

Community perspective towards Eichhornia in Galela Lake, South Galela, North Halmahera

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Abstract

South Galela District is one of the districts located in North Halmahera Regency. The sub-district was consist of 7 villages (Seki, Togawa Besi, Togawa, Soakonora, Igobula, Ori, Bale) which are located nearby Lake Galela, overgrown by aquatic vegetation, namely water hyacinth (Eichhornia). The aquatic vegetation has positive and negative impact on the society. The purpose of the study is to determine the South Galela community perceptive on the positive and negative impacts of Eichhornia in Lake Galela. The research used is descriptive quantitative. The population in this study were all residential building plots in Galela Selatan District. Samples were taken randomly on residential building plots. The number of samples is determined using the Slovin formula with a confidence level of 95%, and the number of samples is 300 building parcels. The data collection techniques used are questionnaire, interview, observation, and documentation. The results showed that there are many people in Galela Selatan Subdistrict more dominant in assessing the existence of Eichhornia towards a positive impact, because people saw it support the community's economy, especially making handicrafts. Based on the results of the research, the factors on community perceptions in Galela Selatan District are the level of community knowledge, length of stay of the community, type of work and level of income. These factors have different effects on the level of public perception.

Key words: Community Perspective, Eichhornia, Galela Lake

A. INTRODUCTION

Galela Lake is the largest lake on the island of Halmahera, covering approximately 414 hectares area. Located in Galela District, North Halmahera Regency. The view of the lake is very beautiful because surrounded by several villages. Community around the village use the lake water as a source of drinking water, washing facilities and inland fisheries cultivation facilities. Unfortunately, the beauty of Galela

Lake is threatened with extinction. This is due to the influence of Eichhornia which grows and covers the beauty of the lake. In fact, almost 50 percent of the lake's water area has been covered by Eichhornia.

Eichhornia (*Eichhornia crassipes* (Mart) Solms) is an aquatic plant vegetation which classified as a weed or pest in lake waters, lives floating, develops roots in the mud in shallow water. The Eichhornia reproduce very quickly, both vegetatively and generatively. Reproduction by vegetative means can double twice in 7-10 days. One Eichhornia in 52 days can grow to an area of 1 m², or within 1 year it can cover an area of 7 m². Heyne K. (1987) states that within 6 months the growth of Eichhornia in an area of 1 ha can reach a wet weight of 125 tons.

Eichhornia (*Eichhornia crassipes*) is a type of floating aquatic plant. Eichhornia has several benefits, namely having the ability as a biofilter. With the presence of rhizosphere microbes in the roots and supported by large absorption and accumulation of certain pollutants, it can be used as an alternative to control pollution in waters. At the end of the root there is a root sac where in the sun the roots are red, the arrangement of the roots can collect mud and particles of dissolved substances in water. The roots of the Eichhornia are able to neutralize water that contaminated with waste and often used in handling industrial waste

The breeding of the plant is triggered by increased fertility in lake waters (eutrophication), as a result of erosion and land sedimentation, various community activities (bathing, washing, latrines or MCK), aquaculture, water transportation waste, and agricultural waste. Eichhornia is aquatic vegetation classified as weeds or pests on Galela Lake, Eichhornia which are one of the components of the attraction of tourist attractions in Galela District not only produce positive impacts but also have negative impacts.

One of the solutions to eradicate Eichhornia was carried out by the North Halmahera Regional Government in 2015 by issuing a budget of 500 million through the Fisheries and Marine Service (DPK) for the purchase of koan fish (a type of herbivorous plant-eating fish). The release of this koan fish was carried out by the Deputy Regent, Rusman Soleman (Malut post, 11 September 2015). Unfortunately, these efforts have not succeeded in overcoming the "invasion" of Eichhornia in the lake.

At the end of 2016, KH. Wahab Abdullah University (UNWAHA) in collaboration with North Maluku Province agreed to create an Eichhornia empowerment program by producing *bioethanol*. The prevention and conversion of Eichhornia weeds into bioethanol fuel in Galela Lake as an initial program of cooperation between UNWAHA - Ministry of Agriculture and North Maluku Provincial Government. The program supports the economic improvement of the local community and the increase in regional opinion, considering that both programs are implemented based on natural resources and community resources owned by North Maluku.

In 2017, the government supported by the community work together to clean up Eichhornia on Galela Lake through buying Eichhornia from the community at the price of IDR 35,000 per cubic meter. However, due to limited funds, Eichhornia cleaning does not reach the leaves.

Removal of Eichhornia should be done every year to reduce uncontrolled population, but it will only temporarily solve the problem of increasing number. The fast and uncontrolled growth rate of Eichhornia makes the surface of Galela Lake covered by Eichhornia. It causes silting and obstruction of water flow and damages the ecosystem in the lake. The impacts felt by the community due to the rapid growth of Eichhornia include the increasing difficulty of fishermen in carrying out daily activities such as fishing because most fishing boats are often trapped and difficult to

move. In addition, the development of Eichhornia which live on the water surface create dirty look and no longer has aesthetic value.

The positive impacts of the Eichhornia include the stems of the plant which are used as the main material for plaiting crafts, mushroom growing media and animal feed (Guritno, 2003). The positive and negative impacts of Eichhornia encourage researchers to conduct research related to people's perceptions of Eichhornia plants in Galela Lake.

LITERATURE REVIEW

The research from Natalia Wulandari and Nurcahyaningtyas published in the journal *Geography, Education and Environment (JGEL)* Vol. 3, No. 2, July 2019: with the title *Study of Economic Value and Public Perception of Eichhornia Utilization in Rowoboni Village, Semarang Regency in 2013*. The research is almost similar, about the community's perception of Eichhornia, however this study focus is not only on people's perceptions but also on the economic value of the use of Eichhornia

The research conducted by Yoza Wahyu Ningsih et al, which published in the journal *Journal of Geography, Education and Environment (JGEL)* Vol. 3, No. 2, July 2019 with the title; *Public Perception of Eichhornia in Rawa Pening in Banyubiru Village, Semarang Regency*. The results of the study focus on the factors that exist in the local community on the understanding of Eichhornia, what distinguishes it from this research is the factors found in the community as well as the community's educational background on Eichhornia

Third, research conducted by Isma Wardiah et al, in 2019 with the title: *Utilization of Eichhornia for community economic empowerment in Jelapatti Village, North Barito Regency*. Published in the journal *Implementation and action* Vol 1. No.2

of 2019. This research is to empower Eichhornia as a weed into handicrafts and can increase the family economy.

METHODOLOGY

The type of research used in this research is quantitative descriptive method. Quantitative descriptive research is research based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, quantitative data analysis or simple statistics (Siregar, 2013). The quantitative descriptive study is intended to obtain data regarding the public's perception of Eichhornias which have an impact on the Galela lake environment.

The type of research method chosen is descriptive analysis, descriptive analysis method according to Sugiyono (2010), is a method that serves to describe or give an overview of the object under study through data or samples that have been collected as they are without analyzing and making general conclusions

The types of data used in the study are primary data and secondary data. Primary data is taken directly at the source such as during field observations. Secondary data is supporting data such as books, journals, articles, Google Earth imagery, the administrative map of Banyubiru Village (Figure 1) which is obtained from the RBI map at a scale of 1: 25,000. The data collection technique used in this research is observation, interview, documentation. Interviews were conducted by analyzing the opinions of research subjects.

The type of data analysis used in this research is descriptive data analysis. Descriptive data analysis is an analytical technique used in analyzing data by making descriptions of the collected data without generalizing the results of the research. The results of the research data derived from interview data and questionnaires conducted in the village community around Galela Lake, the calculated data results are then

described in order to obtain conclusions from the data. Analysis of the data can be used to describe people's perceptions of Eichhornia.

RESULT AND DISCUSSION

Respondents who were taken from the local community to find out about the perceptions of water hyacinth were as many as 70 people from 18 years to 60 years old with different educational backgrounds and from various different life backgrounds. From the data received, as many as 42 people or 60% of the respondents stated that they had good perceptions and as many as 28 people or 40% said they had bad perceptions. Good when the community says it is not good and when they are in a neutral position.

Most of the local people think well of the Eichhornia because most of the inhabitants have fishpond in Galela Lake, and the Eichhornia is one of the nesting sites for newly hatched fish. The local community in maintaining fishpond takes the young fish in the Galela lake. The understanding of this community is not based on the deeper effects of Eichhornia.

In detail, the results of interviews with local people about their understanding of Eichhornia can be classified into two parts, namely the positive and negative impacts of the plant.

The positive impact of the existence of Eichhornia is as an organic fertilizer. The Eichhornia is used by the people around Lake Galela as organic fertilizer, especially for its roots which are rarely used but thrown away. The community uses it as the main material for the manufacture of organic fertilizers which have been produced, although not yet on a mass basis. Although it has not yet reached various cities with the availability of organic fertilizers, it is hoped that it can help efforts to restore the quality of lake water and accelerate efforts to restore critical land in the lake's catchment area.

As the basic material for making handicrafts, the people in several villages around Lake Galela have a creative attitude. This is because the community has been given training on how to make handicrafts with Eichhornia as the basic material. Eichhornia are used as the main material for making handicrafts such as weaving. Water hyacinth has been a pest in Galela Lake. Therefore, people can use it as a source of additional income or even their main income.

Negative Impact of the Existence of Eichhornia in Galela Lake can affect social, economic and environmental activities. The impact felt by the community has been going on for a long time. The negative impact of the existence of Eichhornia is silting, it is not impossible that one day Lake Galela will become shallow due to rotting water hyacinth plants.

Just few people are aware of the impact of silting that occurs in Galela Lake, due to the low level of community knowledge of the importance of maintaining the ecosystem in the lake. The closure of the lake surface by the Eichhornia has increased continuously, this uncontrolled growth causes the closure of the water surface. This affects the activity of fishermen who are looking for fish because it is blocked by Eichhornia. The fishermen complained about obstacles while fishing

The damage to the community's agricultural products caused by Eichhornia are disturbed by agricultural pests. This is because the Eichhornia bush becomes a nest for rats, which in the event of high tide the bush pulls over to the community's agricultural land, where the rats who join the bush eat up the community's agricultural products. The community also complained that the rotting Eichhornia waste caused an unpleasant odor and polluted the water in Lake Galela.

Public Perception of the Existence of Eichhornia in Lake Galela. Perception in the Big Indonesian Dictionary is a direct response (acceptance) of something. The process of a person knowing several things through their five senses. Perception contains an inner

process of knowing and evaluating the extent to which a person knows others. In this process the sensitivity in a person to the environment begins to appear. The perspective will determine the impression generated from the perceptual process (Rohmaul & Yudi, 2015).

Community perceptions can be in the form of positive perceptions and negative perceptions, not everything that affects this positive perception can be seen from the level of public knowledge of certain things by taking a high level of education. Not everything that affects people's negative perceptions can be seen from a lack of knowledge and lack of education, so that negative perceptions are not overlooked because these perceptions work according to their wishes.

Based on the results of the study, the level of education does not affect the level of public perception of the impact of the Eichhornia. Some people who take education think that Eichhornia have a positive impact, this is because the community sees Eichhornia from the point of view of developing a business in the form of cultivation freshwater fish. However, there are some people who are taking elementary, junior high, high school education who think that the Eichhornia has a higher positive impact than the negative impact it produces. This is due to the lack of understanding, counseling, training and knowledge gained while in school, making people see one particular aspect and ignore other aspects.

Unlike the case with people who have higher education levels such as diplomas and degrees, they think that Eichhornia have a high negative impact compared to its positive impact. Although there are still those who think the Eichhornia has a positive impact on society.

The type of work has also affects the community's perception of the existence of Eichhornia, based on the type of job, each respondent has own perspective on water hyacinth plants. People who have a profession that is not in

direct contact with Galela Lake and the aspects in it have the same response between positive and negative impacts. It can be concluded that the type of work can also influence people's perceptions of Eichhornia.

CONCLUSIONS

The results of research on community perceptions of Galela Lake, both positive and negative perceptions, do not depend on the level of community education, but community perceptions are more likely to be influenced by the type of work of the local community.

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