

## ABSTRAK

**Ahmad Qadri, NIM 4202520009 (2025), Prediksi Potensi Sebaran Geografis Famili Cercopithecidae (Ordo Primates) di Sumatera Menggunakan Model MaxEnt.**

Famili *Cercopithecidae* (Ordo Primata) berperan penting dalam ekosistem hutan tropis Sumatera sebagai penyebar biji, pengendali populasi serangga, serta indikator kesehatan ekosistem. Namun, populasinya terancam oleh deforestasi, fragmentasi habitat, dan tekanan antropogenik. Penelitian ini bertujuan memprediksi distribusi geografis potensial *Cercopithecidae* di Sumatera serta mengidentifikasi variabel lingkungan utama yang memengaruhi preferensi habitatnya sebagai dasar strategi konservasi berbasis spasial. Data penelitian mencakup 2.649 titik kehadiran dari GBIF, iNaturalist, Taman Nasional Batang Gadis, dan literatur, serta 11 variabel lingkungan yang meliputi faktor bioklimatik, topografi, tutupan lahan, dan antropogenik. Pemodelan dilakukan dengan algoritma Maximum Entropy (MaxEnt) menggunakan 10 kali replikasi, menghasilkan nilai Area Under Curve (AUC) rata-rata  $0,875 \pm 0,010$  yang menunjukkan kinerja prediktif baik. Variabel paling berpengaruh adalah curah hujan (25,5%; 36,1%), suhu maksimum (10,9%; 16,7%), precipitation seasonality/BIO15 (12,2%; 12,7%), dan annual precipitation/BIO12 (10,4%; 11,7%). Hasil klasifikasi kesesuaian habitat menunjukkan kategori rendah seluas 381.767,7 km<sup>2</sup> (80,63%), sedang 69,55 km<sup>2</sup> (14,69%), dan tinggi 22,16 km<sup>2</sup> (4,68%). Habitat potensial tinggi terkonsentrasi di jalur Pegunungan Bukit Barisan, meliputi Ekosistem Leuser (Aceh), Dataran Tinggi Karo (Sumatera Utara), Gunung Singgalang–Merapi (Sumatera Barat), Taman Nasional Kerinci Seblat (Jambi–Bengkulu), dan Taman Nasional Bukit Barisan Selatan (Lampung). Sebaliknya, wilayah dataran rendah di Riau, Jambi timur, dan Bangka Belitung didominasi habitat kesesuaian rendah. Temuan ini menegaskan efektivitas MaxEnt dalam pemetaan distribusi primata tropis serta urgensi perlindungan hutan pegunungan, pembangunan koridor ekologis, dan penetapan kawasan prioritas konservasi untuk menjamin kelestarian *Cercopithecidae* di Sumatera.

**Kata Kunci:** Sebaran Spesies, *Cercopithecidae*, MaxEnt, Habitat Potensial, Konservasi.

## ABSTRACT

**Ahmad Qadri, NIM 4202520009 (2025), Prediksi Potensi Sebaran Geografis Famili Cercopithecidae (Ordo Primates) di Sumatera Menggunakan Model MaxEnt.**

The family *Cercopithecidae* (Order Primates) plays an important role in Sumatra's tropical forests as seed dispersers, insect population regulators, and indicators of ecosystem health. However, their populations are threatened by deforestation, habitat fragmentation, and anthropogenic pressures. This study aims to predict the potential geographic distribution of *Cercopithecidae* in Sumatra and to identify the key environmental variables influencing their habitat preferences as a basis for spatially based conservation strategies. The dataset consisted of 2,649 occurrence records obtained from GBIF, iNaturalist, Batang Gadis National Park, and scientific literature, along with 11 environmental variables including bioclimatic, topographic, land cover, and anthropogenic factors. Modeling was performed using the Maximum Entropy (MaxEnt) algorithm with 10 replicates, yielding an average Area Under Curve (AUC) of  $0.875 \pm 0.010$ , indicating good predictive performance. The most influential variables were precipitation (25.5%; 36.1%), maximum temperature (10.9%; 16.7%), precipitation seasonality/BIO15 (12.2%; 12.7%), and annual precipitation/BIO12 (10.4%; 11.7%). Habitat suitability classification showed that low-suitability areas cover 381,767.7 km<sup>2</sup> (80.63%), medium suitability 69.55 km<sup>2</sup> (14.69%), and high suitability only 22.16 km<sup>2</sup> (4.68%). High suitability habitats were concentrated along the Bukit Barisan Mountain range, particularly within the Leuser Ecosystem (Aceh), Karo Highlands (North Sumatra), Mount Singgalang–Merapi (West Sumatra), Kerinci Seblat National Park (Jambi–Bengkulu), and Bukit Barisan Selatan National Park (Lampung). In contrast, lowland regions such as Riau, eastern Jambi, and Bangka Belitung were dominated by low suitability habitats. These findings highlight the effectiveness of MaxEnt in mapping tropical primate distributions and emphasize the urgency of conserving montane forests, establishing ecological corridors, and designating priority conservation areas to ensure the long-term survival of *Cercopithecidae* in Sumatra.

**Keywords:** Species Distribution, *Cercopithecidae*, MaxEnt, Habitat Suitability, Conservation.