



POPULASI PASAK BUMI (*Eurycoma longifolia* Jack.) DI RESOR MATOTONAN, TAMAN NASIONAL SIBERUT

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INTISARI

Pasak bumi (*Eurycoma longifolia* Jack.) merupakan tumbuhan obat yang memiliki status langka berdasarkan Permen LHK No. P.20/Menlhk/Setjen/Kum.1/6/2018 dan diklasifikasikan sebagai hampir terancam oleh IUCN Red List. Kelangkaan ini diduga disebabkan oleh perusakan habitat akibat alih fungsi lahan menjadi pertanian dan peternakan, serta faktor ekologi seperti proses reproduksi lambat dan tipe benih reklasitran. Penelitian ini bertujuan membandingkan variasi kelimpahan struktur populasi pasak bumi antara Zona Tradisional sebagai perwakilan kondisi hutan terganggu dan Zona Rimba sebagai perwakilan kondisi hutan tidak terganggu, serta mengetahui pengaruh faktor lingkungan abiotik terhadap kelimpahannya di Resor Matotonan, Taman Nasional Siberut.

Pengambilan data populasi pasak bumi dilakukan pada 16 petak ukur di Zona Tradisional dan 16 petak ukur di Zona Rimba. Struktur populasi pasak bumi hanya ditemukan pada tingkat semai dan pancang. Data kelimpahan tidak berdistribusi normal ($p\text{-value} < 0,05$) berdasarkan uji Shapiro-Wilk. Banyaknya nilai nol pada kelimpahan pasak bumi menyebabkan overdispersi (varians $>$ rata-rata), sehingga pemodelan dilakukan menggunakan distribusi Binomial Negatif. Analisis pola penyebaran menggunakan Indeks Morisita terstandar. Perbandingan kelimpahan antar zona dianalisis dengan uji Mann-Whitney U. Pengaruh faktor lingkungan terhadap kelimpahan dianalisis dengan regresi linear berganda menggunakan *software* IBM SPSS Statistics 20.

Hasil menunjukkan kelimpahan pasak bumi di Resor Matotonan secara umum rendah. Pada tingkat semai hanya ditemukan di Zona Rimba dengan kelimpahan 313 ± 1250 ind/ha. Kemudian, kelimpahan pada tingkat pancang di Zona Tradisional sebesar 350 ± 771 ind/ha dan 200 ± 438 ind/ha di Zona Rimba. uji Mann Whitney U tidak menemukan perbedaan signifikan kelimpahan pasak bumi tingkat semai ($p=0,317$) maupun pancang ($p=0,803$) antara Zona Tradisional dan Zona Rimba. Perbedaan kelimpahan yang tidak signifikan ini konsisten dengan pola distribusi binomial negatif yang berhasil dimodelkan, mengindikasikan sangat sedikitnya individu pasak bumi dan pola penyebaran mengelompok. Faktor lingkungan secara keseluruhan berpengaruh kuat terhadap kelimpahan pasak bumi ($r=0,735$). Ketinggian tempat ($p=0,001$), suhu ($p=0,036$), dan pH tanah ($p=0,014$) berpengaruh signifikan terhadap kelimpahan pasak bumi.

Kata Kunci: Spesies langka, Pola distribusi, Strategi konservasi

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POPULATION OF PASAK BUMI (*Eurycoma longifolia* Jack.) IN
MATOTONAN RESORT, SIBERUT NATIONAL PARK
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ABSTRACT

Pasak bumi (*Eurycoma longifolia* Jack.) is a medicinal plant classified as a rare species according to Regulation of the Indonesian Ministry of Environment and Forestry No. P.20/Menlhk/Setjen/Kum.1/6/2018 and categorized as Near Threatened by the IUCN Red List. Its rarity is suspected to be caused by habitat destruction due to land conversion for agriculture and livestock farming, as well as ecological factors such as slow reproductive processes and recalcitrant seed types. This study aims to compare the variation in population structure and abundance of *Pasak Bumi* between the Traditional Zone, representing disturbed forest conditions, and the Wilderness Zone, representing undisturbed forest conditions, and to identify the influence of abiotic environmental factors on its abundance in the Matotonan Resort, Siberut National Park.

Population data of *Pasak Bumi* were collected from 16 sample plots in the Traditional Zone and 16 plots in the Wilderness Zone. The population structure of *Pasak Bumi* was only found at the seedling and sapling stages. Abundance data were not normally distributed (p -value < 0.05) based on the Shapiro-Wilk test. The high frequency of zero values in the abundance data indicated overdispersion (variance $>$ mean), thus the modeling used a Negative Binomial distribution. Spatial distribution patterns were analyzed using the standardized Morisita Index. Differences in abundance between zones were analyzed using the Mann-Whitney U test. The influence of environmental factors on abundance was assessed using multiple linear regression with IBM SPSS Statistics 20.

Results indicated that the overall abundance of Pasak bumi in Matotonan Resort was low. At the seedling stage, individuals were found only in the Wilderness Zone with an abundance of 313 ± 1250 ind/ha. Meanwhile, sapling abundance was 350 ± 771 ind/ha in the Traditional Zone and 200 ± 438 ind/ha in the Wilderness Zone. The Mann-Whitney U test showed no significant differences in abundance at either the seedling stage ($p = 0.317$) or sapling stage ($p = 0.803$) between the two zones. These non-significant differences align with the successfully modeled negative binomial distribution, indicating very few individuals and a clumped distribution pattern. Overall, environmental factors strongly influenced the abundance of *Pasak Bumi* ($r = 0.735$), with elevation ($p = 0.001$), temperature ($p = 0.036$), and soil pH ($p = 0.014$) having significant effects.

Keywords: Rare species, Distribution pattern, Conservation strategy

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