Journal of Environment and Earth Science
ISSN 2224-3216 (Paper) ISSN 2225-0948 (Online)
Vol.4, No.16, 2014
www.iiste.org

Productivity and Selectivity of Several Traditional Fishing Gear (Study at Katingan, Central Kalimantan, Indonesia)

Kembarawati[1] Keppi Sukesi[2] Idianor Mahyudin[3]
1.Faculty of Agriculture, Palangka Raya University, Yos Sudarso Street, Palangka Raya, Cetral Borneo 27111, Indonesia
2.Faculty of Agriculture, Brawijaya University, Veteran Road, Malang, East Java 65145, Indonesia
3.Faculty of Fisheris, Lambung Mangkurat University, Ahmad Yani Road, Banjarbaru, South Borneo Indonesia
E-mail of the corresponding author: *kembarawati@yahoo.co.id*

Abstract
There are traditional equipments and the modern ones. The amount is also increased from year to year, so the decreasing products happen in the last few years. Fisherman used traditional tools that were made from bamboo and rattan surrounds their village. The production scale also variously happens and it is proved by the increasing amount from year to year. This research needs 23 families. The suggestion to use the gear with high selectivity in large amount is an alternative to bridge the economic needs and preservation of aquatic ecosystems.
Keywords : productivity, selectivity, traditional fishing gear

1. Preface

Baun Bango is one of villages in Kamipang sub district. The location of the village is far enough from the Capital (Palangkaraya). Access road has begun to open, although some still have not been paved. Most of people there works as fisherman. The various number and scale of the equipments to catch the fishes are used in Baun Bango. There are traditional equipments and the modern ones. The amount is also increased from year to year, so the decreasing products happen in the last few years.

The intensive fishing in nature is feared to give negative effects on its preservation. This condition is closely related to the increased intensity of fishing and primarily related to the fishing practices that could impact on the extinction. The use of selective fishing gear is recommended in order to conserve aquatic resource including river, lake and swamp.

Based on the background and explanation above, this research is needed to be done. It is also supported by several important reasons considered as follows: Baun Bango is considered as the bigger producer of freshwater fishes than other villages in Kamipang, Katingan. Existing fisheries production has tended to decrease. The selectivity of various fishing gears is necessary to be investigated in order keep the fishery resources. Based on the reasons explain above, the selectivity research of the fishing gear used in Baun Bango needs to be done.

2. Subject and Method

This research is done by directly observing the location including the number, the type and the selectivity of fishing gear in Baun Bango, Kamipang Sub district, Katingan in Central Kalimantan as the data. The distribution of questionnaire as the instrument of data collection is also done (Patton, 2006). The technique applied is field observation in order to get physical description of the fishing gears used (Singa Rimbun dan Efendi 1995, Mantra 2000). The approach method used is quantitative one. The location that is chosen is Kamipang sub district, Katingan in Central Kalimantan instead of other districts since it is considered as the bigger producer of freshwater fishes than others.

Population and sample of fisherman for fishing gear selectivity in Baun Bango consists of 310 families around the location of the research done in Kamipang sub district. The selection of the respondent sample was done in purposive way (intentional) towards the head of fisherman families in Kamipang. This research needs 23 families based on Slovin formula in the level of 20% inaccuracy as the samples of this research.

The data analyses was done by using quantitative approach for fishing gear selectivity, by applying environment friendly fishing guide based on FAO standard in accordance with Ministry of Maritime Affairs and Fisheries (2006). There are three classifications of fishing gear in Indonesia. First: in accordance with A. Von Brandt's classification (1964), Second: international statistical classification of fishing gear based on FAO standard, Third: the standard classification of fishing gear by Indonesian fishery statistics. There are 9 (nine) criteria of environment friendly fishing gear as the analysis instrument used by FAO and issued by Ministry of Maritime Affairs and Fisheries (2006) which is accorded with Code of Conduct for Responsible Fisheries (CCRF). They are:

1. Having high selectivity
2. Unable to destroy the habitat
3. Producing high quality fishes
4. Save to fishermen

5. Save fish products
6. Low by-catch
7. Low biodiversity impact
8. Save protected fishes
9. Social acceptable

3. The Result of Research

There are 13 types of fishing gear and its percentage which is used by fishermen in Baun Bango can be seen in this following table:

Table 1. Fishing gear used by Baun Bango's fishermen

Name	User Number	Percentages
Rengge	28	16.2
Banjur	23	13.3
Rawai	20	11.6
Kabam	15	8.7
Rempa	15	8.7
Salambau	14	8.1
Pangilar	13	7.5
Jala, lunta	14	8.1
Pisi,Unjun	7	4.0
Tampirai	15	8.7
Buwu	3	1.7
Hempeng	3	1.7
Beje	3	1.7

Source: Primary data were processed in 2012

People in Baun Bango have and use more than one type of fishing gear. Most of respondents use Rengge to catch the fishes (16,2%). It is followed by banjur (13,3) and rawai (11,6%). A half of respondents use kabam (8,7%), rempa (8,7%), tampirai (8,7%), salambau (8,1%), jala lunta (8,1%) and pangilar (7,5%). Besides, three other fishing gears, buwu, hempeng and beje only used by 3 respondents (10,3). People mostly use rengge, bajur and rawai because they have reachable price and able to produce fishes in large quantities in every trip.

4. Discussion

Each gear has different productivity because of its size and technical fishing. Fishing gear productivity will be measured based on fish catches in every trip. Salambau is the gear with the highest productivity since it is able to get 240 kg fish / trip.

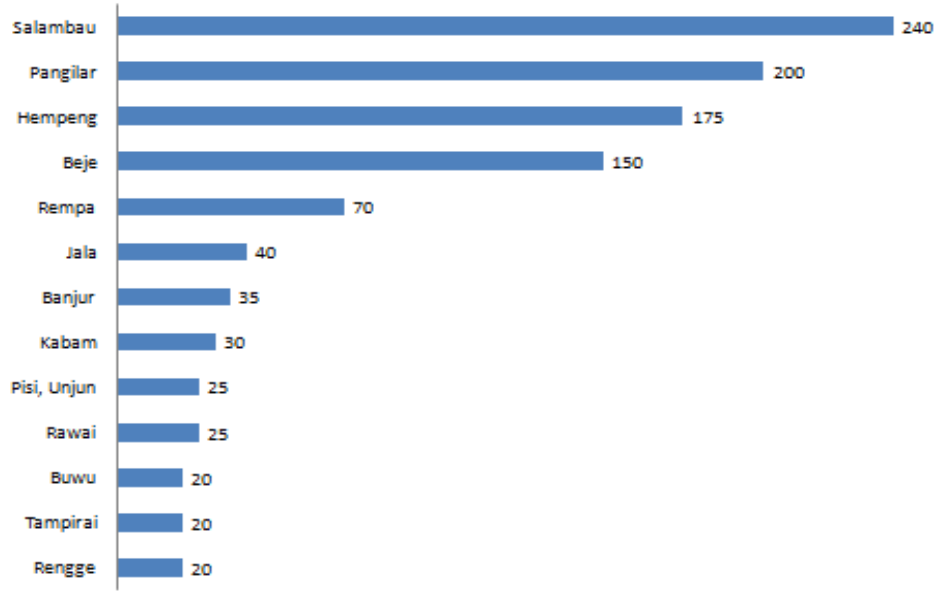

Figure 1. Fishing Gear Productivity

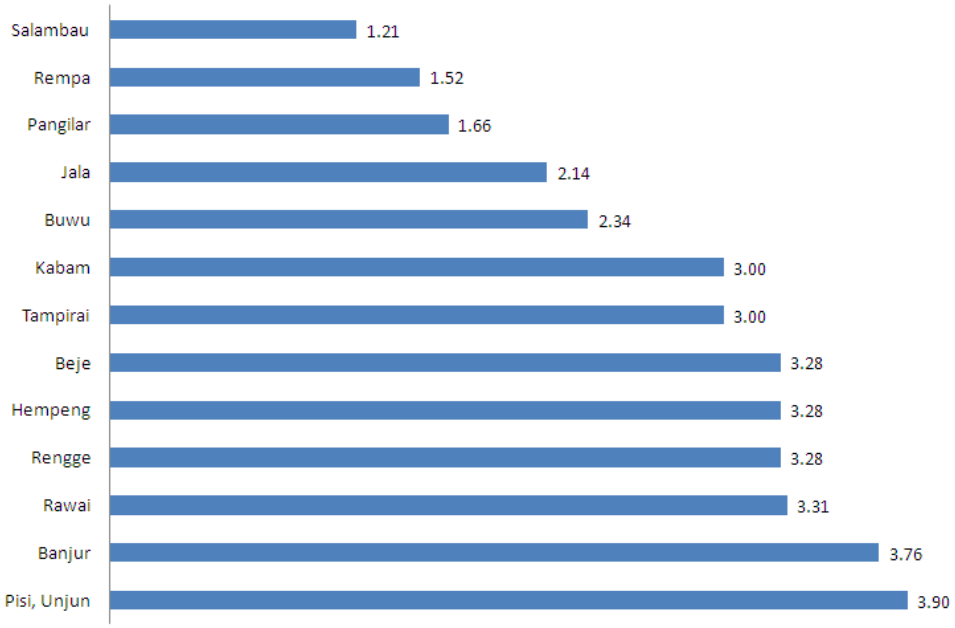

Figure 2. Fishing Gear Selectivity

The fishing gear which is able to get the similar production number of salambau is pangilar (productivity 200 kg/trip) and hempeng (productivity 175 kg/trip). Other gears only can get 20 up to 70 kg/trip. The high productivity of salambau is still constrained by its expensive price and low selectivity of the fish catch. The price of salambau is about Rp 5.000.000/ unit. With the costs of operating a fishing enterprise rising steadily over the past decade, particularly for trawlers, it is crucial for harvesters to find ways to save on fuel in every possible way. Fishing gear design is a significant factor in the energy efficiency of every vessel and can help save on fuel charges (Parente, 2008). Some ways to reduce drag on your gear : reduce the amount of netting surface area, increase mesh sizes, use efficient trawl doors, decrease twine sizes, introduce super fibers, use an energy efficient design, examine footgear (Priour, 1999).

Salambau and rempau has the lowest selectivity. It can be seen from the calculation of fishing gear score based on its selectivity. Pisi/unjun, buwu, jala and other gears that have been recorded by the researcher have high selectivity. Selectivity score of fishing gear is 1- 4 in which 1 explain that the gear is able to catch more than 3 fish types., while 4 only can get 1 type of fish. Based on the figure 2, salambau has low selectivity (1,21), hempeng (1,41), rempa (1,52), pangilar (1,66), jala (2,14) dan buwu (2,34). Salambau is the gear which is made by Baun Bango's fishermen, with the material which is bought in the market, produced by factory and hapa/waring from small mess size nylon (0,5 cm) is used to make the nets. Both large and small size aquatic biota can be netted / caught by using Salambau. This condition will threaten the sustainability of marine resources today. Rempa is usually used when the water of lake/river receding, all aquatic biota can be netted by this one so the condition is also able to threaten the resource.

5. Conclusion

This research discovers that the number of fishing gears which are usually used by the fishermen in Baun Bango Village is 13, they are Rengge, Banjur, Rawai, Kabam, Rempa, Salambau, Pangilar, Jala, Pisi, Tampirai, Buwu, Hempeng, and Beje. Fishing gear productivity can be measured by the total number of fish catches in every trip. Based on the data analyses, Salambau, Pangilar Hempeng and Beje are considered as the gears which have high productivity since they are able to produce 150-240kg/trip, while other fising gears only produce approximately 20-70 kg/trip. Salambau, Rempa and Pangilar are considered as the low selectivity fishing gears since the selectivity score of the are 2,14-3,90. Thus, it indicates that the three fishing gears, Salambau, Rempa and Pangilar are needed to be watched out, given more attention, and regulated the way to use them so that it will save fish resource.

REFERENCES

Anonim. 2006. Environmental Impact Assessment Port Fish Landing. Department of Marine and Fisheries Katingan.

Anonim. 2010. Katingan in numbers. Central Statistical Bureau of Katingan, Central.

FAO. 2000. Indicator for Sustainable Development of Marine Capture Fisheris. FAO Technical Guideline for Responsible Fisheris. No. 08

Mantra, LB 2000. Survey Research Measures Proposed Research and Research Reports. UGM Press. Yogyakarta

Patton, Mechael Quinn. 2006. Qualitative Evaluation Methods. Pustaka Pelajar Publisher. Yogyakarta.

Parente J., Fonseca P., Henriques V. and Campos A., 2008. Strategies for improving fuel efficiency in the Portuguese trawl fishery, Fisheries Research. 93 117–124

Priour, D., 1999. Calculation of net shapes by the finite element method with triangular elements. Communications in Numerical Methods in Engineering, 15(10), 755-763.

Singarimbun, M, dan Effendi, S. 1995. Survey Research Method, LP3ES. Jakarta

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar