

Effectiveness of Different Baits and Fishing times for *Pentapodus Trivittatus* in Faan Waters, Maluku Tenggara, Maluku, Indonesia

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Abstract: This study used *Dendronereis pinnaticirris* worms and *Engraulis* sp. Fish to catch *Pentapodus trivittatus* in the waters of Faan, Maluku Tenggara, Maluku, Indonesia. The aim was to determine which bait type caught the most *Pentapodus trivittatus* and to determine the most effective time to catch *Pentapodus trivittatus*.

The method used is a complete randomized design ANOVA (CRD) statistical analysis to see the ratio of bait to the number of *Pentapodus trivittatus* fish caught and a comparative descriptive analysis to see the catch based on the time of fishing. This study, which lasted for 20 days, obtained a total number of *Pentapodus trivittatus* fish caught of 448 fish. The results of the complete randomized design ANOVA statistical test at $\alpha = 0.05$ are $F_{hit} = 76.29 > F_{tab} = 4.01$. These results indicate that H_0 is rejected and H_1 is accepted.

The conclusion is that the number of *Pentapodus trivittatus* caught by *Dendronereis pinnaticirris* worm bait and *Engraulis* sp. bait is not the same or significantly different.

The *Dendronereis pinnaticirris* worm bait caught 305 *Pentapodus trivittatus* (68%), while the *Engraulis* sp. bait only caught 143 (32%).

The fishing time for *Pentapodus trivittatus* fish in the first period from 07.00 to 10.00 WIT produced 325 fish (72%), while in the second period from 15.00 to 18.00 WIT only 123 fish or 28% were obtained.

Keywords: *Dendronereis pinnaticirris*, *Engraulis* sp, Faan, Maluku Tenggara, Maluku.

1. INTRODUCTION

The waters of Faan, Maluku Tenggara, Maluku, Indonesia have significant fisheries potential both on the coast and at sea. Reef and demersal fish species consistently choose these waters as their habitat (Rahaningmas & Renjaan 2018). *Pentapodus trivittatus* (family Nemipteridae) is a demersal fish that lives in coastal ecosystems near coral reefs and seagrass beds. This is consistent with research by Amin et al. (2016), which found that the abundance of *Pentapodus trivittatus* was highly visible in the seagrass zone. Phinrub et al. (2014) explained that *Pentapodus trivittatus* fish were regularly found in seagrass beds at water depths between 5-30 m.

Pentapodus trivittatus fish are distributed almost throughout Indonesian waters. One example is the waters of Faer Island, Tual, Maluku, which has sandy and rocky waters and a seagrass ecosystem that serves as a habitat for several demersal fish, including *Pentapodus trivittatus* (Kusnadi 2008). The distinctive body of *Pentapodus trivittatus* fish is dark gray or olive brown on the upper side and silvery white on the underside. The flesh is reddish white and contains high nutritional value, making *Pentapodus trivittatus* fish have economic value (Pamuji et al. 2018). This study used a handline to catch *Pentapodus trivittatus* fish. The main advantage of handline fishing is the consistently good quality of the catch. Another advantage is that the handline construction is very simple and the materials are inexpensive, and it can be operated at various water depths (Rahaningmas et al. 2014).

The success of catching *Pentapodus trivittatus* using a handline is largely determined by the bait. Siswoko et al. (2013) explained that fishing will be more effective if the bait used attracts or stimulates

The method of operating a handline fishing rod consists of: Preparation of one boat, two anglers and logistics; Departure to the fishing area; Anchor is set and fishing equipment is prepared; The fishing process starts at 07:00 WIT until 10:00 WIT; The catch is separated based on the type of bait; Fishing continues at 14:00 WIT until 17:00 WIT; The caught fish are stored for further processing; and Fishing activities are continued the next day.

2.2. Research Methods

This research employed an experimental method, conducting direct field trials. The *Pentapodus trivittatus* fishing operation used a handline, each baited with *Engraulis* sp. and *Dendroneis pinnaticirris* worms.

The *Pentapodus trivittatus* fishing activity was divided into two periods: morning from 7:00 to 10:00 a.m. WIT and afternoon from 3:00 to 6:00 p.m. WIT. The distance between the fishing area and the shore was approximately 1 mile, and the water depth was approximately 30 m. Two anglers in the same boat operated the handline, each baiting *Engraulis* sp. and *Dendroneis pinnaticirris* worms.

2.3. Data Analysis

Descriptive analysis was used to examine differences in fishing duration, and a completely randomized design (CRD) ANOVA statistical analysis was used to examine the effect of bait type on catch quantity.

$Y_{ijk} = \mu + \tau_i + \delta_{ij} + \epsilon_{ijk}$; $i = 1,2,3, \dots$ etc.; and $j = 1,2,3 \dots$ etc.

Y_{ijk} is the observation of treatment -i, repetition -j, and subsample -k; μ is the population mean; τ_i : treatment i; δ_{ij} : effect of repetition -j, treatment -i; and ϵ_{ijk} : subsample error. The assumptions required for this analysis are: 1) additive, homogeneous, independent, and normal; 2) τ_i is permanent; and 3) $\epsilon_{ijk} \sim N(0, \delta^2)$. The hypotheses tested are:

Yes: $\tau_1 = \tau_2 = \tau_3 = \dots = \tau_5 = 0$; and $H_0: \tau_1 = \tau_2 = \tau_3 = \dots = \tau_5 \neq 0$

The conclusion is:

If $F_{hit} < F_{tab}$, then H_0 is accepted and H_1 is rejected. And if $F_{hit} > F_{tab}$, then H_0 is rejected and H_1 is accepted.

3. RESULTS

3.1. Morphology of the *Pentapodus Trivittatus* Fish

The *Pentapodus trivittatus* fish has a head position closer to the eyes and there are several scales under the eyes. The upper body color is gray with a narrow pale saddle pattern on the back, there are pale lines that follow the lateral line, the middle lateral line is white often wide and forms a white pattern, a wide gray line on the snout, a pair of blue lines behind the eyes and gray from the lower rear corner of the eyes to the bottom of the operculum. The morphology of the *Pentapodus trivittatus* fish can be seen in Figure 3.



Figure 3. *Pentapodus trivittatus* fish

During the study, *Pentapodus trivittatus* consistently responded to the worm bait *Dendroneis pinnaticirris* and *Engraulis* sp. This is consistent with the research findings of Syukur et al. (2017), which explain that *Pentapodus trivittatus* are classified as worm- and small-fish-eating fish. Furthermore, the study by Pamuji et al. (2018) also states that *Pentapodus trivittatus* are invertebrate-eating fish, including *Dendroneis pinnaticirris* and *Engraulis* sp.

3.2. *Pentapodus Trivittatus* Fish Catch Results Based on Bait Type and Fishing Time

The total number of *Pentapodus trivittatus* fish caught during the study was 448. In detail, the *Pentapodus trivittatus* fish caught using *Dendroneis pinnaticirris* worm bait were 305 fish or 68%, while *Engraulis* sp fish bait only caught 143 fish (32%).

The results of the ANOVA statistical test of a completely randomized design at a 95% confidence level ($\alpha = 0.05$) are $F_{hit} = 76.29 > F_{tab} = 4.01$. These results indicate that H_0 is rejected and H_1 is accepted. So the conclusion is that there is a significant difference in the number of *Pentapodus trivittatus* fish catches using *Dendroneis pinnaticirris* worm bait and *Engraulis* sp. fish bait.

The total number of *Pentapodus trivittatus* fish was 448 fish caught in two different time periods, namely the first period at 07.00 - 10.00 WIT got 325 fish or 72%, and the second period from 15.00 to 18.00 WIT only got 123 fish or 28%.

4. DISCUSSION

4.1. Catch Results Based on Bait Type

The *Pentapodus trivittatus* fish caught using *Dendroneis pinnaticirris* worm bait were 305 fish or 68%, while *Engraulis* sp fish bait only caught 143 fish (32%).

The data above shows that *Pentapodus trivittatus* fish consumed more *Dendroneis pinnaticirris* worm bait. This is because *Pentapodus trivittatus* fish and *Dendroneis pinnaticirris* worm bait forage in the same habitat.

According to Hermawan et al. (2015), the worm *Dendroneis pinnaticirris* can survive on soft sand substrates. Phinrub et al. (2015) state that the fish *Pentapodus trivittatus* is often found in sandy areas. Furthermore, Syukur (2016) explains that most seagrass watersheds have sandy substrates.

Furthermore, *Pentapodus trivittatus* fish prefer to eat *Dendroneis pinnaticirris* worm bait because of its unique characteristics, which have been recognized by *Pentapodus trivittatus* fish as their predators. According to Onthoni (2017), explains that the sharp and long-lasting smell of bait in the water can stimulate fish to approach and eat it because generally coral and demersal fish rely more on the sense of smell to find food.

4.2. Catch Results Based on Fishing Time

The number of *Pentapodus trivittatus* fish caught during the research was 448. These results were obtained from two different time periods, namely the first period at 07.00 - 10.00 WIT obtained 325 heads or 72%, and the second period from 15.00 to 18.00 WIT only obtained 123 heads or 28%.

The data above shows that *Pentapodus trivittatus* fish were caught more frequently in the first period than in the second. This is because *Pentapodus trivittatus* are diurnal (active during the day) fish that rest at night and only emerge from their hiding places to forage in the morning.

According to Latuconsina et al (2014), the Nemipteridae family always rests and hides among coral at night and because of its diurnal nature, this family is always active during the day.

Furthermore, relatively calm waters make it easier for fish to detect the presence of bait, allowing for smooth and efficient feeding. Furthermore, fish caught are those passing through the fishing area or coincident with feeding times. The second period of *Pentapodus trivittatus* fishing yielded only 123 fish (28%). The catch during the second period was lower than the first. This was because the clear water conditions allowed the fish to begin searching for other food sources. According to Pamuji et al (2018), fish will change their food according to their needs, abilities and the availability of food in the waters.

Furthermore, the fish caught were those passing through the fishing area on their way to their hiding place or those returning to their hiding place. Latuconsina et al (2014) explained that the abundance of

Nemipteridae fish varies throughout the day, with the highest migration activity occurring in the morning to forage and in the afternoon to return to their hiding place.

5. CONCLUSION

The conclusions obtained from the results of catching *Pentapodus trivittatus* fish for 20 days are:

- The total number of *Pentapodus trivittatus* fish caught during the study was 448. Of those caught using *Dendroneireis pinnaticirris* worm bait, 305 (68%) were caught, while only 143 (32%) were caught using *Engraulis* sp.
- The total number of *Pentapodus trivittatus* fish was 448 fish caught in two different time periods, namely the first period at 07.00 - 10.00 WIT, 325 fish or 72% were caught, and the second period from 15.00 to 18.00 WIT only caught 123 fish or 28%.

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