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Keanekaragaman Spesies dan Bionomik Nyamuk yang Berpotensi sebagai Vektor Filariasis dan Penyakit Tular Vektor Lainnya di Daerah Endemis Filariasis di Desa Luwuk Bunter Kabupaten Kotawaringin Timur Kalimantan Tengah
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Keanekaragaman Spesies dan Bionomik Nyamuk yang Berpotensi sebagai Vektor Filariasis dan Penyakit Tular Vektor Lainnya di Daerah Endemis Filariasis di Desa Luwuk Bunter, Kabupaten Kotawaringin Timur, Kalimantan Tengah

ABSTRAK

Latar Belakang: Desa Luwuk Bunter merupakan daerah endemis filariasis dengan kondisi lingkungan berupa rawa, sungai, kolam, kobakan air, dan vegetasi yang berpotensi mendukung perkembangan nyamuk. Informasi mengenai keanekaragaman spesies, bionomik, habitat, dan distribusi spasial nyamuk diperlukan untuk menentukan prioritas pengendalian vektor.

Tujuan: Menganalisis komposisi spesies, kepadatan, bionomik, habitat, kondisi lingkungan, dan distribusi spasial nyamuk yang berpotensi sebagai vektor penyakit serta mendeteksi DNA *Brugia* sp. pada nyamuk di Desa Luwuk Bunter, Kabupaten Kotawaringin Timur.

Metode: Penelitian deskriptif eksploratif dilakukan melalui survei larva pada 12 titik habitat dan penangkapan nyamuk dewasa di tiga rumah serta satu lokasi kerja penderita filariasis. Nyamuk dewasa dikoleksi menggunakan metode *Resting Collection* dan *Human Landing Collection*, kemudian diidentifikasi secara morfologi. Data dianalisis berdasarkan jumlah, persentase, kelimpahan nisbi, indeks keanekaragaman Shannon–Wiener, karakteristik bionomik, dan distribusi spasial. Pemeriksaan PCR secara *pooling* dilakukan untuk mendeteksi DNA *Brugia* sp.

Hasil: Sebanyak sembilan dari 12 habitat positif larva. Habitat rawa menghasilkan larva terbanyak, yaitu 21 larva (34,43%), sedangkan genus *Culex* memiliki distribusi habitat terluas dengan indeks habitat 0,78. Sebanyak 254 nyamuk dewasa yang terdiri atas tujuh spesies dari tiga genus berhasil dikoleksi. *Culex tritaeniorhynchus* merupakan spesies dominan dengan kelimpahan nisbi 43,70%. Indeks keanekaragaman sebesar 1,43 menunjukkan keanekaragaman sedang. Nyamuk lebih banyak beristirahat di luar rumah (83,57%) dan aktivitas menggigit juga lebih tinggi di luar rumah (57,89%), dengan puncak aktivitas pada pukul 20.00–20.45 WIB. Pemetaan menunjukkan konsentrasi habitat potensial pada area rawa, sungai, kolam, kobakan air, dan vegetasi di sekitar permukiman. Seluruh sampel nyamuk yang diperiksa menunjukkan hasil negatif terhadap DNA *Brugia* sp.

Kesimpulan: Desa Luwuk Bunter memiliki komunitas nyamuk dengan keanekaragaman sedang yang didominasi genus *Culex*, terutama *Culex tritaeniorhynchus*. Aktivitas nyamuk lebih dominan di luar rumah pada awal hingga pertengahan malam. Area dengan konsentrasi habitat perairan dan vegetasi perlu diprioritaskan dalam surveilans serta pengendalian vektor, meskipun DNA *Brugia* sp. tidak terdeteksi selama penelitian.

Kata kunci: bionomik, filariasis, keanekaragaman nyamuk, *Culex*, distribusi spasial

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Species Diversity and Bionomics of Mosquitoes with Potential as Vectors of Lymphatic Filariasis and Other Vector-Borne Diseases in a Filariasis-Endemic Area of Luwuk Bunter Village, East Kotawaringin Regency, Central Kalimantan, Indonesia

ABSTRACT

Background: Luwuk Bunter Village is a lymphatic filariasis-endemic area characterised by swamps, rivers, ponds, water puddles, and vegetation that may support mosquito development. Information on mosquito diversity, bionomics, habitats, and spatial distribution is required to determine priority areas for vector control.

Objective: To analyse the species composition, density, bionomics, habitats, environmental conditions, and spatial distribution of potential mosquito vectors and to detect *Brugia* sp. DNA in mosquitoes collected in Luwuk Bunter Village, East Kotawaringin Regency.

Methods: This exploratory descriptive study included larval surveys at 12 habitat points and adult mosquito collections at three houses and one workplace of a person with filariasis. Adult mosquitoes were collected using Resting Collection and Human Landing Collection methods and morphologically identified. Data were analysed using counts, percentages, relative abundance, the Shannon–Wiener diversity index, bionomic characteristics, and spatial distribution. Pooled polymerase chain reaction testing was performed to detect *Brugia* sp. DNA.

Results: Larvae were detected in nine of the 12 surveyed habitats. Swamps produced the highest number of larvae, with 21 larvae (34.43%), while *Culex* had the broadest habitat distribution, with a habitat index of 0.78. A total of 254 adult mosquitoes representing seven species and three genera were collected. *Culex tritaeniorhynchus* was the dominant species, with a relative abundance of 43.70%. The Shannon–Wiener index was 1.43, indicating moderate species diversity. Mosquitoes were more frequently found resting outdoors (83.57%), and biting activity was also higher outdoors (57.89%), peaking between 8:00 and 8:45 p.m. Temperature, humidity, low wind speed, light intensity, vegetation, and aquatic habitats supported mosquito occurrence. Spatial mapping identified concentrations of potential habitats around swamps, rivers, ponds, water puddles, and vegetated residential areas. All mosquito pools tested negative for *Brugia* sp. DNA.

Conclusions: Luwuk Bunter Village had a moderately diverse mosquito community dominated by the genus *Culex*, particularly *Culex tritaeniorhynchus*. Mosquito activity was predominantly outdoors during the early to middle hours of the night. Areas containing concentrations of aquatic habitats and vegetation should be prioritised for vector surveillance and control, although *Brugia* sp. DNA was not detected during the study period.

Keywords: bionomics, filariasis, mosquito diversity, *Culex*, spatial distribution