Fishermen’s perception of fisheries resources and water condition in Kretsek District, Parangtritis

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Abstract. The coastal area which located in Kretsek District performed the highest production in capture fisheries of Bantul Regency. As the consequence, many people in this district earn their living on fisheries sector as a fisherman, especially people in Parangtritis Village. The existence of perception affect relation between the person and their environment. In this case, the perception between fishermen and their coastal area specifically the sea water condition. Therefore, the study was conducted to understand the perception which develop in this area. The method used was quantitative descriptive method with chi-square test to understand relation between fishermen’s characteristic and perception with condition in Parangtritis coast. Result showed that fishermen’s perception about size of capture fish results, needed for conservation of fish resources, and about capture fish result condition in Parangtritis coast is have a relation with level of education, income, and fishermen’s place of origin.

Keywords: Fishermen perception, fishermen characteristic, fisheries resources, parangtritis

1. Introduction
Kretsek District is in south of the Bantul Regency within area of 2,677 Ha. The climate in this district is similar as in the tropical low land areas with hot weather. The temperature in this district is ranged from 28–32 °C. The topography in this district is mostly flat to wavy areas, with small part of wavy to hilly areas (5 %). Kretsek district is inhabited by 7,762 families with the total population is 30,834–14,835 people of male and 15,981 people of female. The level of population density in Kretsek district is 1152 people/km². Based on district monograph data, it is noted that 17,215 people or 55.8 % of Kretsek district residents work on the agricultural sector.

The agriculture, forestry, and fisheries sectors are the second sector which generate the most contribution to GDP after the invoicing industry sector in Bantul Regency. This indicates that the large number of people are working in those sectors. Kretsek district also known to be the district which performed highest contribution in capture fisheries among the districts in Bantul Regency. Consequently, many people are earning in fisheries sector, usually as fishermen in Parangtritis Village.

Human response to the environment depends on how humans interpret and how the individual perceives his environment [1]. Perception of the environment affects individual relationships with their environment [2]. As individual, it can be observed from its participation in environment including utilizing the environment, preventing environmental damage and tackling environmental damage [3].

Perception affects the relationship between fishermen and their environment, in this case the sea waters. Therefore, study of fishermen’s perception in Parangtritis Village of water condition in
Parangtritis Coast needs to be done. The concept of this perception can be adopted to coastal environment, by observing the fishermen as human and seawater as the environment. Limited data about this perception is the reason this study need to be done.

2. Method

2.1. Location and time
The research location is in Kretek District, Bantul Regency, Special Region of Yogyakarta Province (figure 1). This research was provided on August 2018.

2.2. Sampling
The method used in this research is descriptive method and survey with a quantitative approach. In his book, Sugiyono stated that quantitative method is a research method used to examine a particular population or sample, the sampling technique used randomly, collecting data using research instruments, analysing statistical data aim to testing predetermined hypotheses, while survey methods are research methods who take samples in the population and use a questionnaire as a tool used to collect primary data [4]. This study uses a questionnaire with several questions that can be answered based on the choice of answers available while some other questions can be answered according to free thinking.

2.3. Data analysis
In this study, the questions to the fishermen in Parangtritis coast covers some aspect. Those aspect were how their perception of the condition of the fish caught, the type of fish caught, the size of the fish caught, the condition of the waters in Parangtritis, the causes of water pollution in Parangtritis, and the need for conservation of fish resources in Parangtritis waters.

Figure 1. Fishermen’s place of origin map in Parangtritis Coast.
This study uses a questionnaire with several questions that can be answered based on the choice of answers available while some other questions can be answered according to free thinking. While the data processing method for this research is quantitative descriptive analysis. Quantitative descriptive research methods in this study was to obtain an overview of fishermen’s perception of the water conditions in Parangtritis by using SPSS (Statistical Product and Service Solutions).

3. Results and discussion

3.1. Characteristic of respondent

The characteristics of respondent on this research based on level of education, fishermen’s income seen from the socio-cultural and economic aspects are shown in figure 2. In this research, andon fishermen are fishermen who migrated from an area and have settled in the village of Parangtritis, while local fishermen are fishermen who have lived from childhood or at least 10 years in Parangtritis. Based on figure 2, most of the andon fishermen on Parangtritis coast have a level of elementary education and most of the local fishermen have a level of high school education. While the income earned by andon and local fishermen is mostly less than Rp 200,000.

3.2. Perception of the fishermen

Based on the results of survey, founded that most of the fishermen in Parangtritis waters felt that the condition of the cached fish increased even though not too much, then the number of fish caught and the size of capture fish in Parangtritis had not experienced an increase or decrease in the past. Most fishermen also argue that the condition of the waters in Parangtritis is relatively good, even if there is a pollution, it happens due to natural factors. Even so, most fishermen say that there is a need to conserve fish resources in Parangtritis coast. The perception of the condition of Parangtritis waters by the fishermen is not separated from the characteristics of each fisherman. Therefore, a chi-square test was conducted to see the relationship between the characteristics of fishermen – in this research include level of education, income, and place of origin – and their perception to Parangtritis water condition. Based on the results of survey, all of the variable can be seen on figure 3.

3.3. Perception based on social economic characteristics of fishermen and size fish of catch

Furthermore, based on data survey, data continue chi-square test. In chi-square test, there is an initial hypothesis, known that:

H0  : there is no relation between fishermen’s characteristic and Parangtritis water condition.

H1  : there is relation between fishermen’s characteristic and Parangtritis water condition.

Zero hypothesis (H0) rejected if the significance value of chi-square < 0.05.

![Figure 2. (a) Fishermen's level of education, and (b) Fishermen's income in Parangtritis Coast.](image-url)
3.4. Perception based on social economic characteristics of fishermen and size fish of catch

Furthermore, based on data survey, data continue chi-square test. In chi-square test, there is an initial hypothesis, known that:

H0 : there is no relation between fishermen’s characteristic and Parangtritis water condition.

H1 : there is relation between fishermen’s characteristic and Parangtritis water condition.

Zero hypothesis (H0) rejected if the significance value of chi-square < 0.05.

Based on the level of education and the size of the fish caught in table 1 and table 2, known that most fishermen feel that the size of the fish they catch is the same as before. Then the results of the chi-square
test indicate that there was a relationship between the level of education and the perception of fishermen on the size of the fish caught, because the chi-square significance value was less than 0.050 which was 0.023.

Based on fishermen’s income and fishermen’s perception of fish source conservation in table 3 and table 4, known that most of fishermen agree there is need to fish source conservation in Parangtritis Coast. Then the results of chi-square test indicate that there is relation between fishermen’s income and fishermen’s perception of fish source conservation, because the chi-square value was less than 0.050, which was 0.044.

Based on fishermen’s place of origin and value of fish caught condition in table 5 and 6, known that most of fishermen feel that there is an increasing fish caught in Parangtritis Coast, but not much. Then the results of chi-square test indicate that there is relation between fishermen’s place of origin and fish caught condition, because the chi-square value was 0.050.

| Table 1. Level of education and the size of fish caught in coastal Parangtritis. |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Size of fish caught             | Elementary      | Junior high school | Senior high school | Total |
| Greater                         | 4               | 0               | 1               | 5   |
| Same as before                  | 14              | 4               | 9               | 27  |
| Smaller                         | 0               | 2               | 0               | 2   |
| Total                           | 18              | 6               | 10              | 34  |

| Table 2. Result of chi-square test for level of education and the size of fish caught in coastal Parangtritis. |
|---------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
|                                                              | Value           | df              | Asymp. sig. (2-sided) |
| Pearson chi-square                                            | 11.328<sup>a</sup> | 4               | .023            |
| Likelihood ratio                                              | 9.741           | 4               | .045            |
| Linear-by-linear association                                  | .987            | 1               | .320            |
| N of valid cases                                               | 34              |                 |                 |

| Table 3. Level of income fishermen and fish resources conservation in coastal Parangtritis. |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Fish source conservation        | No Idea < Rp. 200,000 | Rp. 200,000 – Rp. 500,000 | > Rp. 500,000 | Not sure | Total |
| Agree                           | 2               | 3               | 0               | 1               | 16              |
| Disagree                        | 0               | 0               | 1               | 2               | 5               |
| No idea                         | 0               | 4               | 0               | 0               | 10              |
| Total                           | 2               | 7               | 1               | 3               | 31              |
Table 4. Result of chi-square test for level of income fishermen and fish resources conservation in coastal Parangtritis.

|                               | Value     | df  | Asymp. sig. (2-sided) |
|-------------------------------|-----------|-----|-----------------------|
| Pearson chi-square            | 15.906a   | 8   | .044                  |
| Likelihood ratio              | 14.931    | 8   | .061                  |
| Linear-by-linear association  | .365      | 1   | .546                  |
| N of valid cases              | 31        |     |                       |

Table 5. Fishermen’s place of origin and fish caught condition in Parangtritis.

| Fish caught condition last 5 years | Fishermen’s place of origin | Total |
|------------------------------------|-----------------------------|-------|
|                                    | Andon                       | Local |       |
| Unknown                            | 0                           | 3     | 3     |
| Increase two times                 | 1                           | 6     | 7     |
| Increase, but not much             | 5                           | 10    | 15    |
| Same as before                     | 4                           | 2     | 6     |
| Less two times                     | 3                           | 1     | 4     |
| Less, but not much                 | 2                           | 0     | 2     |
| Total                              | 15                          | 22    | 37    |

Table 6. Result of chi-square test for fishermen’s place of origin and value of fish caught condition in Parangtritis coast.

|                               | Value     | df  | Asymp. sig. (2-sided) |
|-------------------------------|-----------|-----|-----------------------|
| Pearson chi-square            | 10.973a   | 5   | .050                  |
| Likelihood ratio              | 12.987    | 5   | .024                  |
| N of valid cases              | 37        |     |                       |

4. Conclusion

Fishermen’s perception about the size of fish caught, the need for conservation of fish resources, and the condition of fish caught in coastal of Parangtritis, each has a correlation with the level of education, income, and origin of fishermen. Fishermen’s perception about the size of fish caught have significant value was less than 0.050 which was 0.023. They have good perception related conservation of fish resources in Coastal of Parangtritis. The perception of fisherment have significance value was less than 0.050, which was 0.044. Then the results of perception to place of origin and fish caught condition have significant value was 0.050.

Acknowledgments

This paper is funded by Hibah Penelitian Dasar Unggulan Perguruan Tinggi with grant number 83/PKS/R/UI/2018. We thank Balai Penangkapan Ikan Mina Bahari Parangtritis for the cooperation.
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