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STATUS OF CORAL REEFS AND FISH RESOURCES IN ETHNOCONSERVATION AREAS: CONSERVATION AND SUSTAINABLE FISHERIES

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Abstract: Coral reef management in marine ecosystems supports people's livelihoods. The Sapuka Islands do not yet have the status of coral reefs and fish resources to support the determination of ethno-based conservation zones. This study uses observation, survey, and social mapping methods. The analysis used is descriptive qualitative analysis and ArcGIS. This study aims to analyse the status of coral reefs and fish resources in the Sapuka Islands and determine conservation zones in the ethnoconservation areas in the Sapuka Islands. The results of this study indicate that the highest level of coral reef damage is on Sapuka Caddi Island, covering an area of 150.46 Ha and the lowest damage is on Sambargitang Island, 7.76 Ha. Types of ethnoconservation fish based on tribe are Octopus, which is protected by the Bajo tribe; Snapper, protected by the Mandar tribe; and Tendro Fish, protected by the Bugis and Makassar tribes. The determination of conservation zones in the ethnoconservation area in the Sapuka Islands, with an area of 71,956.53 Ha is located in the Core Zone covering an area of 3,513.87 Ha, the Limited Utilisation Zone covering an area of 38,719.71 Ha, and the Other Zone covering an area of 17,974.7 Ha.

Keywords: Conservation zones, coral reefs, ethnoconservation.

Introduction

Coastal ecosystems support the livelihoods and well-being of coastal communities worldwide (Lau *et al*., 2019). Communities living on small islands depend on natural resources and have different social, economic, and cultural characteristics from other communities because geographical conditions limit them. The behaviour of island communities towards their environment impacts the sustainability of marine resources, including coral reefs. Coral reefs in archipelagic waters play an essential role in the sustainability and protection of aquatic organisms because they are home to various marine species.

Therefore, management that supports ecological values needs to be carried out to reduce ecological impacts in the future (Rojo *et al*., 2019; Qiao *et al*., 2022) while paying attention to fishing activities carried out by residents that are in line with sustainability. In line with this, marine ecotourism such as snorkelling or diving in coral reef areas is a source of income for many island areas such as marine ecotourism in the Great Lakes, Canada, which can improve the welfare of local communities (Vis *et al*., 2024). Unsustainable fishing practices carried out by local communities can damage coral reef ecosystems. In addition, the threat of climate change can also cause coral bleaching (Araujo *et al*., 2016; Nobre *et al*., 2017; Davies *et al*., 2018; Fassina *et al*., 2020).

Several countries, including Indonesia have regulated and established marine conservation areas to protect their waters, including coral reef ecosystems. Conservation involves the government and the community through law enforcement and coral reef rehabilitation. Hence, humans also play an essential role in the functional homogenisation of fish living in coral reef ecosystems (Nalley *et al*., 2024) such as throughout the Western Pacific. Taxa show a relationship between population growth

and decreased phylogenetic diversity of fish (D'Agata *et al*., 2014). Moreover, scientific knowledge of fish migration can support good fisheries management (Hallwass *et al*., 2020). South Africa has provided community funding to support conservation areas that meet the socio-economic factors of local communities (Field *et al*., 2025).

Local wisdom of communities on small islands in maintaining ecosystems is determined by their culture. Thus, the treatment in utilising their resources is in line with fishing practices, maintaining fish sustainability, including reducing conflicts between fishermen (Daris *et al*., 2023; Massiseng *et al*., 2023). Local wisdom in ethnoconservation can be passed down from generation to generation, as seen in Kenya and countries in the West Indian Ocean, where ethnoconservation is integrated into daily life through local customs. Ethnoconservation has implemented conceptualisation, initiation, implementation, monitoring, and adaptive management for sustainability (Kawaka *et al*., 2017; Ochieng *et al*., 2024). Furthermore, Lau *et al*. (2020) stated that ethnoconservation areas can combine government management policies with community culture, which means they can unite modernity and tradition.

Efforts to protect and restore coral reef ecosystems from damage caused by climate change and human activities require conservation and rehabilitation efforts to maintain marine biodiversity (Li *et al*., 2023; Shaver *et al*., 2024; Zhou *et al*., 2024; Dang *et al*., 2024). Steins *et al*. (2021) and Simonsen *et al*. (2022) introduced a concept, namely Nature-based Solutions (NBS) and the EU taxonomy means Nature-based Solutions (NbS) and the European Union taxonomy, which is a classification framework established by the EU to support aquatic environment restoration, the blue economy, and sustainable financing.

Coral reef rehabilitation is needed in the recovery and support of the sustainability of reef fish, including being made a marine protected area managed in the national jurisdiction area, as well as regulating utilisation practices (Maestro *et al*., 2019; Ouyang *et al*., 2021; Steger *et al*., 2021; Boothroyd *et al*., 2024; Zapelini *et al*., 2024). This is crucial because of the high pressure that occurs in water areas due to nature and human activities, including plastic waste in the ocean (Massiseng *et al*., 2022; Sangaji *et al*., 2024). Note that people who utilise fishery resources as a livelihood can be used as actors in management.

Management of coastal areas and small islands can be carried out in a participatory manner to develop the marine and fisheries potential in their area through a rehabilitation and conservation system. Conservation must arise from community initiatives by patrolling the waters of their island to prevent illegal fishing and fish sales transactions in the middle of the sea and developing coastal ecotourism for community welfare based on their local uniqueness. This can contribute to the defence of the ecosystem from various global threats (Ferreira *et al*., 2022). It is essential to increase public awareness and make them key actors in coral reef management (Gann *et al*., 2019; Hein *et al*., 2021; Quigley *et al*., 2022). This research is significant because it can support management in the waters of the Sapuka Islands through indicators of coral reef and reef fish status in determining conservation zones based on community participation (ethnoconservation).

Materials and Methods

Location and Time of the Study

This research was conducted from May 2024 to August 2024 and the research location was in the waters covering the small islands in the Sapuka Islands. The Sapuka Islands are in Liukang Tangaya District, Pangkajene and Kepulauan Regency, South Sulawesi Province, Indonesia (Figure 1). The islands included in the Sapuka Islands are: Sapuka Lompo Island (E118°10'7,551"; S7°5'4,426"), Sapuka Caddi Island (E118°9'31,294"; S7°6'55,685"), Sambarjaga Island (E118°14'9,918"; S7°5'22, 139"), Sambargitang Island (E118°16'45,132"; S7°8'42,358"), Cakalangan Island (E118°0'35, 713"; S7°13'9,391"), Tinggalungan Island

(E118°2’25,076”; S7°2’10,826”), Kembang Lemari Island (E117°59’42,226”; S7°3’53, 981”), Lamuruang Island (E118°6’24,735”; S7°18’15,201”), and Pelokang Island (E118°23’21,910”: S7°11’28,012”).

The research location is included in the Wallacea waters, which have abundant marine and fishery resources. The Sapuka Islands are a water area that implements ethnoconservation in the Wallacea ecoregion (Jaya *et al*., 2024). The water parameters are in one area of island waters (Katiandagho *et al*., 2024). In addition, the people in the location have their primary jobs as fishermen and homemakers and only a small number work as traders and civil servants. The tribes in the research location consist of the Mandar, Makassar, Bugis, Bima, and Bajo tribes, which are closely related to implementing culture, especially those related to ethnoconservation, so, a more in-depth study is needed.

Data Type and Source

Primary data collection was conducted through observation, coral reef condition surveys, and taking research station coordinates using Global Positioning System (GPS), in-depth interviews, and social mapping. The social mapping method in this research involves fishermen as respondents to find the fishing areas and types of fish resources in the waters. Note that this method uses fishing area maps and GPS. The number of respondents used in this study was 30 for the interview and social mapping activities. Primary data collection was conducted in the waters of the small islands of the Sapuka Islands

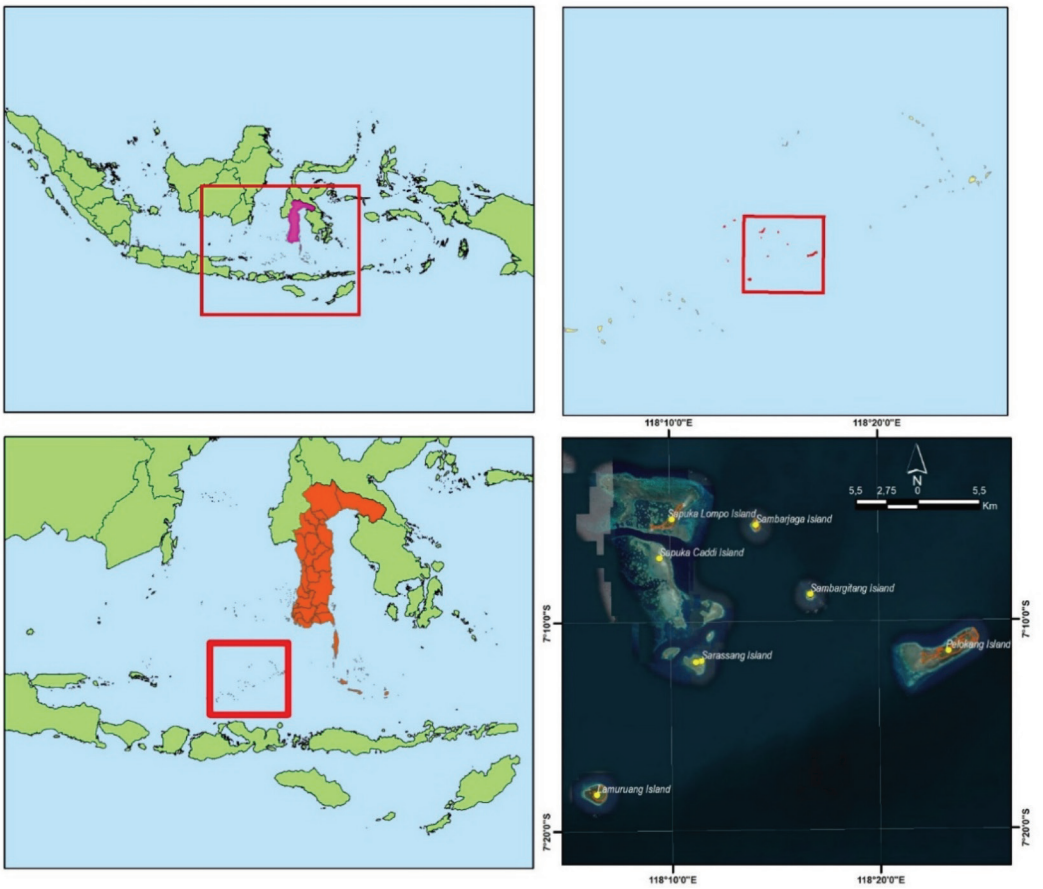

Figure 1: Map of research locations in the waters of the Sapuka Islands

and the communities living on the small islands of the Sapuka Islands. Meanwhile, secondary data for this study came from documents related to marine and fisheries resource policies from agencies related to the research. Other data were also obtained from research journals that previous researchers had published to add references and provide further comparisons to the data received and comparisons of research locations. Table 1 presents the types and Sources of data used in this study.

Table 1 shows an overview of the data sought to achieve the research objectives. The data sources obtained to analyse the status of coral reefs and fish resources in the Sapuka Islands are observations, coral reef condition surveys, and social mapping. Furthermore, data collection to determine the rehabilitation zone in the community ethnoconservation area is conducted by conducting social mapping, determining coordinate points using GPS, overlaying maps originating from the Coastal Area and Small Islands Zoning Plan (RZWP3K) document of South Sulawesi Province with community ethnoconservation maps, and using Geographic Information System (ArcGIS).

Tools and Materials for Data Collection

The tools and materials referred to in this study are a GPS for taking coordinate points, maps of the research area in the form of banners and coloured markers for social mapping activities, the ArcGIS program on a computer to make maps, fishing boats, diving equipment, underwater cameras, notebooks, and recording devices for interviews.

Data Collection Method

Once the equipment and materials have been prepared, data is collected using various methods adjusted to the research objectives. The observation method in the waters involves conducting a field survey to directly assess the current conditions of the research location. Correspondingly, we conducted social mapping by engaging fishermen as participants and informants to gather insights into the condition of coral reefs and fish resources in their fishing areas. We continued our coral reef survey using diving techniques, equipped with diving gear and underwater cameras to assess the condition of the coral reefs. The documentation of the coral reefs under the sea is then carried out.

In-depth interviews were conducted by recording the results of interviews with the fishing community regarding ethnoconservation that had been carried out at the research location and linked to the results of the map overlay from the RZWP3K document, with the ethnoconservation map determined by the

Table 1: Types and sources of data used in this study

No.	Type of Data	Source of Data	Location/Unit
1	Analysis of the status of coral reefs and fish resources in the Sapuka Islands	Observation, coral reef condition survey, social mapping	Sapuka Islands Water Area
2	Determination of conservation zones in the ethnoconservation areas of the Sapuka Islands community	Social mapping, GPS, map overlay, and GIS	Sapuka Islands Water Area

Note: Primary data collection

Table 2: Data collection method and number of respondents

No.	Data Collection Method	Number of Respondents
1	Interview	30 fishermen's
2	Social mapping	30 fishermen's

Note: Primary data collection

community. Based on this, data was obtained to determine the rehabilitation zone in the community's ethnoconservation area in the research location's waters.

Data Analysis Method

Data analysis for the status of coral reefs and fish resources in the Sapuka Islands

Data analysis uses a descriptive qualitative method to analyse the status of coral reefs and fish resources in the research waters. Descriptive qualitative research is carried out by first reducing the data and then compiling the analysis results related to the status of coral reefs and fish resources, presented in the form of maps and explanations of the research results. The last step is to draw conclusions and verify the data that has been analysed. Aprian *et al*. (2023) used qualitative descriptive analysis in their research on the Social-Ecological System (SES) framework, which was continued by creating a qualitative network to obtain a superior marine resource management model.

The analysis used is based on the research objectives, which are to analyse the status of coral reefs and fish resources in the Sapuka Islands using qualitative descriptive analysis to describe the condition of coral reefs and fish resources in the waters of the Sapuka Islands. As for determining the conservation zones in ethnoconservation areas, we use ArcGIS analysis in the form of ethnic-based conservation area maps.

Analysis of data for determining conservation zones in ethnoconservation areas in the Sapuka Islands

Data analysis was used to determine the conservation zone in the ethnoconservation area in the waters of the research location using spatial analysis of coral reef status data, fish resources, and the RZWP3K document maps, as well as interviews with fishing communities. From these results, a map overlay was carried out using ArcGIS analysis. Riley *et al*. (2024) stated that the findings resulting from the spatial analysis could contribute to sustainable management strategies and influence policymakers.

Results and Discussion

Analysis of the Status of Coral Reefs and Fish Resources in the Sapuka Islands

Based on the results of secondary data collection, the level of coral reef damage at the research location was obtained as stated in the RZWP3K document and has been stipulated as the Regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia in 2022.

The next activity is primary data collection through a coral reef survey focused on the conservation waters based on the Regulation of the Minister of Marine Affairs and Fisheries in 2022 (Figure 2). The level of damage to coral reefs in the waters of the Sapuka Islands, based on the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022 is 5,532.13 Ha. This area is divided into Core Zone (2,381.23 Ha), Limited Utilisation Zone (1,845.56 Ha), and Other Zones (1,305.34 Ha). Coral reef damage is found in several small islands in the research location, namely Sapuka Lompo (65.87 Ha), Tinggalungan (13.14 Ha), Kembang Lemari (8.62 Ha), Sambarjaga (16.06 Ha), Sapuka Caddi (150.46 Ha), Sambargitang (7.76 Ha), Pelokang (90.46 Ha), Sarassang (25.72 Ha), and Lamuruang (14.37 Ha). Figure 3 illustrates the condition of coral reefs in the research location.

Based on primary data and documentation in Figure 3, the highest level of coral reef damage is in the waters surrounding Sapuka Caddi Island and the lowest is on Sambargitang Island. The results of the ArcGIS analysis based on coral reef survey data in community ethnoconservation areas can be seen in Figure 4.

The level of coral reef damage in the waters of the research location, based on ethnoconservation is 7,011.04 Ha spread across the Core Zone (3,249.56 Ha), Limited Utilisation Zone (2,085.63 Ha), and Other Zones (1,675.85 Ha). Coral reef damage is determined

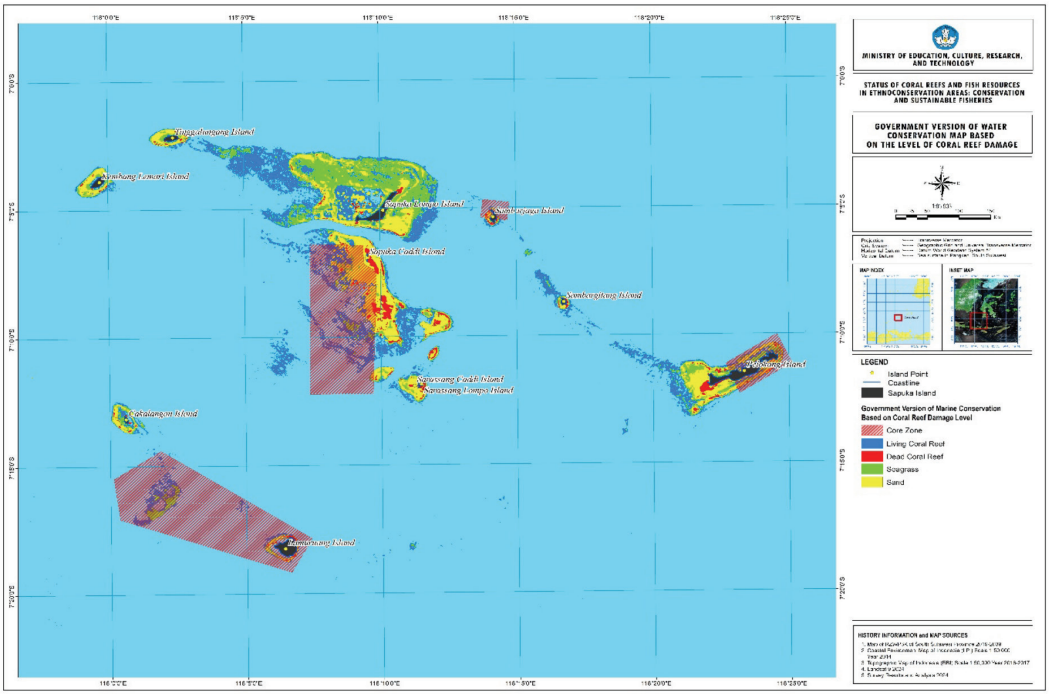

Figure 2: Map of coral reef damage levels at the research location based on the regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022

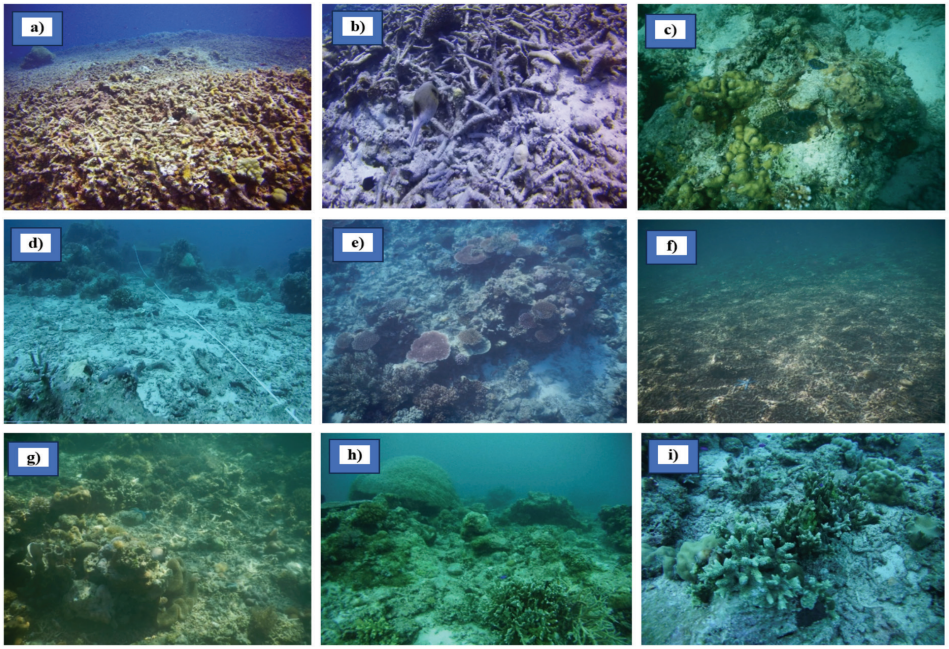

Figure 3: The level of damage to coral reefs at the research location, consisting of the islands: (a) Sapuka Caddi, (b) Sapuka Lompo, (c) Lamuruang, (d) Pelokang, (e) Sarassang, (f) Sambargitang, (g) Sambarjaga, (h) Tinggalungan (i) Kembang Lemari

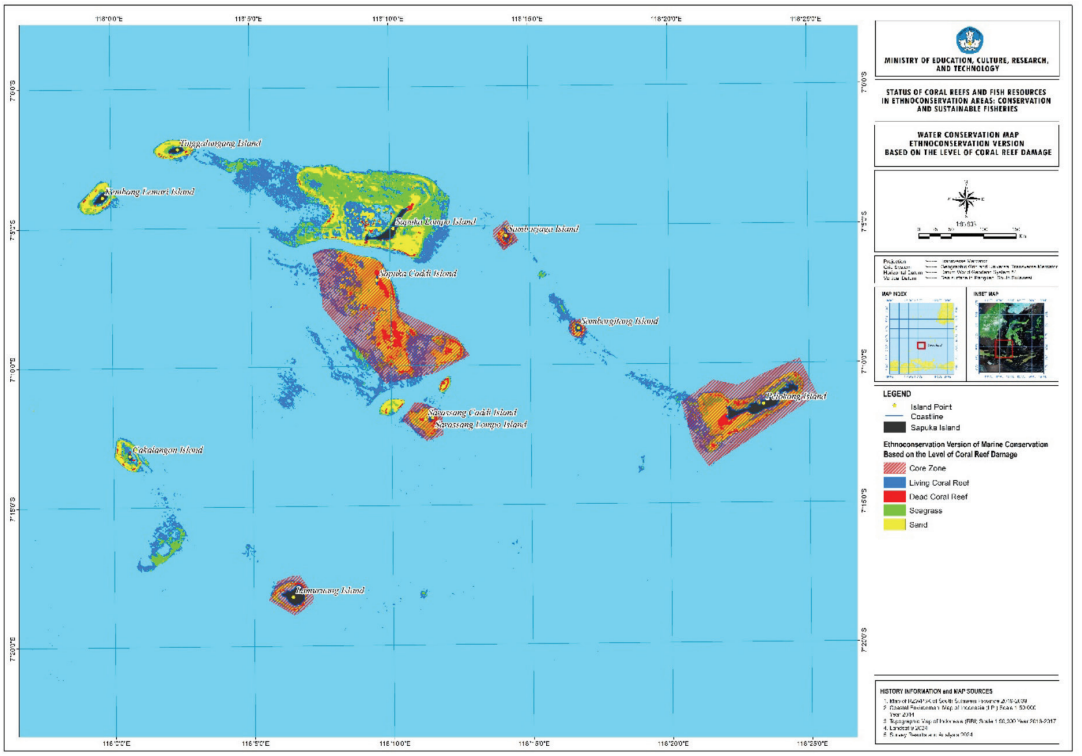

Figure 4: Map of coral reef damage levels at research locations based on community ethnoconservation

on the islands: Sapuka Lompo (76.47 Ha), Tinggalungan (15.92 Ha), Kembang Lemari (10.04 Ha), Sambarjaga (19.58 Ha), Sapuka Caddi (183.84 Ha), Sambargitang (9.31 Ha), Pelokang (95.83 Ha). Sarassang (27.93 Ha), and Lamuruang (16.54 Ha). The highest level of damage based on community ethnoconservation is in the waters of Sapuka Caddi Island and the lowest level of damage is in Sambargitang Island.

Fish distribution data were obtained as depicted in Figure 5. It is based on secondary data collected through the RZWP3K document of South Sulawesi Province, which includes the research location.

The fish distribution map in Figure 5 shows the distribution of fish in the waters of the research location based on the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022.

The fish are spread across the islands' waters (Table 3): Sambarjaga, Sapuka Caddi, Lamuruang, Kembang Lemari, Cakalangan, and Sambargitang. The reef fish that spread across the waters of these islands are Red Snapper, Tendro, and Octopus. The fish distribution map based on ethnoconservation can be seen in Figure 6.

The fish seen in Figure 6, based on community ethnoconservation are evenly distributed in the waters of the islands: Sambarjaga, Pelokang, Sapuka Caddi, Lamuruang, Sambargitang, Sarassang, Tinggalungan, and Kembang Lemari. The types of fish conserved by the community are Octopus, Red Snapper, and Tendro Fish. The Bajo Tribe culture protects the Octopus species, the Mandar Tribe culture protects the Snapper, and the Bugis and Makassar Tribe cultures protect the Tendro Fish.

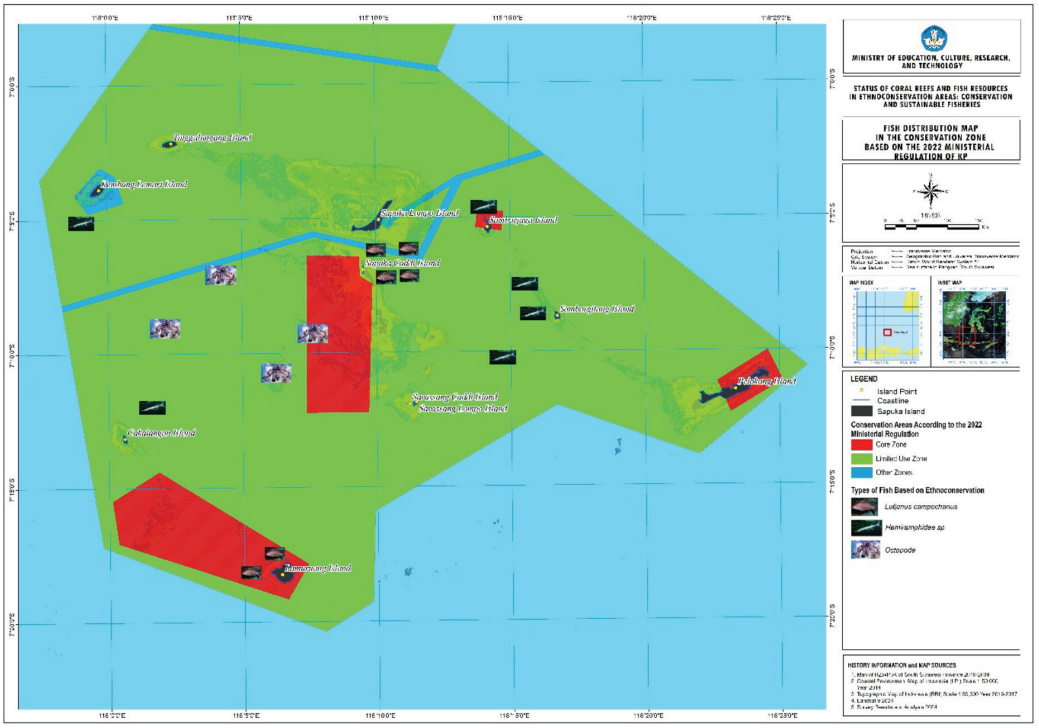

Figure 5: Map of fish distribution in the waters of the research location based on the regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia in 2022

Table 3: Distribution of fish based on fishing area (waters)

No.	Types of Fish Resources	Fishing Area (Waters)
1	Red Snapper Fish	Lamuruang Island, Sapuka Caddi Island
2	Tendro Fish	Kembang Lemari Island, Cakalangan Island, Sambarjaga Island, Sambargitang Island
3	Octopus	Sapuka Caddi Island, Cakalangan Island, Kembang Lemari Island

Note: Primary data collection

Determination of Conservation Zones in Ethnoconservation Areas in the Sapuka Islands

The determination of the Sapuka Islands Marine Conservation Area refers to the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022. According to the ministerial regulations, the conservation area is divided into three zones: Marine protection, marine conservation, and marine conservation. Table 2 shows the marine conservation area at the research location according to the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022.

Table 4 shows that in the RZWP3K document outlined in government regulations, three zones have been regulated: The Core Zone, Limited Utilisation Zone, and Other Zones. The area of each zone varies. The largest is the Core Zone, covering 11,439.76 Ha. In this zone, the community (fishermen) is prohibited

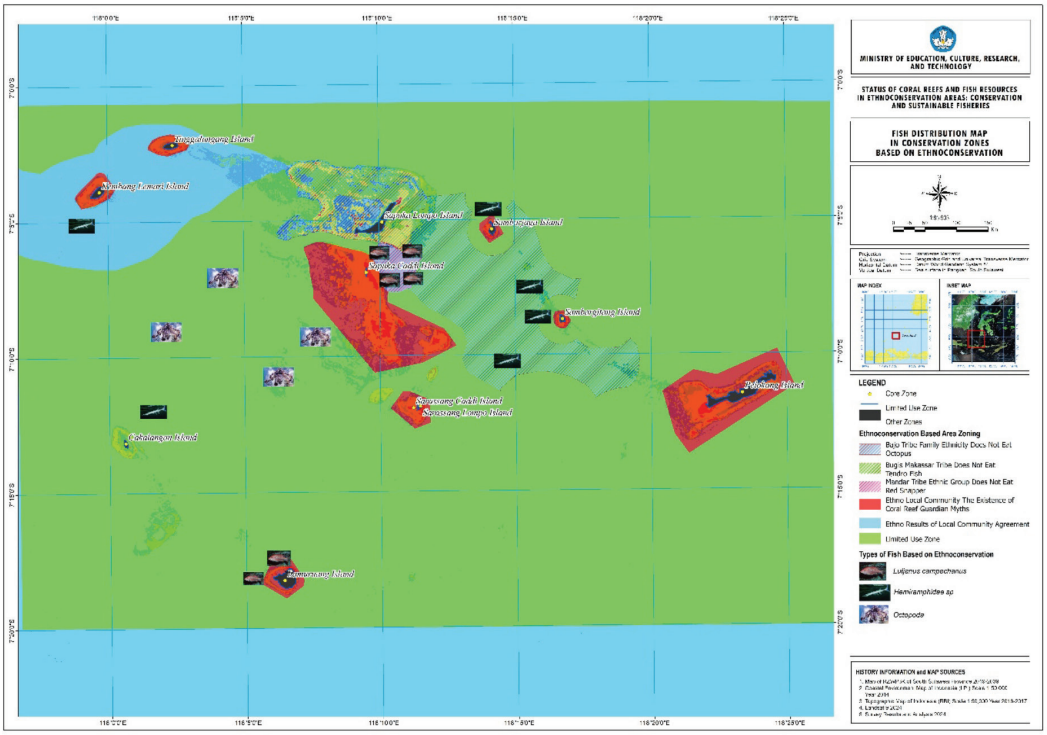

Figure 6: Map of fish distribution based on community ethnoconservation

Table 4: The area of marine conservation areas at the research location based on the regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia in 2022

No.	Conservation Zone	Area (Ha)
1	Core Zone	11,439.76
2	Limited Use Zone	11,123.12
3	Other Zones	3,310.97
Total Area		**125,981.88**

Note: Coastal Area and Small Islands Zoning Plan (RZWP3K) document for South Sulawesi Province, Indonesia

from carrying out fishing activities. The Limited Utilisation Zone covers 11,123.12 Ha, a zone that can be used for fishing activities but must still follow the rules of stakeholders in the area, whose legal status has been determined regarding the community's social, economic, and cultural functions. In other zones, 3,310.97 Ha is determined, much smaller than the previous zones. Other zones include protection zones and rehabilitation zones. Rehabilitation zones are water areas that have damaged coral reefs and seagrass beds that need rehabilitation.

In addition to the conservation areas determined by the government, it is also necessary to examine the community's conservation areas, namely the community ethnoconservation area (Figure 7).

The determination of the Sapuka Islands Marine Conservation Area zone based on ethnoconservation that has been carried out by the local community as shown in Figure 7 is taken from the basis for determining the conservation area zone consisting of six zones, namely: (1) Bajo Tribe Ethnoconservation with

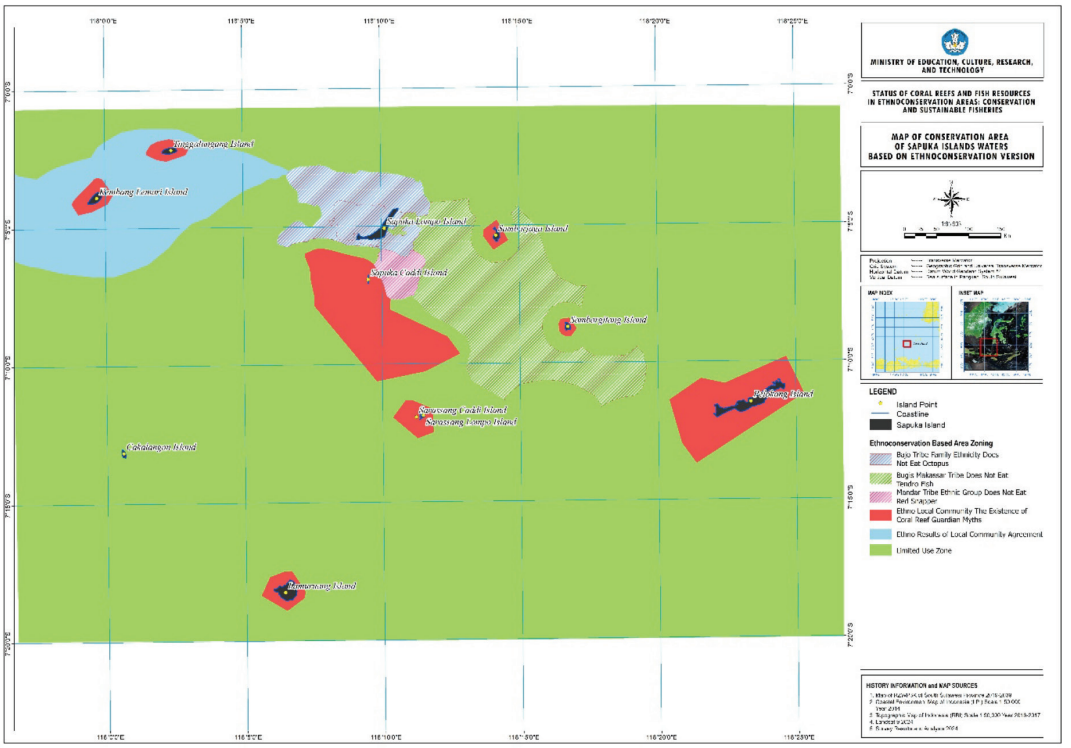

Figure 7: Map of marine conservation areas at research locations based on community ethnoconservation

a ban on catching Octopus and restrictions on the time for catching Sea Cucumber; (2) Bugis Makassar Tribe Ethnoconservation with a ban on eating Tenro Fish; (3) Mandar Tribe Ethnoconservation with a ban on eating Red Snapper; (4) Prohibitions in several fishing areas based on local community myths such as community belief in the existence of a figure guarding the sea and coral reefs, which they call the Prophet Chadir, so that several water areas are used as locations for prohibited fishing; (5) Ethnoconservation, which is the result of an agreement by the local community such as a ban on catching Sea Cucumber in January, February, and March; (6) Limited Utilization Zone based on community agreement such as a ban on the use of fishing gear other than the types of fishing gear found around Kembang Lemari and Tinggalungan Islands. The conservation areas based on community ethnoconservation are listed in Table 3.

Table 3 presents each area the local community uses as an ethnoconservation zone. Among the ethnoconservation zones that have been determined, the largest is the limited utilisation zone. The community enforces the limited utilisation zone by restricting fishing gear use in specific areas near the waters of Tinggalungan Island and Kembang Lemari Island.

This study also combines the conservation zones determined by the government through the Regulation of the Minister of Marine Affairs and Fisheries in 2022 with the community's ethnoconservation zone. The results of overlaying the conservation zone maps from both sources produce an overlay map of the conservation zone, as illustrated in Figure 8.

Based on the area of the Sapuka Islands marine conservation area according to the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022, covering an area of 125,981.88

Table 5: Area of the Sapuka Islands marine conservation area based on ethnoconservation

No.	Types of Ethnoconservation	Area (Ha)
1	Bajo tribe ethnoconservation does not catch Octopus and limits sea cucumber catch	3,923.66
2	Ethnoconservation of the Bugis Makassar tribe does not eat Tenro fish	10,068.20
3	Ethnoconservation of the Mandar tribe does not eat red Snapper	811.62
4	Ethnoconservation of local communities with a ban on fishing based on myths	9,146.76
5	Ethnoconservation as a result of local community agreements	10,603.60
6	Ethnoconservation of limited-use zones	163,384.62
Total Area		**197,938.46**

Note: Primary data (2024)

Ha, overlaid with the area of the Sapuka Islands marine conservation area based on community ethnoconservation covering an area of 197,938.46 Ha, a difference of 71,956.53 Ha is obtained (Table 5). The Sapuka Islands marine conservation area, according to ethnoconservation is wider than the Sapuka Islands marine conservation area, as determined by the government based on the Regulation of the Minister of Marine Affairs and Fisheries in 2022 (Figure 8).

The results of the overlay of conservation area zoning according to the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022 with the conservation area zoning according to the

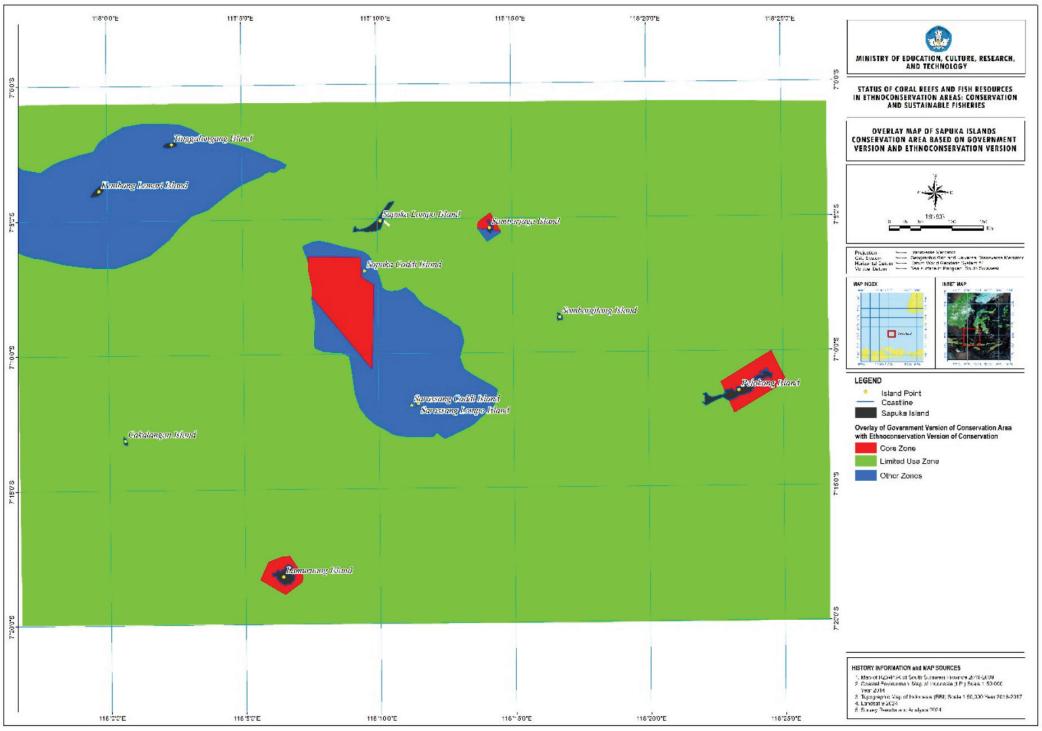

Figure 8: Overlay map of marine conservation areas based on the integration of the regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022, with community ethnoconservation

Table 6: Overlay of conservation area zoning according to the regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia in 2022, with the conservation area zoning according to the community's ethnoconservation version

No	Zone	Island Waters Area	Area (Ha)
1	Core Zone	Sambarjaga Island, Pelokang Island, Sapuka Caddi Island, Lamuruang Island	3,513.87
2	Limited Use Zone	Pelokang Island, Sambarjaga Island, Sambargitang Island, Sapuka Caddi Island, Sarassang Island, Cakalangan Island, Lamuruang Island	38,719.71
3	Other Zones	Kembang Lemari Island, Sapuka Caddi Island, Sambarjaga Island, Sambargitang Island, Sarassang Island	17,974.7

Note: Primary data (2024)

community's ethnoconservation version (Table 6) are in the Core Zone, covering an area of 3,513.87 Ha spread across the Island Waters: Sambarjaga (103.09 Ha), Pelokang (961.83 Ha), Sapuka Caddi 2,080.88 Ha), and Lamuruang (368.08 Ha). The Limited Utilisation Zone covering an area of 38,719.71 Ha spread across the Island Waters: Pelokang (5,887.12 Ha), Sambarjaga (1,511.03 Ha), Sambargitang (2,135.01 Ha), Sapuka Caddi (8,436.07 Ha), Sarassang (5,922.04 Ha), Cakalangan (7,784.34 Ha), and Lamuruang (7,044.1 Ha). Other Zones covering an area of 17,974.7 Ha spread across Island Waters: Residence (6,135.56 Ha), Kembang Lemari (4,391.84 Ha), Sapuka Caddi (5,006.77 Ha), Sambarjaga (398.63 Ha), Sambargitang (593.27 Ha), and Sarassang (1,448.63 Ha).

Conclusions

The conclusion of this study revealed the status of coral reef damage on several small islands in the research location, with the highest level of damage found in the waters of Sapuka Caddi Island at 150.46 Ha and the lowest damage in the waters of Sambargitang Island at 7.76 Ha. The distribution of fish based on ethnoconservation is evenly distributed on the islands: Sambarjaga, Pelokang, Sapuka Caddi, Lamuruang, Sambargitang, Sarassang, Tinggalungan, and Kembang Lemari. The types of fish included in ethnoconservation by the community based on ethnicity are Octopus, protected by the Bajo tribe; Snapper, protected by the Mandar tribe; and Tendro Fish, protected by the Bugis and Makassar tribes.

Determination of conservation zones in the ethnoconservation area in the Sapuka Islands, with an area of 71,956.53 Ha is located in the Core Zone covering an area of 3,513.87 Ha (waters of the islands of Sambarjaga, Pelokang, Sapuka Caddi, and Lamuruang). Limited Utilisation Zone covering an area of 38,719.71 Ha (waters of the islands of Pelokang, Sambarjaga, Sambargitang Sapuka Caddi, Sarassang, Cakalangan, and Lamuruang). Other Zones covering an area of 17,974.7 Ha (waters of the islands of Tinggalungan, Kembang Lemari, Sapuka Caddi, Sambarjaga, Sambargitang, and Sarassang). This research is novel as it determines the status of coral reefs and fish resources in the waters of the Sapuka Islands to support the determination of ethno-based conservation zones. This study provides an overview of the status of coral reefs and fish resources in the Sapuka Islands ethnoconservation area.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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