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MOSQUITO BEHAVIOR AND DENSITY FLUCTUATIONS *Anopheles leucosphyrus group* AS VECTOR KNOWLESI MALARIA IN IBOIH

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ABSTRACT

Anopheles leucosphyrus group infected with the pathogen *Plasmodium knowlesi* from *Macaca fascicularis, Macaca nemestrina*, and *Macaca leonine. an. The leucosphyrus group* consists of species *An. crasens, An. latent s*, and *An. introlotus*. Anopheles mosquitoes have behavior and fluctuations in density at a punctual time in foraging and biting. This study used the Animal-baited trap net method, which is a method that uses farm animals as an attractant. Data collection that has been carried out, it was found that a mosquito *An. leucosphyrus group* has a dynamic behavior of biting from 0 8:00 PM to 03:00 AM, with the highest fluctuations occurring at 10:00 PM. The behavior and fluctuations of a mosquito *An. leucosphyrus group* varies during active biting in search of blood feed.

Keywords: Animal baited trap net, anopheles, *P. knowlesi*, vector.

INTRODUCTION

Plasmodium knowlesi is a blood protozoan that can cause malaria. *Plasmodium knowlesi* has known as reason fifth malaria infection in humans after *P. vivax, P. falciparum, P. malariae*, and *P. ovale* [1][2]. *P. knowlesi* is disease contagious vector transmitted by mosquitoes *Anopheles* group *leucosphyrus* [3]. Case *Plasmodium knowlesi* has reported throughout Southeast Asia, where *Macaca fascicularis, Macaca nemestrina*, and *Macaca leonine* is the main reservoir *P. knowlesi* with mosquito *an. leucosphyrus* group as vector main malaria *knowlesi* [4][5][6].

Anopheles behavior in suck blood character anthropophilic and zoophilic, however more tend

character exophagic and exophilic. Most Anopheles mosquitoes start appear at 06.00 PM. Breeding habitat many found in rice fields, puddles, swamps, ditches, springs, lagoons, streams, beaches, armpits trees, rivers and wells [7]. Effort diversion bite *Anopheles* could conducted with existence cage animal cattle close with house [8]. The Anopheles mosquito has characteristic the place the longing that exists moss green. Behavior bite *an. leucosphyrus group* start appears at 10.00 PM and comes back increased at 04.00 AM. Fluctuation highest totaling 6 individuals and the lowest 1 individual [9]. Every area, species involved _ as infectious *P. knowlesi* vary. *Anopheles* as vector *P. knowlesi* among them *an. latent, An. cracens, An. Introlotus, An. balabacensis,* and *An. dirus* [3]. The Anopheles mosquito has habit bite blood human , pig forest , dog, and monkey, *An. leucosphyrus group* suck blood monkey and be vector predominant malaria knowlesi [10].

Existence Knowlesi malaria disease in Iboih is closely related with existence existence mosquito *Anopheles* as vector. Mosquito *an. leucosphyrus group* have behavior biting and density on time certain, so that need studied related behavior and fluctuation density at certain hours of the night day. Analyze behavior and fluctuation density mosquito *An. leucosphyrus group* aim for could made reference Public moment activity at night day. Research results this expected could become reference party related for educate society to minimize activity outside house at night day. If society of course require for activity outside house at night day for to do action control so as not to infected with knowlesi malaria.

METHOD

Mosquito data collection malaria vector carried out at night day with-use
method *animal baited trap net* with destination for getting mosquito, know behavior mosquito get blood and fluctuation density mosquito. Install *animal-baited trap net* in place roomy with given distance part lower with surface soil 15-20 cm. Stake fastener animal installed in the middle. Collection mosquito carried out from 06.00 PM until 06.00 AM with time

arrest 15 minutes every hour. Mosquito perch was arrested using an aspirator and identified. Mosquito data results collection tabulated according to the time of arrest [11].

RESULT AND DISCUSSION

Research results obtained that mosquito an. leucosphyrus group has amount different densities on an hourly basis. Amount density is very influential to state environment, that is existence the place miss, community as well as animal. Distribution and density an. leucosphyrus group results study presented in picture 1. Mosquito an. leucosphyrus group has behavior looking for blood starting at 08.00 PM until 03.00 AM. Fluctuation increases by the hour, with density highest, occurred at 10.00 PM.

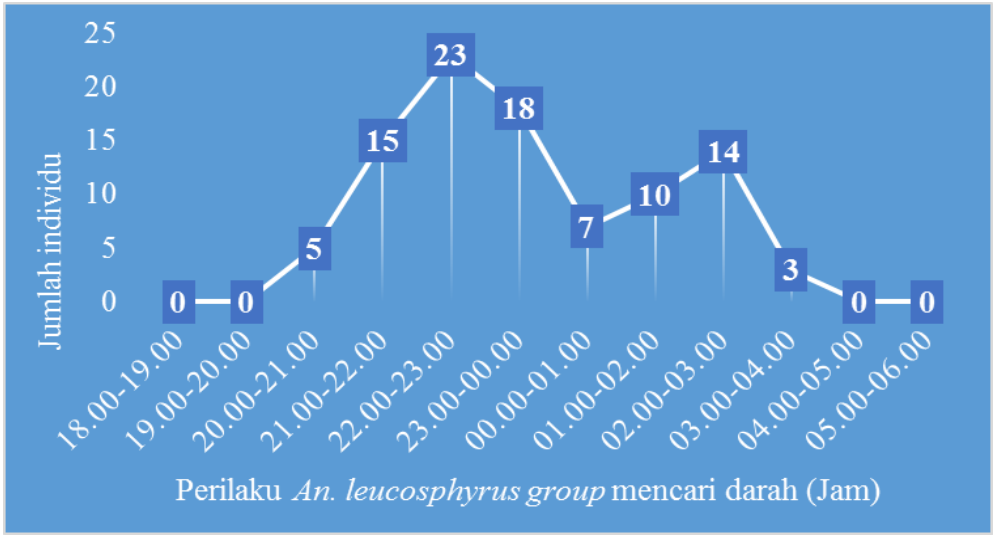

Figure 1. The behavior and fluctuations of the density of *An. leucosphyrus group*

Mosquito behavior An. leucosphyrus group in searching for food or sucking blood starting at 20.00 WIB. Almost all mosquito species, including An. leucosphyrys group such as An. latency and An. introlatus began to actively bite starting at 18.00 WIB. In addition, the mosquito vector An. umbrosus group bites from 07.00 WIB to 11.00 WIB [12]. Mosquito *An. leucosphyrus* group species *An. crescents* and *An. introlatus* was the most collected Anopheles at the time of vector data collection [10]. Mosquito biting behavior An. leucosphyrus group with the main

target of animals and humans. This will strengthen the opinion that this mosquito has the potential to become a vector of knowlesi malaria. *Knowlesi malaria* is a vector-borne disease that occurs due to the bite of an Anopheles mosquito that has been infected with the *P. knowlesi* pathogen from an infected long-tailed monkey (Macaca fascicularis) to infect humans it bites while sucking blood [13].

Mosquito behavior An. leucosphyrus group in search of blood feed starting at 20.00, which time coincides with the hours of community activities outside the house at night. Sabang is an archipelago where most of the people have a livelihood as fishermen. It is important to consider the perspective and behavior of the community about the route of infection by providing information for the achievement of the knowlesi (zoonosis) malaria elimination program. Policymakers need to concentrate on understanding community activities and behaviors that expose individuals and communities to mosquito bites to design socially viable interventions [14]. Socialization related to public knowledge about the distribution of malaria cases, risk factors, clinical symptoms, and management of knowlesi malaria cases can accelerate the elimination of malaria cases [15].

CONCLUSION

Distribution of malaria vector knowlesi An. leucosphyrus group in search of blood starting from 08.00 PM to 03.00 AM. The highest density occurs from 10.00 AM to 11.00 PM. Mosquito An. The leucosphyrus group includes the disease vector Plasmodium knowlesi, which generally lives in forests, with deforestation and land use changes.

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