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COMPARISON OF INCOME OF PEOPLE CATCH FISH USING LIFTNET IN SIPIN LAKE AND TELUK LAKE JAMBI CITY

Perbandingan Pendapatan Masyarakat yang Menangkap Ikan dengan Alat Tangkap Tangkul di Danau Sipin dan Danau Teluk Kota Jambi

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ABSTRACT

In the aspect of fishermen's welfare is strongly influenced by their catch. This is done by the people of Lake Teluk and Lake Sipin focusing on fish production by conducting fishing activities in these waters using Tangkul fishing gear. This study aims to analyze the differences in income of Tangkul fishermen so that it can be used as a reference in the economic aspects of the fishing business. The research was conducted in April - May 2023, at Lake Sipin and Teluk Lake, Jambi City. This research is quantitative in nature using a survey method through interviews with a sample number of 30 respondents using the sampling technique, namely Sample Random Sampling. The data analysis used is π = TR - TC. The results showed that the main catches were Flat Lambak Fish (Thynnichthys polylepis), Kapiat Fish (Barbonymus schwanenfeldi), Seluang Fish (Rasbora argyrotaenia), Sebarau Fish (Hampala macrolepidota), catfish (Pangasius hypophthalmus), Nilem Fish (Osteochilus vittatus) and Senggiring Fish (Mystus nigriceps) and Comparison of income from fish catches in Lake Teluk amounted to IDR 1,502,796, Lake Danau Teluk amounted to IDR 1,502,796, Lake Sipin amounted to IDR 1,334,210, then the fish catch in Lake Teluk is relatively larger with a difference of about 12.63%.

Keywords: Income, Lif net, Sipin Lake, Teluk Lake

ABSTRAK

Dalam aspek kesejahteraan nelayan sangat dipengaruhi oleh hasil tangkapannya. Hal ini yang dilakukan masyarakat Danau Teluk dan Danau Sipin berfokus pada produksi ikan dengan cara melakukan aktivitas penangkapan ikan diperairan tersebut menggunakan alat tangkap Tangkul. Penelitian ini bertujuan untuk menganalisis perbedaan pendapatan nelayan tangkul sehingga dapat dijadikan acuan dalam aspek ekonomi usaha penangkapan. Penelitian dilakukan pada bulan April - Mei 2023, di Danau Sipin dan Danau Teluk, Kota Jambi. Penelitian ini bersifat kuantitatif dengan menggunakan metode survei melalui wawancara dengan jumlah sampel

nelayan tangkap tangkul 30 responden dengan menggunakan teknik pengambilan sampel yakni Sample Random Sampling. Analisis data yang digunakan adalah π = TR – TC. Hasil penelitian menunjukkan bahwa hasil tangkapan utama yaitu Ikan Lambak Pipih (*Thynnichthys polylepis*), Ikan Kapiat (*Barbonymus schwanenfeldi*), Ikan Seluang (*Rasbora argyrotaenia*), Ikan Sebarau (*Hampala macrolepidota*), Ikan Patin (*Pangasius hypophthalmus*), Ikan Nilem (*Osteochilus vittatus*) dan Ikan Senggiring (*Mystus nigriceps*) serta Perbandingan pendapatan dari hasil tangkapan ikan di Danau Teluk sebesar Rp.1.502.796, Danau Sipin sebesar Rp. 1.334.210, maka hasil angkapan ikan di Danau Teluk relatif lebih besar dengan selisih sekitar 12,63%.

Kata Kunci: Pendapatan, Tangkul, Danau Sipin, Danau Teluk

INTRODUCTION

Jambi City has a large potential of public waters with an area of 812 ha, consisting of 368 ha of rivers, 309 ha of swamps and 135 ha of lakes. These public waters are a natural habitat for various aquatic biota such as fish and shrimp. The lakes located in Jambi City include Teluk Lake and Sipin Lake. The types of fishing gear in Teluk Lake and Sipin Lake are quite diverse, including tangkul (Lift net), fishing rods (Line fishing), bubu (tubular trap). Of the several types of fishing gear, tangkul is the dominant fishing gear operated by fishermen. Tangkul is a fishing gear similar to anco but larger in size. Tangkul is a passive fishing gear in the form of a square, generally measuring 7x7 m with a mesh size of 1 inch (Sukandi, 2008).

Based on the fishing gear in Sipin Lake and Teluk Lake in Jambi City, it indicates that the fisheries potential in these public waters is high. According to Sukmono *et al*. (2010) Teluk Lake and Sipin Lake have high fisheries potential, although the number of fishermen's catches such as gabus, baung, and catfish is generally low. Some of the most dominant types of fish in the area are flathead fish, seluang fish, and kapiat.

The varied catch will affect the income of fishermen. If the fishermen's catch is good, their income will also increase, and vice versa. In addition, several factors that affect fishermen's income, according to Sujarno (2008), include social and economic aspects, such as the amount of costs, number of boats, distance traveled, and experience. Several problems in capture fisheries also contribute to the income obtained by fishermen.

The characteristics of fishermen are also another reason for this income. Each fisherman also has work experience that is pursued so that it can affect the income of fishermen. Fishermen who have been in the fishing world for a longer time will be accustomed to and know the conditions than fishermen who are just starting to pursue fishing. According to Murdiyarso (2007) depleted resources and fish prices as output in capture fisheries can also affect fishermen's income.

Therefore, the author is interested and wants to conduct this research with the title "Comparison of Income of People Catch Fish with Various Fishing Gear in Lake Sipin and Lake Teluk Jambi City".

METHODS

Place and Time

This research was conducted in April - May 2023 in Danau Teluk District and Danau Sipin District, Jambi City, Jambi Province.

Research Method

The material in this study was the catch of fishermen using tangkul fishing gear and the income from fishermen's catches in Teluk Lake and Sipin Lake. While the equipment used was stationery, a list of questions (questionnaires) and documentation tools (cameras). The method used in this study was the survey method. The object of this research was fishermen using

tangkul fishing gear in Teluk Lake and Sipin Lake. To determine the number of respondents in this study using Sample Random Sampling which is a random sampling of the population of fishermen using tangkul fishing gear. The number of respondents taken was 15 respondents at each location with a total of 30 research respondents.

Research Procedure

The researcher made a questionnaire, the creation of a questionnaire used to make it easier for researchers to interview fishermen, conduct direct interviews with fishermen who own tangkul fishing gear and also researchers at the same time collect data and documentation. After conducting interviews, researchers will conduct data sampling, where data sampling is carried out 4 times in 31 days to calculate the income of fishermen, interviews are conducted every week for each fisherman. After sampling, data processing is carried out using statistical tests, namely the T Test using Microsoft Excel, the data processed is data on fishermen's catches, selling prices of fishermen's catches and fixed costs and variable costs of fishing. After that, the researcher describes the results of data processing in the results and discussion.

Data Collection

The data collected in this study are primary data and secondary data.

1. Primary data, namely data collected directly from the original source and specifically used to answer research questions. The primary data taken consists of fishermen's income, number of catches, selling prices (Kilograms), weight of fish unloaded (kg) costs used during fishing operations (fixed costs and variable costs).
2. Secondary data obtained indirectly but can be obtained by obtaining references through writing books, logical articles, research diaries and various sources.

Data Analysis

The data obtained is first tabulated and then calculated using mathematical calculations. Then the following calculations are carried out:

1. To calculate Income, use the following formula:

$$\pi = TR - TC$$

Description:
π : Income (profit)
TR : Total Revenue
TC : Total Cost

2. To find out Income, use the following formula:

$$TR = P.Q$$

Description:
TR : Total Income (IDR)
P : Selling Price (IDR)
Q : Number of Fish Sold (kg)

3. To find out the total amount of costs used by fishermen as follows:

$$TC = FC + VC$$

Description:
TC : Total Cost
FC : Fixed Cost
VC : Variable Cost

RESULT

General Condition of the Research Location

This research was conducted in Teluk Lake and Sipin Lake located in Jambi City. Teluk Lake has adequate depth and relatively stable fertility, making it a balanced and productive

ecosystem, very beneficial for the life of aquatic organisms such as freshwater shrimp. During the flood season, Teluk Lake has an area of approximately ± 62.5 hectares with a depth of 14.4 meters, while in the dry season its area decreases to ± 40.4 hectares with a depth of 8 meters. Most of the fishing activities in Teluk Lake, which is around 70%, are intended for capture fisheries, which are carried out by permanent and seasonal fishermen, while the remaining 30% are used for fish farming (Kaban, 2017). Teluk Kenali Lake has a variety of native fish species that are still abundant, such as seluang fish, lambak fish, and tekang fish. These three types of fish have high economic value and are in great demand by the community (Harmansyah, 2017).

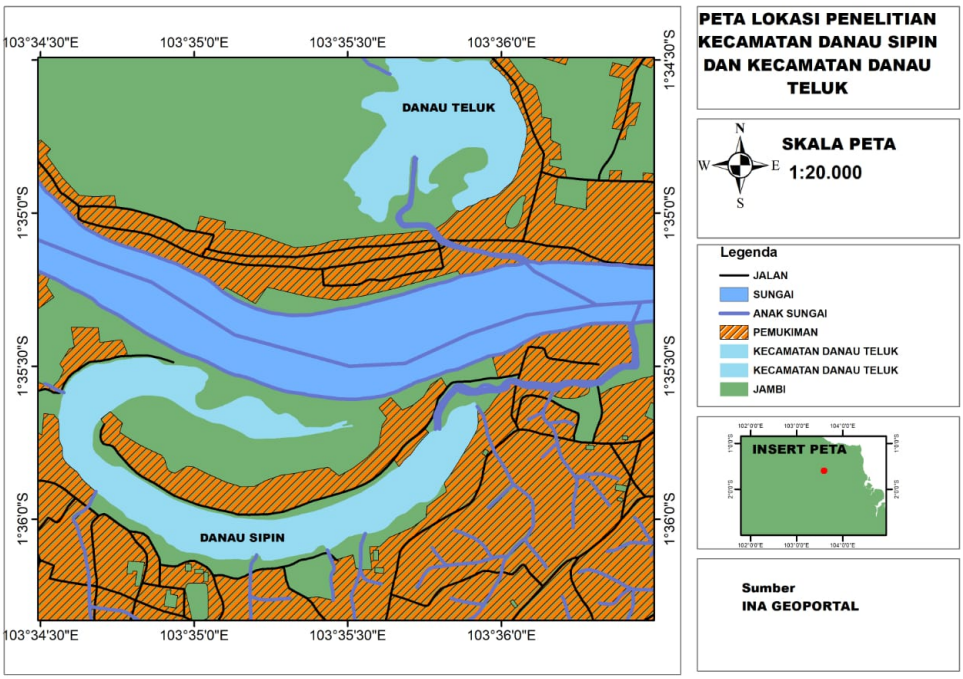

Figure 1. Research Location Map

Sipin Lake has a long shape and encircles Sipin Island. The nature along the lake still looks natural, overgrown with bushes and lush trees (Ikhsan, 2007). The Sipin Lake area has various important functions for the lives of the surrounding community and Jambi City. One of its functions is as a supplier of raw water for household needs, businesses in the fisheries sector, and the tourism sector. Fisheries activities in Sipin Lake include freshwater fish cultivation, especially through floating cages, with tilapia and carp as the most commonly cultivated types. In addition, Sipin Lake is now also one of the tourist destinations for the people of Jambi Province, especially Jambi City.

Characteristics of Teluk Lake and Sipin Lake Fishermen

Respondent characteristics are used to determine the diversity of respondents based on age, education level and work experience of fishermen in Teluk Lake and Sipin Lake. The characteristics of the age level of fishermen in Sipin Lake and Teluk Lake are shown in the following table:

Table 1. Description of Respondents Based on Age in Teluk Lake and Sipin Lake

No	Age (Years)	Teluk Lake	Sipin Lake
1	≤30	4 People	-
2	31-35	1 Person	3 People
3	36-40	3 People	2 People
4	41-45	-	1 Person

No	Age (Years)	Teluk Lake	Sipin Lake
5	46-50	2 People	3 People
6	>50	5 People	6 People
	Total	15 People	15 People

Based on table 1. It can be seen that the respondents aged 41-45 years are 1 person, while the respondents aged > 50 years are 10 people. Individual performance is influenced by age, which has an impact on the ability to complete work. Age plays an important role in decision making, and in this context, the age of a fisherman also affects income from the catch.

Table 2. Description of Respondents Based on Last Education Level

No	Education	Total (People)	Percentage (%)
1	Elementary School	5	16.67
2	Junior High School	8	26.67
3	Senior High School	17	56.67
	Total	30	100

Based on table 2, the highest level of education for fishermen (high school) reached 56.67% of 17 respondents. This is because of the awareness of the lower middle class community in getting the highest possible education to meet their basic needs in finding work. The level of education is one of the factors that influences the ability to think and absorb information. The higher a person's education, the more mature the decisions they make compared to those with lower levels of education.

Table 3. Description of Respondents Based on Experience

No	Experience (Years)	Total (People)	Percentage (%)
1	≤10	5	16.67
2	11-15	5	16.67
3	16-20	13	43.33
4	>20	7	23.33
	Total	30	100

In table 3, it can be seen that the respondents' work experience ranges from less than 10 years to more than 20 years with a total of 30 respondents. The majority of respondents in Teluk Lake and Sipin Lake have 16 years of work experience with a total of 13 people (43.33%). This means that the respondents have had quite a long work experience, so that the respondents have had a lot of experience.

Fishermen's Catch Production in Teluk Lake and Sipin Lake

The catch production is the number of fish species and other aquatic animals caught during fishing operations. The catch in the Tangkul fishing gear is lambak fish, seluang fish, senggiring fish, sebarau fish, kapiat fish and fish. The following is the amount of catch production per month by fishermen in Teluk Lake and Sipin Lake.

Table 4. Total Catch Per Month by Tangkul Fishermen in Teluk Lake

Types of Fish	Number of Catches/Kg/Month	Average Catch
Lambak Fish	149.1	10.65
Kapiat Fish	6.6	1.65
Seluang Fish	42.6	3.53
Sebarau Fish	33.4	5.56

Types of Fish	Number of Catches/Kg/Month	Average Catch
Catfish	31.5	6.3
Total	263.2	27.69

The total catch of fishermen in the bay lake was 263.2 kg with an average of 27.69 kg. This amount was obtained from 149.1 kg of lambak fish, 6.6 kg of capiat fish, 42.6 kg of seluang fish, 33.4 kg of sebarau fish, 31.5 kg of catfish. These results were obtained from all fishermen who caught fish with tangkul fishing gear in the bay lake.

Table 5. Number of Catches Per Month by Tangkul Fishermen in Lake Sipin

Types of Fish	Number of Catches/Kg/Month	Average Catch
Lambak Fish	64.32	7.14
Nilem Fish	19.34	2.76
Seluang Fish	15	2.5
Sebarau Fish	14.3	4.76
Senggiring Fish	8.25	2.06
Total	121.21	19.22

The total catch of fishermen in Lake Sipin was 121.21 kg with an average of 19.22 kg. This amount was obtained from 64.32 kg of lambak fish, 2.76 kg of Nilem fish, 15 kg of seluang fish, 14.3 kg of sebarau fish, and 8.25 kg of senggiring fish. These results were obtained from all fishermen who caught fish with tangkul fishing gear in Lake Sipin. Based on the Tangkul Catch Results in Teluk Lake and Sipin Lake, it can be seen that the highest total catch of tangkul fishing gear was Flat Lambak fish, as much as 149.1 kg in Teluk Lake and as much as 64.32 kg in Sipin Lake.

Tangkul Fishermen's Income in Teluk Lake and Sipin Lake

Income is an important thing in a business. In this study, tangkul fishermen sell their catch so that the sales results are in the form of income. The following is the average income of tangkul fishermen in Teluk Lake and Sipin Lake which can be seen in Table 6.

Table 6. Income of tangkul fishermen in Teluk Lake and Sipin Lake

No.	Types of Fish Catch	Rata-Rata Penerimaan	
		Teluk Lake	Sipin Lake
1	Lambak Pipih (*Thynnichthys polylepis*)	IDR 220,050	IDR 160,482
2	Kapiat (*Barbonymus schwanenfeldi*)	IDR 26,650	IDR -
3	Seluang (*Rasbora argyrotaenia*)	IDR 141,897	IDR 73,413
4	Sebarau (*Hampala macrolepidota*)	IDR 68,283	IDR 84,966
5	Catfish (*Pangasius hypophthalmus*)	IDR 125,800	IDR -
6	Nilem (*Osteochilus vittatus*)	IDR -	IDR 57,248
7	Senggiring (*Mystus nigriceps*)	IDR -	IDR 30,482
Total		IDR 582,680	IDR 406,591

The average value of all fishermen's income in Teluk Lake is IDR 582,680, - which is obtained from the total amount of catch. And the average value of fishermen's income in Sipin

Lake is IDR 406,591, - which is obtained from the total amount of catch. From the catch, each fisherman in Teluk Lake and Sipin Lake already has their own place to buy the catch. The income of Tangkul fishermen in each region depends on the total weight of the fish they catch. In addition, the income value also depends on the fishing season.

The income received by fishermen is in accordance with the amount of production obtained and the selling price of fish, which varies every month. If production decreases, the income of fishermen will also decrease. The income of fishermen in Teluk Lake is higher than that of fishermen in Sipin Lake because the fishermen there are still actively catching fish. The high income or income from fishing efforts in Teluk Lake shows that the potential for fisheries resources in the area is relatively more fertile than the Sipin Lake area, this can be seen in terms of area. While in Sipin Lake, some areas are used as tourist areas.

Table 7. Average Costs Incurred at Teluk Lake and Sipin Lake

No.	Type of Cost	Teluk Lake Expenditure (IDR/month)	Sipin Lake Expenditure (IDR/month)
1	Fixed Costs	112,800	99,200
2	Variable Costs	88,400	67,300
	Total	201,200	166,500

The total cost of Tangkul in Teluk Lake is IDR 201,200 which comes from the investment costs of tangkul, boats, net repairs, buying bamboo, and replacing foundation boards. While the total cost of Tangkul in Sipin Lake is IDR 166,500 which comes from buying leaky buckets, repairing nets on fishing gear. The costs were taken during the research, and each month the expenses or costs incurred vary according to the materials or tools that have been used up.

A fisherman's income is obtained from the sale of catches obtained through fishing activities. Generally, fishermen's income is uncertain and varies based on the catch. Net income (TR-TC) is the total income obtained after deducting the total costs incurred (Table 8).

Table 8. Average Income of Tangkul Fishermen Per Month in Teluk Lake and Sipin Lake

No	Description	Average Value of Teluk Lake Fishermen (IDR/month)	Average Value of Sipin Lake Fishermen (IDR/month)
1	Total Revenue (TR)	582,680	406,591
2	Total Cost (TC)	201,200	166,500
3	Profit (TR-TC)	381,480	240,091

The average total income earned by tangkul fishermen in Teluk Lake is IDR 381,480 per month. This figure is obtained from the average income of IDR 582,680 minus the average cost of IDR 201,200. Meanwhile, the income of tangkul fishermen in Sipin Lake reaches IDR 240,091 per month, which is obtained from the average income of IDR 406,591 after being reduced by the average cost of IDR 166,500.

DISCUSSION

Characteristics of Teluk Lake and Sipin Lake Fishermen

The age of fishermen is one of the factors that influences the amount of income earned. Fishermen who are still of productive age tend to be able to produce higher production, which in turn has an impact on optimal income. Conversely, as age increases, the ability to work and generate income can decrease. In other words, a person's age also affects performance in increasing income. According to Suroya *et al*. (2017) that age is a supporting factor in achieving success in business activities, those who are still productive will be faster in making

decisions about new innovations.

Fishermen who are of productive age but are unable to provide maximum results may be influenced by various other factors, such as expertise and experience in using fishing gear. The age of fishermen who are relatively agile and dynamic usually ranges from 18 to 55 years (Hapsari, 2014). Respondents or fishermen who fall into the productive age category are respondents who are 15-64 years old (Sukmaningrum, 2017).

The level of education discussed in this study refers to the formal education that has been undergone by fishermen. Formal education plays an important role in influencing fishermen's income; the higher the level of education, the greater the ease and innovation that can be done to increase fish catch production. In Teluk Lake, the highest level of education (high school) reaches 60% with a total of 9 people, while in Sipin Lake, the highest level of education (high school) reaches 80% with a total of 12 people. According to Konoralma *et al*. (2020) the length of a person's education in their work can be measured by the mastery of the skills they have. A person's level of education is usually seen from the last level of education they have taken. Fishing communities with low education tend to be more dependent on marine products and have limitations in diversifying sources of income. According to Suroya *et al*. (2017) education can affect the level of welfare because it can change the mindset of an individual to be more developed.

Work experience affects the operation of catches or the operation of fishing gear, this is because the more experience, the fishermen can understand the conditions and situations in the fishing process and the operation of marketing institutions runs smoothly and gets optimal results. The majority of fishermen in Teluk Lake have 11-15 years of work experience with a total of 7 people with a percentage of 46.67%, while in Sipin Lake the majority have work experience as fishermen for ≤10 years with a total of 6 people with a percentage of 40%. According to Primyastanto *et al*. (2012) that the experience of going to sea in the fisheries sector is very important for fishermen, because from this experience they develop expertise and skills in fishing, which in turn affects how they earn income. The respondents in this study had quite a long work experience, so they had accumulated a lot of knowledge and skills from the work that had been done for years.

Cost is one of the determining factors for the smoothness of a business. In fishing for tanghulu, costs consist of fixed costs and variable costs. Fixed costs associated with the use of hook fishing gear include income costs and expenditure costs. Income is also an important factor in starting a business; in the context of this study, income refers to a fishing business with tangkul fishing gear. Income is a value in the form of an amount of money received by a company or individual from the business being run.

Income of Tangkul Fishermen in Teluk Lake and Sipin Lake

Income is an important thing in a business. In this study, Tangkul fishermen sell their catch so that the sales results are in the form of income. The income value of fishermen in Teluk Lake and Sipin Lake depends on the total weight of the catch. The amount of profit also varies depending on the fishing season. The income received by a fisherman depends on the production achieved and the selling price of fish which varies from month to month. If production decreases, the income of fishermen will also decrease. Income is in the form of operational catches of fishermen who use Tangkul fishing gear and is obtained at the selling price.

The average income value of all Tangkul fishermen in Teluk Lake is IDR 582,680 which is obtained from the total amount of catch. And the average income value of Tangkul fishermen in Sipin Lake is IDR 406,591 which is obtained from the total amount of catch. The income of fishermen obtained is in accordance with the production they get and the selling price of fish which is different each month. If production decreases, the income of fishermen will also

decrease. Fishermen's income in Teluk Lake is higher than fishermen in Sipin Lake because fishermen in Teluk Lake are still active in fishing activities, with total income based on this study reaching IDR 582,680. The high income of fishermen's fishing efforts in Teluk Lake indicates that the potential for fishery resources in the area is more fertile compared to Sipin Lake, which can be seen from the condition of the area.

Meanwhile, in Sipin Lake, some areas are used as tourist areas. This is reinforced by Nitmulyo (2000), who stated that pollution in the fishing ground area will reduce carrying capacity, resulting in a decrease in the fish population. Profits from fisheries are obtained after subtracting the total cost from the income from the sale of catches or production, with the assumption that the higher the results obtained, the income and profits will also increase (Jamal, 2014). According to Wismaningrum (2013) Income is the amount of money obtained from the sale of fish production, which is influenced by the quantity of fish caught and the price set when the fish are landed. Income is calculated from the amount of fish production multiplied by the price per fish.

In the capture fisheries business, of course, there are costs or capital that must be incurred, namely fixed and variable costs. The capture fisheries business using tangkul fishing gear has costs, namely net repairs, consumption, boat repairs and repairs to bamboo poles. The total cost of Tangkul in Teluk Lake is IDR 201,200 where the cost comes from the investment cost of tangkul, boats, net repairs, purchase of bamboo, and replacement boards for the foundation. While the total cost of Tangkul in Sipin Lake is IDR 166,500 which comes from the purchase of leaking buckets, repairs to nets on fishing gear. The costs were taken during the research, and each month the expenses or costs incurred vary according to the materials or tools that have been used up. The total cost is the result of all costs incurred during the fisheries business activities, both total fixed costs and variable costs.

The income of Tangkul fishermen can be seen from the production proportion of the catch obtained. The income of the Tangkul fishing community is determined by the results of the receipts and costs incurred (fixed costs and variable costs) income is obtained from receipts minus production costs, this is in accordance with the opinion of Maduwu (2023) who stated that the difference between receipts and production costs produces income. A fisherman's income comes from the sale of catches obtained from the catch. The average total income obtained as a Tangkul fisherman in Teluk Lake is IDR 381,480 per month, which is obtained from the total average value of receipts, which is IDR 582,680 minus the total average cost, which is IDR 201,200. Meanwhile, the income obtained by Tangkul fishermen in Sipin Lake is IDR 240,091 per month, which is obtained from the total average value of receipts, which is IDR 406,591 minus the total average cost, which is IDR 166,500.

Tangkul fishermen in the transition season sometimes experience losses, where the total costs incurred are greater than the income obtained. This is because the number of fish caught in the research month is very small, in contrast to the catch during the peak season. In addition, fluctuations in fish prices each month can also affect fishermen's income. In research related to income, there are differences in income between one fisherman and another. There are several factors that cause these differences, such as differences in fisherman status, differences in catches, unpredictable weather and differences in fishing areas related to existing potential. According to Devita (2023), fishermen actually have uncertain incomes, which are sometimes high and sometimes low. Sometimes they don't go fishing, and the activities carried out include resting, repairing fishing gear such as nets, and maintaining and repairing boats if they are damaged. In addition, some fishermen also have side jobs, such as farming, becoming laborers, or construction workers.

CONCLUSION

The results of the study showed that the fish catch in Teluk Lake had an average catch of 49.54 kg in one month consisting of lambak fish, seluang fish, kapiat fish, sebarau fish and catfish, and the fish catch in Sipin Lake had an average catch of 19.1 kg in one month. Comparison of income from fish catches using tangkul fishing gear with income of, respectively IDR 509,180 in Teluk Lake and IDR 327,391 in Sipin Lake. The income of people who catch fish with tangkul with fish catches in Teluk Lake is relatively greater than in Sipin Lake which has a difference of IDR 181,789.

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