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Analysis of the effect of differences in folded trap forms and types of bait on catch results of stone crab (*Thalamita sima)* in folded traps in Tambak Lorok, Semarang

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Abstract
Folding traps are fishing gear that is classified as Traps. This fishing gear uses iron as the frame so that it does not have a ballast. The nets used in This fishing gear are PE (Polyethylene). The target fish of this fishing gear is the Stone Crab. The purpose of this study was to determine the effect of differences in the use of fresh fish bait with shrimp head bait on the tool. catch folded traps against rock crab catches in Tambak Lorok waters, Semarang. The main catch of this folding trap is Stone Crab (*Thalamita sima*), and the bycatch is Brown Crab (*Charybdis lucifera*), Tiger Grouper (*Epinephelus sp*.), And Mangrove Crab (*Scylla sp*). The result of the significance of the bubu form is 0.512, which means it is greater than the significance value. This shows that H0 is accepted, so there is no significant effect of the different treatment of folding traps. The significance value of the interaction between bait and folding traps is 0.969. This value is greater than the value of the significance level, which means that there is no significant interaction between bait and time. Based on the tests that have been carried out on the catch of folded traps using Two Way Anova, the results show that the folded traps given shredded fish have good results. More and significant compared to shrimp head bait, which shows that there is a significant effect between feeding between fold traps. Meanwhile, there is no significant effect between the use of dome folding traps and box folding traps.

Keywords: folded traps, shrimp heads, fresh fish, stone crab, Tambak Lorok, Semarang

Introduction
Traps is one type of fishing gear used to catch crabs. Traps that is commonly used to catch crabs in the Tambak lorok area is Folding Trap. This fishing gear uses iron as the frame so that it does not have a ballast. The nets used in this fishing gear are PE (Polyethylene). The target fish of this fishing gear is the Stone Crab. The selling value of Stone Crab is high compared to other fish or seafood. In Semarang stone crab is one of the leading commodities, so the selling price of stone crab is high. A folding trap is a fishing device that is fixed (passively) in the water for a certain period of time which makes it easier for fish to enter and make it difficult for them to get out. The folded traps catch stone crabs that are still fresh, alive, and have intact body parts, so they have a high selling value. In the operation of the folding trap, bait is needed. The bait to be used in the research on the operation of folding traps is shrimp and trash fish. Semarang fishermen usually use trash fish bait, and what is being tested is the catch (stone crab) using trash fish bait and shrimp heads. The reason for using shrimp heads is because shrimp heads are included in the bait criteria, namely cheap, easy to find, strong odor, besides that shrimp heads are also waste so there is no need for more money to get shrimp heads. Stone crabs are classified as scavengers or skavers and eaters basic animals. It is hoped that the aroma of shrimp head and trash fish will be able to attract stone crabs to come to the fishing gear. According to Baskoro and Efendi (2005) in Fitri (2011) [1], in general, nocturnal fish species have bait with a strong odor, this indicates that noctornal fish species have a sense of the dominant organs used in their activities are olfactory organs and sight organs.
The research objectives were to determine the condition of the fisheries in Tambak Lorok waters, Semarang; know the difference in the construction of a box-folded traps and a dome-folding traps; and knowing the difference between the catch of stone crab (Thalamita S.) based on the effectiveness, number, weight and size of stone crab (Thalamita S.) using box-fold and dome-folding traps, as well as differences in the bait used, namely trash fish bait and shrimp heads.

Material and Methods
The method used in this research is experimental fishing method. The experimental method is an effort to collect data in a way that allows to obtain clear conclusions, especially about the truth of a hypothesis which includes causality by controlling one or more variables that affect unwanted objects. the size of the PE rope is bigger than that of the folding lathe. 40 bubu nyang will be spread, consisting of 20 box folding traps and 20 dome folding traps, then there will be alternating baiting, starting with trash fish and then followed by shrimp head bait. The pattern of installing the folding trays is carried out alternately. The following is a picture of the folding traps lane installation:

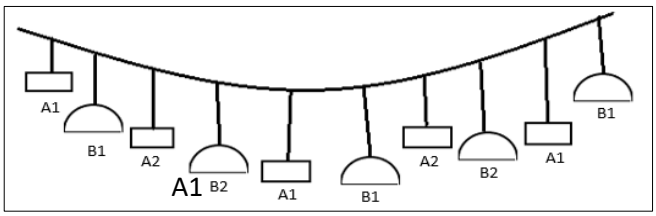

Fig 1

Explanation
A1: Fold the box with trash fish bait
B1: Fold the dome with trash fish bait
A2: Box fold with shrimp head bait
B2: Fold dome traps with shrimp head bait

The operating methods for all types of traps are generally almost the same, namely in addition to the fishing area where a lot of fish are estimated (bottom fish, crab, shrimp, conch, protected, squid, octopus or other aquatic habitats that can be caught with traps) will be used as a catch target. There are bubu installations that are installed one by one (single system installation), some are installed in a chain (line system installation). The time of setting and hauling is done in the morning, at noon, in the evening before sunset. The time for soaking the traps in the waters is that it is only soaked for a few hours, some are soaked one night, some are soaked for up to 3 days and 3 nights and some are even soaked for up to 7 days 7 nights. (Perdana, *et al*., 2016) [3]

Baiting

The bait used is the head of shrimp and trash fish. The bait is attached to the bait hook in the middle of the folding trap. The bait installation is attached to the hook in the middle of the folding trap.

Settings

Bubu installation begins with installing the bait according to the treatment. Bait installation is done by hooking the bait on the hook in the trap.

Immersing

This research carried out the immersion of the folding traps, each carried out for approximately 12 hours, the fishermen used to place the folding traps during the day and then they were taken at night, and put them at night and then they were taken in the morning.

Hauling

The withdrawal of the bubu begins with the withdrawal of the marker buoy, then the pulling of the buoy rope and the lifting of the body of the bubu and the stone weight.

Result

General Condition of Tambak Lorok Village

Tambak Lorok Village is located in the area of Tanjungmas Village, North Semarang District. Tambak Lorok is one of the coastal villages in Semarang City which is located on the banks of the East Canal Flood River and Banger River which has a total area of 46.8 hectares with an average height of o, 5 meters above sea level. Tambak Lorok has land subsidence of 9-10 cm per year.

Tambak Lorok Area Boundaries:
North side: Java Sea
South side: North Arteri Road
West side: PLTUG
East side: Kali Banger

Land use is divided into settlements of 32.4 ha, port area of 3.2 ha, use of ponds / ponds 11.2 ha and Tambak Lorok has land subsidence of 9-10 cm per year. Most of the people in Tambak Lorok work as fishermen, so that the people in this area depend on marine products for their livelihoods and this area is also known as fishermen's settlement. The existence of fishing settlements is closely related to fishing sources, catch distribution areas and coastal areas, where this beach must be easily accessible to the public with a good transportation system and road network, enriched with a variety of fascinating economic, social and cultural activities without having to damage environment. The increasing population growth causes settlement problems in Tambak Lorok Village, including density and slum

Fishing Ground

Fishing area is a water area where the target fish is caught and can be used to operate fishing gear. An area is said to be a fishing area, if there is an interaction between fish resources and the technology used to catch fish. The results of the operation of the folding trap fishing gear based on GPS are presented in table 1:

Table 1: Titik Koordinat Pengoperasian Bubu Lipat

Trip	Time	Coordinate			
		Fishing base		Fishing ground	
		S	E	S	E
Trip 1	Morning	6° 56’46,202”	110° 26’ 03,152’’	6° 56’ 26,204”	110° 24’ 46,880’’
Trip 2	Night	6° 56’46,202”	110° 26’ 03,150’’	6° 56’ 24,252’’	110° 24’ 53,924’’
Trip 3	Morning	6° 56’46,202”	110° 26’ 03,150’’	6° 56’ 25,560’’	110° 24’ 47,379’’
Trip 4	Night	6° 56’46,202”	110° 26’ 03,150’’	6° 56’ 23,237’’	110° 24’ 52,081’’
Trip 5	Morning	6° 56’46,202”	110° 26’ 03,150’’	6° 56’ 30,967’’	110° 24’ 48,945’’
Trip 6	Night	6° 56’46,202”	110° 26’ 03,150’’	6° 56’ 25,665’’	110° 24’ 48,945’’

Resource: Research, 2021.

Based on research in Tambak Lorok, Semarang, Central Java, the average distance between a fishing base and a fishing ground takes about half an hour's drive. The location of the fishing ground is on the edge of the sea, because the fishing target of the trap must be in a rocky area and only about 2- 4 meters deep. In determining the fishing area, each folding trap fisherman determines it with experience. Fishermen who want to get a lot of catches are very far from fishing on a fishing base. The distance between fishing areas also influences the fishermen's catch. Fishermen tend to go to sea close to the fishing base, because it does not take a long time to go to sea and there is a small risk of harm because at any time they can quickly return home when fishing.

Total Catches

The total catches of the folded traps used during the study were Stone Crab (*Thalamita sima*), Brown Crab (*Charybdis lucifera*), Tiger Grouper (*Epinephelus* sp.), And Mangrove Crab (*Scylla* sp). The main catch of this folding trap is Stone Crab (*Thalamita sima*), and the bycatch is Brown Crab (*Charybdis lucifera*), Tiger Grouper (*Epinephelus* sp.), And Mangrove Crab (Scylla sp).

Caught Stone Crab (*Thalamita sima*) is then sold to collectors. Stone crab is usually only taken part of the claws at a price of Rp. 30,000.00. Bycatch products such as Brown Crab (*Charybdis lucifera*), Tiger Grouper (*Epinephelus* sp.), And Mangrove Crab (*Scylla* sp) are usually sold to collectors if they get a lot of yields, but if the yield is small it is usually

used for side dishes. The following is the total catch of the folding traps during the study in table 2:

Table 2: Total Catch

	Catch	Amount	Weight
Target Catch	Stone Crab (*Thalamita sima*)	263	20,005
	Subtotal	263	20,005
By-Catch	*Brown Crab (Charybdis lucifera)*	129	12,224
	Tiger Grouper (*Epinephelus sp.)*	10	3,197
	Mangrove Crabs *(Scylla sp)*	1	194
	Subtotal	140	15,615
	Total	403	35,620

Resource: Research, 2021.

Based on the table. It can be seen that the total catch is 403 fish and the total weight is 35,620 grams. The main catch is Stone Crab (*Thalamita sima*) as many as 263 individuals weighing 20.005 grams. The most by-products were found in Brown Crab (*Charybdis lucifera*) as many as 129 individuals with a weight of 12.224 grams. The smallest catch is mangrove crab (*Scylla* sp), which is only 1 head with a weight of 194 grams.

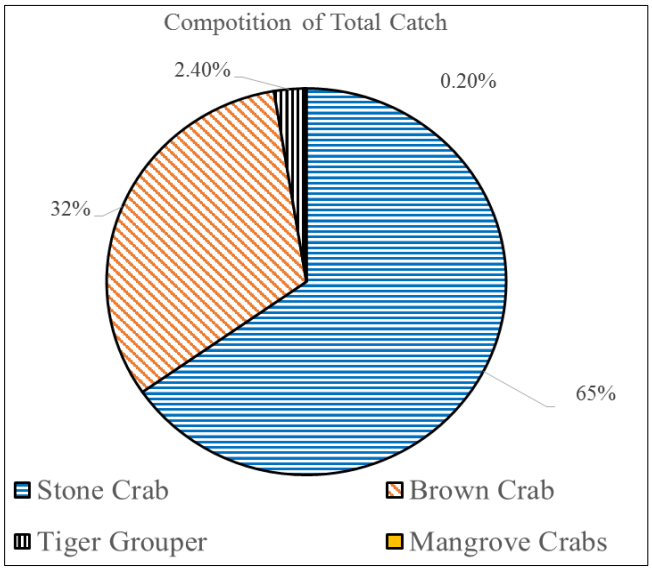

Fig 2

Based on Figure 2, it can be seen that the composition of the highest catch is Stone Crab (*Thalamita sima*) with a percentage of 65% and the second position is Brown Crab (*Charybdis lucifera*) with a percentage of 32%. Overall, the traps were dominated by target catches, namely Batu Crab (*Thalamita sima*) totaling 263 and bycatch, namely Brown Crab (*Charybdis lucifera*), Tiger Grouper (*Epinephelus* sp.), And Mangrove Crab (*Scylla* sp) with a total of 140 individuals. The main catch (Target Catch) is the component of the fish stock that is mainly sought from the fishing operation. The main catch is the main target target of the fishing gear used. By-catch is non-target fish caught in fishing operations. The capture of this non-target fish species can be caused by overlapping habitats between target and non-target fish and the lack of selectivity of the fishing gear used. According to Wang *et al*. (2010) [5], a high proportion of the main catch (target catch) compared to bycatch, can prove that the fishing gear used during the study is environmentally friendly. One of the assessments of the environmental level of a fishing gear can be done by comparing the proportion of the catch target and the bycatch. If the target catch proportion is> 60%, then the fishing gear can be said to be environmentally friendly.

Catch Result Analysis

There is a considerable difference in weight and number of catches between the use of shrimp head bait and trash fish. Based on this number, it shows that dome folding traps with trash fish get more stone crab (Thalamita S.) than shrimp head bait. This is probably because the smell of trash fish is fresher and more pungent so Stone Crab (Thalamita S.) is more attracted to trash fish bait. This is probably because the smell of fresh fish is more pungent so Stone Crab (Thalamita S.) is more attracted to fresh fish bait. Most carnivorous animals in the sea are more attracted by the pungent odor produced by trash fish so they prefer to enter traps containing fresh trash fish over traps containing shrimp heads. turned out to be expensive. According to Baskoro and Effendy (2005) in Widowati (2015) [6], the characteristics of a good bait are long lasting, have a specific smell, are affordable and are favored by the fish that are the destination of the catch. It should be noted, however, that in both bait and non-bait trap fisheries, different factors arouse the attention and curiosity of the fish in the traps. Bait (bait) is a form of stimulation (stimulus) that is physical or chemical that can respond to certain fish in the purpose of catching fish. According to King (1991) in Widowati (2015) [6], explaining that bait on traps and traps is used to catch crustaceans such as crabs and shrimp, as well as snapper. The principle is, the fish are attracted by the bait, then enter the traps through the mouth of the traps and find it difficult to escape.

Apart from the bait factor and the shape of the dome-folding trap, the catch obtained at the start of fishing tends to be small and not maximal. This is because at sea, the weather is not supportive and it is in the transitional season, so the waves are big and cause little catch compared to the next trip. This is confirmed by Neilirrohmah, *et al*. (2019) [2], stating that it was likely due to bad weather that occurred after the first week of operation, thus affecting the catch in the following week of operation. This is confirmed by Tiyoso (1979) in Pradenta *et al*. (2014) [4], which states that fluctuations in the catch from fishing gear types of traps occur due to daily, seasonal, and annual migration and changes in fish groups, variations in fish size in the population, and the appropriateness of determining where to install traps, because this type of fishing gear is passive.

This study uses the Two Way Anova test, because there are 2 factors being tested. Before carrying out the Two Way Anova test, the normality and homogeneity test must first be carried out. These two tests are a requirement for carrying out the Two Way Anova test. The normality test used is the Kolmogorov - Smirnov test. Based on the normality test that has been carried out, based on the normality test that has been carried out, the results presented in table 3 are as follows:

Table 3

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		24
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	4.84936123
Most Extreme Differences	Absolute	.182
	Positive	.182
	Negative	-.097
Test Statistic		.182
Asymp. Sig. (2-tailed)		.39[c]
a. Test distribution is Normal.		
b. Calculated from data.		

Resource: Research, 2021.

Based on the table above, it is known that the sig value in this study is 0.39. The basis for decision making in the Kolmogorov - Smirnov normality test is if the sig value> 0.05 then the data is normally distributed, while the sig value <0.05 indicates the data is not normally distributed. The calculation above shows that the sig value is 0.39> 0.05, so it means that the data is normally distributed. The first requirement in carrying out the Two Way Anova test has been fulfilled, namely the data is normally distributed. The next step is to test the homogeneity of the data. This homogeneity test is carried out to determine the uniformity of a data.

The results of the homogeneity test are presented in table 4 as follows

Table 4

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: hasil			
F	df1	df2	Sig.
5.026	3	20	.09
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + umpan + bentuk + umpan * bentuk			

Resource: Research, 2021.

Based on the table above, it is known that the sig value obtained is 0.09. The principle of decision making from this homogeneity test is that if the sig value> 0.05 then the data is homogeneous. The sig value obtained is 0.09, indicating that it is greater than 0.05. This shows that the data is homogeneous and can be continued for the Two Way Anova test. The results of the Two Way Anova test are presented in table 5 as follows:

Based on the table above, it is known that the sig corrected model value is 0.061. This value shows that the sig corrected model> 0.05, which means that there is no significant effect. The results of the significance of the feed obtained a value of 0.010. This value is smaller than the significance level value, so that H0 is rejected, which means that there is a significant effect of the bait treatment. The significance result of the bubu form is 0.512, which means it is greater than the significance value. This shows that H0 is accepted, so there is no significant effect of the different treatment of folding traps. The significance value of the results of the interaction between the bait and the difference in shape is 0.969. This value is greater than the significance level value, which means that there is no significant interaction between the bait and the difference in form.

Based on the tests that have been carried out on the catches of folded traps using Two Way Anova, the results show that folded traps given trash fish have more and significant results compared to shrimp head bait, which shows that there is a significant influence between the feeding of the bait. between the folding traps. Meanwhile, there is no significant effect between the use of dome folding traps and box folding traps.

Conclusion

The conclusions of the research regarding the analysis of the effect of different types of bait and shape of traps on the catch of folded traps in Tambak Lorok waters, Semarang are as follows:

1. Different types of bait (shrimp head and trash fish) have an effect on the catch of rock crab, the type of trash fish bait gets a higher catch, which is 88 heads, far more than the type of shrimp head bait which is only 53 pieces of rock crab. The significance value between the head of shrimp and trash fish was obtained a value of 0.010. This value is smaller than the significance level value, which means that there is a significant influence between shrimp head bait and trash fish bait.
2. The difference in shape of the dome-folded traps (dome-folded traps and box-folded traps) has no effect on the catch of rock crabs, but jam-box folding traps provide more catch than dome-folding traps, namely 132 stone crabs. The significance value of the interaction between the bait and the traps is 0.512. This value is greater than the value of the significance level, which means that there is no significant effect between the dome folding and the box folding traps.
3. There is an interaction between the factors of the type of bait used and the shape of the folding traps in the traps to the catch of rock crabs. The significance value of the interaction between the bait and the traps is 0.969. This value is greater than the significance level value, which means that there is no significant interaction between the bait and the traps.

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