

ABSTRACT

Imawarti Panjaitan, 24020119120025, **Modeling the Distribution of Hornbill Habitat in Gunung Leuser National Park using Maximum Entropy (MaxEnt)**. Supervised by Karyadi Baskoro and Rully Rahadian

Hornbills (family Bucerotidae) are a protected group of large horned birds in Indonesia that face hunting pressure. Spatial information on their habitat suitability in Gunung Leuser National Park (GLNP) is still limited, with available information generally based on inventory and density data. The complexity of the landscape, including vast areas, steep topography, and changing land cover, poses obstacles and threats to hornbill research in the GLNP area. Therefore, the Maximum Entropy (MaxEnt) approach was used to map potential habitat suitability based on environmental variables. The objectives of this study were to model the distribution of habitat suitability and to identify and analyze the contribution of environmental variables to hornbill habitat suitability in GLNP. The data used were 335 points, consisting of hornbill presence points from direct observations, camera trap teams, and SMART patrol teams. Predictor environmental variables such as land cover, elevation, slope, distance from agricultural land, distance from rivers, distance from settlements, distance from roads, and rainfall, in the form of image data were downloaded from various sources. The results of this study indicate that the model has reasonable predictions (AUC 0.866 ± 0.012). The area of suitable habitat is smaller than that of unsuitable habitat. The most influential predictor variables in this model are distance from settlements, land cover, and distance from agricultural land. This information can be used as a basis for supporting habitat management planning and hornbill conservation strategies in the GLNP area.

Keywords: *spatial modeling, habitat suitability, QGIS, species presence, environmental variables*