DIFFERENCES OF HAULING TIME AND DISTANCE PLACEMENT OF LIFTNET IN PALABUHANRATU SUKABUMI, WEST JAVA, INDONESIA

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ABSTRACT

The water of Palabuhanratu known as the main base of catch fisheries in the South coast of West Java, Indonesia. Fishing tools in water of Palabuhanratu has a diversity of species and in general is still traditional and one of them is lift net. This research aims to determine the optimal hauling time and the distance placement of lift net to the weight and type of the catch. The method used experimental fishing with Completely Randomized Design (CRD) with three times hauling treatments, there are time hauling before midnight (H1) at 20.00-23.00 WIB, at midnight (H2) at 23.00-02.00 WIB and after midnight (H3) at 02.00-05.00 WIB real to the weight of the catch and the optimal hauling time is at midnight (H2) at 23.00-02.00 WIB and three repetitions. Conducted in August 2017 during a dark moon phase of six days. The data were collected using 2 units of lift net that were operated differently from the beach, there are near lift net 0.62 miles and far lift net 1.86 miles from the beach. Based on the result of the research, it can be concluded that the differences of hauling time of lift nets have significant effect on the weight of the catch and the optimal hauling time is at midnight (H2) at 23.00-02.00 WIB get the weight of the catch are 44.4 kg on far lift net and the weight of the catch are 40.3 kg on near lift net, but based on the F test analysis the differences of lift nets distance have not effect on the catch.

Keywords: Life Net, Hauling, Distance, Catch, Palabuhanratu

Introductions

The waters of Palabuhanratu are known as the main base of capture fisheries in the South coast of West Java, Indonesia. The existence of Palabuhanratu located directly opposite the Indian Ocean is very strategic for the development of fisheries and marine in Indonesia.

Fishing units operated in Palabuhanratu waters have a variety of species. The diversity of fishing gear is tailored to the type of fish that is the target of fishing, fishing grounds and fishing technology. The fishing gear that is found in Palabuhanratu in general is still traditional among others is the lift net. Lift net is a series or rectangular bamboo structure using a float and ballast to the bottom of the water so that it can float and settle on the waters, where in the middle of the building is installed nets. In the operations of lift net uses light as an instructor which aims to collect fish with positive phototactic image in the light area so as to facilitate the fisherman in making the fishing effort (Hasan et al. 2008).

The main catch of the lift net in Palabuhanratu is a small pelagic species such as selar, short mackerel, sardine (Ta'alidin 2004). The main foods are small pelagic fish such as plankton, so its abundance is highly dependent on environmental factors. This causes these resources to be different in abundance in each territorial waters. The availability of fish in a region will change as the environment changes, causing the fish to choose a place that suits its condition and the changes can occur in a short or long time. In general, fishing areas are not fixed, always changing with the movement of fish that adjust to changes in environmental conditions. The decline in the rate of capture production can be caused by many factors such as fishing and water conditions (Warda et al. 2011).

Fishermen need to understand the extent of optimizing the use of light in the moon phase of fish behavior as well as to understand the placement of the lift net position against water conditions such as depth, brightness or water temperature. So that will be able to maximize the production of the catch either the number of catches or the diversity of the catch type. Based on the description, this study aims to determine the optimal hauling time and the distance of the lift net to the weight of the catch.

Method

The research was conducted in August 2017 during the dark moon phase at Palabuhanratu Sukabumi, West Java Indonesia. The method used in this research is survey method, data retrieval technique by experimental fishing method and Randomized Block Design (RBD) using 2 units of floating chart which is operated different distance from the beach that is near 0.62 mil chart and distant chart 1.86 mil. The tools used in this research are 6 GT motor boats, 2 floating bagang units, diesel power plants, scales, timers, cameras, GPS, thermometers, secchi disks, refractometers and calculators.

Catches during the research to be observed include fish species, average length and weight of catches and observed water characteristics. Observations will be divided into three based on the treatment of hauling time:

H1 = Hauling before midnight (at 20:00 to 23:00 pm)

H2 = Hauling at midnight (23:00 to 02:00 pm)

H3 = Hauling already at midnight (02:00-05:00 pm)

Observations will be repeated 3 times on each lift net. The data obtained were analyzed descriptively quantitatively presented in the form of tables, diagrams or graphs (Allen 2002) followed by statistical analysis using F test (Gasperz 2006) with 5% error rate. If the treatment gives effect to the catch, then the test is continued with Duncan Multiple Range Test to determine the difference between treatments.

The test criterion is calculated according to the equation:

$$X_{ij} = \mu + \tau_i + \beta_j + e_{ij}$$

Information :

X_{ij} = observation results on the treatment of the i and group j

μ = general average

τ_i = effect of the i th treatment

β_j = the effect of j-th treatment

e_{ij} = the influence of random factor on the i-th treatment and the j-th repeat

Result and Discussion

Two lft net fishing gear used in this research is in the waters of Palabuhanratu bay with fishing base in Palabuhanratu Nusantara Fishing Port. Determination of the location point of both the fishing ground is done by interviewing the method to the local fisherman, then to know the location point of coordinates using GPS (Global Position System), where the lift net close (Fishing Ground 1) 07°00'00,6" S, 106°32'12,1" E, remote lift net 06°59'57,7" S,

106°31'39,7' E. Both charts have the same water characteristics as temperatures ranging from 28-29o C, salinity of 33-35 psu, pH of 6.13 - 6.22, average water brightness in the range 3.50 - 6.50 meters , but there is a difference in depth where the near chart has a depth of 38 meters and a distant chart has a depth of 45 meters.
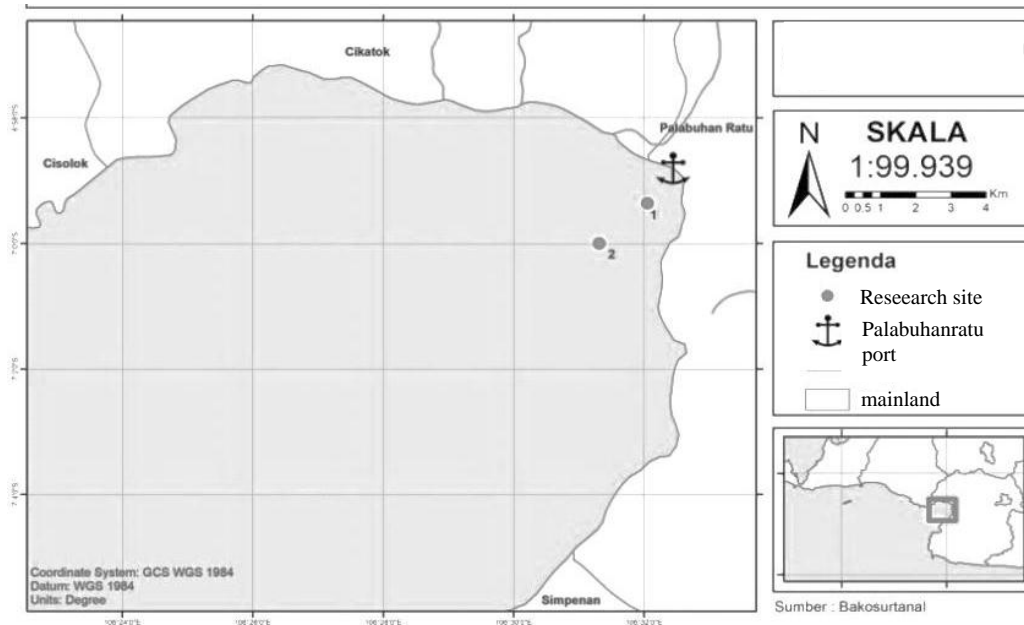

Figure 1. Map of Research Sites of Palabuhanratu waters

The catches obtained are demersal fish that is hairtail (*Trichiurus* sp), and *Leiognathus* sp. Pelagic fish caught are *Auxis rochei*, *Sardinella fimbriata*, *Decapterus russelli*, shrimp and the type of mollusca caught is squid (*Loligo* sp). Table 1 is total fish species captured near and far chart.

Table 1. Total fish species captured

No	Spesies	Close liftnet (kg)	Remote liftnet (kg)
1	Hairtail (*Trichiurus* sp)	36,3	38,5
2	*Leiognathus* sp	23,7	28,3
3	*Auxis rochei*	3,3	11
4	*Sardinella fimbriata*	7,7	0,5
5	*Decapterus russelli*	1,3	1,5
6	Squid	1,9	2,3
7	Shrimp	1,5	4

The most dominant fish caught on both lift nets are the type of hairtail. Hairtail (Trichiurus sp) is a carnivorous fish and active foraging at night (nocturnal) and has a fast swimming ability, so it is estimated fish layur looking for food at night around the illumination of light so caught by lift net. The hairtail has diverse vertical diurnal migration during adulthood and juvenile in terms of foraging. Adult Layer Fish generally feeds near the surface of the waters during the day and migrates to the bottom of the waters at night and

juveniles form clusters on a 100 m area above the water base during the day and form groups to feed at night at the water surface (Abidin 2013), that's why many small-sized fishes are caught on a floating fishing gear with an average length of 33 cm and have not experienced mature gonads. According to Agustina (2015) Based on the first long analysis of mature gonad fish layur in the waters of the sunda strait on the first female layers gonad ripe 46 cm and males of 45cm.

It can be seen that the difference of placement distance of lift net has significant effect on the weight of *Sardinella fimbriata* and *Auxis rochei*, on the Lift net near the weight of *Sardinella fimbriata* larger than the weight of Auxis rochei, as well On the other hand, in the far Lift net weights of *Auxis rochei* are bigger than the *Sardinella fimbriata*, because the *Sardinella fimbriata* are found in the waters near the coast and the food is plankton, unlike the *Auxis rochei* deep waters. It seems that the water depth is sufficient to affect the number and diversity of the species caught.

Hauling is the process of withdrawal of the net, done every few hours or if the fish is clustered over the net, where hauling on the floating chart is done 3 times in one trip ie before midnight (H1), midnight (H2) and after midnight (H3) . To know the catch based on hauling time on both floating chart, it can be seen Figure 2.

Based on F-test analysis with 5% error level and continued with Duncan multiple range test, the results showed that the hauling weight based on hauling on the near chart and chart is significantly different.
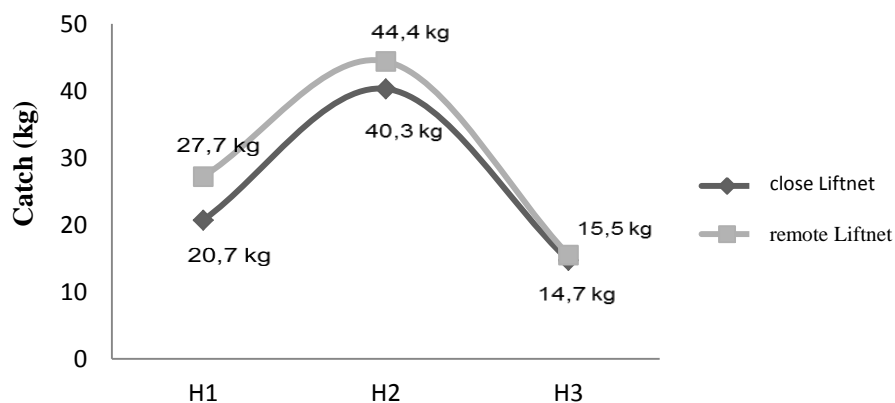

Figure 2. The close liftnet and remote liftnet based on hauling time

The high catch of hauling at midnight of total catch during the research is a behavioral phenomenon of fish related to feeding behavior and phototaxis properties. It is alleged that midnight time is a feeding habits of nocturnal fish and phototactic peaks of dominant fish species caught. Where the time used during hauling before midnight (H1) is done around the

hours of 20:00 to 23:00 pm, hauling at midnight (H2) at 23:00 to 02:00 pm, and hauling after midnight (H3) at 02.00-05.00 WIB. Where hauling catch is highest at midnight hauling (H2) and lowest when hauling after midnight (H3).

The catches obtained during the research with the liftnet fishing gear operated at different distances from the coast having the catch weight as shown in Figure 3.
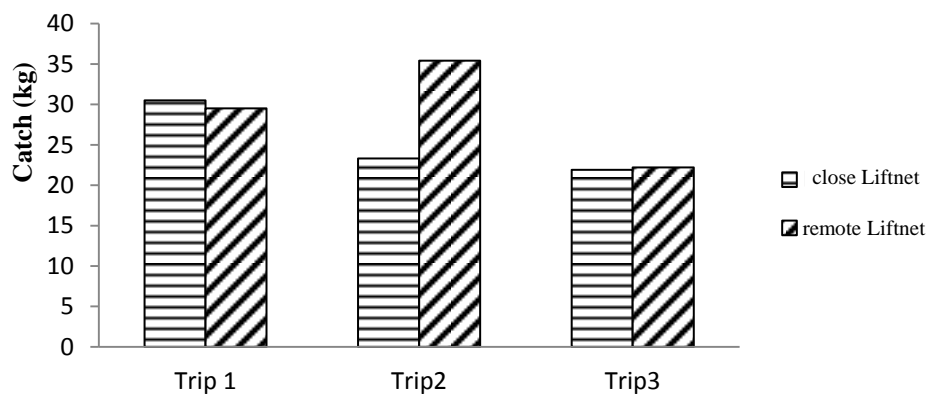

Figure 3. Comparison of the Catch (kg) of the close and remote

Figure 3 diagram above shows the weight ratio (Kg) of catchment liftnet near the distance from the beach with liftnet far from the beach. On the first trip and trip three can be seen the difference in weight of the catch of the second elevatornet is not too significant that the first trip is only 1 kg dispute, and the third trip is only 0.3 kg dispute. While the total weight of catch on the second trip has a significant difference that is 12.1 kg disagreed. Based on F-test analysis with 5% error level and continued with Duncan multiple range test, the result shows that the weight of catch at near liftnet and the remote chart is not significantly different.

It is estimated that some environmental factors affect the number or absence of catches such as liftnet depth, the deeper the water, the more the number of species that can be caught. Another factor is the behavior of fish who are happy with light (positive phototaksis) such as anchovies, and allegedly the number of catches is also influenced by the availability of food in a waters. Fish that are actively foraging, if available food will stay long in light illumination areas to eat by eating smaller fish or plankton and otherwise will soon leave the area if food is not available.

Simbolon et al. (2009) describes the formation of fishing areas affected by water conditions suitable for the survival of biota, the interest of the contractor and there is enough food in the water, where the availability of food is one factor that determines the population abundance and the condition of fish that exist in a waters. The interaction between one species

with other biota in the fishing area is generally due to the predation process, the predatory process that occurs illustrates the sequential energy transfer. The predatory structure that occurs in the gear using light as an atractor is not complete with the tropic level in general. This is due to observations limited only to species attracted by light, gathered around the illuminated area of light captured (Bunbun et al 2014).

Conclusion

Based on the result of the research, it can be concluded that the difference of hauling elevatornet time has significant effect on the catch weight and the optimal hauling time is at midnight (H2) at 23.00-02.00 WIB get the weight of the catch as much as 44,4 kg at long distance elevator and result weight a catch of 40.3 kg at a short distance liftnet, but based on F test analysis the difference of elevatornet placement did not affect the catch.

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