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COMMUNITY STRUCTURE OF BAGAN TANCAP CATCHES IN LAKE KERINCI, JAMBI PROVINCE

Struktur Komunitas Hasil Tangkapan Bagan Tancap di Danau Kerinci, Provinsi Jambi

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ABSTRACT

Lake Kerinci is one of the lakes in Jambi Province that plays an important role as a fishery resource for the communities around the lake, particularly the villages of Tanjung Tanah and Sanggaran Agung. Fishing activities in both villages are carried out daily to meet household needs and the daily economic needs of fishermen. One of the fishing tools used in Lake Kerinci is the bagan tancap, which is a fishing tool made of bamboo sticks stuck into the bottom of the lake on a permanent basis. The fixed fishing rafts are operated every day, day and night, which affects the structure of the community in Lake Kerinci. The structure of the community is related to the composition, diversity, uniformity, and dominance of fish species in the waters. This study aims to determine the structure of the community caught by fixed nets, environmental parameters, and differences in catches between Tanjung Tanah Village and Sanggaran Agung Village. This study was conducted in Lake Kerinci, Kerinci Regency, Jambi Province, from May 1 to June 4, 2025. The results obtained were H` 1.09, categorized as moderate, E 0.79, categorized as high, and E 0.40, categorized as low. It can be concluded that the community structure in Lake Kerinci is still quite stable, but sustainable management is needed to preserve the ecosystem in Lake Kerinci.
Keywords: Bagan Tancap, Catch, Community Structure

ABSTRAK

Danau Kerinci merupakan salah satu danau yang ada di Provinsi Jambi yang memiliki peran penting sebagai sumberdaya perikanan bagi masyarakat yang ada di sekitar danau. khususnya desa Tanjung Tanah dan Desa Sanggaran Agung. Aktivitas penangkapan ikan di kedua desa tersebut rutin dilakukan setiap hari guna memenuhi kebutuhan rumah tangga maupun kebutuhan ekonomi sehari-hari nelayan. Salah satu alat tangkap yang beroperasi di Danau Kerinci yaitu bagan tancap, bagan tancap adalah alat penangkapan ikan yang dibuat dari susunan bambu yang ditancapkan kedasar perairan yang sifatnya permanen. Pengoperasian bagan tancap dilakukan setiap hari pada siang dan malam hari, yang mana berpengaruh terhadap struktur komunitas yang ada di Danau Kerinci. Struktur komunitas berkaitan dengan

komposisi, keanekaragaman, keseragaman, dan dominasi jenis ikan yang ada di perairan. Penelitian ini bertujuan untuk mengetahui struktur komunitas hasil tangkapan bagan tancap, parameter lingkungan dan perbedaan hasil tangkapan yang ada di Desa Tanjung Tanah dan Desa Sanggaran Agung. Penelitian ini dilaksanakan di Danau Kerinci, Kabupaten Kerinci, Provinsi Jambi, dan waktu penelitian pada tanggal 01 Mei sampai 04 Juni 2025. Adapun hasil yang di dapat yaitu H` 1,09 dikategorikan sedang, E yang didapat 0,79 dikategroikan tinggi, dan E yang didapat 0,40 dikategorikan rendah. Dapat disimpulkan bahwa struktur komunitas yang ada di Danau Kerinci masih cukup stabil, tetapi perlu dilakukan pengelolaan berkelanjutan agar ekosistem yang ada di Danau Kerinci tetap terjaga.

Kata Kunci: Bagan Tancap, Hasil Tangkapan, Struktur Komunitas

INTRODUCTION

Lake Kerinci is a lake in Jambi Province that plays a vital role as a fishery resource for the surrounding communities. It is home to various species of fish and other aquatic organisms, all contributing to the balance of the aquatic ecosystem. Lake Kerinci serves as a source of income for the local community, who work as traditional fishermen, particularly in Tanjung Tanah Village and Sanggaran Agung Village. In both villages, fishermen routinely fish daily, with the catch used to meet household and daily economic needs.

One of the fishing gears used in Lake Kerinci is the fixed-net net (bagan tancap). This net is a fishing gear permanently installed in passive waters. The primary material used to construct the fixed-net net is bamboo. The fixed-net net consists of bamboo arranged longitudinally and transversely in a rectangular shape. Bamboo is preferred due to its availability and affordability (Azmi, 2021). Bagan tancap (lift net) is classified as a lift net. It consists of three components: the body, the net, and the fishing gear (Wahyu, 2024). Bagan tancap (lift net) is typically operated during the day or night in Lake Kerinci, with nighttime operations utilizing lights as a fishing aid.

Bagan tancap (lift net) operations are conducted daily, both during the day and at night, which impacts the abundance and composition of fish catches in Lake Kerinci. Analyzing the community structure of bagan tancap catches is crucial for understanding Lake Kerinci's ecosystem. Community structure, including abundance, diversity, and dominance, provides an overview of the aquatic ecology. Changes in these values can indicate disturbances in the waters, such as overfishing, changes in water quality, or disturbances to the aquatic ecosystem.

Government fisheries management efforts include fish restocking in Lake Kerinci. The government conducted fish restocking in February 2019 to maintain the balance of the fish population in Lake Kerinci. Restocking plays a role in restoring declining fish populations and maintaining biodiversity in Lake Kerinci. Reintroducing economically valuable fish is expected to optimize fisheries productivity. Therefore, this study aims to determine changes in community structure in Lake Kerinci waters following fish restocking.

METHODS

Time and Place

This research was conducted in the waters of Lake Kerinci in Tanjung Tanah and Sanggaran Agung Villages, Kerinci Regency, Jambi Province. The research period was May 1 to June 4, 2025.

Tools and Materials

The tools used in this research were: fixed-net catches from Lake Kerinci. The equipment used included: a set of stationery, a laptop for reporting, a mobile phone camera for

documentation, a ruler, a scale, a thermometer for measuring water temperature, and a pH meter for measuring water pH.

Research Procedure

The research method used was a survey, where data and information were collected through direct observation. Primary data were obtained by interviewing fishermen and recording catches by species. Secondary data were collected in the form of supporting data, such as the research location and general conditions of the research site. A total of 107 fixed-net fishing gears were used, with 78 in Tanjung Tanah Village and 29 in Sanggaran Agung Village. The samples taken were 30% of the fixed-net fishing gear in the two villages. Tanjung Tanah Village took 30% of 78 (23 data points), and Sanggaran Agung Village took 30% of 29 (9 data points), for a total of 32 data points.

Data Analysis

Catch Species Composition

Catch species composition (KJ) is the number of species per total number of individuals caught using the formula of Samitra & Rozi (2018) as follows:

$$KJ = \frac{ni}{N} \times 100\%$$

Where:
KJ : Species Composition %
ni : Number of individuals of each species (fish)
N : Total number of fish caught (fish)

Diversity Index (H′)

The diversity index is used to determine species diversity and is calculated using the Shannon-Wiener equation (Krebs, 2009) as follows:

$$H' = - \sum \frac{ni}{N} \times \ln \frac{ni}{N}$$

Where:
H′ : Shannon-Wiener diversity index
ni : Number of individuals of each species
N : Total number of fish caught
ln : Natural logarithm

The range of Shannon diversity index (H′) values is categorized as follows:

$H' < 1$ = low, meaning the number of individuals is not uniform and one species dominates.
$1 \leq H' \leq 3$ = moderate, meaning the number of individuals is uniform and no species dominates.
$H' > 3$ = high, meaning the number of individuals of each species is high.

Evenness Index (E)

The evenness index indicates the distribution pattern of species within a community. It is calculated using the following formula (Odum, 1993):

$$E = \frac{H'}{\ln S}$$

Where:
E : Evenness Index
H′ : Diversity Index
lnS : Number of species found

Evenness index (E) values are categorized as follows:

$E < 0.4$ = Evenness index is categorized as low
$0.4 \leq E \leq 0.6$ = Evenness index is categorized as medium
$E > 0.6$ = Evenness index is categorized as high

A smaller E value indicates uneven distribution of individuals of each species and suggests that one species dominates the community. A larger E value indicates that the populations of each species are relatively equal.

Dominance Index (C)

The dominance index is used to determine the dominance of species within a community. The catch dominance index is calculated using the following formula (Odum, 1993):

$$C = \sum \left(\frac{ni}{N}\right) 2$$

Where:
C : Simpson's Dominance
ni : Number of individuals of each species
N : Number of individuals of all species

Dominance index (C) values are categorized as follows:
$C < 0.5$ = categorized as low, meaning no species dominates with a diverse number of individuals in the community.
$0.5 \leq C \leq 1$ = categorized as medium, meaning the number of individuals is less diverse.
$C > 1$ = categorized as high, meaning that individuals of the same species dominate the community.

Frequency of Presence (FK)

The frequency of presence is used to determine the number of a particular species during a given fishing period. This can be seen from the following equation (Muhammad et al., 2020):

$$FK = \frac{ti}{T} \times 100\%$$

Where:
FK : Frequency of presence of the i-th species (%)
ti : Number of occurrences of the i-th species per trip
T : Total number of fishing trips

Where:
FK = 0 - 25% : Very rare presence
FK = 50 - 75% : Moderate presence
FK = 25 - 50% : Rare presence
FK = > 75% : Frequent presence

RESULTS

General Conditions of the Research Site

Lake Kerinci was formed by tectonic faulting along the Bukit Barisan Mountains, which holds abundant natural water resources, with river flow originating from the Watershed Area (DTA) within the Kerinci Seblat National Park (TNKS) conservation area. The natural resource diversity of Lake Kerinci's ecosystem is highly diverse, encompassing fisheries, agriculture, tourism, hydroelectric power generation (PLTA), and mining (Rochmah et al., 2021). Lake Kerinci is divided into several sub-districts and villages, including Tanjung Tanah Village and Sanggaran Agung Village. These two villages are located in areas surrounding the lake where fishing is carried out, particularly using fixed-net fishing gear.

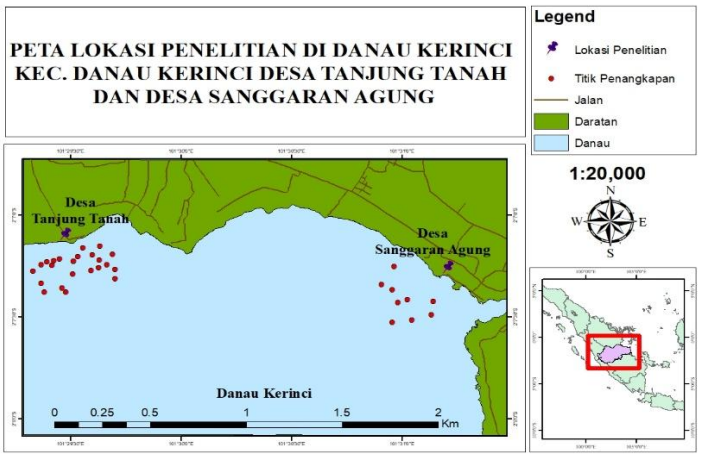

Figure 1. Map of the Research Site

Composition of Fixed-net Catches

The fixed-net fishing gear used uses 32 nets with a mesh size of 1–2.5 inches. The study was conducted over 30 days, with setup starting at 7:00 a.m. and hauling back between 12:00 and 1:00 p.m. The catch of four species of lift nets during the study is shown in Table 1.

Table 1. Composition of Catch

No	Types of Fish	Scientific Name	Amount (fish)	Composition of Total Catch Results (%)	Weight (kg)	Weight Composition of Catch Results (%)
1	Tilapia	*Oreochromis niloticus*	39	56%	9.98	59.7%
2	Mujair	*Oreochromis mossambicus*	19	27%	5.37	32.1%
3	Barau	*Hampala macrolepidota*	4	6%	0.66	3.9%
4	Medik	*Osteochilus waandersii*	8	11%	0.72	4.3%
	Total		70	100%	31.40	100%

The diversity, uniformity, and dominance index values for catches using the fixed-line net fishing gear are shown in Table 2.

Table 2. Diversity, Uniformity, and Dominance Index Values

No	Index	Result	Category
1	H′	1.09	Medium
2	E	0.79	High
3	C	0.40	Low

The frequency of attendance can be seen in Table 3, and the observed parameters can be seen in Table 4.

Table 3. Frequency of Attendance

No	Types of Fish	Scientific Name	FK (%)
1	Tilapia	*Oreochromis niloticus*	75
2	Mujair	*Oreochromis mossambicus*	31

No	Types of Fish	Scientific Name	FK (%)
3	Barau	*Hampala macrolepidota*	9
4	Medik	*Osteochilus waandersii*	22

Table 4. Observed Parameters

No	Parameter	Minimum	Maximum	Average
1	Temperature	25.6	28.5	27.08
2	pH	7.01	7.98	7.53

DISCUSSION

Based on Table 1, tilapia was the most commonly caught fish, in terms of both quantity and weight. A total of 39 tilapia was caught, representing 56% of the total catch. In terms of weight, the tilapia weighed 9.98 kg, representing 59.7% of the total catch. The high catch rate for tilapia is likely due to its widespread distribution and rapid growth. Furthermore, tilapia have a relatively fast production rate and adaptability. This aligns with Afiat (2017) who stated that the rapid development and distribution of tilapia are due to several factors, including their relatively rapid growth rate and high tolerance to freshwater, brackish, and marine environments.

19 tilapias were caught, representing 27% of the total catch, and their total weight was approximately 5.37 kg, representing 32.1% of the total catch. Like tilapia, tilapia is also highly adaptable to aquatic environments and exhibit rapid reproduction. Rattu et al. (2021) stated that tilapia fish reproduce relatively faster than other freshwater fish. This is supported by Samuel & Subagja (2011) statement that tilapia fish spawn more than once a year. According to fishermen, the catch was lower than usual due to strong undercurrents in the lake, which caused the fish to move around.

Meanwhile, four barau fish were caught, representing 6% of the total catch. The total weight of the barau fish was approximately 0.66 kg, representing 3.9% of the total catch. The small number of barau fish caught indicates an unsuitable habitat for the fish. Jubaedah (2004) stated that the natural habitat of barau fish is waters with strong currents. This unsuitable habitat contributes to the low number of barau fish caught.

Eight medic fish were caught, representing 11% of the total catch, and the total weight of the medic fish caught was approximately 0.72 kg, representing 4.3% of the total catch. Similar to the low catch of barau fish due to its unsuitable habitat, the medic fish's habitat is also unsuitable for Lake Kerinci, resulting in a low catch. The medic fish's habitat is freshwater rivers with rocky and gravelly bottoms and fast currents (Nasution & Dimenta, 2021).

Based on Table 2, the diversity index obtained was 1.09, categorized as moderate. This indicates that the ecosystem in Lake Kerinci remains relatively stable, with a sufficient number of other species present. This aligns with Febrian et al. (2022) statement that a moderate diversity index indicates no species exhibiting high or low diversity. A diversity index value approaching 0 indicates low species diversity and indicates poor water conditions. Conversely, a diversity index value approaching 3 indicates good water conditions (Odum, 1993).

The evenness index is a study used to estimate water conditions and community distribution, which can determine the stability of a water environment (Budiman et al., 2021). The evenness index obtained was 0.79, categorized as high. This indicates that the number of individuals among species is relatively even, although some species have slightly more individuals than others. This aligns with Ardani & Organsastra (2009) statement that an E value approaching 1 indicates that individuals across species are relatively evenly distributed. Conversely, if the E value approaches 0, there are individuals across species whose distribution tends to be uneven, and a group of individuals of a particular species is abundant.

The resulting dominance index of 0.40, categorized as low, indicates the absence of an extremely dominant species in Lake Kerinci. The community structure in Lake Kerinci remains balanced, with the number of individuals across species relatively even, with no single species dominant. A higher dominance index indicates the presence of a dominant species in the waters. Conversely, a lower dominance index indicates the absence of a dominant species in the waters, which is usually accompanied by a high evenness index (Paulangan et al., 2021).

According to Table 3, the tilapia presence frequency is 75%, categorized as moderate. Tilapia have a large population and are therefore easily captured. In addition, tilapia easily adapts to the environment in various water conditions, fast growth rate and easy reproduction which causes tilapia to be caught more often. According to Rusyadi et al. (2018) tilapia has a high tolerance to changes in the aquatic environment, this is supported by Nirmala et al. (2012) who stated that tilapia is quite widespread and has a high ability to tolerate adverse environments. In addition to having the ability to adapt to environmental changes, tilapia also has the ability to breed easily and its growth rate is fast (Nasution et al., 2014).

Tilapia fish were present at 31% of the time, categorized as rarely caught. Tilapia are invasive fish, like tilapia, but they compete less with tilapia for food. This aligns with Shuai & Li (2022) statement that tilapia tend to eat a variety of foods, allowing them to compete with all local fish species for food.

Barau fish were present at 9% of the time, and medic fish were present at 22% of the time, categorized as very rarely caught. Barau and medic fish are rarely caught because they require specific environmental conditions. According to Jubaedah (2004), barau fish live in sandy, rocky, or gravelly bottoms with clear water. Medik fish live in clear waters with calm currents and in swamps (Insani et al., 2021). Meanwhile, the bottom of Lake Kerinci has a sandy mud substrate (Kelti Perikanan Danau, 2014). Therefore, barau and medic fish are rarely caught in Lake Kerinci due to their unsuitable habitat.

Based on Table 4, the results of the parameters observed during the study, with an average temperature of 27.08°C, indicate that the temperature in Lake Kerinci during the study was considered ideal. Temperature can be a determining factor in the life of aquatic biota (Rakhmanda, 2011). According to Urbasa et al. (2015), fish thrive at temperatures between 25 and 32°C. Water temperature is a factor that can influence fish growth and appetite.

The acidity or pH of Lake Kerinci during the study was 7.01–7.98, indicating that the pH value in Lake Kerinci is suitable for fish growth and survival. The ideal pH for aquatic organisms is typically between 7 and 8.5 (Insani et al., 2021). pH has an important role in the chemical processes of water, pH greatly affects water quality, if the acidic pH is 4 and the alkaline pH is 11 then fish will die at this pH point (Andria & Rahmaningsih, 2018).

CONCLUSION

Based on the results of this study, the diversity index was 1.09, categorized as moderate, the evenness index was 0.79, categorized as high, and the dominance index was 0.40, categorized as low. This indicates that the community structure in Lake Kerinci remains relatively stable, but sustainable management is needed to maintain the ecosystem.

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REFERENCES

Afiat, M. (2017). *Pertumbuhan dan Sintasan Ikan Nila (Oreochromis niloticus) yang di Pelihara Pada Salinitas Berbeda di Balai Benih Ikan Rappoa Kabupaten Bantaeng*. Universitas Muhammadiyah Makassar. Makkasar.

Andria, M.A.F., & Rahmaningsih, S. (2018). Kajian Teknis Faktor Abiotik pada Embung Bekas Galian Tanah Liat PT. Semen Indonesia Tbk. untuk Pemanfaatan Budidaya Ikan dengan Teknologi KJA. *Jurnal Ilmiah Perikanan dan Kelautan*, *10*(2), 95–105. https://doi.org/10.20473/jipk.v10i2.9825

Ardani, B., & Organsastra. (2009). Struktur Komunitas Ikan di Danau Bagamat Petuk Bukit. *Journal of Tropical Fisheries 4*(1), 356–367.

Azmi, H. A. (2021). *Perbedaan Hasil Tangkapan Ikan Menggunakan Wadah Lampu Putih dan Wadah Lampu Kuning Pada Alat Tangkap Bagan Tancap Di Danau Kerinci*. Universitas Jambi. Jambi.

Budiman, Syafrialdi, & Hertati, R. (2021). Keanekaragaman Jenis Ikan Di Perairan Sungai Batang Uleh Kabupaten Bungo Provinsi Jambi. *Semah Journal Pengelolaan Sumberdaya Perairan 5*(1), 24–33.

Febrian, I., Nursaadah, E., & Karyadi, B. (2022). Analisis Indeks Keanekaragaman, Keragaman, dan Dominansi Ikan di Sungai Aur Lemau Kabupaten Bengkulu Tengah. *Bioscientist : Jurnal Ilmiah Biologi 10*(2), 600–612. https://doi.org/10.33394/bioscientist.v10i2.5056

https://jambi.viralpublik.com/sekda-mdianto-pemprov-jambi-dukung-restocking-ikan-di-kawasan-reservasi.02 Desember 2025.

Insani, H.M., Mulawarman, Hadi, S., Ramadan, F., Lisna, Darmawi, D., Nelwida, & Hariski, M. (2021). Pengaruh Warna Cahaya Lampu Pada Hasil Tangkapan Ikan Dengan Alat Tangkul di Danau Kerinci Kabupaten Kerinci Provinsi Jambi. *Semah Journal Pengelolaan Sumberdaya Perairan 5*(2), 21–35.

Jubaedah, I. (2004). D*istribusi Makanan Ikan Hampal (Hampala Macrolepidota C.V) di Waduk Cirata, Jawa barat*. Institut Pertanian Bogor. Bogor.

Kelti Perikanan Danau, 2014. Penelitian Perikanan Tangkap Di Danau Kerinci. Kementrian Kelautan Dan Perikanan.

Krebs, C.J. (2009). *Ecology: The Experimental Analysis of Distribution and Abundance, in: The Quarterly Review of Biology*. Pearson Education Limited. https://doi.org/10.1086/407551

Muhammad, M., Syafrialdi, S., & Hertati, R. (2020). Keanekaragaman Jenis-Jenis Ikan di Sungai Tembesi Kecamatan Bathin VIII Kabupaten Sarolangun Provinsi Jambi. *Semah Jurnal Pengelolaan Sumberdaya Perairan 4*(1), 1–13.

Nasution, A.S.I., Basuki, F., & Hastuti, S. (2014). Analisis Kelulushidupan dan Pertumbuhan Benih Ikan Nila Saline Strain Pandu (*Oreochromis Niloticus*) yang di Pelihara di Tambak Tugu, Semarang Dengan Kepadatan Berbeda. *Journal of Aquaculture Management and Technology 3*(2), 25–32.

Nasution, S.J., & Dimenta, R.H. (2021). Aspek Biologis Ikan Medik (*Osteochilus waandersii*) di Sungai Tambatan, Sumatera Utara, Indonesia. *Bioeduscience 5*(2), 92–103. https://doi.org/10.22236/j.bes/526745

Nirmala, K., Hastuti, Y.P., & Yuniar, V. (2012). Toksisitas Merkuri (Hg) dan Tingkat Kelangsungan Hidup, Pertumbuhan, Gambaran Darah, dan Kerusakan Organ pada Ikan Nila *Oreochromis Niloticus*. *Jurnal Akuakultur Indonesia 11*(1), 38–48.

Odum, E.P. (1993). *Dasar-dasar Ekologi*: Terjemahan dari Fundamentals of Ecology., in: Samingan, A.B. (Ed.), Universitas Gadjah Mada press, Yogyakarta.

Paulangan, Y.P., Supoyo, A.S., & Kalor, J.D. (2021). Indeks keanekaragaman, keseragaman dan dominasi nudibranch di perairan Teluk Humbolt Kota Jayapura Papua Indonesia. *Jurnal Pengelolaan Perikanan Tropis 5*(1), 59–64.

Rakhmanda, A. (2011). Estimasi Populasi Gastropoda di Sungai Tambak Bayan Yogyakarta. *Jurnal Ekologi Perairan 1*,1–7.

Rattu, F.E., Moko, E.M., Sakul, E.H., Naharia, O., Yalindua, A., & Rawung, L. (2021). Ketahanan Hidup Bibit Ikan Mujair (*Oreochromis mossambicus*) dan Nilai Parameter Kimiawi Lingkungan Pada Media Pemeliharaan Bioflok Dengan Debris Daluga Sebagai Sumber Karbon. *Fullerene Journal of Chemistry 6*(1), 46–53. https://doi.org/10.37033/fjc.v6i1.253

Rochmah, K.W., Damris, & Rosyani, (2021). Analisis Keberlanjutan Pengelolaan Danau Kerinci. *Jurnal Pembangunan Berkelanjutan 4*(1), 74–84. https://doi.org/10.22437/jpb.v4i1.12430

Rusyadi, I., Hutabarat, S., & Ain, C. (2018). Pengaruh Kandungan Nutrien Terhadap Kesuburan di Kolam Budidaya Ikan Nila (Oreochromis Sp.) di Balai Benih Ikan Mijen, Semarang. *Management of Aquatic Resources Journal (Maquares) 6*(1), 61–66.

Samitra, D., & Rozi, Z.F. (2018). Keanekaragaman Ikan di Sungai Kelingi Kota Lubuklinggau. *Jurnal Biota 4*(1), 1–6. https://doi.org/10.19109/biota.v4i1.1370

Samuel, & Subagja. (2011). Karakteristik Habitat dan Biologi Ikan Mujaer (*Oreochromis mossambicus*) di Danau Ranau, Sumatera Selatan. *Bawal 3*(5), 287–297.

Shuai, F., & Li, J. (2022). Ikan Nila (*Oreochromis niloticusLinnaeus*, 1758) Invasi Menyebabkan Gangguan Struktur Trofik Komunitas Ikan di Sungai Cina Selatan-Sungai Mutiara. *Biologi 1*,1–15. https://doi.org/10.3390/biologi11111665

Urbasa, P.A., Undap, S.L., & Rompas, R.J. (2015). Dampak Kualitas Air Pada Budi Daya Ikan Dengan Jaring Tancap di Desa Toulimembet Danau Tondano. *Jurnal Budidaya Perairan Januari 3*(1), 59–67.

Wahyu. (2024). *Studi Hasil Tangkapan Bagan Tancap Berdasarkan Perbedaan Karakteristik Daerah Penangkapan Ikan Di Perairan Teluk Bone, Kota Palopo*. Universitas Hasanuddin, Makassar.