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ECONOMICS OF SMALL-SCALE HAND LINE FISHERY FLEET PRODUCTION BASED ON DRIVING POWER IN EVERY SEASON IN THE SMALL ISLAND PARK CONSERVATION AREA, SOUTHEAST MALUKU REGENCY

EKONOMI PRODUKSI ARMADA PERIKANAN PANCING ULUR SKALA KECIL BERDASARKAN TENAGA PENGGERAK DI SETIAP MUSIM PADA KAWASAN KONSERVASI TAMAN PULAU KECIL, KABUPATEN MALUKU TENGGARA

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ABSTRACT

The economic benefits of hand line production activities carried out by small fishermen utilizing some inputs to produce high economic value output each season in the Kei Kecil small island park (TPK) conservation area differ according to the driving power. Production cost efficiency, effectiveness of production results, and business profits are very important for the sustainability and development of small-scale hand-line fisheries. This study aims to analyze the economics of small-scale hand line production based on the driving power in each season in the TPK Kei conservation area. The type of data needed is primary and secondary data, and the collection method used is triangulation. The analysis used includes analysis of business profits, production cost efficiency, and effectiveness of production results. The results of the analysis show that the production of hand line carried out in the TPK Kei Kecil conservation area in each season is more efficient and effective in the hand line fishing fleet that uses hand line rowing and the highest business profit is the hand line fishing fleet that uses ketinting driving power. The production of small-scale hand lines in the TPK Kei conservation area is small in each season efficiently, effectively, and profitably.

Keywords: cost efficiency, production effectiveness, business profit, hand line.

ABSTRAK

Manfaat ekonomi dari aktivitas produksi perikanan pancing ulur yang dilakukan oleh nelayan kecil dengan memanfaatkan sejumlah input untuk menghasilkan output yang bernilai ekonomis tinggi dalam setiap musim di kawasan konservasi Taman Pulau Kecil (TPK) Kei Kecil berbeda menurut tenaga penggerak. Efesiensi biaya produksi, efektivitas hasil produksi dan keuntungan usaha menjadi sangat penting untuk keberlanjutan dan pegembangan usaha perikanan pancing ulur skala kecil. Penelitian ini bertujuan untuk menganalisis ekonomi produksi perikanan pancing ulur skala kecil berdasarkan tenaga penggerak dalam setiap musim di kawasan konservasi TPK Kei Kecil. Jenis data yang dibutuhkan adalah data primer dan sekunder, metode pengumpulan yang digunakan adalah metode triangulasi. Analisis yang digunakan meliputi analisis keuntungan usaha, efesiensi biaya produksi dan efektivitas hasil produksi. Hasil analisis menunjukan bahwa produksi perikanan pancing ulur yang dilakukan di kawasan konservasi TPK Kei Kecil dalam setiap musim yang lebih efesien dan efektif adalah armada perikanan pancing ulur yang menggunakan tenaga penggerak dayung dan keuntungan usaha tertinggi adalah armada perikanan pancing ulur yang menggunakan tenaga penggerak ketinting. Produksi perikanan pancing ulur skala kecil di kawasan konservasi TPK Kei Kecil dalam setiap musim efesien dan efektif serta menguntungkan.

Kata kunci: efesiensi biaya, efektivitas produksi, keuntungan usaha, pancing ulur.

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INTRODUCTION

Hand line is one of the fishing gears whose operation is very simple and environmentally friendly, so small fishermen widely use it in coastal areas to catch fish in coastal and marine waters (Rosdiana et al., 2023). Small-scale hand-line fisheries produce economically valuable pelagic and demersal fish resources in waters close to the coast using a fleet with a capacity of less than five gross tons (GT) and hand-line fishing gear. The main catch of small-scale handline fisheries in Southeast Maluku Regency waters is demersal and reef fish because these fish have high economic value (Kantun et al., 2017). One of the most potential handline fleet fishing grounds in Southeast Maluku Regency is the waters of the Small Kei Kecil Island Park (TPK) conservation area located west of Kei Kecil Island. The TPK Kei Kecil conservation area was established in 2016 to have an area of 150,000 Ha, of which there is a capture fisheries sub-zone, which has an area of 113,919.73 Ha or 76% (Ministry of Marine and Fisheries, 2016).

The production of hand-line fisheries operating in the waters of the Kei Kecil Island Park (TPK) conservation area is dominated by a relatively small fishing fleet and modest driving power. Hand line fisheries production combines various inputs, including fishing gear, ships, machinery, labor, and fuel oil efficiently, to produce effective outputs of demersal fish and reef fish catches of high economic value. According to Picaulima et al., (2023), capture fisheries production is economical if the input costs used in fishing operations are very efficient production costs are low, and the output produced is very effective or catches are high. The use of efficient production inputs in hand line fisheries in the waters of the TPK Kei Kecil conservation area is expected to provide significant and sustainable benefits for the welfare of small fishermen; this is the main objective of small-scale capture fisheries production economic activities, namely sustainable fisheries business benefits (Moniharapon et al., 2023). Driving power is the motorization technology of capture fisheries fleets. In capture fisheries production, the driving power combines several factors of production of capital goods and fixed capital (inputs) efficiently in the production process to obtain effective catches (output). Therefore, small fishermen's diverse driving power in fisheries production will directly impact production and economic aspects.

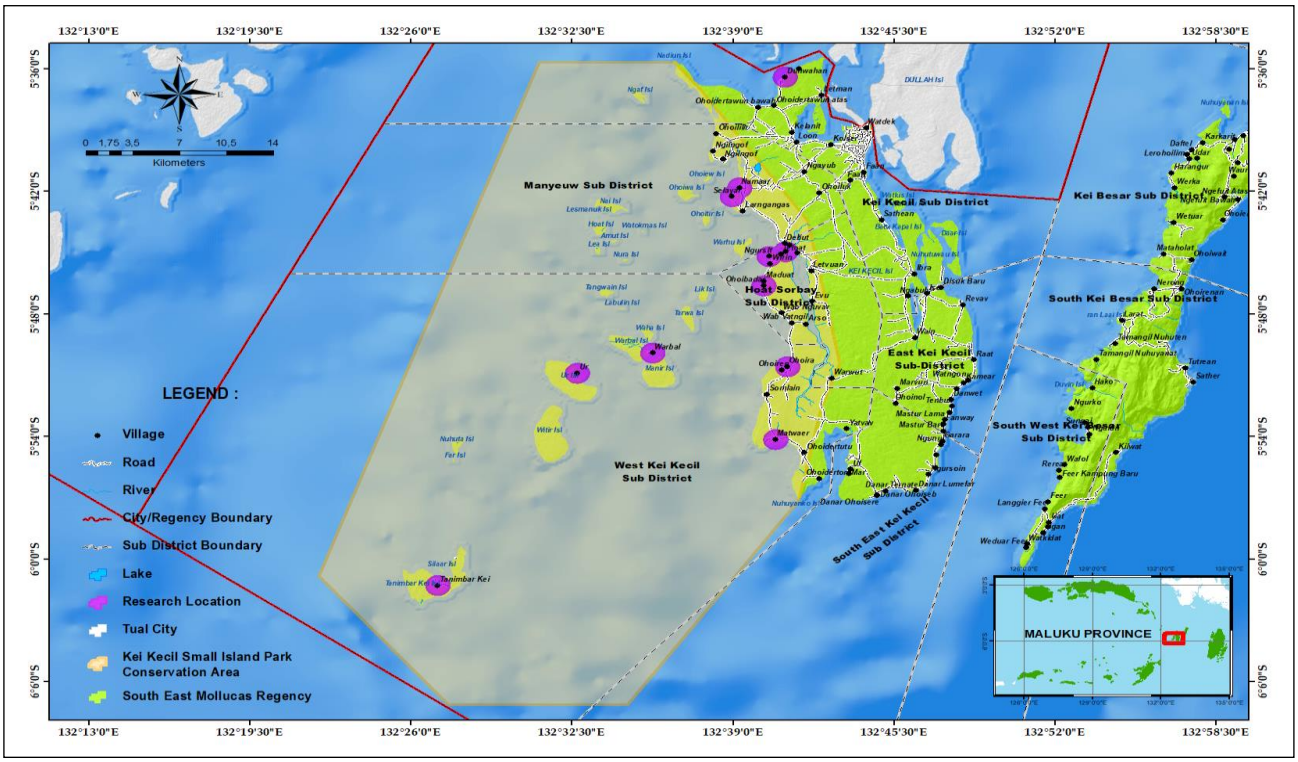
Economic research on hand line fisheries production and capture fisheries in conservation areas that have been carried out previously is related to the feasibility analysis of hand line business (Ishak et al., 2021); Hand line revenue analysis (Rosdiana et al., 2023); Financial characteristics of hand line business in marine nature reserves (Arkham et al., 2020); Economic sustainability and small-scale raft lift net fisheries development strategy in TPK Kei Kecil conservation area (Picaulima et al., 2022); Technical and financial aspects of raft lift net business in TPK Kei Kecil conservation area (Notanubun et al., 2021). Economic research on hand-line production in conservation areas still needs to be improved. In capture fisheries production activities, the driving power used can determine the efficiency level of production costs, the effectiveness of production results, and business benefits. Therefore, using different driving technologies in hand-line fisheries production each season in the TPK Kei Kecil conservation area will provide different catches and economic benefits. Therefore, this

study aims to analyze the economics of small-scale hand line fisheries production with different driving powers based on analysis of production cost efficiency, effectiveness of production results, and business profits in each season in the TPK Kei Kecil conservation area. This research can provide basic information for the government, the Marine Fisheries Service of Maluku Province as the fisheries manager in managing and developing small-scale handline fisheries in the TPK Kei Kecil conservation area for economic sustainability and welfare of small fishermen.

RESEARCH METHODS

Research Time and Location

The research was conducted from May to December 2023 in the Kei Kecil Small Island Park (TPK) conservation area, Southeast Maluku Regency (Figure 1).



Source: Personal Documents (2023)

Figure 1. Map of Research Location

Data Types and Sources

This study's data type consists of primary and secondary data. The primary data obtained are sourced from small fishermen who use hand line fishing gear and carry out fishing or production activities in the Kei Kecil Small Island Park (TPK) conservation area in each season, including the amount of production, number of trips, selling price of fish, fishing ground, cost of fuel oil, rations, price and ice needs, and fleet capacity. The secondary data obtained are sourced from the website of the Regional Government of Southeast Maluku Regency, related agencies, and library materials on the economic aspects of small-scale hand-line fishery fleet production.

Data Collection Methods

The data collected in this study used the survey method. Based on the type and source of data, data collection techniques using the triangulation method include observation, interviews, and document analysis. Triangulation is data collection that integrates three techniques: observation, interview, and document analysis (Sitorus, 1998). The sample was determined based on purposive sampling techniques on small-scale hand line fishermen; the requirements respondents were willing to be interviewed, residing around the TPK Kei Kecil conservation area and conducting fishing operations using hand line fishing gear in the conservation area every season, having experience as a hand line fisherman for more than five years, having a fishing fleet capacity of less than 10 GT. The number of samples in this study was 72 units of small-scale hand line fishery fleets using driving power rowing, 6.5 PK ketinting, and 15 PK outboard motors spread across 13 coastal Ohoi within the TPK Kei Kecil conservation area. The collected data is then processed, analyzed, and presented in tables and figures for comparative descriptive discussion.

Data Analysis Methods

The data analyzed in this study used qualitative and quantitative descriptive analysis methods. Qualitative analysis was used to identify fishing grounds as production sites for small-scale handline fleets in each season in the TPK Kei Kecil conservation area. Quantitative analysis is used to analyze the economics of small-scale hand line fishery fleet production activities in each season in the TPK Kei Kecil conservation area, including total business revenues, total business capture costs, production cost efficiency, effectiveness of production results, and business profits. Descriptive analysis methods qualitatively and quantitatively, as follows:

1. Analysis of the fishing ground of small-scale hand line fleets

   Analysis of the identification of small-scale hand line fleet fishing grounds in each season in the Kei Kei Kecil TPK conservation area is carried out through a grid map and shown by data collectors to small fishermen as owners of small-scale hand line fleets. The small fishermen mark the fishing areas in each season. The marked grid map is then transformed into the Arc Map software to give an overview of the fishing ground of small-scale hand line fleets each season in the Kei Kei Kecil TPK conservation area.

2. Analysis of the business profits of small-scale hand-line fishing fleets

   Profit analysis was conducted to determine how much profit the small-scale hand line fishing fleet operating in the small Kei TPK conservation area is today. The fishery business profit analysis is formulated from total revenue and total costs (Picaulima et al., 2022); the formula is as follows:

   1. Total revenue of hand line fishing business:

$$TR = Q.P \quad (1)$$

      Where:

      TR = Total revenue of hand line fishing business in each season (IDR)

      P = The average selling price of fish in each season (IDR/kg)

      Q = The average amount of fish production of hand line fisheries in each season (kg)

   2. Total fishing costs of hand line fishing business:

$$TC = TVC + TFCE \quad (2)$$

Where:

TC = Total catch cost of hand line fishing effort in each season (IDR)

TFC = Total fixed cost of hand line fishing effort in each season (IDR)

TVC = Total variable cost of hand line fishing effort in each season (IDR)

3. Profit of hand line fishing business:

$$\pi = TR - TC \quad (3)$$

Where:

Π = Net profit of hand line fishing business in each season (IDR)

TR = Total revenue of hand line fishing effort in each season (IDR)

TC = Total catch cost of hand line fishing effort in each season (IDR)

3. Analysis of production cost efficiency of small-scale hand-line fishing fleets

Production cost efficiency analysis was conducted to determine the minimum production costs incurred by small fishermen in the production process of small-scale hand-line fishing fleets operating in the TPK Kei Kecil conservation area each season to produce several outputs. Efficiency analysis using formulas quoted from (Kasim et al., 2021; Picaulima et al., 2023) The formula is as follows:

$$Ef = \frac{TC}{Q} \quad (4)$$

Where:

Ef = Cost efficiency of hand line fishery production in each season (IDR/kg)

TC = Total catch cost of hand line fishing effort in each season (IDR)

Q = Total production of hand line fishing business in each season (kg)

4. Analysis of the business effectiveness of small-scale hand line fishing fleets

Production effectiveness analysis was conducted to determine the highest output level produced in the production process of small-scale hand-line fishery fleets in each season in the current Kei Kecil TPK conservation area. Efficiency analysis using the formula quoted from (Kasim et al., 2021; Picaulima et al., 2023) The formula is as follows:

$$EV = \frac{Q}{TC} \quad (5)$$

Where:

Ev = The effectiveness of hand line fishery production in each season (kg/IDR)

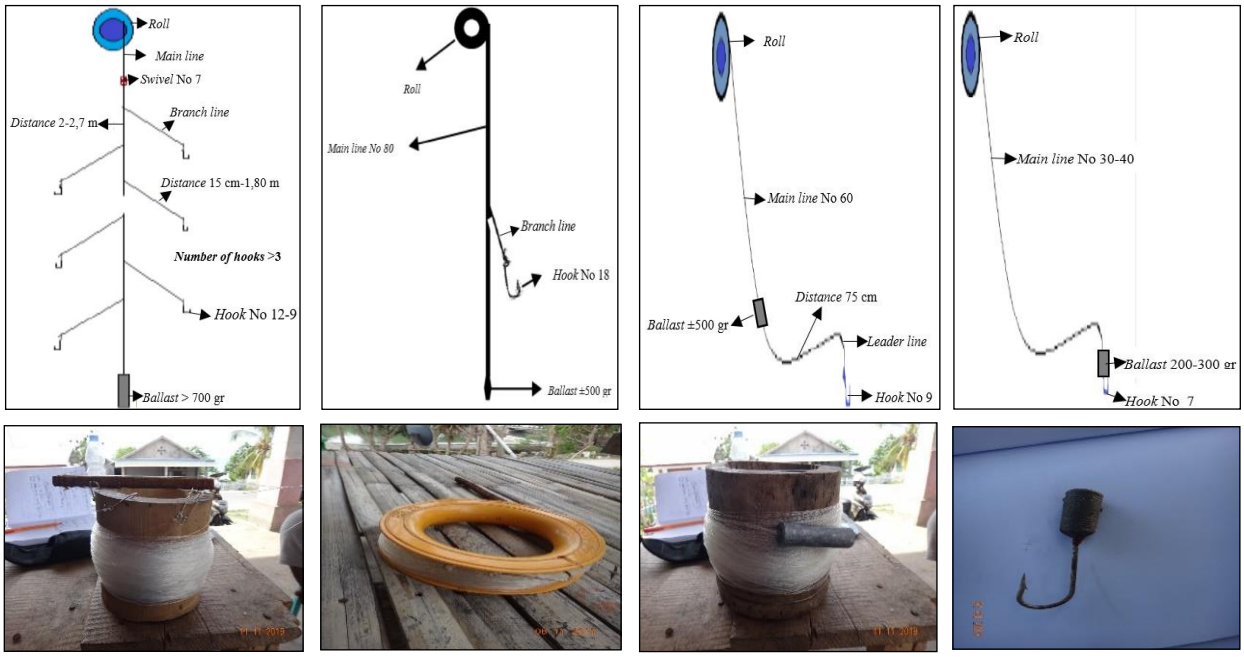
Q = Total Hand Line Fisheries Production in Each Season (kg)

TC = Total catch cost of hand line fishing effort in each season (IDR)

RESULT AND DISCUSSION

Production of small-scale handline fisheries every season in the Kei Kecil Island Park Conservation Area

Hand-line fisheries production is the work of capital goods production factors, and capital is used efficiently in the hand-line fishery production process to obtain effective results. The hand line for small fishermen in Southeast Maluku Regency is known as “bottom fishing” because the target catch is demersal fish resources and reef fish with high economic value. (Wiyono et al., 2022).



(a) (b) (c) (d)

Source: Personal Documents (2023)

Figure 2. Small-Scale Fishing Gear with Branch Lines (a and b) and Non-Branch Line (c and d)

Hand line fishing gear consists of a roll, main line, hooks, swivel, and ballast (Tesen & Hutapea, 2020). Figure 2 shows that the hand line used by small fishermen in the TPK Kei Kecil conservation area generally consists of 2 types, hand lines that use branch lines and hand lines that do not use branch lines. The hand line uses branch line 1 and more than three, while the hand line that does not use the branch line consists of one hook whose ballast position is in the middle of the branch line and the ballast position is cast along with the hook.



(a) Outboard Motor 15 PK (b) Ketinting 6.5 PK (c) Boat Rowing

Source: Personal Documents (2023)

Figure 3. Small-Scale Hand Line Fishing Fleet

The hand line operates in the waters of Kei Kecil TPK conservation area using a relatively small fleet of less than 2 GT. It uses simple driving power, namely rowing, ketinting with a power of

6.5 PK, and outboard motors with a power of 15 PK (Figure 3). The largest size of the hand line fishing fleet is the fishing fleet that uses outboard motor driving power, and the smallest is the rowing boat. These hand-line fishing fleet sizes based on driving power are presented in Table 1.

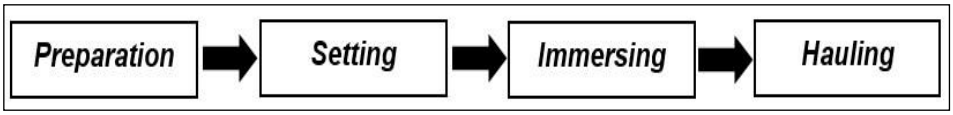
Table 1. Hand Line Fishing Fleet Size Based on Driving Power

No	Driving Power	Long (m)	Wide (m)	Height (m)
1.	Rowing	2.5 – 3	0.3 – 0.6	0.3 – 0.5
2.	Ketinting	4 – 8	0.9 - 1.1	0.6 – 0.8
3.	Outboard Motor	5 – 9	1.1 – 1.2	0.7 – 1

Source: Analysis Results (2023)

Small fishermen who carry out hand-line fishery production activities are 1-2 people who serve as carrying boats and fishing. The fuel oil (BBM) used by the fishing fleet hand line, ketinting, and outboard motor is petalite and the fishing ground of the three fishing fleets is dynamic based on the season.

The production method of small-scale handline fisheries in the TPK Kei Kecil conservation area consists of four stages (Figure 4). According to Tesen & Hutapea, (2020) that the method of fishing operations consists of preparation, setting, immersing, and hauling. Preparation is the first stage that must be done by a fisherman including machinery, fuel, fishing gear, fish bait, ice, and before heading to the fishing ground at 06.00 WIT or 18.00 WIT. The setting is to attach the prepared bait to the hook and lower it into the water. Immersing is the stage of waiting for the bait to be eaten by the target fish. Then hauling is a process of pulling the fishing line after the target fish is related to the hook into the fishing boat, releasing the fish from the hook and putting it into a box filled with ice, the setting stage until hauling is carried out continuously. On the fishing ground, the fishing time of hand-line fishermen is 7-12 hours.



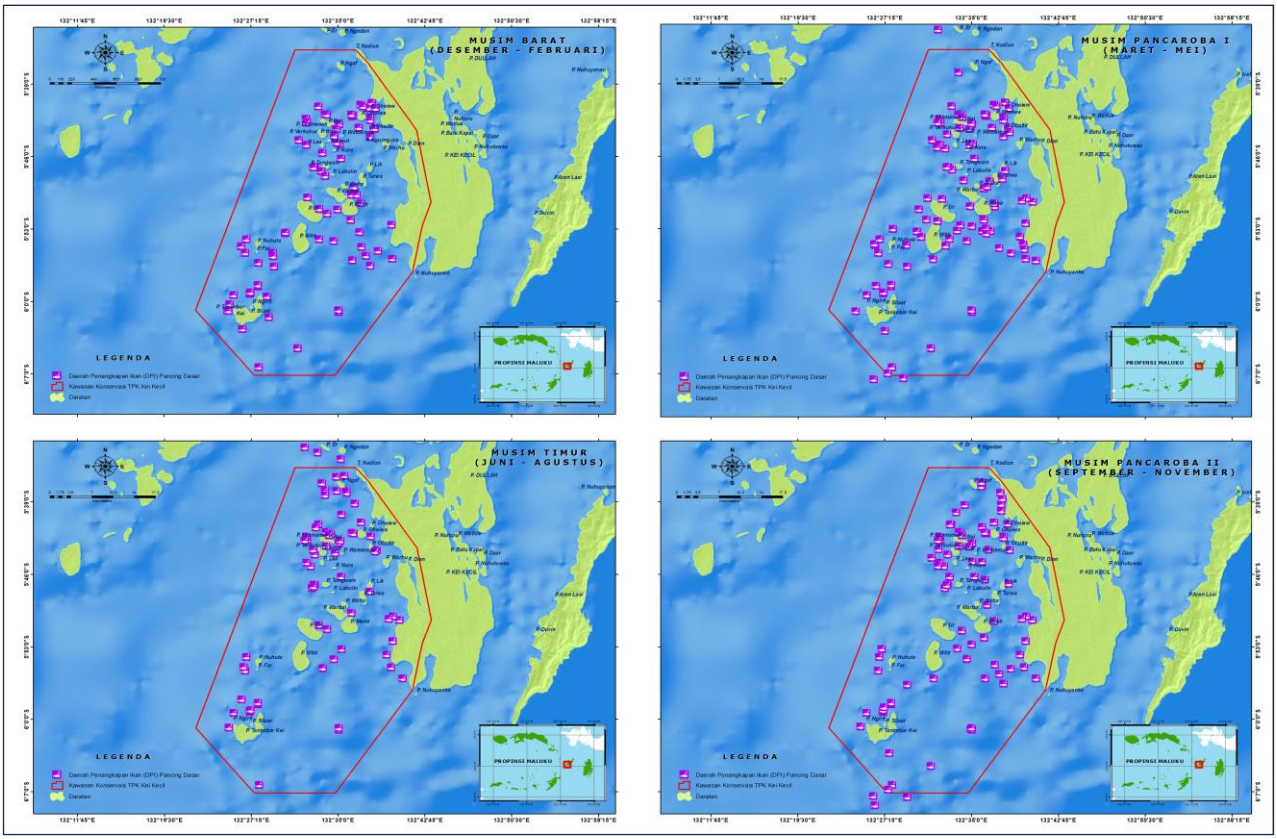
Source: Analysis Results (2023)

Figure 4. Stages of Small-Scale Hand Line Fishery Production Method

The fleet's hand line fishing ground in the waters of the TPK Kei Kecil conservation area is very economical because it is not far from the fishing base, so operational costs are low, and the catch has high economic value. The characteristics of a small-scale fishing fleet fishing grounds in the TPK Kei Kecil conservation area are close to the fishing base, low operational costs, and catches of high economic value (Picaulima et al., 2024). Hand line fishing fleet's fishing grounds are dynamic each season because they are influenced by the monsoon wind.

Figure 5 shows that the fishing ground of the TPK Kei Kecil conservation area is located in the western part of Kei Kecil Island, so it is directly affected by the west munson wind. In the rainy season, the fishing ground waters are very bumpy, especially in the north, but fishing operations are still carried out more to the south and close to the island or coast. This condition continues until the

middle of transition season 1. In the dry season, the fishing ground is more northern, and the transition season 2 fishing ground spreads evenly from north to south.



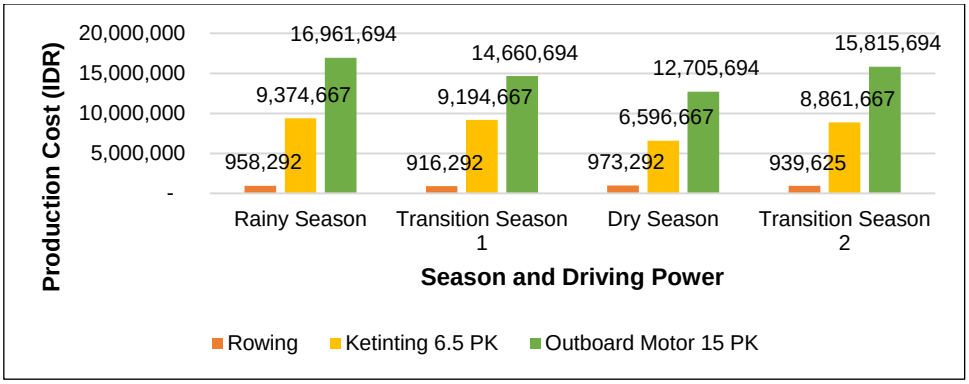
Source: Analysis Results (2023)

Figure 5. Fishing Ground of Small-Scale Fishing Fleets in Every Season in TPK Kei Kecil Conservation Area

The hand line fishery business is a fishery production activity that uses working capital efficiently to produce quality demersal and reef fish at high selling prices. Working capital includes fixed and variable costs (Ariadi et al., 2019). Therefore, working capital is a set of costs used in a business to obtain fixed and variable factors of production in the production process. Fixed cost of hand fishery The line includes depreciation investment and maintenance, while variable costs consist of fuel oil, labor wages, oil, ice cubes, and rations. The need for fixed and variable costs, which are production costs, differ according to the driving power in each season. Figure 6 shows that the largest production cost in each season is the driving power of the outboard motor, and the smallest is rowing. The high cost of producing hand line fleets that use outboard motor driving power due to fixed costs which include depreciation costs and maintenance costs incurred is large compared to the ketinting and rowing hand line fleet, besides that the variable costs used in each fishing operation are higher than the other two driving powers, especially fuel needs. The fuel needed by ketinting ranges from 3-18 liters/trip while the fuel driving power of outboard motors ranges from 10-30 liters/trip. The high and low cost of production is primarily determined by the size of the fixed cost component and the variable costs incurred to obtain several outputs (Picaulima et al., 2023).

The production of hand-line fishing fleets differs according to season and driving power. The overall production in Figure 7 shows that the highest production is the hand line fleet that uses driving

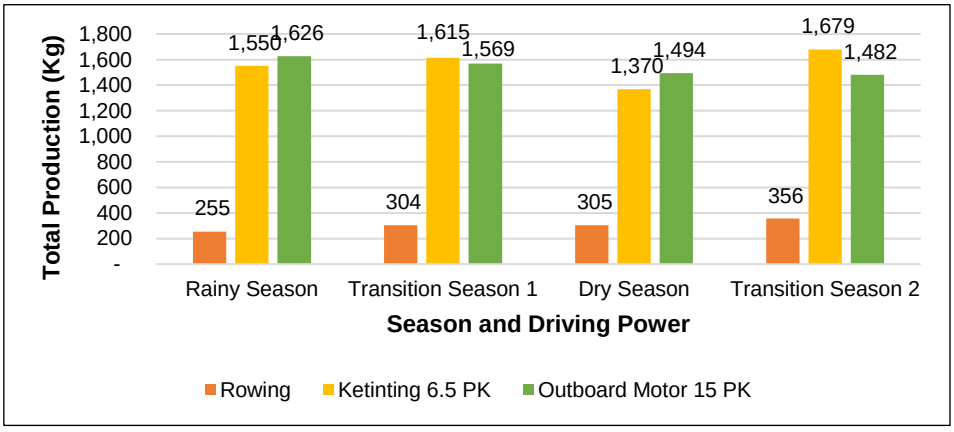
power ketinting occurs in transition season 2 of 1,679 Kg and transition season 1 of 1,679 kg and driving power of outboard motors in the rainy season of 1,626 Kg and dry season of 1,494 Kg while the lowest production in each season of rowing driving power.



Source: Analysis Results (2023)

Figure 6. Production Cost of Small-Scale Hand Line Fishing Fleet Based on Driving Power in Every Season

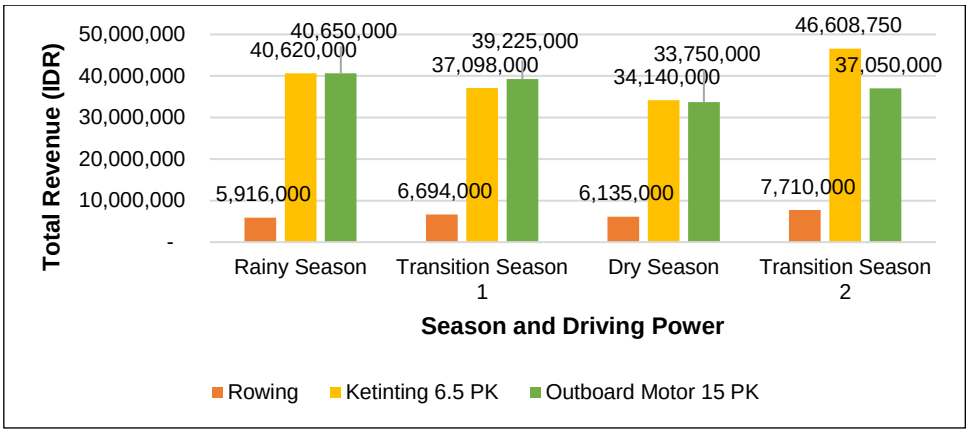
The high production of hand line fleets that use outboard motors driving power in rainy and dry seasons due to the condition of the fishing ground in the TPK Kei conservation area is small and wavy, so it is perfect for a large fleet capacity to carry out fishery production activities. In contrast, in transition seasons 1 and 2, the condition of the fishing ground is not bumpy, so the fishing ground in the TPK Kei conservation area is small and very effective for hand line fishing operations using ketinting driving power; in addition, the fishing ground of the hand line and ketinting fleets have the same fishing ground in the TPK Kei conservation area. In contrast, the rowing fleet generally has a small fleet capacity, so the fishing ground is not too far away, so the production is low compared to the second-hand line fleets. Therefore, the high seasonal production of hand line fleets in the waters of Southeast Maluku Regency is strongly influenced individually and together by fleet capacity, fishing ground, and rainfall (Picaulima et al., 2021). The main catch of the hand line is dominated by *Lethrinus lenjtan*, *Lutjanus malabaricus*, *Carangoides coeruleopinnatus*, *Aphareus rutilans*, *Paracaesio gonzalesi*, *Lutjanus kasmira*), *Etelisn carbunculus*, *Plectropomus leopardus*, while the bycatch is *Decapterus sp*. The highest catch in each season is *Lethrinus lenjtan* fish, and the lowest is *Decapterus sp* (Picaulima et al., 2020).



Source: Analysis Results (2023)

Figure 7. Production of Small-Scale Hand Line Fishing Fleet Based on Driving Power in Every Season

Operating income is the result of multiplying the amount of production and selling price of fish products in a certain season. Figure 8 shows that the production income of hand line fisheries based on driving power operating in the small TPK Kei conservation area is highest in the rainy season, and transition season 1 is a hand line that uses outboard motor driving power while in the dry season, and transition season 2 is ketinting. The high income of hand line fishermen who use outboard motor driving power in the rainy season due to bumpy weather conditions so that production is higher and high selling prices average IDR25,000/Kg and in transition season 1 although production decreases but selling prices are still the same as rainy season while hand line fleets in dry season. However, production is low, but selling prices are high at an average of IDR24,900/kg and transition season 2 production results. The fishery is high, and the selling price is high, which is an average of IDR27,700 / kg. Please also note that the price of fish for each fisherman at each home base is different. The selling price of fish and the amount of fish caught influence fishermen's high and low incomes in each season (Ridha, 2017).



Source: Analysis Results (2023)

Figure 8. Small-Scale Hand Line Fisheries Business Revenue Based on Driving Power in Every Season

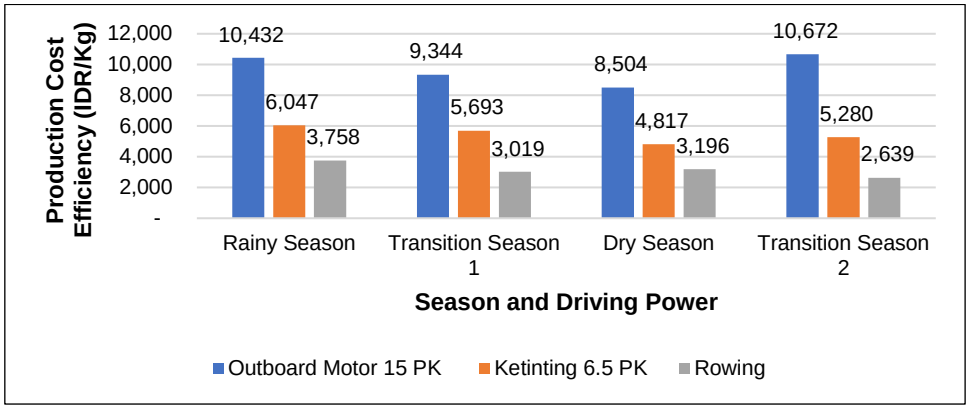
Economy of Small-Scale Hand Line Fisheries Production in Every Season in Kei Kecil Island Park Conservation Area

The economy of hand line fisheries production is the behavior of hand line fishermen in utilizing capital goods production factors and working capital in the production process of demersal fishing and reef fish efficiently to obtain effective results and profits.

Cost Efficiency of Small-Scale Hand Line Fisheries Production

The efficiency of hand line fishery production costs is the lowest cost incurred by small fishermen in obtaining a certain amount of catch output. Figure 9 shows that all driving power that carries out production activities in the TPK Kei conservation area is small in each season and is very efficient because production costs are very efficient. This is evidenced by the cost of goods sold being below the average sales price of fishery products in each season, which is IDR25,000 / kg. Of the three hand line fishing fleets, the most efficient fleet in fishing operations in each season is the hand-line fishing fleet that uses rowing driving power. The efficiency of the rowing fishing fleet is because the production costs incurred by rowing fishermen in each season for variable (ration) and

fixed (depreciation and maintenance) costs are very low, which is between IDR916,292 (transition season 1) - IDR973,902 (dry season) compared to the output of catch products obtained which ranges from 255 kg (rainy season) – 356 kg (transition season 2) meaning that the production costs incurred are very low compared to the output achieved. This efficiency value is minimal compared to hand line fleets that use driving power, ketinting, and outboard motors. According to Picaulima et al., (2023) The low value of efficiency is because the cost of production inputs incurred to obtain output is minimal, and the value of efficiency shows the cost of goods sold.

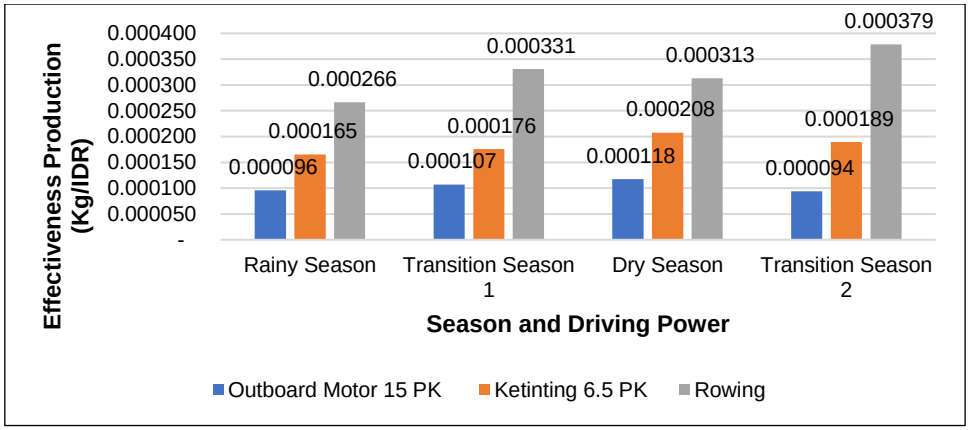


Source: Analysis Results (2023)

Figure 9. Production Cost Efficiency of Small-Scale Hand Line Fishing Fleet Based on Driving Power in Every Season

Effectiveness of Small-Scale Hand Line Fisheries Production Results

The effectiveness of hand line fisheries production is the level of effective output produced by fisheries in each season under the conservation control of TPK Kei Kecil. Figure 10 shows that all fishing fleets that carry out production activities in each season in the TPK Kei Kecil conservation area are very effective.



Source: Analysis Results (2023)

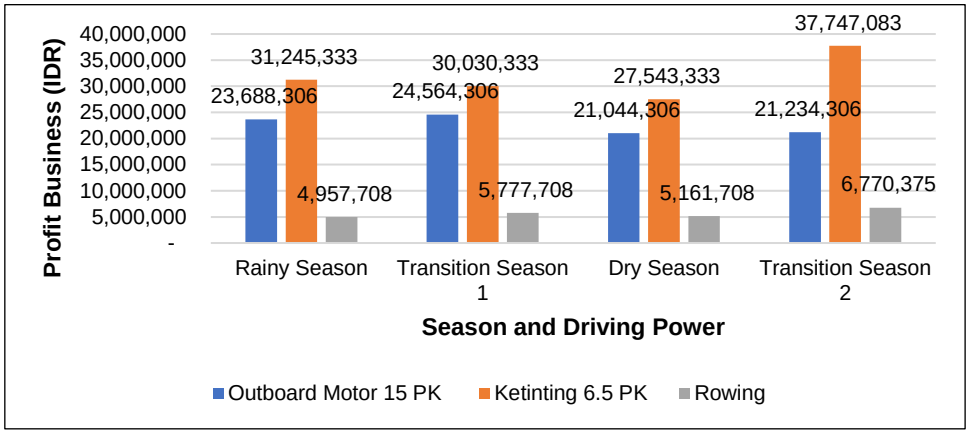
Figure 10. Effectiveness of Small-Scale Hand Line Fishing Fleet Production Based on Driving Power in Every Season

The highest effectiveness in each season is the hand line fishing fleet that uses driving power rowing because the output produced is large, ranging from 255 kg (rainy season) to 356 kg (transition season 2) compared to the production costs incurred are very efficient, which is around IDR916,292

(transition season I) to IDR973.902 (dry season). Production effectiveness is the production process using the same costs and getting a lot of output (Halil & Rahmawati, 2019).

Profit of Small-Scale Hand Line Fisheries Production Business

The business profit analysis aims to determine the amount of business profit and relative of the hand line fishery business each season in the TPK Kei Kecil conservation area. Figure 11 shows that all fishing fleets that carry out production activities in each season in the TPK Kei Kecil conservation area are profitable because the income obtained is greater than the production costs incurred, but the highest business profit in each season is the hand line fishing fleet that uses ketinting driving power and the lowest is the fleet that uses rowing driving power.



Source: Analysis Results (2023)

Figure 11. Profit of Small-Scale Hand Line Fishery Business Based on Driving Power in Every Season

The high profit obtained by the hand line fishing fleet that uses driving power ketinting 6.5 PK because the production costs (total cost) incurred in each season are very low, ranging from IDR6,596,667 (dry season) to IDR9,374,667 (rainy season) while the revenue (total revenue) obtained is very high in each season, which ranges from IDR34,140,000 (dry season) to IDR40,620,000 (rainy season), This condition is the opposite for hand line fishing fleets that use rowing driving power. However, this fishing business is still relatively profitable in every season. Ketinting 6.5 PK driving power is very efficient, effective, and economical in fisheries production both near and long distances in the middle of the sea (Tumigolung et al., 2017). The amount of business profit obtained describes the success and progress of a managed business. (Sumiratin & Syarbiah, 2018).

CONCLUSION AND SUGGESTION

Conclusion

Small-scale hand line fisheries fleets that carry out production activities every season in the TPK Kei Kecil conservation area are more efficient, namely 3,758 (rainy season), 3,019 (transition season 1), 3,196 (dry season), 2,639 (transition season 2) and effective, namely 0.000266 (rainy season), 0.000331 (transition season 1), 0.000313 (dry season), 0.000379 (transition season 2) is a hand line fishing fleet that uses rowing driving power. The highest business profit is the fleet hand

line that uses ketinting 6.5 PK driving power are IDR31,245,333 (rainy season), IDR30,030,333 (transition season 1), IDR27,543,333 (dry season), IDR37,747,083 (transition season 2).

Suggestion

Fisheries managers of Maluku Province need to work with hand-line fishermen to arrange production inputs based on the driving power in the TPK Kei Kecil conservation area during each season. Further research must study the production factors of small-scale handline fisheries in the TPK Kei Kecil conservation area. A study of production factors was conducted to determine what factors significantly affect the production of hand line fisheries in the TPK Kei Kecil conservation area.

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REFERENCES

Ariadi, H., Fadjar, M., & Mahmudi, M. (2019). Financial Feasibility Analysis of Shrimp Vannamei (Litopenaeus vannamei) Culture in Intensive Aquaculture System with Low Salinity. *Journal of Economic and Social of Fisheries and Marine*, *7*(1), 81–94. https://doi.org/http://dx.doi.org/10.21776/ub.ecsofim.2019.007.01.08

Arkham, M. N., Hutapea, R. Y. F., Tiku, M., Widayaka, R., & Sari, E. M. (2020). Karakteristik finansial usaha perikanan pancing ulur di Kawasan SAP Kepulauan Raja Ampat dan laut sekitarnya. *Jurnal Pengelolaan Perikanan Tropis*, *4*(2), 19–28. https://doi.org/https://doi.org/10.29244/jppt.v4i2.32660

Halil, A., & Rahmawati. (2019). Analisis Pendapatan dan Efisiensi Usaha Pembibitan Udang Vaname (Litopenaeus vannamei) di Kabupaten Takalar. *Journal TABARO*, *3*(2), 373–379. Retrieved from https://ojs.unanda.ac.id/index.php/jtas/article/view/299

Ishak, A., Fakhriyyah, S., & Hasan, C. M. (2021). Analisis Kelayakan Usaha Alat Tangkap Pancing Ulur Studi Kasus di Pulau Barrang Caddi Kecamatan Sangkurang Kota Makasar. *Ponggawa Journal Of Fisheries Socio-Economic*, *1*(1), 51–59. https://doi.org/https://doi.org/10.35911/ponggawa.v1i1.14219

Kantun, W., Cahyono, I., & Arsana, W. S. (2017). Strategi Pengembangan Perikanan Pancing Ulur Di Babana Mamuju Tengah Sulawesi Barat. *Marine Fisheries : Journal of Marine Fisheries Technology and Management*, *8*(2), 235–247. https://doi.org/https://doi.org/10.29244/jmf.8.2.235-247

Kasim, M., Balubi, A., Astuti, O., Rahman, A., Patadjai, S., Muskita, W., Jalil, W. (2021). Comparison between the growth of Kappahycus alvarezii (Rhodophyta) seed from tissue culture and clone selection cultivated using horizontal net q. *The Egyptian Journal of Aquatic Research*, (xxxx), 1–6. https://doi.org/10.1016/j.ejar.2021.01.003

Kementerian Kelautan dan Perikanan. (2016). Keputusan Menteri Kelautan dan Perikanan Republik Indonesia Tentang Kawasan Konservasi Pesisir dan Pulau-Pulau Kecil Pulau Kei Kecil, Pulau-Pulau, dan Perairan Sekitarnya di Kabupaten Maluku Tenggara Provinsi Maluku. Hlm 5

Moniharapon, R. D., Hiariey, J., & Bawole, D. (2023). Analisis Pendapatan Usaha Tuna Hand Line di Dusun Parigi Negeri Wahai Kecamatan Seram Utara. *Journal Of Coastal and Deep Sea*, *1*(2), 26–37. https://doi.org/https://doi.org/10.30598/jcds.v1i2.11899

Notanubun, C., Talakua, W., & Siahanenia, S. (2021). Analisis Aspek Teknis dan Finansial Usaha

Perikanan Bagan Apung (Lift Net) di Ohoi Selayar Kabupaten Maluku Tenggara. *PAPALELE: Jurnal Penelitian Sosial Ekonomi Perikanan Dan Kelautan*, *5*(1), 1–12. Retrieved from https://ojs3.unpatti.ac.id/index.php/papalele/article/view/3182

Picaulima, S.M., Wiyono, E., Baskoro, M., & Riyanto, M. (2020). Fleets dynamics of small-scale fisheries in eastern Kei Kecil Island, Maluku Province, Indonesia. *AACL Bioflux*, *13*(5), 2835–2851. Retrieved from: http://www.bioflux.com.ro/aacl

Picaulima, S.M., Wiyono, E. S., Baskoro, M. S., & Riyanto, M. (2021). Analisis Faktor-Faktor yang Memengaruhi Hasil Tangkapan dalam Dinamika Armada Perikanan Skala Kecil di Pulau Kei Kecil Bagian Timur. *Sumberdaya Akuatik Indopasifik*, *5*(4), 415–428. https://doi.org/https://doi.org/10.46252/jsai-fpik-unipa.2021.Vol.5.No.4.189

Picaulima, S.M., Wiyono, E. S., Rahantoknam, M. A., & Notanubun, J. (2022). Ekonomi Perikanan Mini Purse seine Berdasarkan Musim dan Daerah Penangkapan di Kepulauan Kei. *ECSOFIM Economic and Social of Fisheries and Marine Journal*, *9*(2), 195–208. https://doi.org/http://dx.doi.org/10.21776/ub.ecsofim.2022.009.02.04

Picaulima, S.M., Ngangun, T., Labetubun, W., Elwuar, M. ., & Farneubun, A. (2022). Keberlanjutan Ekonomi dan Strategi Pengembangan Usaha Perikanan Bagan Apung Rakit Skala Kecil di Ohoi Namar Kabupaten Maluku Tenggara Provinsi Maluku. *Jurnal Perikanan Dan Kelautan*, *27*(3), 386–393. https://doi.org/http://dx.doi.org/10.31258/jpk.27.3.386-393

Picaulima, S.M., Rahakbauw, S. D., Ngamel, A. K., Ohoiwutun, E. C., & Kilmanun, A. D. (2023). Efesiensi Biaya Produksi Dan Efektivitas Produksi Usaha Perikanan Jaring Insang Dasar Skala Kecil Setiap Musim di Desa Labetawi, Kota Tual. *Jurnal Agribisnis Perikanan*, *16*(2), 339–347. https://doi.org/https://doi.org/10.52046/agrikan.v16i2.1826

Picaulima, S.M., Makailipesy, M. M., & Thenu, I. M. (2024). Daerah Penangkapan Ekonomis Armada Perikanan Bagan Apung Skala Kecil Dalam Setiap Musim Di Kawasan Konservasi Taman Pulau Kecil Kabupaten Maluku Tenggara. *Jurnal Agribisnis Perikanan*, *17*(1), 17–27. https://doi.org/10.52046/agrikan.v17i1.17-27

Ridha, A. (2017). Analisis Faktor-Faktor yang Mempengaruhi Pendapatan Nelayan di Kecamatan Idi Rayeuk. *Jurnal Samudra Ekonomi Dan Bisnis*, *8*(1), 646–652. Retrieved from http://jurnal.unsam.ac.id/index.php/jseb/article/view/205

Rosdiana, Fachrudin, Abadiyah, Ani, K., Usman, H., & Idris. (2023). Analisis Pendapatan Nelayan Pancing Ulur (Hand Line) di Desa Salubomba Kecamatan Banawa Kabupaten Donggala. *Jurnal TROFISH*, *2*(1), 18–25. https://doi.org/https://doi.org/10.31970/trofish.v2i1.137

Sumiratin, E., & Syarbiah, S. (2018). Analisis Kelayakan Usaha Pengolahan Ikan Asap Di Kecamatan Wawotobi Kabupaten Konawe. *Jurnal Mitra Manajemen*, *2*(6), 654–664. Retrieved from http://e-jurnalmitramanajemen.com/index.php/jmm/article/view/168

Tesen, M., & Hutapea, R. Y. (2020). Studi Pengoperasian Pancing Ulur dan Komposisi Hasil Tangkapan Pada KM Jala Jana 05 di WPP 572. *Aurelia Jurnal*, *1*(2), 91–102. https://doi.org/http://dx.doi.org/10.15578/aj.v1i2.8950

Tumigolung, S.S., Pangalila, F. P. T., & Kaparang, F. E. (2017). Studi Tentang Pengaruh Perbedaan Daya Mesin Terhadap Kecepatan dan Konsumsi Bahan Bakar Minyak Pada Perahu *Pakura. Jurnal Ilmu dan Teknologi Perikanan Tangkap*, 2(5), 187-193.

Wiyono, E. S., Picaulima, S. M., & Nababan, B. (2022). *Perikanan Skala Kecil : Persepsi dan Strategi Alokasi Armada Penangkapan Ikan* (Pertama). Bogor: IPB Press.