

BIONOMI DAN VARIASI GENETIK *Anopheles farauti* LAVERAN (DIPTERA: CULICIDAE) DI EKOSISTEM PANTAI (KABUPATEN BIAK NUMFOR) DAN EKOSISTEM RAWA (KABUPATEN ASMAT) PROVINSI PAPUA

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Kabupaten Biak Numfor dan Asmat adalah daerah endemis malaria di Provinsi Papua. Upaya pengendalian malaria yang tidak didasari pada pengetahuan tentang bionomi vektor merupakan salah satu penyebab masih tingginya kasus malaria di beberapa kawasan. Nyamuk *Anopheles farauti* dilaporkan sebagai salah satu vektor utama malaria di Kabupaten Biak Numfor dan Asmat. Tujuan penelitian adalah: 1. mengetahui kepadatan, kebiasaan menghisap darah berdasarkan waktu dan tempat, rentang umur dan habitat nyamuk *An. farauti* di ekosistem pantai dan rawa. 2. menentukan potensi nyamuk *An. farauti* menjadi vektor (VC) dan potensi penularan malaria (EIR) di ekosistem pantai dan rawa, 3. Mengetahui hubungan distribusi spasial habitat nyamuk *An. farauti* dengan kasus malaria di ekosistem pantai dan rawa, 4. Mengetahui variasi genetik anggota spesies nyamuk *An. farauti* Laveran (Diptera: Culicidae) di ekosistem pantai dan rawa. Metode yang digunakan untuk mengetahui kepadatan, kebiasaan menghisap darah, rentang umur, menghitung VC dan EIR adalah: *human landing collection*, bedah ovarium dan uji ELISA. Analisis spasial menggunakan program Arc.GIS 9.3 digunakan untuk membuat peta distribusi kasus dan habitat nyamuk *An. farauti*. Metode RAPD-PCR digunakan untuk analisis variasi individu anggota *An. farauti* Laveran. Hasil penelitian menunjukkan rata-rata nilai kepadatan (MBR) nyamuk *An farauti* di ekosistem pantai adalah 20,1-24,3 nyamuk/orang/jam, ekosistem rawa 32,4-39,1 nyamuk/orang/jam. Aktivitas mencari darah nyamuk *An. farauti* di ekosistem pantai dan rawa berlangsung sepanjang malam namun paling banyak mencari darah pada pukul 18.00-19.00. Nyamuk *An. farauti* di ekosistem pantai bersifat *zoofilik*, di ekosistem rawa *antropofilik*. Perkiraan umur populasi nyamuk *An. farauti* di ekosistem pantai adalah 6-8 hari, di ekosistem rawa 2-9 hari. Nilai VC di ekosistem pantai adalah 0,00 - 0,05, ekosistem rawa adalah 0,00 - 0,92. Nilai EIR di ekosistem pantai adalah 0,00- 0,63, ekosistem rawa 0,00 - 80,27. Distribusi kasus dan habitat nyamuk *An. farauti* berada dalam zona jangkauan terbang nyamuk *An. farauti* (2,5 km). *An. farauti* di ekosistem pantai dan rawa memiliki koefisien similaritas < 70%. Hasil penelitian di ekosistem pantai dan rawa menunjukkan bahwa bionomi nyamuk *An. farauti* mempengaruhi eksistensi malaria di kawasan tersebut. Distribusi kasus dan habitat berada pada area beresiko tertular malaria.

Kata kunci : bionomi, *EIR*, *VC*, variasi individu

**BIONOMICS AND GENETIC DIVERSITY OF SPECIES *Anopheles farauti*
LAVERAN (DIPTERA: CULICIDAE) IN COASTAL ECOSYSTEM (BIAK
NUMFOR REGENCY) AND SWAMP ECOSYSTEM (ASMAT REGENCY) IN
PAPUA PROVINCE
ABSTRACT**

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Biak Numfor and Asmat regency are malaria endemic areas in Papua Province. Malaria control efforts that are not based on knowledge of the behaviour mosquitoes as vectors of malaria are likely to be the cause of high incidence of malaria in the region. Research aimed at: (1) determinine density, blood-seeking behavior, lifespan and breeding habitat in coastal and swamp ecosystems, (2) determinine vector potential (VC) and EIR mosquito (3) reveal the correlation between spatial distribution of breeding habitat and malaria outbreak and (4) explaine the genetic diversity of *An. farauti* mosquito in coastal and swamp ecosystems. To achieve these goals, this research involved various methods such as human landing collection, ELISA, spatial analysis and RAPD-PCR. The data showed that the population density of *An. farauti*, and the proportion of parous had no positive correlation with the number of malaria-infected people, occured in research locations. The feeding activity of *An. farauti* mosquito in coastal and swamp ecosystems is a nocturnal activity, but the peak activity is mainly between 6 p.m.-7 p.m. *An. farauti* in coastal ecosystems are zoophilic, in swamp ecosystems anthropophilic. Based on the value of HBI, *An. farauti* mosquito found in coastal ecosystem tends to have less potential ability to act as malaria vector compared to that of living in swamp ecosystem. Environmental factors such as temperature, humidity, precipitation, and wind velocity usually become the essential elements that affect the development and bionomics of vectors. However, the research that has been conducted in coastal and swamp ecosystems explicates that those

factors have no significant correlation. The life span of *An. farauti* population in coastal ecosystem is estimated to range 16-18 days, in swamp ecosystem is 12-14 days. VC in coastal ecosystem ranges from 0.00 - 0.05, in swamp ecosystem 0.00 - 0.92. EIR in coastal ecosystem ranges from 0.00- 0.63, in swamp ecosystem from 0.00 - 80.27. People living in houses have positive symptom to be malaria-infected, Habitats of the mosquitoes (sites where larvae are found and *An.farauti* are captured) are located within buffer zone less than 0.5 km. It means that those sites are considered as malaria-transmission risk areas. The analysis result on genetic diversity shows that most *An.farauti* species samples collected from two research locations share similarity coefficient $< 70\%$.

Key words : bionomics, vector, VC, EIR, diversity genetic