondary data are data obtained from agencies related to the protection of mangrove ecosystems and literature studies from previous studies. The data analysis used in this study is qualitative descriptive analysis. Descriptive qualitative is a method used in qualitative research for a descriptive study through the process of data reduction, data display and drawing conclusions (Yuliani and Siliwangi, 2018). The data obtained was also used to develop village regulations to protect mangroves by referring to legal provisions such as article 21 of Law Number 41 of 1999 concerning Forestry and article 7 of Law Number 10 of 2004. To determine the condition of land change, spatial analysis is also carried out using Landsat satellite imagery.

3. Results and Discussion

3.1 Community Understanding of Mangrove Forest

The community's understanding of the current condition of the mangrove forest in Paluh Kurau Village, from 30 respondents who were interviewed, 5 people (17%) did not answer, and 25 people (83%) answered that the condition of the mangrove forest in Paluh Kurau Village has decreased due to changes in function land, namely, to become oil palm plantations, rice fields, settlements, and intensive ponds. Decreasing the amount of mangrove forest area can cause mangrove forest degradation and is indicated by a shift in land function (Riwayati, 2014). The decrease in mangrove forests in Paluh Kurau Village is evidenced by changes in the mangrove area. Based on spatial analysis of Landsat in 2021, in 2009 a mangrove area of 1,700 ha was obtained while in 2021 a mangrove area of 1,580 ha was obtained (Figure 2).

Efforts to restore mangrove forests in Paluh Kurau Village have been carried out by the government, farmer groups, and NGOs that concentrate on mangrove restoration starting after the tsunami. Activities carried out in land restoration are replanting in coastal areas as habitat for degraded mangroves. Some of the intensive pond repairs that have been abandoned by the manager have been replanted with mangroves. However, due to land tenure owned by individuals or unscrupulous persons, the conversion of mangrove forest functions still occurring today into oil palm plantations and intensive ponds such as vaname shrimp. The shift in the function of mangrove forests to intensive ponds for shrimp farming in accordance with the results of research by Ilman et al., (2016) for the next two decades, the damage to mangrove ecosystems in Indonesia is the result of the conversion of land to shrimp ponds cultivation is the leading cause because people are intensively concentrating on the amount of shrimp production and ignore the mangrove trees in the pond.

The results of interviews conducted with respondents about the understanding of mangrove functions that have been identified so far in Paluh Kurau Village are: 2 people (6%) stated that it was a water filter so that it was not cloudy, 8 people (27%) stated that they were oxygen producers, 5 people (17%) who stated as a barrier to seawater abrasion, 5 people (17%) as a barrier to the entry of seawater into the plains, 10 people (33%) as a place of fishing habitat and a source of livelihood for fishers. This public opinion is not far from the research results by Oudenhoven et al., (2015) show that mangrove ecosystems provide environmental services. The environmental services referred to are (1) providing shrimp and fish, (2) raw materials, (3) carbon dioxide storage, (4) beach protection, (5) water purification, (6) spawning grounds, and (7) nature-based recreation.

Public understanding of mangroves that grow well in ponds provides added value to fish production, a key for coastal communities living in mangrove ecosystems. People in Paluh Kurau Village who live in mangrove ecosystems understand that mangroves are a place for marine biota to spawn, breed, and support the community's economy. Reducing the number of fish production for shrimp and crab fisheries in the brackish waters of Paluh Kurau Village currently affects people's income. The decrease of fish production is influenced by the decrease in the area of the mangrove ecosystem due to the conversion of functions to intensive ponds and other functions, causing the cycle to spawn and breed in the previous mangrove area to no longer occur (Soraya et al., 2012).

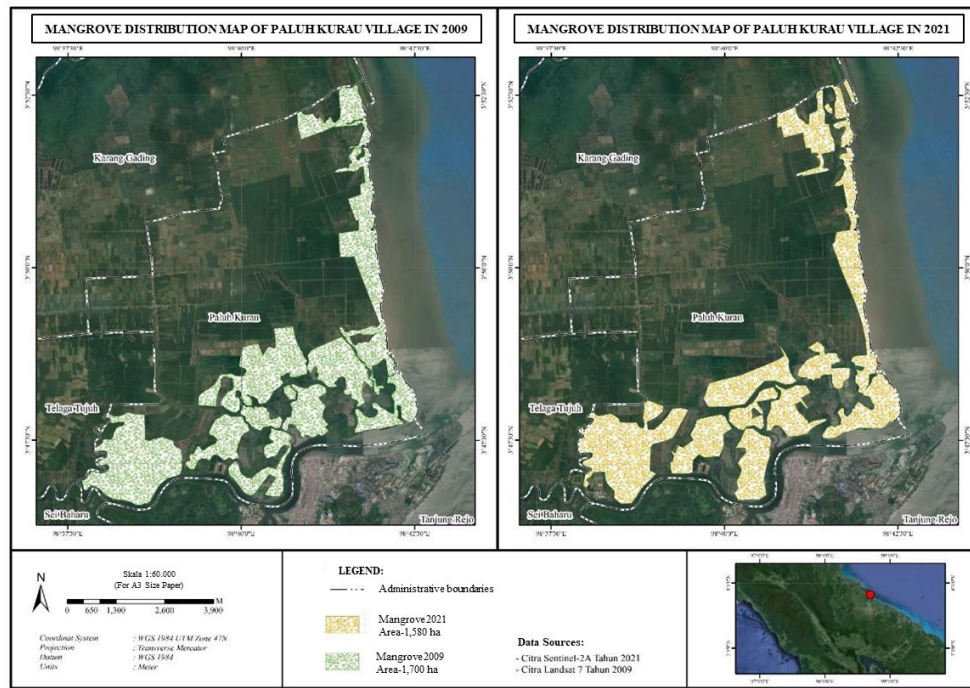


Figure 2. Map of changes in mangrove forest

3.2 Strengthening Participatory of the Community for Mangrove Forest Protection

Communities living around mangrove forests are the key to successful mangrove protection. This is because the impact of mangrove damage will be directly felt by the community. The needs of the Paluh Kurau Village Community around the mangrove ecosystem in the coastal area are:

3.2.1 Source of Marine Life

Marine biotas such as shrimp, crabs, and fish originating from the mangrove ecosystem are used as their food by the community, it is also a medium of exchange for buying and selling to meet their daily needs.

3.2.2 Beach Protector

Strong sea breezes pose a threat to settlements. The beach is generally a residential area, which can be a target for the entry of water waves caused by strong winds. If the mangrove tree line is well arranged in the coastal area, then the threat of the impact of wind and waves can be avoided.

3.2.3 Producer of Oxygen and Prevent Global Warming

Damage to mangroves will impact the heat of the air, which is felt directly by the community because of the reduced shade from existing mangrove trees.

The needs of people living in coastal areas are required to play a role in forest management in order that the utilization received directly or indirectly can be sustainable. The role of the community in the management of mangrove forests is also due to the fact that the community has felt the negative impact of damaged mangrove forests, such as the 2015 cyclone disaster in Paluh Kurau Village, which caused many houses to be damaged. Awareness of the fundamental needs in life is one of the roles of the community in protecting mangrove forests (Apelabi et al., 2019). This condition is also in line with the opinion of previous experts who showed that the success of sustainable forest management could be combined with ecological interests with socioeconomic interests around the forest (Bengen, 2001).

3.3 Protection Policy for Mangrove Forest as Basis for Drafting Village Regulations

Mangrove protection efforts aim to save the forest from all efforts that will damage its existence. The general goal of protecting mangrove forests is to instill awareness in everyone, both those who live around mangrove forests and immigrants who want to take advantage of mangrove forests, of the importance of the function of mangrove forests as a unit in forestry management (Rehulina and Sitorus, 2020). In carrying out the protection of mangrove forests, there are 3 aspects of the approach: technical, juridical, and physical aspects (Sila and Nuraeni, 2009).

Juridically, several efforts to protect mangroves have been carried out by the government (Rehulina and Sitorus, 2020):

- Law No 27 Year 2007 on the Management of Coastal Areas and Small Islands (State Gazette of the Republic of Indonesia Year 2007 Number 1156); which is revised in Law Number 1 of 2014 concerning Management of Coastal Areas and Small Islands (State Gazette of the Republic of Indonesia of 2014 Number 84, Supplement to the State Gazette of the Republic of Indonesia Number 4739).
- Law Number 32 of 2009 concerning Environmental Protection and Management (State Gazette of the Republic of Indonesia of 2009 Number 140, Supplement to the State Gazette of the Republic of Indonesia Number 5059).
- Law Number 5 of 1990 concerning Conservation of Biological Natural Resources and Their Ecosystems (State Gazette of the Republic of Indonesia of 1990 Number 49, Supplement to the State Gazette of the Republic of Indonesia Number 3419).
- Law Number 06 of 2014 concerning Villages (State Gazette of the Republic of Indonesia of 2014 Number 7, Supplement to the State Gazette of the Republic of Indonesia Number 5495).
- Government Regulation Number 26 of 2008 concerning National Spatial Planning.
- Government Regulation Number 73 of 2013 concerning Swamps.
- Presidential Regulation Number 73 of 2012 concerning the National Strategy for Mangrove Ecosystem Management.

Based on article 21 of Law No. 41 year 1999 about Forestry, Forest Management includes forest management activities and the preparation of forest management plans, forest utilization and forest area use, forest rehabilitation and reclamation, and forest protection and nature conservation can be the basis for drafting village regulations in order to accommodate forest management policy so that forests mangroves can be protected.

This legal policy related to the conservation of mangrove forests has been issued in the rule of law with the objective is that mangrove forest management should be carried out consistently between the government and community components so that contributions to the supervision and protection of mangrove forests for the common interest can run in accordance with the objectives of the published legal rules and policies. Thus, the government's legal regulations can be the basis for drafting village-level regulations that are mutually agreed upon with legal protection.

In line with the article 7 of Law No. 10 Year 2004 which state that Village regulations are regulations of the same level, made by the village representative institution and the headman based on the community's agreement so that in its implementation, the law can be implemented and obeyed under applicable legal provisions (Cahyaningrum and Setyowati, 2011).

3.4 Mangrove Protection Agreements in the Village Regulation Draft

The agreement of the Paluh Kurau Village community in designing a Village Regulation as an effort to protect mangroves regulates the main things including:

3.4.1 Purpose and Objectives of Village Regulations

The purposes of drafting this village regulation are:

- Maintaining the preservation of the mangrove area
- Protecting the biota in the mangrove area from extinction
- Protecting migratory bird species in the mangrove area from extinction
- Preventing the transfer of land use in mangrove areas
- Prevent illegal logging
- Reduce global warming

Meanwhile, the purpose of the local village regulation is to manage and utilize mangrove areas for the welfare of the community. The purpose and objectives of the village regulations are based on the awareness and common interest of the community to preserve mangrove forests. If there is no good awareness from the community, the essential points in drafting village regulations will not be achieved. Village regulations that have been approved will be formalized into legally applicable regulations. One factor that shows that law enforcement is running well is the benefits that are felt

directly by the community from regulations made, such as village regulations (Cahyaningrum and Setyowati, 2011).

3.4.2 *The Agreement on the Rights, Obligations, Prohibitions, and Sanctions*

The agreement on the rights, obligations, prohibitions, and sanctions of the community as agreed in the village regulation draft is:

Community Rights

Community rights are:

- Getting benefits from the mangrove forest area
- Conducting limited livelihood activities in the mangrove forest area
- The limiting livelihoods allowed are installing traditional crab fishing gear, nets at high tide, traditional fishing nets, and small fishing activities that do not damage mangroves
- Monitoring and supervising

Community Obligations

Community obligations are:

- Preserving the mangrove area
- Carrying out reforestation or replanting of damaged plants
- Protecting mangrove areas from illegal logging
- Supervising the activities of residents and anyone suspected of doing damage
- Reporting destructive activities carried out by anyone to the local village, government, and or to law enforcement officers, both in writing and verbally

The Prohibitions

The prohibitions are:

- Damaging, changing, and destroying signs for the protection of mangrove forest areas built by the government, private, and or the community
- Carrying out illegal logging activities in the mangrove forest and the green lines
- Carry out activities that can damage or destroy the life or growth of biota in mangrove forest areas and the green lines
- Shooting or killing migratory bird species in mangrove forest areas and the green lines
- Diverting the function of mangrove forests and green lines that can damage the ecosystem

The Provisions of the Sanctions

The provisions of the sanctions are:

- Everyone who conducts illegal logging in mangrove forest areas and green lines is required to provide back 500 mangrove seedlings individually of each tree to be cut down
- Everyone who destroys the mangrove forest area, and the green line will be subject to a suspension of village administration
- The refusal of replanting in mangrove forest areas and green lines will be submitted to the authorities for legal proceedings

In an inventory of village regulations quoted from the rights, obligations, prohibitions, and sanctions of the community as agreed in the draft village regulations in Paluh Kurau Village, it is clear that the mangrove forest ecosystem must directly be protected by the rights, obligations, prohibitions, and sanctions that are binding on the community, government, and any parties who enter the mangrove ecosystem area of Paluh Kurau Village. Thus, before this village regulation is ratified, it is necessary to have repeated socialization in the community until they understand the binding provisions in the village regulation draft before it is legally validated (Hasantua et al., 2017).

In accordance with the establishment of village regulations, as a realization of Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia that everyone has the right to live in physical and spiritual prosperity, to have a good and healthy place to live (Redi et al., 2019). Departing from this, people living in Paluh Kurau Village should have the right to live well in their environment and also have the obligation to carry out direct and indirect supervision of mangrove forests in their area so that the forest remains sustainable.

Based on the data of interviewed respondents, about 30 people answered that they were willing and agreed to apply the local Village Regulation if it would be officially stipulated. This direct statement is a reflection of the attitude of the community who really need and want the protection of the mangrove forest in Paluh Kurau Village to be realized. This also implies that the high dependence of the community on mangrove forests results in the need for protection and sustainable management of mangrove forests (Redi et al., 2019). Thus, in its management, the community also has the same opportunity to increase capacity through counseling and training activities on mangrove forest management conservatively.

4. Conclusion

The condition of mangrove forests in Paluh Kurau Village has decreased due to changes in land function, namely into palm oil plantations, rice fields, settlements, and intensive ponds. The benefits of mangroves known to the Paluh Kurau Community are water filters, oxygen producers, abrasion prevention, barriers to seawater entry into the land, and fish habitat as a source of livelihood. The establishment of a draft village regulation in the protection of community-based mangrove forest ecosystems in Paluh Kurau Village was approved and supported by the people of Paluh Kurau Village. The development of village regulations in Paluh Kurau includes agreements, policies, rights, obligations, prohibitions, and sanctions for mangrove protection that are mutually agreed upon and refer to the national regulations of the Republic of Indonesia.

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6. Conflicts of Interest

The authors declare no conflict of interest.

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