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Analysis of Bottom Gillnet Catches in Lambur Luar Village, Muara Sabak Timur District, Tanjung Jabung Timur Regency

Ade Khairunissa[1], Mairizal[2], Rizky Janatul Magwa[1*], Lisna[2], Fauzan Ramadan[1], Wulandari[1]

[1]Fishery Resources Utilization Study Program, Faculty of Animal Husbandry, University of Jambi
[2]Animal Husbandry Study Program, Faculty of Animal Husbandry, University of Jambi
Jl. Jambi – Ma. Bulian KM 15 Mendalo Darat Jambi 45363

Correspondence:
rizkymagwa@unja.ac.id

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ABSTRACT

The waters of Lambur Luar Village are a productive coastal area that supports capture fisheries activities, one of which is through the use of bottom gillnets. This fishing gear is considered fairly selective and environmentally friendly, making it important to assess its effectiveness in terms of catch composition. This study aims to analyze the main catch, bycatch, and discard from bottom gillnets operated by local fishers. The method used was a survey with purposive sampling on ten fishing units, with four replications per unit. The data were analyzed descriptively and supported by biodiversity indices, including diversity, evenness, and dominance. The results showed that mantis shrimp (*Harpiosquilla raphidea*) was the dominant main catch, with the highest number and biomass. Bycatch was dominated by demersal fish such as croaker (*Johnius trachycephalus*), tongue sole (*Cynoglossus lingua*), Chacunda gizzard shad (*Anodontostoma chacunda*), fourfinger threadfin (*Eleutheronema tetradactylum*), along with several other species. Meanwhile, discards consist of non-economic benthic organisms such as snails, starfish (*Asteroidea* spp.), horseshoe crabs (*Tachypleus gigas*), and ghost crabs (*Ocypoda quadrata*). The diversity index indicated a moderate category, reflecting ecosystem balance, while the dominance index was low, suggesting no single species excessively dominated the ecosystem. In conclusion, bottom gillnets with a mesh size of 3.5 inches proved effective in capturing target organisms suitable for consumption while reducing the proportion of unwanted discards. This indicates that bottom gillnets have the potential to support sustainable fisheries practices without causing significant negative impacts on the benthic ecosystem in the waters of Lambur Luar Village.

INTRODUCTION

Indonesia's coastal areas have enormous and diverse fisheries resources. One area with significant capture fisheries potential is Muara Sabak Timur District, Tanjung Jabung Timur

Regency, Jambi Province. Muara Sabak Timur District is one of the districts located on the east coast of Jambi and has quite promising capture fisheries commodities for small-scale fishermen, and one of them is located in Lambur Luar Village. Fishing gear operated by fishermen in Lambur Luar Village includes tiger trawls, Belat, Bottom Gillnets, Three-Layer Nets, Bubu, Kelong, Rawai, Jermal, etc. (Jarwanto *et al*., 2014).

*Bottom gillnet*is a fishing gear made of rectangular netting material, with a uniform mesh size, and operated on the bottom of the water to catch demersal fish (Rumkorem & Mandowen, 2023). This fishing gear is included in the category of gillnets (*bottom gillnets*). The term "gillnet" refers to the way the caught fish are entangled around the operculum through the mesh (Purwanto *et al.,* 2019). The main catch from the use of bottom gillnets in Lambur Luar Village is mantis shrimp (*Harpiosquilla raphidea*), which is also known as shrimp ketak, shrimp ronggeng, or shrimp lipan, and locally often referred to as shrimp nenek. In addition to mantis shrimp, bycatch that is often obtained includes gulama fish, tongue fish, selangat fish and senangin fish (Ramdhani *et al.,* 2019). Mantis shrimp is a prime commodity for fishermen in Lambur Luar Village, which has high demand in both local and international markets.

The demersal mantis shrimp has a varied body color and is often found in tropical and subtropical waters, making it a major export commodity. Adult mantis shrimp can reach up to 30 cm in size, while the smallest are around 15 cm in length (Sukarni *et al.,* 2018). According to research by Sukarni & Wardiatno (2020), mantis shrimp that live on the bottom of the waters have an average size of 12-18 cm, with a maximum of around 20 cm. Furthermore, it is stated that the characteristics of mantis shrimp are a dark line along the posterior edge of the thorax, a carapace that only partially covers the head and the first three thoracic segments, and a body color that varies from dark to brown. Mantis shrimp have 6-8 abdominal segments and a yellow telson with two brown spots surrounded by white. Mantis shrimp or grandmother shrimp are an important export commodity, especially exported to Hong Kong and Taiwan. Lambur Luar Village in East Tanjung Jabung Regency is known as a major producer of mantis shrimp, especially the Harpiosquilla raphidea species, which supplies around 60% of Indonesia's total exports (Ramdhani & Jhonnerie, 2020).

Catch composition is the composition of the types or species of fish resources caught during fishing operations. A diverse composition occurs when the catch contains various types of fish and other organisms in relatively even numbers. This is usually influenced by environmental stability, abundant resource availability, and balanced ecological interactions. These conditions make the ecosystem more resilient to environmental disturbances and increase productivity. Conversely, a less diverse composition tends to be caused by the dominance of certain species, significant environmental changes, or human activities such as pollution and habitat destruction. As a result, the ecosystem becomes more vulnerable to disturbances and its productivity decreases (Nita *et al.,* 2023).

In addition to describing the condition of resources and types of fishing gear, this study analyzed the composition of bottom gillnet catches in Lambur Luar Village using a quantitative approach. The analysis was conducted by calculating the proportion of main, bycatch, and discards, as well as assessing the levels of diversity (H'), evenness (E), and dominance (C) of the species caught. Diversity values can provide an indication of ecosystem stability; moderate diversity indicates a relatively even distribution of species without dominance of a particular type, while low diversity indicates the presence of ecological pressure or dominance of a particular species. The evenness index indicates an even distribution of individuals between species, while the dominance index measures the extent to which one or several species

dominate the catch (Notanubun *et al.,* 2024). Analysis of these three indices can reveal the ecological conditions of the waters and the effectiveness of bottom gillnets in capturing target organisms without disrupting the ecosystem balance (Ibadillah *et al.,* 2024).

Research on Analysis of Bottom Gillnet Catches in Lambur Luar Village can provide important insights for fisheries resource management, support sustainability, and maintain the welfare of local fishermen. However, research on catch analysis using bottom gillnets in Lambur Luar Village has never been conducted. Therefore, the author is interested in conducting research on the Analysis of Bottom Gillnet Catches in Lambur Luar Village, Muara Sabak Timur District, Tanjung Jabung Timur Regency.

METHODS

Time and Place

This research was conducted in Lambur Luar Village, Muara Sabak Timur District, Tanjung Jabung Timur Regency on February 1 to March 1, 2025. The materials used in this research were fish catches obtained using bottom gillnets. While the equipment used includes bottom gillnet fishing gear with each fishing gear used consisting of 45 pieces and each 1 (one) unit has a length of 35 m, a net height of 1.5 m, a mesh size of 3.5 inches, a camera, measuring tools such as millimeter blocks, scales and stationery.

Research Methods

The method used in this research was a survey. Surveys are the most common primary data collection method in social science research. A survey is a list of written questions whose answers are recorded by respondents themselves (Pakpahan *et al.,* 2021). The group of fishermen selected for this study were fishermen using bottom gillnet fishing gear operating in the waters of Lambur Luar Village. The sampling method used was purposive sampling, with the criteria for fishermen using a 3.5-inch mesh size on the bottom gillnet fishing gear. Purposive sampling is a sampling technique that uses certain considerations after knowing the characteristics of the population (Subali, 2010). Each fishing gear was repeated 4 times with 10 fishermen.

Data Analysis

Catch analysis focused on the composition of the catch, including the proportion between main and bycatch. The object analysis included the weight of each fish species (kg) and the catch categories, which were divided into main catch, bycatch, and discard. Observations on catch handling were also analyzed to determine the extent to which the catch was utilized or discarded. The fish caught were then weighed, and the overall weight was then processed using Microsoft Excel software to determine the catch and obtain the correct results using the formula.

Composition of the Catch

Catch composition is used to describe the diversity of fish species caught using bottom gillnet fishing gear. As explained by Bahari *et al.* (2019), this catch composition can also be an indicator of water conditions in fishing areas. The data analyzed include the weight per species and the total weight of the catch recorded in the field, which is then presented in tabular or graphical form. Meanwhile, according to Susanti *et al.* (2013), the catch composition can be calculated based on the composition of each hauling time per unit (kg) of fish species using the following calculation formula:

$$Kj = \frac{ni}{N} \times 100\%$$

Where:
Kj = Type Composition (%)
ni = Amount each species of fish (Tail)
N = Amount total catch (Kg)

Proportion of Catch

In the main and bycatch results, each data on the number and weight of the main catch (HTU) and bycatch (HTS), from the operation is calculated in percentage form, then compared to see which HTU and HTS have a larger proportion. To calculate the Proportion of Catch Results, use the formula from (Rofiqo *et al.,* 2019):

$$Main\ catch\ (\%) = \frac{Main\ catch}{Total\ hasil\ tangkapan} \times 100\%$$

$$Bycatch(\%) = \frac{Bycatch}{Total\ hasil\ tangkapan} \times 100\%$$

$$Discard\ (\%) = \frac{Discard}{Total\ hasil\ tangkapan} \times 100\%$$

Where:
Main catch = Main Catch
Bycatch = Bycatch
Discard = Discarded Catch Results

Diversity Index (H')

Diversity index analysis is used to determine species diversity. The equation used to calculate this index is the Shannon-Winner formula (Hertati *et al.,* 2023).

$$H' = -\sum_{i=1}^{n} pi \ln pi$$

Where:
H' = Shannon-Wiener Diversity Index
Pi = Number of individuals of each type
Ln = Natural logarithm
Pi = Σ ni/N (Number of individuals of one species to all species)

The range of diversity index (H') values is classified as follows:

- H' < 1 is included in the Low category, meaning low diversity with a non-uniform number of individuals and one species dominates.
- 1 < H'< = 3 is included in the Medium category, meaning moderate diversity with a uniform number of individuals and no dominant species.
- H'>3 is included in the High category, meaning high species diversity, high number of individuals per species.

Uniformity Index (E)

The uniformity index (E) can be calculated using the formula from Odum (1993), namely:

$$E = \frac{H'}{InS}$$

Where:
E = Species Uniformity Index
H' = Diversity Index
InS = Number of species found

If the uniformity index (E) value is less than 0.4, it indicates that the population has a low level of uniformity. When the E value is between 0.4 and 0.6, the population's level of uniformity is considered moderate. However, when the E value exceeds 0.6, the population is considered to have a high level of uniformity (Krebs, 1972). The criteria for uniformity index values can be seen in Table 1.

Table 1. Uniformity Index Criteria

Uniformity Index Value	Category
E < 0.4	Low
0.4 < E < 0.6	Currently
E > 0.6	Tall

Dominance Index

The dominance index is used to determine the extent to which a species or genus dominates other groups. The catch dominance index is calculated using Odum's (1993) formula as follows:

$$C = \sum_{i=1}^{n} \left(\frac{ni}{N}\right)^2$$

Where:
C = Dominance Index
ni = Number of Individuals per Species
N = Number of individuals of all species

In determining the Simpson dominance index criteria (Nita *et al.,* 2023) can be seen in Table 2.

Table 2. Dominance Index Criteria

Dominance Index Value	Category
C < 0.4	Low
0.4≤C≤ 0.6	Currently
C > 0.6	Tall

RESULTS

Composition of Catch Results

Catch composition is a term generally used in the fisheries and marine sector to refer to the relative proportions of various species caught in a fishing process or other fishing activity (Miradni *et al.,* 2024). The results of research conducted in Muara Sabak Timur District, specifically in Lambur Luar Village, using bottom gillnet fishing gear, showed a diverse catch composition. By knowing the catch composition, fish and shrimp species caught during the study period can be identified. The catch composition using bottom gillnets, which are made of better quality and easily obtained monofilament material, is based on weight (kg) and number (fish) can be seen in Table 3.

Table 3. Composition of Bottom Gillnet Catch Results

No	Catch	Scientific Name	Average Length	Number (Tail)	Tail Composition (%)	Weight (Kg)	Weight Composition (%)
1.	Mantis Shrimp*	*Harpiosquilla raphidea*	21.96	133	26.49	17.48	21.45
2.	Wedge Fish**	*Platycephalus indicus*	40.93	17	3.39	8.54	10.48
3.	Black Pomfret**	*Parastromateus niger*	17.32	20	3.98	2.54	3.12
4.	White Pomfret**	*Pampus argenteus*	18.2	6	1.2	1.18	1.44
5.	Puput Fish**	*Ilisha elongata*	19.13	19	3.78	0.85	1.04
6.	Spotted Bonjol Fish**	*Pterotolithus maculatus*	41.25	2	0.4	1.52	1.86
7.	Gulama Fish**	*Johnius trachycephalus*	21.03	97	19.32	9.95	12.21
8.	Sole**	*Cynoglossus lingua*	31.03	45	8.96	5.71	7.01
9.	Red snapper**	*Lutjanus campechanus*	17.1	7	1.39	0.55	0.67
10.	Veined Catfish**	*Arius venosus*	25.67	3	0.6	0.49	0.6
11.	Parang Fish**	*Chirocentrus dorab*	41.71	7	1.39	1.04	1.28
12.	Stingray**	*Dasyatis* sp.	39.36	17	3.39	4.39	5.39
13.	Carpet Shark**	*Chiloscyllium arabicum*	54.75	7	1.39	4.56	5.60
14.	Fish on the Side**	*Pseudorhombus arsius*	23.52	15	2.99	5.36	6.58
15.	Selangat Fish**	*Anodontostoma chacunda*	14.16	26	5.18	1.07	1.32
16.	Yellowtail Mackerel**	*Selaroides leptolepis*	17	4	0.8	0.32	0.39
17.	Tetengkek Selar Fish**	*Megalaspis cordyla*	25.13	19	3.78	3.07	3.77
18.	Catfish**	*Plotosus canius*	49.88	5	1	4.79	5.87
19.	Happy Fish**	*Eleutheronema tetradactylum*	28.07	25	4.98	7.44	9.13
20.	Grouper**	*Epinephelus malabaricus*	15	1	0.2	0.05	0.06
21.	Octopus **	*Octopus vulgaris*	39	2	0.4	0.59	0.73
22.	Snail***	*Pomacea canaliculata*	-	12	2.39	-	-
23.	Starfish***	*Asteroidea* spp.	-	2	0.4	-	-
24.	Horseshoe Crab***	*Tachypleus gigas*	-	5	1	-	-

No	Catch	Scientific Name	Average Length	Number (Tail)	Tail Composition (%)	Weight (Kg)	Weight Composition (%)
25.	Ghost Crab ***	*Ocypode pallidula*	-	6	1.2	-	-
	Total		28.63	502	100	81.48	100

Where: * : Main Catch
** : Bycatch
*** : Discarded Catch Results

Diversity, Uniformity, and Dominance Index Values of Catch Results

The diversity index (H') indicates the level of species diversity in an aquatic community, with higher values indicating a greater number of evenly distributed species. The evenness index (E) measures the extent to which individuals in a community are evenly distributed among the species present, while the dominance index (C) describes the extent to which a species dominates the community (Mawaddah *et al.,* 2022). Based on research using bottom gillnet fishing gear, 1 shrimp species and 20 fish species were obtained. The values of the diversity index (H'), evenness (E), and dominance (C) can be seen in Table 4.

Table 4. Diversity, Uniformity, and Dominance of Catch Results

Index	Mark	Category
H'	2.51	Currently
E	0.78	Tall
C	0.13	Low

Where: H = Diversity Index C = Dominance Index
E = Uniformity Index

Fish First Gonad Maturation (LM)

Measuring fish size using specific approaches can be used to estimate fish populations, including growth and mortality. Similarly, by studying reproductive aspects, predicting the spawning season is useful in management through the closed season. Length at first maturity can be used to adjust net mesh size, especially when linked to length at first capture (Rasdam *et al.*, 2023), can be seen in Table 5.

Table 5. Species Worth Catching and Not Worth Catching

No	Species	Fish Size	Catchable Size	Number of Eligible Fish (Tails)	Unsuitable Number of Catches (Tails)
1.	Mantis Shrimp	14 - 31.5	17.8	110	23
2.	Wedge Fish	14 - 49.5	23.8	15	2
3.	Black Pomfret	10.5 - 21	22.5	0	20
4.	White Pomfret	12.5 - 26.5	15.9	6	0
5.	Puput Fish	12 - 23.5	12.4	18	1
6.	Spotted Bojol Fish	29.5 - 53	13.5	2	0
7.	Gulama Fish	10.5 - 39.5	15.3	78	19
8.	Sole	21 - 43	25	38	7
9.	Red snapper	12 - 20	30.7	0	7
10.	Veined Catfish	23 - 27.5	15	3	0

No	Species	Fish Size	Catchable Size	Number of Eligible Fish (Tails)	Unsuitable Number of Catches (Tails)
11.	Parang Fish	33.5 - 60	29.4	7	0
12.	Stingray	17.5 - 59	25	16	1
13.	Carpet shark	45 - 62	49.5	6	1
14.	Fish on the Side	17.5 - 39	22.8	7	8
15.	Selangat Fish	13 - 14.5	14.1	11	15
16.	Yellowtail Mackerel	15.5 - 18.5	15.3	4	0
17.	Tetengkek Selar Fish	23 - 29.5	37.3	0	19
18.	Catfish	42 - 56	25.7	5	0
19.	Happy Fish	21 - 44	35	8	17
20.	Grouper	15 - 15	21	0	1
21.	Octopus	25 - 53	11.3	2	0
	Amount			336	141
	Percentage			68.13%	29.56%

DISCUSSION

Composition of Catch Results

Based on Table 3, the total catch using bottom gillnets in the waters of Lambur Luar Village, Muara Sabak Timur District, was recorded at 502 individuals with a total biomass of 81.48 kg. The catch composition was divided into 1 type of main catch, 21 types of bycatch, and 4 types of discards. Mantis shrimp dominated the catch with 133 individuals (26.49%) and a weight of 17.48 kg (21.45%), thus indicating that this species is a primary commodity for fishermen in Lambur Luar Village with high economic value. The high percentage of mantis shrimp catches indicates that resource availability is still relatively good. Because one indicator of good resource availability can be seen from the availability of abundant resources and can be obtained relatively easily and in areas that are still accessible in coastal areas (small-scale gillnets) (Hutchings & Lambert 2003). Mantis shrimp live in the intertidal region at the bottom of sea waters with mud or sandy mud substrates (Moosa 2000).

In addition, bycatch was dominated by demersal fish that have quite good selling value, including 97 gulamah fish (19.32%), 45 tongue fish (8.96%), 26 selangat fish (5.18%), senangin fish (25) and several other species such as black pomfret, puput, selar tetengkek, etc. The presence of these bycatch species shows that the bottom gillnet is quite productive in catching demersal fish that inhabit muddy and sandy bottoms. Meanwhile, the catch with the least amount came from 1 grouper (0.2%), 2 octopus (0.4%), and 2 spotted bonjol fish (0.4%). The discarded catch consisted of non-target biota that have no economic value, namely snails (*Pomacea canaliculata*), starfish (*Asteroidea spp*.), horseshoe crab (*Tachypleus gigas*), and ghost crab (*Ocypode pallidula*). The number of discarded organisms is relatively small, indicating that the 3.5 inch mesh size bottom gillnet is quite selective in catching target organisms and is environmentally friendly compared to other fishing gear that tends to produce large amounts of discards.

The operation of a bottom gillnet is carried out by drifting the fishing gear on the bottom of the water. This causes many non-target species (*bycath and discard*) to be caught by the gillnet, because when the gillnet drifts and sweeps the bottom of the water, the bottom

organisms are directly entangled in the fishing gear. This refers to the statement of Tzanatos *et al.,* (2007) that the amount of discard from the catch is significantly more influenced by the method of operating the fishing gear and the fishing area compared to the time or season of fishing. In addition to the operating method of the gillnet that sweeps the bottom of the water, the capture of bottom organisms that become bycath and discard in mantis shrimp fishing efforts is caused by the ability and behavior of demersal fish that tend to be low. This refers to the statement of Nofrizal & Arimoto (2017), that the ability and behavior of fish swimming play an important role in the process of catching fish by fishing gear. The percentage of non-target catches is important for assessing the overall impact on fisheries, such as on fish populations and on the ecosystems where they operate the fishing gear (Evans *et al.,* 1994).

Diversity, Uniformity, and Dominance Index Values of Catch Results

Diversity Index (H')

Based on Table 4, it can be seen that the diversity index (H') value obtained from observations during research in the waters of Lambur Luar Village is 2.51, which is included in the moderate category. This means that the diversity in these waters is still in a fairly good condition, with the number of individuals from various species being fairly even, although there are some species that are more dominant. Based on the Shannon-Wiener equation (Odum, 1993), if the H' value is in the range of 1-3, then the species diversity in the ecosystem can be categorized as moderate, which means that no species dominates significantly.

The diversity index value is strongly influenced by the variety of species and the mesh size of the fishing gear, in this case a bottom gillnet with a mesh size of 3.5 inches. The greater the number of fish species caught and the greater the diversity of individuals within each species, the higher the level of diversity in the aquatic ecosystem. Conversely, the fewer species caught and the more uneven the number of individuals within each species, the lower the aquatic diversity will be (Wahyu *et al.,* 2013). According to Nasution *et al.* (2024), drift gillnets in Sei Berombang produced catches with moderate diversity and low dominance, suggesting that this fishing gear does not exert excessive pressure on the ecosystem. This finding reinforces the results of the present study, where bottom gillnets with a 3.5-inch mesh size were also relatively selective and supportive of sustainable fisheries.

This diversity index can also be used to estimate the condition of the aquatic environment. As stated by Brower *et al.,* (1990), this index reflects the balance of the ecosystem in the waters, and added that an aquatic community is said to have high species diversity if there are many species with a relatively even number of individuals, and low diversity can be said if there are few species with an uneven number of individuals. In this case, the results of the study showed that the condition of the waters in Lambur Luar Village still has quite good diversity, with a relatively even distribution of species, although there are more dominant species such as the mantis shrimp (*Harpiosquilla raphidea*) which is the main catch.

Uniformity Index (E)

The evenness index describes how evenly distributed individuals are across species within a community. Evenness index values range from 0.4 to 0.6 for the moderate category, and the lower the value, the more uneven the distribution of species within the community (Krebs, 1972). The evenness index value obtained in this study was 0.78, which is included in the high category, indicating that the distribution of individuals across species in the waters of Lambur Luar Village is quite even and no single species dominates.

Bottom gillnets with a 3.5-inch mesh size contribute to a balanced species distribution because they selectively catch species of a certain size. Furthermore, the diversity of habitats in the surrounding waters also supports ecosystem balance.

According to Odum (1993), a high uniformity index is accompanied by a low dominance index, as evidenced in this study by a dominance index of 0.13, indicating the absence of any particular species. This indicates that the waters of Lambur Luar Village still maintain a good ecological balance and support species diversity.

Dominance Index (C)

Based on the dominance index calculation obtained from the bottom gillnet catch with a mesh size of 3.5 inches in Lambur Luar Village, the dominance index value obtained was 0.13, which is considered low. This indicates that no single species significantly dominates the aquatic community. Although mantis shrimp are the main catch and are more abundant, other species such as gulama and senangin fish are also caught in significant numbers, reflecting a relatively even species diversity.

This low dominance index value indicates that no single species is prominent or dominant within the community. Ecologically, this indicates that the water conditions in Lambur Luar Village are stable and the environment is good enough to support biodiversity. According to Notanubun *et al.,* (2024), a low dominance index value indicates that the species distribution is fairly even and that no single species dominates the community excessively, supporting a healthy and sustainable ecosystem.

Furthermore, this low dominance index value is consistent with the findings of a high evenness index (E), which is 0.78, indicating a fairly even distribution of individuals across species. This indicates that although some species are more numerous, no single species dominates the community. The dominance index is useful for measuring the extent to which a species dominates a community, and this low value indicates good diversity in the waters. A low dominance index value indicates that the waters of Lambur Luar Village exhibit a good ecological balance, supporting a fairly even diversity of species, and indicating that fishing practices carried out using selective fishing gear such as bottom gillnets can contribute to the sustainability of fishery resources and the stability of the ecosystem as a whole. The moderate diversity index combined with a high evenness and low dominance index indicates that gillnet operations in Hinako waters are relatively sustainable and do not overly exploit a single species (Togatorop *et al*., 2025).

Fish First Time Gonad Maturity (Lm)

Based on Table 5, research results in Lambur Luar Village indicate that the use of bottom gillnets with a 3.5-inch mesh size resulted in high catch diversity. Bottom gillnets were cast at depths of 5-10 meters, which supports the capture of demersal fish that live on the bottom. In addition to depth, mesh size also affects catch diversity, with a 3.5-inch mesh size allowing the capture of medium to large fish while reducing bycatch.

Overall, 21 species were caught, with 336 fish suitable for catch and 141 unsuitable. The most commonly caught species were mantis shrimp (110) and sugar snapper (78). However, several species, such as red snapper and catfish, were caught but did not meet the size or number criteria for capture.

Length at first maturity (Lm) is crucial for determining the catchable size of fish, which is closely related to the sustainability of fishery resources. According to Sudrajat *et al.,* (2022), determining catchable size based on Lm prevents the capture of immature fish, thus preventing stock declines that threaten the sustainability of fish populations. Capturing fish that have not reached Lm can reduce the reproductive capacity of the species.

This fishing gear has proven to be quite selective, capable of catching key species of suitable size while minimizing discards. The diversity of species captured reflects the still-productive waters that support a wide variety of marine organisms. The use of nets with a 3.5-inch mesh size is key to determining the sustainability of fisheries resources. If a large number of unsuitable (*juvenile*) fish are caught, this can disrupt fish population regeneration, reduce future catch potential, and disrupt ecosystem balance. Conversely, if a large number of suitable fish are caught, this indicates that the fishing gear is ecologically and economically appropriate, supporting fisheries sustainability while improving fishermen's welfare. With these characteristics, the use of bottom gillnets is considered capable of supporting sustainable fisheries management in the coastal area of Lambur Luar Village.

CONCLUSION

This study shows that the use of bottom gillnet fishing gear in the waters of Lambur Luar Village results in a catch composition dominated by mantis shrimp as the main catch, with various types of demersal fish as bycatch. This fishing gear has proven to be quite selective because it is able to catch main species at catchable sizes while minimizing discards. The diversity of species caught reflects the condition of the waters that are still productive and support various types of marine organisms. This fishing gear has the potential to support sustainable fisheries management without causing damage to the benthic ecosystem in the waters of Lambur Luar Village.

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