THE DOMINANT FACTORS THAT INFLUENCE THE NUMBER OF MALARIA CASE AND ALTERNATIVE CONTROL IN TANJUNG TIRAM, BATU BARA DISTRICT

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ABSTRACT

Malaria is a serious and fatal disease that is transmitted by mosquitoes and if not treated immediately, the patient will experience severe complications and can cause death (CDC, 2015). According to the World Health Organization (WHO) (2014), the malaria mortality rate in the world in 2013 still reached 47% and 78% of them were children under 5 years old. The Global Malaria Program (GMP) states that malaria is a disease that must be continuously observed, monitored and evaluated, and that appropriate policy and strategy formulations are needed. Bogak Village, Suka Maju and Bagan Dalam in Tanjung Tiram District, Batu Bara Regency, North Sumatera, Indonesia are malaria endemic areas. Clinical malaria cases in 2015 were the highest from the three villages namely Bogak village reached 15 cases with a population of 5,812 people, Sukamaju village 11 cases with a total population of 14,389 people and Bagan village in 27 cases with a population of 4,024. This study was conducted to determine the dominant factors causing the high incidence of malaria as well as alternative control in Bogak Village, Suka Maju Village, and Bagan Dalam Village, Tanjung Tiram District, Batubarap Registry. The purpose of this study was to analyze the dominant factors influencing the high incidence of malaria and controlling alternatives and seeing the influence of population characteristics (age, sex, education, income, occupation), temperature, humidity, socio-cultural and socioeconomic on decreasing incidence malaria in Bogak Village, Suka Maju and Bagan Dalam in Tanjung Tiram District, Batu Bara Regency. The results and outcomes achieved in this study are by making tilapia ponds at the location of the land that has been determined along with Tanjung Tiram sub-district officials, village heads and officers from the Coal Health Office and local community leaders. It is recommended that there be a decrease in the density of malaria mosquito larvae in the three fish ponds in Bogak Village, Sukamaju Village and Bagan Dalam Village. It is expected that the relevant village officials can continue this activity to help reduce the incidence of diseases caused by the bite of Anopheles mosquitoes in the District of Tanjung Tiram, Batu Bara.

Keywords: Control, Malaria, Pond, Oreochromis niloticus, Fish

1. INTRODUCTION

The entire cycle that recurs inside red blood cells is called an asexual erythrocytic cycle or blood sizogony (Putu, 2009; Nugroho, 2010). According to the World Health Organization (WHO) (2014), the malaria mortality rate in the world in 2013 still reached 47% and 78% of them were children under 5 years old. The Global Malaria Program (GMP) states that malaria is a disease that must be continuously monitored, monitored and evaluated, and that appropriate policy and strategy formulations are needed. In GMP it is targeted that 80% of the population is protected and sufferers receive Arthemisinin-based Combination Therapy (ACT) (Harijanto et al, 2010). The high incidence of malaria is influenced by the low level of knowledge, attitudes and actions of families towards the prevention and eradication of malaria. Therefore, with the lack of receiving health education about malaria, it is also possible that prevention efforts that have been carried out by the community are less frequent because the community does not have enough knowledge and information to carry out such prevention. Based on the preliminary survey that was carried out on January 5-6, 2016, the Tanjung Tiram Health Center was one of the Puskesmas in the Batu Bara District area located in Tanjung Tiram District. The working area includes several villages close to the beach where the majority of the population work as fishermen. There are still many swamps found around people's homes, holes in the former ponds that are still flooded with water.
The location of tilapia ponds is in three villages, Bagan Dalam Village, Bogak Village and Suka Maju Village. Clinical malaria cases in 2015 were the highest from the three villages namely Bogak village reached 15 cases with a population of 5,812 people, Sukamaju village 11 cases with a total population of 14,389 people and Bagan village in 27 cases with a population of 4,024. Various efforts carried out by the Tanjung Tiram Health Center were to conduct counseling on the dangers of malaria, then to treat malaria sufferers and to distribute mosquito nets to the community in the Tanjung Tiram Health Center work area. In addition, fogging is also carried out to kill mosquitoes that cause malaria. But that all must also be based on the behavior of the community itself who want to carry out the education that has been given and obedient to use mosquito nets as a protective sleep at night. The environment which is also a supporting factor for the breeding of mosquitoes also needs to be watched out and maintained so as not to become a place for mosquito nests. Used fish ponds that are no longer used should be dried or entered by fish that can eat mosquito larvae so that mosquito breeding is minimal.

II. LITERATURE REVIEW

Malaria is a serious and fatal disease that is transmitted by mosquitoes and if not treated immediately, the patient will experience severe complications and can cause death (CDC, 2015). Plasmodium falciparum is a severe cause of infection and can even cause a variety of acute manifestations and if untreated, can cause death (Soemarwo, 2010; Band, 2008, Rahardjo & Marsaulina, 2020 and Sembiring et al., 2020). Life cycle of liver stage plasmodium. This stage begins when the female Anopheles mosquito bites humans and inserts sporozoites in its saliva into human blood while sucking blood. In a short time (± 1/2 - 1 hour) all sporozoites disappear from the bloodstream into the liver cells and immediately infect liver cells. During 5-16 days in liver cells (hepatocytes) sporozoites divide asexually, and turn into liver sizon (cryptozoic sizon) depending on the malaria parasite species that infects. After cryptozoic sizon in the liver cells becomes mature, this form with infected liver cells will rupture and release 5,000-30,000 merozoites depending on the species that immediately enter the red blood cells (Gunawan, 2009; Manalu, 2012; Putu, 2009; Nugroho, 2010). While the cycle in the blood begins with the release of merozoites from the mature schizon in the liver into the circulation and changes into young trophozoites (ring shape). The young trophozoites grow into adult trophozoites and then divide into sizon. Sizon who is already ripe with merozoites-merozots in a certain maximum depends on the species, breaks with infected red blood cells, and the merozoites which are released again infect the red blood cells to repeat the cycle.

III. METHODS

The research method used in this study is a Quasi Experiment Design, which is a time series design with a control time series design (Campbell, 1996 and Habbe et al, 2019). In other words this design does not have strict restrictions on randomization and at the same time can control the threats of validity. In this case the experimental group is 3 (three) ponds which are constructed with the size of each 5 x 6 meter pool. This research is a series of studies that will begin in 2018 for 8 months. An overview of the research road map (road map) is expected to follow the researchers' plan to achieve the research target which is to reduce the density of Anopheles sp mosquitoes. by utilizing fish ponds.

IV. RESULTS AND DISCUSSION

The location of tilapia ponds is in three villages, Bagan Dalam Village, Bogak Village and Suka Maju Village. Each village provides land for a tilapia pond made of concrete tubs measuring 5X6 meters in Bagan Dalam Village, in Suka Maju Village, Each pond is supervised by a person in charge as a fish feeder and caring for the pond so that the fish stays alive and breeds. The seeds of Nila Merah fish were purchased from 2000 tilapia hatchery entrepreneurs with a size of 2-3 inches. The feed pellets purchased were 400 kg (4 bags). Ponds in Bagan Dalam Village are covered with 7,500 red tilapia fish and 400 kg of fish (pellets). Ponds in the village Bogak sprinkled with 2500 red tilapia fish, and 100 kg of fish pellets. Ponds in the Suka Maju Village are dusted with 2500 tilapia red fish and 100 kg of fish feed. Each pond is given an electric aerator which functions to increase the oxygen content in the pool water so that fish can continue to survive. Every day the life of Red Tilapia is observed and its ability to eat jenitic and Anopheles mosquito larvae in the pond. The development of the life of Red Tilapia is recorded and documented every day. In the Red Tilapia pond in Bogak Village, Tilapia remains alive and develops well, although there are 2 dead fish seeds. In the Red Tilapia pond in Bagan Dalam Village, the Red Tilapia fish still live and thrive even though there are 3 dead fish seeds.
Supervision of each pond in the three villages, namely Bagan Dalam Village, Bogak Village and Suka Maju Village is very necessary to maintain the pond so that the fish can survive. The ability of aerators in each pond greatly affects the life of fish in the pond to get oxygen (O2). The magnitude of the decrease in the density of Anopheles mosquitoes and Malaria Prevalence Ratio with the maintenance of red tilapia fish in predetermined ponds. Income from sales of red tilapia fish bred in ponds. Through this research, an innovative finding will be obtained which presents a concept to reduce the incidence of malaria in the area.

V. CONCLUSION

Bogak Village, Suka Maju and Bagan Dalam in Tanjung Tiram District, Batu Bara Regency are malaria endemic areas. Where there are still a lot of swamps found around people's homes, holes in the former ponds that are still flooded by water. Also supported by low temperature conditions and high humidity so that the mosquito breeding process becomes faster.

- When sowing the seeds until the end of sowing, the fish breed well.
- Supervision is very necessary to treat the pond so that the fish stay alive and breed.
- It takes aerator in the pond to get oxygen (O2) for the survival of red tilapia.
- Fish feed is needed which greatly determines the continuation of the fish feed.
- The development of the ability of the Red Tilapia to eat jenitic and Anopheles mosquito larvae in the pond is very good.

Suggestion

It is expected to decrease the density of malaria mosquito larvae in the three fish ponds in Bogak Village, Sukamaju Village and Bagan Dalam Village.

It is expected that the relevant village officials can continue this activity to help reduce the incidence of diseases caused by the bite of Anopheles mosquitoes in the Tanjung Tiram Subdistrict, Batu Bara.

REFERENCE