

FISHERMAN'S KNOWLEDGE AND PERCEPTION ON THE TERUBUK FISHMANAGEMENT IN LABUHANBATU DISTRICT

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ABSTRACT

Fishermen's perceptions have a strong correlation with the success of reef fish management. The aim of this research is to analyze the social characteristics of bottom fish fishermen, analyze the level of knowledge and perceptions of fishermen regarding the management of bottom fish and analyze the relationship between the level of knowledge and the perception of bottom fish fishermen regarding the existence and management of bottom fish. The method used is the purposive sampling method by determining the research location which is divided into 3 sampling points. The level of knowledge of respondents at the research location regarding the existence and management of reef fish resources consisted of low level of knowledge (4%), medium level of knowledge (80%) and high level of knowledge (16%). Respondents' perceptions at the research location regarding the existence and management of reef fish resources consisted of low perception (2%), medium perception (86.66%) and high perception (11.33%). From the Spearman correlation test, information was obtained on the Spearman correlation coefficient of 0.220 and p-value = 0.007. The p-value = 0.007 < 0.05 indicates that there is a significant influence between knowledge and fishermen's perceptions in managing reef fish. Spearman's correlation of 0.220 is in the range 0.00-0.25, which means the correlation between the two variables is a "very weak" correlation.

Keywords : correlation, overfishing, sustainable fisheries, coastal, significance

I. INTRODUCTION

Coastal and marine resources are known as very promising potential. As a common property resource and open to the public(Cole & Ostrom 2012), its utilization tends to increase throughout Indonesia to exceed its carrying capacity or sustainable potential. Fishermen compete to get as much benefit as possible, not a few use destructive methods. This is what causes overfishing conditions in various waters in Indonesia, including the most recent fisheries in Labuhan Batu waters.

For a long time, fish has been the prima donna in all parts of Indonesia, especially in the Labuhanbatu district. Labuhanbatu Regency uses terubuk fish as the nickname for the city of Terubuk Fish because Terubuk Fish is the pride of this area(Rumondang, 2018).The delicious taste and relatively high price, especially for the eggs, make the hunt for egg-laying fish continue to occur massively. As a result, the decline in the worst fish populations continues to occur from time to time until now. In addition, the decline in the terubuk fish population is due to the implementation of regulations that are not widely socialized, not accompanied by minimal assistance of facilities and infrastructure for fishermen and not in accordance with the socio-cultural community

which is more bound to local wisdom (Siregar *et al.*, 2020).

The realization of sustainable fishing conditions is strongly influenced by the social and economic status of fishermen (Bravo-Olivas *et al.*, 2015). In general, fishing communities are socially and economically vulnerable (Ramadhan *et al.*, 2017). Fishing communities are classified as relatively poor, with relatively low levels of education, making it difficult for them to find alternative jobs (Bachtiar *et al.*, 2003). The main characteristic of fishermen is their high dependence on resources. This dependence should be a strong reason to regulate the utilization and management of marine resources in an efficient and sustainable manner.

The social and economic characteristics of fishing communities influence their perceptions and behavior towards resource use (Karnad *et al.*, 2013). Fishermen's perceptions have a strong correlation with the success of fisheries management. Fishermen's perceptions of fishery resources are very important to know because fishermen's behavior in fishing activities is influenced by their assessment of the existence of fishery resources. If fishermen's perceptions are known, it will be easier to formulate appropriate policies or management strategies because there is a correlation between fishermen's perceptions and compliance with regulations (Nababan *et al.*, 2017). Knowledge plays an important role in the formation of individual perceptions. Someone who has a good knowledge, has a broad insight to interpret something.

II. RESEARCH METHODS

A. Location and Time of Research

The research was conducted from June 2023 to August 2023 in Labuhanbatu District. The research location is divided into 3 representative sampling points. Determining the location of the sampling is done by purposive sampling method. The research respondents consisted of terubuk fishermen from villages located around the sampling point (Table 1.)

Table 1. The village of origin of the research respondents

Sampling Station	Village	Sub-districts	District
1	Teluk Sentosa	Panai Hulu	Labuhanbatu
2	Tanjung Sarang Elang	Panai Hulu	Labuhanbatu
3	Sei Nahodarris	Panai Tengah	Labuhanbatu

B. Method of collecting data

To get an overview of social characteristics and to know the level of knowledge and perceptions of fishermen on the existence and management of terubuk, structured and in-depth interviews were conducted using a questionnaire. Through interviews obtained information on the characteristics of respondents such as age, experience as a fisherman and education. Respondents were the worst fishermen, totaling 50 respondents at each sampling point so that the total number of respondents from the 3 sampling points was 150 people. According to Suwarso, (2017), respondents are fishermen who use gill nets with a mesh size of 2 to 3 inches.

C. Analysis Method

Data analysis was carried out descriptively by narrating all the facts that were found at the research location, especially regarding fishermen's knowledge of the existence and management of terubuk fish. The level of fishermen's knowledge was

obtained through interviews using a questionnaire and submitting 20 positive statements about the importance of the existence and management of the terubuk fish. The level of knowledge of respondents was measured using a Likert scale. For this study, there were 4 possible answers, namely "very know, know, don't know and really don't know". The score for the Likert Scale is a score of 4 for very knowing answers, a score of 3 for knowing answers, a score of 2 for not knowing and a score of 1 for really not knowing. This level of knowledge is further categorized into low, medium and high.

Table 2. Category level of fishermen's knowledge of the existence and management of terutub fish

No.	Categories	Score
1	Low	20-40
2	Currently	41-60
3	Tall	61-80

Information on fishermen's perceptions of the existence and management of terubuk fish was obtained from interviews by submitting 20 positive statements about the importance of the existence and management efforts of terubuk in the waters of Labuhan Batu Regency, North Sumatra. Perception respondents were measured by a Likert scale. There are 4 answer choices, namely "strongly agree, agree, disagree and strongly disagree". The score for the Likert scale is a score of 4 for strongly agree answers, a score of 3 for agree answers, a score of 2 for disagree answers, and a score of 1 for strongly disagree answers. These perceptions are further categorized into low, medium and high, based on the total score obtained (Table 3).

Table 3. Categories of fishermen's perceptions of the importance and efforts to manage terubuk fish

No.	Categories	Score
1	Low	20-40
2	Currently	41-60
3	Tall	61-80

The correlation between the knowledge level of fishermen and their perceptions and behavior was tested with the Spearman Rank correlation test(Sugiyono, 2011) by using the SPSS application with the following formula:

Information :

$$p = 1 - \frac{6\sum d_i^2}{n(n^2 - 1)}$$

ρ = Spearman correlation coefficient

d_i = The difference in rank between the two observation rankings

n = Number of data pairs

Significance testcarried out to determine the significant relationship between the variables tested with the following hypothesis:

H_0 : There is no relationship between the level of knowledge and the perceptions and behavior of the fishermen

H_1 : There is a relationship between the level of knowledge and the perceptions and

behavior of the fishermen

A significant value <0.05 indicates a correlation, while a significant value >0.05 indicates no correlation. The degree of closeness of the relationship between the variables tested with the Rank Spearman test is presented in Table 4.

Table 4. The level of relationship between the variables tested

Intervals	Relationship levels
0.00-0.25	Very weak
$>0.26-0.50$	Enough
$>0.50-0.75$	Strong
$>0.75-1.00$	Very strong

The value of the correlation coefficient indicates the criteria for the direction of the relationship. The value of the correlation coefficient is between -1 to +1. If the value of the correlation coefficient is positive, then the relationship between the two variables is unidirectional. Conversely, if the value of the correlation coefficient is negative, the relationship between the two variables is not unidirectional.

III. RESULTS AND DISCUSSION

A. Characteristics of the Worst Fishermen

The characteristics of the best fishermen discussed in this study include age, experience as fishermen, ethnicity and education. The number of research respondents was 150 people, dominated by fishermen with a productive age range of 15-64 years, a total of 142 people (90%), while the number of fishermen over 64 years was 8 people (10%). Age is one of the factors that influence fishing effort, because at a productive age a person can do a job to the fullest (Mulyasari et al., 2018). The productive age ranges from 15-64 years (Winarso, 2014). The majority of respondents came from ethnic Malays (140 people), while there were 3 Javanese people and the remaining 7 Batak tribes.

A total of 16 respondents had experience as fishermen for less than 10 years, 93 respondents had experience of 10-20 years, 27 respondents had been fishermen for 21-30 years and found 14 respondents who had been fishermen for more than 30 years (Figure 1.).

The majority of respondents had never attended school 14 people (9.33%), had education only up to elementary school level 92 people (61.33%), respondents studied up to junior high school level 17 people (11.33%), attended school up to high school level 23 people (15.33%), and only 4 people (2.66%) of the respondents earned a bachelor's degree (Figure 2.).

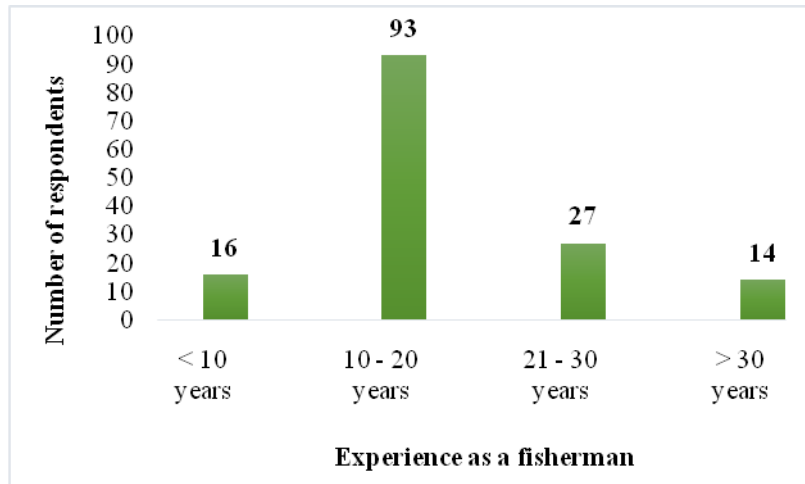


Figure 1. Respondent's experience as a fisherman

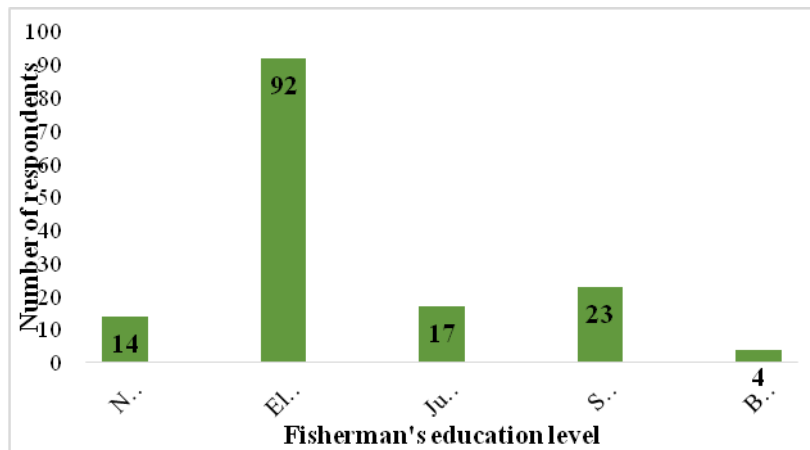


Figure 2. Respondents' Education Level

B. The Level of Knowledge and Perceptions of the Terubuk Fishermen on the Presence and Management of the Terubuk Fishermen

Perception is the process of giving meaning, stimuli and sensations received by individuals. Individual perceptions are heavily influenced by internal and external factors (Arifin *et al.*, 2017). Internal factors that affect one's perception include interest, motivation and individual characteristics. While external factors that influence perception include information obtained and knowledge (Toha, 2003).

A total of 32 respondents at station 1 had a moderate level of knowledge, 7 people had a high level of knowledge and no respondents had a low level of knowledge. The number of respondents with a moderate level of knowledge at station 2 was 41 people, 4 people had a high level of knowledge and 6 respondents with a low level of knowledge. At station 3, namely in Sei Nahodaris Village, no respondents had a low level of knowledge, 47 people had a moderate level of knowledge and 13 people had a high level of knowledge (Figure 3.).

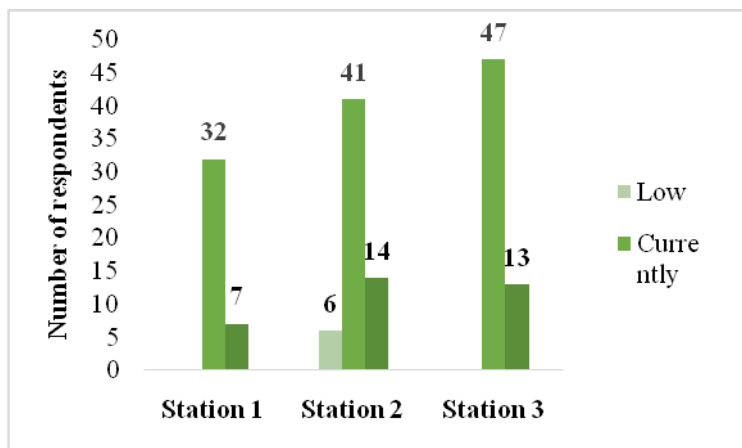


Figure 3. Knowledge level of the worst fishermen

Overall, the level of knowledge of the respondents at the research location regarding the existence and management of terubuk fish resources consisted of low knowledge level (4%), medium knowledge level (80%) and high knowledge level (16%).

All respondents (45 people) at stations 1 and 2 have moderate perceptions. At station 2, 3 respondents had low perceptions. At station 3, 40 respondents had moderate perceptions and 17 respondents had high perceptions (Figure 4). Overall, the perceptions of respondents in the research locations regarding the existence and management of fish resources were the lowest (2%), moderate (86.66%) and high (11.33%).

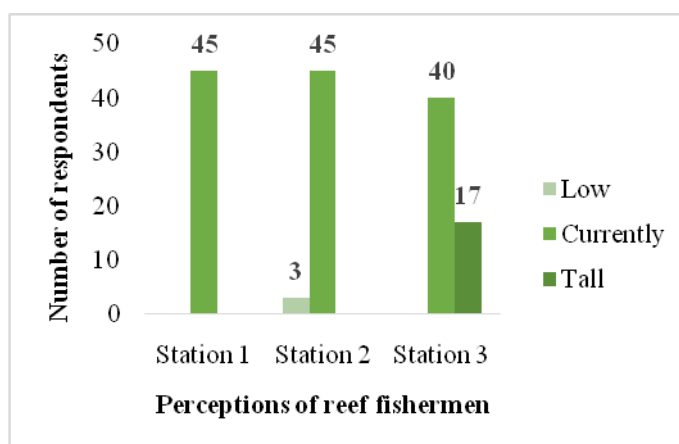


Figure 4. Distribution of the perceptions of the worst fishermen

C. Relationship between Knowledge Level and Fishermen's' Perceptions

From the Spearman's correlation test which was conducted to determine the relationship between knowledge level and fishermen's perceptions of the existence and management of terubuk, information was obtained that the Spearman correlation coefficient was 0.220 and p-value = 0.007. The p-value = 0.007 < 0.05 indicates that there is a significant effect between knowledge on fishermen's perceptions in managing terubuk fish. Spearman's correlation of 0.220 is in the range of 0.00-0.25, which means that the correlation between the two variables is a "very weak" correlation (Table 5).

Table 5. The coefficient value of the relationship between the level of knowledge and perception

correlations			Knowledge	Perception
Spearman's rho	Knowledge	Correlation	1,000	.220**
		Coefficient		
		Sig. (2-tailed)		007
	Perception	N	150	150
		Correlation	.220**	1,000
		Coefficient		
	Sig. (2-tailed)	007		
	N	150	150	

** . Correlation is significant at the 0.01 level (2-tailed).

From the research that was conducted, it is known that there is a significant influence between the level of knowledge on fishermen's perceptions, but the relationship is very weak. This happens because basically the knowledge and perceptions of fishing communities regarding the existence and management of terubuk are quite good. Fishermen understand the importance of the existence of coral reef fish in the Barumon River, Labuhanbatu Regency, and have no objection to the coral reef management and conservation program. However, there are external aspects outside the fisherman's self which are difficult to control, namely the pressure of the necessities of life. The limited skills of fishermen make it difficult for them to find other sources of income. This is in line with the statement (Siregar *et al.*, 2022), that terubuk fishermen continued to catch terubuk fish during the month of the ban because they had no other means of livelihood other than catching terubuk fish. They also wish to be provided with assistance and training regarding alternative livelihoods so that they can reduce fishing activities in Sei Barumon, Panai Hulu District so that the sustainability of terubuk fish is maintained.

IV. CONCLUSION

The level of knowledge of respondents at the research location regarding the existence and management of reef fish resources consisted of low level of knowledge (4%), medium level of knowledge (80%) and high level of knowledge (16%). Respondents' perceptions at the research location regarding the existence and management of reef fish resources consisted of low perception (2%), medium perception (86.66%) and high perception (11.33%). From the Spearman correlation test, information was obtained on the Spearman correlation coefficient of 0.220 and p-value = 0.007. The p-value = 0.007 < 0.05 indicates that there is a significant influence between knowledge and fishermen's perceptions in managing reef fish. Spearman's correlation of 0.220 is in the range 0.00-0.25, which means the correlation between the two variables is a "very weak" correlation. Basically, the level of knowledge and perception of fishermen in the Barumon River, Labuhanbatu Regency is in the quite good category, but there are other things that make their behavior bad in fishing activities (ignoring the no-catch rule), due to the pressure of life's needs.

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