JURNAL PERIKANAN DAN KELAUTAN
Volume 30 No. 3, October 2025: 396-402

e-issn : 2721-8902
p-issn : 0853-7607

Comparison of Wire Trap (*Temilar*) Catch Yields between Daytime and Nighttime Operations in Tarikan Village, Muaro Jambi Regency

Perbandingan Hasil Tangkapan Bubu Kawat (Temilar) pada Waktu Pengoperasian Siang dan Malam Hari di Desa Tarikan Kabupaten Muaro Jambi

Aditya Eka Apriliyanto[1*], Bagus Pramusintho[1], Lisna[1]
[1]Department of Fisheries Resource Utilization, Faculty of Animal Husbandry, Universitas Jambi, Muaro Jambi 36361 Indonesia
**email: eaditya079@gmail.com*

Received
9 September 2025

Accepted
27 September 2025

Abstract

The purpose of this study was to determine the differences in catch results of wire traps (*temilar*) between daytime and nighttime operations. The research was conducted in the waters of the Kumpeh River, Tarikan Village, Muaro Jambi Regency. The method used in this study was experimental fishing and simple random sampling with 15 replications, using two treatments: daytime and nighttime operations. Based on the results of the survey, nine species of fish were caught. The dominant species was the lambak (*Labiobarbus ocellatus*), with a total of 212 individuals and an overall catch of 814 individuals obtained during nighttime trap operations. The heaviest catch was the tembakang (*Helostoma temminckii*), with an individual weight of 7,266 grams and a total weight of 28,871 g, also obtained from the use of wire traps (*temilar*) at night. The t-test results showed a significant difference ($P < 0.05$) in both the number and weight of catches between daytime and nighttime wire trap (*temilar*) operations. Based on these findings, it can be concluded that nighttime operation of wire traps (*temilar*) yields higher catches, both in number and total weight, compared to daytime operations.

Keywords: Wire Trap, Operational Time, Kumpeh River

Abstrak

Tujuan penelitian ini adalah untuk mengetahui perbedaan hasil tangkapan bubu kawat (temilar) antara waktu pengoperasian pada siang hari dan malam hari. Penelitian dilaksanakan di perairan Sungai Kumpeh, Desa Tarikan, Kabupaten Muaro Jambi. Metode yang digunakan dalam penelitian ini adalah *experimental fishing* dan *simple random sampling* dengan 15 kali ulangan, menggunakan dua perlakuan yaitu pengoperasian pada siang hari dan malam hari. Berdasarkan hasil penelitian, diperoleh sembilan jenis ikan hasil tangkapan. Jenis ikan yang paling mendominasi adalah ikan lambak (*L. ocellatus*), sebanyak 212 ekor, dengan total hasil tangkapan sebanyak 814 ekor pada penggunaan bubu pada malam hari. Hasil tangkapan dengan berat tertinggi diperoleh dari ikan tembakang (*H. temminckii*) dengan berat individu 7.266 gram dan berat total 28.871 gram pada penggunaan bubu kawat (temilar) di malam hari. Hasil uji-t menunjukkan bahwa terdapat perbedaan yang nyata antara jumlah dan berat hasil tangkapan pada pengoperasian alat tangkap bubu kawat (temilar) siang dan malam hari ($P < 0,05$). Berdasarkan hasil tersebut, dapat disimpulkan bahwa pengoperasian bubu kawat (temilar) pada malam hari

menghasilkan tangkapan yang lebih besar, baik berdasarkan jumlah maupun berat, dibandingkan dengan pengoperasian pada siang hari.

Kata kunci: Bubu Kawat, Waktu Operasional, Sungai Kumpeh

1. Introduction

The potential of marine and fisheries resources in Jambi Province is considerably significant. The province has a sea area of 44,496 km² with a coastline length of approximately ±210 km. The potential capture fisheries production is estimated at 114,036 tons per year, with a sustainable yield of 71,820 tons per year. The total number of fishing gear and their types in public waters across districts and cities in Jambi Province from 2013 to 2017 reached 92,444 units. Muaro Jambi Regency has a total of 2,057 fishing gear units, consisting of 686 drift gill nets, 650 portable traps (bubu), 441 cast nets, 336 set long lines, and 14 hook and line units (BPS, 2018).

Most of these fishing gears are operated by local communities along the Batanghari River and its tributaries. The Batanghari River has a length of approximately 210 km, a width of about 400 m, a depth ranging from 4 to 20 m, and a water discharge of around 690 m³ per second. The Batanghari River, which flows through Jambi City, has several tributaries, one of which is the Kumpeh River. The Kumpeh River flows through two sub-districts: Kumpeh Ulu and Kumpeh Hilir. This river serves as an outlet of the Batanghari River, with a length of approximately 96 km, a width of about 8 m, and a depth ranging from 3 to 10 m (BPS, 2014).

The Kumpeh River, located in Tarikan Village, Kumpeh Ulu Sub-district, Muaro Jambi Regency, has a strategic function as a habitat for various species of edible fish, such as snakehead (*Channa striata*), climbing perch (*Anabas testudineus*), Siam gourami (*Trichogaster trichopterus*), lais catfish (*Kryptopterus* sp.), bujuk (*Channa lucius*), and lambak (*Dangila* sp.) (Asra, 2009). The activities of the local community around the river include oil palm plantation work, household activities, and side jobs such as fishing.

A river is a natural or artificial watercourse that serves as a drainage network containing water from its upstream to downstream, bounded by riverbanks on both sides. According to Djumanto et al. (2013), rivers are classified as lotic ecosystems that play an important biological, ecological, and economic role in human life. River water is utilized for various purposes, including raw water for drinking, washing, irrigation, fisheries, livestock, power generation, and other daily needs.

The Kumpeh River serves as one of the primary economic sources for the people of Kumpeh Ulu Sub-district, particularly those engaged in fishing. The fishing gears commonly used by the community in Tarikan Village include fishing rods, lift nets, wire traps (*bubu kawat*), bamboo traps, and cast nets. Fishermen in Tarikan Village generally use wire traps (*temilar*) as their main fishing gear, operated during the daytime for about 11 to 12 hours. The soaking duration (immersing time) is one of the crucial factors influencing the catch results, as fish behavior varies according to their activity patterns. Nocturnal fish are active at night, while diurnal fish are active during the day.

Rosyid et al. (2005) stated that differences in fishing time lead to differences in catch results. Meanwhile, Yuspardianto et al. (2002) reported that the catch yield at night is generally higher than during the day, based on a t-student test. Most fishermen along the Kumpeh River's tributaries are part-time fishermen who spend only a small portion of their time fishing. In contrast, most of their time is devoted to other occupations. The fishing gear commonly used in the Kumpeh River is the wire trap, known locally as *temilar*. The wire trap (*temilar*) is one of the traditional, environmentally friendly fishing gears. It is made of wire formed into a cube-shaped structure resembling a basket, with dimensions of 60 × 30 × 30 cm. One side of the trap has an entrance fitted with a valve to prevent fish from escaping.

Fishermen in Tarikan Village prefer to use wire traps (*temilar*) because the materials are easy to obtain and more durable. In their operation, fishermen usually do not use bait. Each fisherman installs around 20 to 30 traps per fishing trip, with soaking times that vary depending on their schedules. Generally, the traps are soaked when the fishermen return from work. Several factors, including trap construction, soaking duration, and bait usage, influence the success of fishing using traps. However, fishermen in Tarikan Village typically operate the wire traps (*temilar*) only during the daytime. Therefore, this research, entitled "Comparison of wire trap (*temilar*) Catch yields between daytime and nighttime operations in Tarikan Village, Muaro Jambi Regency," was conducted to determine the objective comparison of catch results between daytime and nighttime operations of wire trap (*temilar*) fishing gear.

2. Material and Method

2.1. Time and Place

The study was conducted in the waters of the Kumpeh River, Tarikan Village, Muaro Jambi Regency.

2.2. Methods

The method used in this study was Experimental Fishing according to Hanafiah (2000). The sampling method applied was Simple Random Sampling. According to Arieska & Herdiani (2018), Simple Random Sampling is a sampling technique in which each member of the population is given an equal opportunity to be selected as a sample. A total of six wire traps were used, with 15 repetitions and two treatments, namely daytime and nighttime operations, each with a soaking duration of 12 hours.

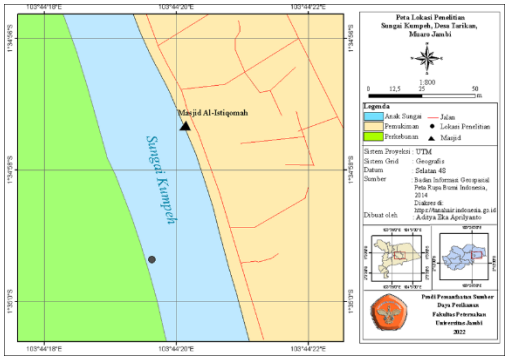

Figure 1. Map of the research location

2.3. Procedures

The research was carried out through several interrelated stages. The initial stage was preparation, which included setting up instruments to measure environmental parameters, such as a thermometer and pH meter, as well as preparing the fishing gear in the form of wire traps (*bubu kawat*). At this stage, bait preparation was also conducted using ripe oil palm fruit. The oil palm fruit was cut into small pieces and then placed into perforated plastic bottles, with a weight of 100 g for each fishing device.

The next stage was the trap arrangement. The wire traps were arranged lengthwise and placed inside a boat to facilitate installation at the research location. Each trap was equipped with a plastic bottle as a marker. After all preparations were completed, the activity continued by heading to the fishing area (fishing ground) using a boat. During the installation (setting) process, the distance between traps was set at 100 cm to maintain order and ensure fishing efficiency.

The subsequent stage was trap immersion. After the installation was completed, all traps were left or submerged in the water for 12 hours. Daytime immersion began at 06.00 a.m. (WIB), while nighttime immersion began at 06.00 p.m. (WIB). The final stage was trap retrieval (hauling). The traps were pulled out after being submerged for 12 hours. Traps immersed during the day were lifted at 06.00 p.m., while those immersed at night were lifted at 06.00 a.m. After the catches were collected, the bait inside the traps was replaced with fresh bait, and the traps were placed back into the river to continue the next fishing cycle.

2.4. Data Analysis

The data collected included the total catch based on species, number of individuals (tails), and total weight (g). To determine the difference in catches obtained from the wire traps (*temilar*), both in terms of number (fish) and weight (kg), a t-test was conducted (Sudjana, 2005)

3. Result and Discussion

Tarikan Village has an area of 2.45 km² with a total population of 3,147 people (BPS, 2018). Most of the residents of Tarikan Village work as farmers, fishers, and in other occupations. The aquatic biota resources around the Kumpeh River Waters are quite diverse, consisting of various fish species, including Siam gourami (Trichogaster pectoralis), snakehead (*Channa striata*), kissing gourami (*Helostoma temminckii*), climbing perch (*Anabas testudineus*), lambak (*Labiobarbus ocellatus*), Malacca gourami (*Trichogaster* sp.), kaperas (*Anematichthys apogon*), belida (*Chitala lopis*), and marbled goby (*Oxyeleotris marmorata*). To utilize these resources, fishers in Tarikan Village use various types of fishing gear, including tubular traps (*bubu lukah*), trap pots (*temilar*), hook and line (*pancing*), pole and line (*tajur*), cast nets (*jala lempar*), gill nets (*jaring insang*), and lift nets (*tangkul*).

Table 1. Data on Types of Fishing Gear Available in Tarikan Village

No	Types of Fishing Gear	Jumlah (Unit)
1	Bubu temilar	30
2	Bubu lukah	10
3	Jaring ingsang	7
4	Jala lempar	2
5	Tangkul	5

The fishing ground location is situated along the banks of the Kumpeh River, Tarikan Village, Kumpeh District, Muaro Jambi Regency. According to Laksitaningtyas (2016), the Kumpeh River is one of the tributaries of the Batanghari River. The land along the river is utilized for settlements, oil palm plantations, and agricultural activities. The Kumpeh River contains a high diversity of fish species, making it a vital resource for the local community, who depend on it for their livelihood.

The fishing ground location was selected based on its proximity to residential areas. The fishing gear was placed at coordinates 103.739º E and 1.583º S along the river channel. The gear was installed not too close to the riverbank and in areas where the current was not too strong. These conditions align with the findings of Supeni (2022), who stated that the most suitable time and location for river fishing is when the water current is not too strong and the tide is not too high, allowing for greater catch yields. This is also supported by the study of Erawan et al. (2017), which explained that fishing gear should be installed in areas not too close to the riverbank and with moderate water flow to prevent the gear from being carried away by the current, thereby enabling the capture of various fish species swimming in the river flow.

Table 2. Environmental Parameters of Tarikan Village, Kumpe River

Environmental Parameters	Morning		Night	
	Average	Range	Average	Range
temperature (℃)	29	27-30	25	24-27
pH	7	6,9-7.5	7	7-7,6

Based on the measurement of environmental parameters at each trap placement point in the waters of the Kumpeh River, the average temperature ranged between 27 to 30°C. This temperature range indicates that the water conditions in the Kumpeh River are still within the normal limits that can be tolerated by fish and are suitable for standardizing the environmental conditions of the study area. Based on the temperature observations, the water temperature was classified as normal and capable of supporting fish life.

This finding is consistent with the opinion of Pohan et al. (2016), who stated that the ideal temperature range for fish survival is between 22°C–33°C, and Urbasa et al. (2015), who reported that fish can grow well at temperatures around 25–32°C. According to Gunawan et al. (2019), fish require stable temperatures in their habitat because temperature affects metabolic processes and the rate of food consumption, which can accelerate growth. The study also showed that the average pH during the day and at night was 7. This pH range indicates that the water condition was normal. This is in line with the statement of Tatangindatu et al. (2013), who explained that the appropriate pH range for aquatic life is between 5 – 8.5. Based on this range, the waters of the Kumpeh River can be categorized as suitable for fishing activities. The acidity level (pH) is an important factor in determining water quality because it influences the chemical processes that occur within it. If the pH value drops to 4 (acidic) or rises to 11 (alkaline), it may result in fish mortality.

In this study, the environmental parameters observed were temperature and pH. The environmental conditions in the Kumpeh River, Tarikan Village, fluctuate daily. Changes in temperature and pH levels, which may increase or decrease, are influenced by the rainy season and significantly affect the fish catch. According to Rais et al. (2015), temperature and pH greatly influence the number of fish caught. When the temperature is high, the number of fish caught tends to increase, while excessively high pH levels lead to fewer fish being caught. Therefore, environmental parameters such as temperature and pH play an important role in determining the increase or decrease in fish catch yields.

Table 3. Number and Composition of Catch Types from Wire Traps (temilar) during Daytime and Nighttime Operations

Local name	Latin Names	Afternoon		Night	
		Tail	composition (%)	Tail	composition (%)
Sepat siam	*Trichogaster pectorlis*	135	19.91	109	13.39
Gabus	*Channa striata*	1	0.14	44	5.40
Tembakang	*Helostoma temminckii*	105	15.48	150	18.42
Betok	*Anabas testudineus*	71	10.47	93	15.82
Lambak	*Labiobarbus ocellatus*	211	31.12	212	26.04
Sepat malako	*Trichogaster*	98	14.45	119	14.61
Kaperas	*Anematichthys apogon*	54	7,96	84	10.31
Belida	*Chitala lopis*	3	0.44	2	0.24
Betutu	*Oxyeleotris marmorata*	-	-	1	0.12
Total		678	100	814	100
Average/Day		45±2,16 a		54±14,80 b	

Note: Different superscripts on the same line indicate significant differences (P<0.05).

Based on Table 3, lambak is the most caught by wire bubu operations during the day and night. This is due to the large population of fish in the Kumpeh River because the fish are looking for food on the edges of the waters where there are plants. This is in accordance with the opinion of Kaban (2018) that the lambak is a type of fish that is quite commonly found in the Batanghari River and tributary streams. This is because this fish can adapt to changes in water conditions in the river, so that the population is always large throughout the day. In this study, the fewest catches were obtained, namely, betutu. This shows that the existence of betutu fish in the Kumpeh

River is still not large in population when compared to other fish. This is in accordance with the opinion of Sahrim (2019), that betutu have slow growth and are classified as lazy fish because they are not actively moving, so the energy they get is more used for growth. Not all feed is eaten by betutu for their growth, because this fish will eat feed with high protein. In addition, betutu also have a high mortality rate because betutu are susceptible to stress, so that the fish's appetite decreases and causes death. In addition to betutu, there are snakehead fish with fewer catches during the day compared to other fish. This is because snakehead fish is a nocturnal fish that actively forages at night; it is proven that fishing done at night is more than during the day.

Based on research conducted by Salamah et al (2022), snakehead is classified as a carnivorous animal with its food types in the form of fish, aquatic insects, bivalves, and crustaceans. It is suspected that because the bait used in the study is oil palm fruit, snakeheads are less interested in entering the wire bubu that has been installed. At night, belida fish have fewer catches than betutu. When compared to daytime catch, Belida has fewer catches after betutu and snakehead. This shows that the population of Belida is very small in the Kumpeh River. According to Santoso et al (2019), the existence of belida is currently rare to the point of extinction because biological factors cause this. The fact of wooden pillars and solid aquatic plants submerged in water is vital for the belida as it is used as a protector and a place to attach eggs, according to the t-test hypothesis. The results of the arrests made in the Kumpeh River at night were more than during the day. This is in accordance with Tomasoa's (2020) research; the results of the capture at night are much higher when compared to during the day.

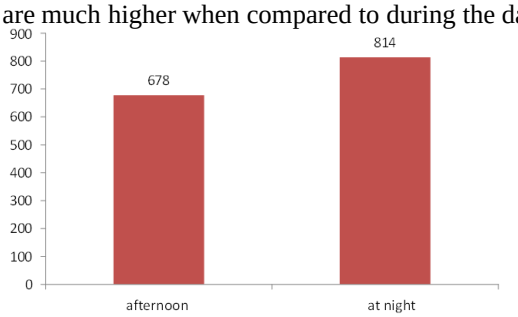

Figure 2. Diagram of temilar bubu catch results during 15 repetitions in units of number (tails).

Based on Figure 2, it can be seen that the catch results using the temilar trap during the day and at night show a difference in terms of quantity (number of fish), where the temilar trap catch at night was 814 fish with an average catch of 54 fish, while during daytime immersion of the bubu temilar, the catch was 678 fish with an average catch of 45 fish. Data analysis using an independent samples t-test to determine the difference in the catch of temilar traps operated during the day and at night in terms of quantity (number of fish) yielded a T-count of 3.9412, while the T-table value was 2.14478. Comparing the T-count value with the T-table value shows that T-count > T-table (3.9412 > 2.144787), indicating that there is a significant difference (P<0.05) in the number of catches using wire traps during daytime and nighttime immersion.

Table 4. Average Catch Weight/day (g)

Local Name	Latin name	Afternoon	Night
		g	g
Sepat siam	*Trichogaster pectorlis*	5.021	4.328
Gabus	*Channa striata*	52	4.292
Tembakang	*Helostoma temminckii*	4.779	7.266
Betok	*Anabas testudineus*	2.186	3.366
Lambak	*Labiobarbus ocellatus*	4.548	4.059
Sepat malako	*Trichogaster*	3.332	3.464
Kaperas	*Anematichthys apogon*	1.046	1.667
Belida	*Chitala lopis*	329	277
Betutu	*Oxyeleotris marmorata*	-	107
Total		21.292	28.871
Average/Day		1.419,5±280,03	1.924,7±300,24

Note: Different superscripts on the same line indicate significant differences (P<0.05).

Table 4 shows the results of the t-test on the catch weight of wire traps using two treatments, namely operation during the day and at night, which indicated a significant difference (P<0.05). According to Taufiqurohman et al. (2007), fish feeding habits based on time can be divided into two categories: species that are active during the day and those that are active at night. The average catch weight at night was higher than the average catch weight during the day. Based on their activity periods, the fish caught exhibited differences in feeding habits and foraging times. Some species were caught during nocturnal periods (active at night), while others were caught during diurnal periods (active during the day). The tembakang recorded the highest catch weight, reaching 7,266 g. This was due to the use of oil palm fruit as bait and the presence of aquatic plants around the trap, which attracted the tembakang to approach. This finding is consistent with Aziz et al. (2019), who stated that tembakang inhabit freshwater environments and are benthopelagic, living between the surface and bottom layers of the water. Tembakang are omnivorous and consume almost all types of food, including algae, aquatic plants, zooplankton,

and aquatic insects. The second-largest catch weight was obtained from snakehead, with a total weight of 4,292 g. Snakeheads are classified as nocturnal species that are active at night. Fish species that are generally active at night include catfish, snakehead, and pangasius.

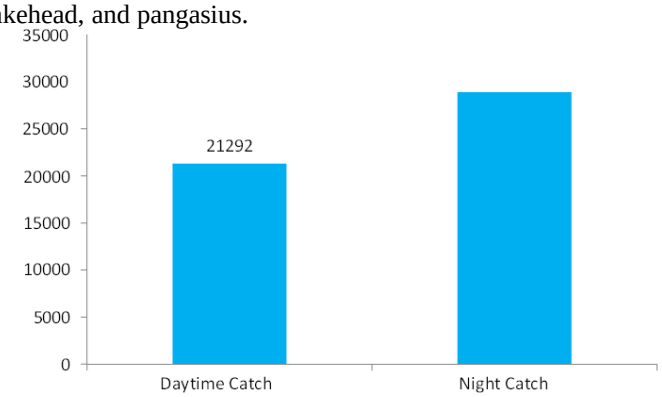

Figure 3. Results of bubu temilar catches during 15 repetitions in units of weight (g).

Figure 3, it can be seen that the catches obtained using *bubu temilar* fishing gear during the day and at night showed differences in weight (g). The total catch weight of the *bubu temilar* during the day was 21,292 g, with an average catch weight of 1,419.5 g, while at night the total catch weight was 28,871 g, with an average of 1,924.7 g. Data analysis using the independent samples t-test was conducted to determine whether there was a difference in the catch weight (g) of *bubu temilar* operated during the day and at night. The calculated t-value (t-count) was 4.76. After taking the absolute value, the t-count remained 4.76. By comparing the t-count with the t-table value, it was found that t-count > t-table (4.76 > 2.144787), indicating that the t-count was greater than the t-table value. Based on the t-test results, the mean catch weights obtained using wire traps during the day and night showed a significant difference ($P<0.05$).

4. Conclusions

Based on the results of the study, it can be concluded that the fish species caught using wire traps (*temilar*) in the waters of Tarikan Village, Kumpeh Ulu District, included Siam gourami, kissing gourami, snakehead, climbing perch, lambak, malako gourami, kaperas, belida, and marble goby. The results showed that the night catches were better than those obtained during the day. Daytime soaking yielded 678 individuals with a total weight of 21,292 grams, while nighttime soaking yielded 814 individuals with a total weight of 28,871 grams. The t-test results showed that t-count > t-table (3.9412 > 2.144787), indicating a significant difference ($P<0.05$). It is recommended that the fishermen of Tarikan Village operate wire traps (*temilar*) at night to achieve optimal catches, which could increase their income. Furthermore, it is suggested that future researchers explore the use of bait types with better potential in terms of aroma, availability, and affordability, as well as increase the number of *temilar* units used to enhance total catch yield.

5. References

[BPS] Badan Pusat Statistik Kabupaten Muaro Jambi 2018. *Kabupaten Muaro Jambi dalam angka*. Muaro Jambi, Jambi.

[BPS] Badan Pusat Statistik Kabupaten Muaro Jambi, 2014. *Dokumen RP12JM*. BPS Provinsi Jambi.

Arieska, P.K., & Herdiani, N. (2018). Pemilihan Teknik Sampling berdasarkan Perhitungan Efisiensi Relatif. *Jurnal Statistika Universitas Muhammadiyah Semarang*, 6(2).

Asra, R. (2009). Makrozoobentos sebagai Indikator Biologi dari Kualitas Air di Sungai Kumpeh dan Danau Arang-Arang Kabupaten Muaro Jambi, Jambi. *Biospecies*, *2*(1).

Azis, D.A., & Syafei, L.S. (2005). *Buku Seri Kesehatan Ikan "Sepat siam Siam Sehat Produksi Meningkat*". Sekolah Tinggi Penyuluhan Pertanian, Jurusan Penyuluhan Perikanan. Bogor.

Djumanto, D., Probosunu, N., & Ifriansyah, R. (2013). *Indek Biotik Famili sebagai Indikator Kualitas Air Sungai Gajahwong Yogyakarta*. Jurusan Perikanan Universitas Gaja Mada. Yogyakarta.

Erawan, M.T.F., Purnama, M.F., & Pratikino, A.G. (2022). Kajian Pengembangan Hilirisasi Industri Perikanan di Sulawesi Tenggara. *Jurnal Formasi: Jurnal Penelitian dan Pengembangan Kebijakan Pembangunan*, *7*(2): 1-12.

Gunawan, H., Tang, U.M., & Mulyadi, M. (2019). The Effect Different of Temperature on Growth and Survival Rate of *Kryptopterus lais*. *Jurnal Perikanan dan Kelautan*, *24*(2): 101-105.

Hanafiah, K.A. (2000). *Rancangan Percobaan, Teori dan Aplikasi*. Fakultas Perikanan Universitas Sriwijaya Palembang. PT. Raja Grafindo Persada. Jakarta. 259 pp

Iskandar, B.H., & Novita, Y. (1997). *Penentun Praktikum Kapal Perikanan.* Jurusan Pemanfaatan Sumber Daya Perikanan Fakultas Perikanan Institut Pertanian Bogor. Bogor.

Kaban, D.H., Timbowo, S.M., Pandey, E.V., Mewengkang, H.W., Palenewen, J.C., Mentang, F., & Dotulong, V. (2019). Analisa Kadar Air, pH, dan Kapang pada Ikan Cakalang (*Katsuwonus pelamis*, L) Asap yang dikemas Vakum pada Penyimpanan Suhu Dingin. *Media Teknologi Hasil Perikanan*, *7*(3): 72- 79.

Laksitaningtyas, A.P. (2016). Sistem Irigasi Desa Kasang Lopak Alai. *Jurnal Teknik Sipil*, *13*(4): 314-322.

Pohan, D.A.S., Budiyono, B., & Syafrudin, S. (2016). Analisis Kualitas Air Sungai Guna Menentukan Peruntukan ditinjau dari Aspek Lingkungan. *Jurnal Ilmu Lingkungan*, *14*(2): 63-71.

Rais, A.H., Rupawan, R., & Herlan, H. (2015). Pengaruh Curah Hujan terhadap Kondisi Perairan dan Hasil Tangkapan Ikan di Estuari Sungai Barito. *Jurnal Penelitian Perikanan Indonesia*, *21*(3): 131-138.

Rosyid, A., Jayanto, B.B., & Amaludin, A. (2005). *Pengaruh Perbedaan Waktu Penangkapan dan Jenis Umpan Terhadap Hasil Tangkapan Kepiting Bakau dengan Alat Tangkap Wadong.* Prosidding Seminar Perikanan Tangkap 15. Universitas Diponegoro. Semarang. 1-7pp.

Sahrim, A. (2019). *Kinerja Pertumbuhan dan Kelangsungan Hidup Benih Ikan Betutu (Oxyeleotris marmorata) yang di pelihara pada Warna Wadah dan Sistem Aerasi yang Berbeda.* Universitas Bangka Belitung.

Salamah, U.H. (2022). *Efektifitas Media Biofiltrasi Anaerob untuk Mendegradasi Bahan Organik Pada Limbah Cair Pencucian Ikan.* UPN Veteran Jatim.

Santoso, H., Asia, A., Hamel, S., Manohas, J., & Arifi, M.Z. (2019). Strategi Pengembangan Pelabuhan Perikanan Dagho. *Frontiers: Jurnal Sains dan Teknologi, 1*(3).

Sudjana, S. (2005). *Metode Statistik*. Tarsito. Bandung

Supeni, E.A., Lestarina, P.M., & Wahab, A.A. (2022). *Identifikasi Jenis Alat Penangkapan Ikan Sepat Rawa di Perairan Rawa Bangkau Kalimantan Selatan.* Prosiding Seminar Nasional Lingkungan Lahan Basah, 7(3).

Syah, F.S. (2016). Identifikasi Jenis Ikan di Perairan Laguna Gampoeng Pulot Kecamatan Leupung Aceh Besar. *Jurnal Ilmiah Mahasiswa Kelautan dan Perikanan Unsyiah*, 1(1) : 66-81.

Tatangindatu, F., Kalesaran, O., & Rompas, R. (2013). Studi Parameter Fisika Kimia Air pada Areal Budidaya Ikan di Danau Tondano, Desa Paleloan, Kabupaten Minahasa. *E-Journal Budidaya Perairan*, 1(2): 8–19.

Taufiqurohman, A., Nurruhwati, I., & Hasan, Z. (2007). *Kebiasaan Makan Ikan (Food Habit) Ikan Nilem (Osteochillus) di Tarogong Kabupaten Garut*. Universitas Padjajaran. Bandung.

Tomasoa, Y.F. (2020). Strategi Pengembangan Perikanan Tangkap di Perairan Ambon (Studi Kasus: Teluk Luar). *Jurnal Agrohut*, *11*(2): 64-74.

Urbasa, P.A., Undap, S.L., & Rompas, R.J. (2015). Dampak kualitas air pada budidaya ikan dengan jaring tancap di Desa Toulimembet Danau Tondano. *E-Journal Budidaya Perairan*, 3(1): 59–67.

Yuspardianto, Y. (2002). *Pengaruh Waktu Operasional Terhadap Hasil Tangkapan Bubu Tiang Dasar di Perairan Bagan Siapi-Siapi Kabupaten Rokan Hilir, Propinsi* Riau. Fakultas Perikanan dan Ilmu Kelautan. Universitas Bung Hatta Padang