HEMISPHERICAL PHOTOGRAPHY OF ARTIFICIAL *SUNGGAU* RAFTERS AND NATURAL *SAMBIT* BEE TREES FOR *Apis dorsata*

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ABSTRAK

FARAH SYAHIDAH NURJANNAH. Fotografi Hemisferik dari Struktur Buatan *Sunggau* dan Pohon Lebah Alami *Sambit* untuk *Apis dorsata*. Dibimbing oleh RIKA RAFFIUDIN, WINDRA PRIAWANDIPUTRA, dan NICOLAS CÉSARD.

Apis dorsata berperan sebagai serangga penyerbuk, produsen madu hutan, dan spesies yang bernilai penting dalam penelitian lebah madu. Pemanen madu lokal secara tradisional membangun tempat bersarang buatan yang disebut *sunggau* untuk menarik koloni lebah *A. dorsata.* Sambit merupakan nama lokal di Belitung untuk pohon tempat bersarang alami bagi lebah madu hutan *A. dorsata*. Penelitian ini membandingkan nilai bukaan kanopi hutan di atas sunggau sebagai struktur buatan dengan profil bukaan kanopi pada tempat bersarang alami (nama lokal sambit). Tutupan kanopi hutan diprepresentasikan melalui fotografi hemisferik dengan sudut pandang vertical langit. Foto hemisferik yang diambil dari bawah substrat sarang dianalisis menggunakan Rstudio versi 2026. Perbedaan ukuran substrat sarang yang tampak pada foto sunggau dan sambit dipengaruhi oleh jarak pengambilan gambar. Nilai bukaan kanopi sunggau dan sambit tumpang tindih dalam kisaran 12–14%. Uji Mann-Whitney mengonfirmasi tidak ada perbedaan signifikan dalam bukaan kanopi antara dua tempat bersarang. Uji statistik menunjukkan tidak ada perbedaan signifikan dalam kondisi mikroklimat yaitu suhu, kelembaban, intensitas cahaya, dan kecepatan angin antara sunggau dan lantai hutan di bawah sambit. Penelitian ini menunjukkan bahwa sunggau dapat menyerupai bukaan kanopi sambit meskipun memiliki perbedaan ketinggian.

Kata Kunci: bukaan kanopi, lebah hutan, iklim mikro, Rstudio, tempat bersarang

ABSTRACT

FARAH SYAHIDAH NURJANNAH. Hemispherical Photography of Artificial *Sunggau* Rafters and Natural *Sambit* Bee Trees for *Apis dorsata*. Supervised by RIKA RAFFIUDIN, WINDRA PRIAWANDIPUTRA, and NICOLAS CÉSARD.

Apis dorsata serves as a pollinator, a producer of wild honey, and a valuable species for honey bee research. Local honey harvesters construct a traditional artificial nesting site known as *sunggau* to attract *A. dorsata* colonies. *Sambit* is the local name in Belitung for natural nesting trees for *A. dorsata,* the forest honey bee. This research compared forest canopy openness above *sunggau* as an artificial structure with the canopy openness profile on natural nesting sites (locally known as *sambit)*. Canopy cover was presented using hemispherical photography with a vertical upward view of the sky. Hemispherical photographs captured under the nest substrates were analyzed using statistical analysis with the Rstudio 2026 version. The appearance difference in nest substrate size between *sunggau* and *sambit* photographs was influenced by the distance of taking images. Canopy openness values of *sunggau* and *sambit* overlapped within a range of 12–14%. The Mann-Whitney test confirmed no significant difference in canopy openness between nesting sites. Statistical tests showed no significant differences in microclimate including temperature, humidity, light intensity, and wind speed between *sunggau* and forest floor under *sambit*. This research suggests that *sunggau* provide canopy openness comparable to *sambit* despite the disparity in nesting height.

Keyword: canopy openness, forest bee, microclimate, nesting sites, Rstudio

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PREFACE

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Farah Syahidah Nurjannah

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