Asian Journal of Conservation Biology, December 2024. Vol. 13 No. 2, pp. 143–150 AJCB: FP0248/84601
ISSN 2278-7666 ©TCRP Foundation 2024 https://doi.org/10.53562/ajcb.84601

Research Article

Long-term future prediction of potential suitable zones for *Calamus flagellum* Griff. (Arecaceae) in Assam, using Maxent and Artificial Neural Networks

Selim Mehmud[1], Nilotpal Kalita[2,*], Himu Roy[3], Dhrubajyoti Sahariah[4], Pranab Bujarbarua[5]

[1]*Department of Botany, University of Science & Technology Meghalaya, Ri-Bhoi, Meghalaya-793101, India*
[2]*Department of Geography, Nowgong Girls' College, Nagaon-782002, Assam, India*
[3]*Department of Botany, Cotton University, Panbazar, Guwahati-781001, Assam, India*
[4]*Department of Geography, Gauhati University, Guwahati-781014, Assam, India*
[5]*Department of Botany, Handique Girls' College, Panbazar, Guwahati-781001, Assam, India*

(Received: December 10, 2023; Revised: July 24, 2024; Accepted: November 18, 2024)

ABSTRACT

The present study utilised the Maxent model to predict the distribution of the rattan species *Calamus flagellum* in Assam to prepare potential distribution and future predictions of suitable zones using bioclimatic variables and CMIP6 environmental models within a GIS framework, focusing on the BCC-CSM2-MR-ssp126 model for the period 2021-2040. Along with the predicted variables, a land use and land cover prediction map of 2040 is also prepared using MOLUSCE plugins (ANN-Multi layer perception) from QGIS 2.8.2 version to anticipate and establish probable land use changes in the year 2040 as well as to detect the transition of land use changes in the study area for the three periods 2014, 2017 and 2020. The model demonstrates high significance with AUC validation statistics of 0.96 for current and 0.95 for future predictions. These results can be utilized to conserve the species under both present and future climatic scenarios.

Key words: Land Use prediction, models, rattan, Assam, ANN