



## ABSTRAK

Jumlah nyamuk *Anopheles* yang terus berkembang, terutama di daerah endemis malaria di Kota Timika Papua, menimbulkan masalah besar bagi kesehatan masyarakat. Kemampuan nyamuk *Anopheles* untuk menyebarkan malaria sangat berbeda, dan populasi nyamuk *Anopheles* dapat berubah karena berbagai faktor ekologi, bionomik, lingkungan, dan sosial.

Tujuan dari penelitian ini adalah untuk mempelajari dinamika populasi nyamuk di Kota Timika dengan membandingkan dua wilayah dengan kasus tertinggi dan terendah malaria. Penelitian ini melihat kepadatan nyamuk, spesiesnya, bionominya, keberadaan sporozoit plasmodium, kepadatan larva, karakteristik habitat larva, faktor klimatik, dan peta distribusi kasus, serta faktor pengetahuan dan perilaku masyarakat dalam mengendalikan nyamuk

Penelitian ini dilakukan melalui observasi *cross-sectional*. Baik nyamuk maupun larva diperiksa secara *purposive* dalam radius 20 meter untuk nyamuk dan 400 meter untuk larva dari rumah penangkapan. Dengan menggunakan univariat dan gambaran spasial, data bionomik nyamuk, kepadatan dan distribusi larva diolah, serta konfirmasi spesies dengan ITS2 dan MspI. Faktor iklim dan jarak penempatan kandang terhadap kepadatan nyamuk diuji dengan menggunakan dinding kruskall, pengetahuan, dan analisis perilaku. Selain itu, sporozoits plasmodium nyamuk dapat dideteksi melalui metode nested-PCR dan qPCR. Nyamuk *An.koliensis* mendominasi di lokasi penelitian, aktif dari pukul 18.00 hingga 04.00. Nyamuk *An. hinesorum* aktif dari pukul 04.00 hingga 05.00 di UOL. Nyamuk *An.tessellatus* aktif dari pukul 20.00 hingga 21.00 di sekitar kandang dengan berbagai perbedaan bionomik.

Habitat yang menguntungkan untuk larva termasuk parit, kubangan, dan rawa-rawa, dengan pH 6-7, suhu 28-35, dan sedikit vegetasi di atas permukaan air. Predator berudu juga ada. Faktor-faktor seperti keberadaan, pengetahuan perilaku masyarakat, dan iklim sangat memengaruhi kadar nyamuk. Di daerah yang paling banyak kasus malaria bersumber dari *An.koliensis*, ditemukan dua pool sporozoit plasmodium vivax dan satu pool plasmodium falciparum yang menunjukkan hasil positif. Hasil penelitian menunjukkan bahwa spesies *Anopheles* memiliki ragam bionomik yang berbeda, dan karakteristik habitat positif larva *Anopheles* dominan pada dua wilayah penelitian. Pada penelitian ini, *An.koliensis* terkonfirmasi sebagai vektor malaria berdasarkan hasil pemeriksaan nested dan hasil qPCR yang menunjukkan sporozoit plasmodium yang positif.

Keyword : *Anopheles*, bionomik, kepadatan, faktor iklim, pengetahuan perilaku, plasmodium, PCR



## ABSTRACT

*Anopheles mosquitoes are becoming increasingly prevalent in Timika City, Papua, particularly in malaria-endemic regions. This presents a significant public health concern. The capacity of Anopheles mosquitoes to transmit malaria is subject to significant fluctuations, and the population of these mosquitoes can fluctuate as a result of a variety of ecological, bionomic, environmental, and social factors.*

*The objective of this investigation was to investigate the dynamics of the mosquito population in Timika City by contrasting two regions with the highest and lowest rates of malaria. In this investigation, the presence of plasmodium sporozoites, mosquito density, species, bionomy, larval density, characteristics of larval habitat, climatic factors, case distribution maps, and community knowledge and behaviour factors were examined in relation to mosquito control.*

*Cross-sectional observation was implemented in this investigation. Mosquitoes and larvae were purposively investigated within a 20-meter radius and 400-meter radius, respectively, of the capture house. Mosquito bionomic data, larval density, and distribution were processed using univariate and spatial descriptions, and species confirmation was performed using ITS2 and MspI methods. Kruskal walls, knowledge, and behavioural analysis were employed to investigate the impact of climate factors and the distance of cage placement on mosquito density. Furthermore, mosquito plasmodium sporozoites can be identified through the use of qPCR and nested-PCR techniques. The research location is primarily inhabited by *An. koliensis* mosquitoes, which are active from 18:00 to 04:00. *An. hinesorum* insects are active in UOL from 04:00 to 05:00. Various bionomic differences are observed in the *An. tessellatus* mosquitoes that are active around the enclosure from 20:00 to 21:00. Ditches, ponds, and swamps are ideal habitats for larvae, particularly those with a pH of 6-7, a temperature of 28-35, and minimal vegetation above the water's surface. Predators of tadpoles are also present.*

*Mosquito populations are significantly influenced by factors such as climate, community behaviour, and the presence of mosquitoes. Two pools of plasmodium vivax sporozoites and one pool of plasmodium falciparum were identified as positive in the region with the highest number of malaria cases caused by *An. koliensis*. The findings indicated that the two study areas exhibit a distinct bionomic diversity among *Anopheles* species, and the positive habitat characteristics of *Anopheles* larvae are predominant. The nested examination and qPCR results of *An. koliensis* in this study confirmed its status as a malaria vector, as evidenced by the presence of positive plasmodium sporozoites.*