Indian Journal of Ecology (2021) 48(2): 367-372

Manuscript Number: 3218
NAAS Rating: 5.79

MaxEnt Modeling for Predicting the Potential Distribution of *Valeriana jatamansi* Jones. in Chakrata Forest Division of Garhwal Himalaya

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Abstract: *Valeriana jatamansi* is distributed in subtropical to the temperate regions between 1000 to 3000m in Himalayas. Its' population is decreasing at an alarming rate to meet the demand of pharmaceutical industries and is placed under endangered categories. The present study was attained to depict its potential distribution in Chakrata forest division. For modeling procedure, Worldclim bioclimatic variables along with slope, aspect, elevation, forest types (based on Sentinel-2) data and 50 spatially well-dispersed species occurrence points were used to predict the potential distribution in the 1164.23 km^2 study area. The suitable habitat for *V. jatamansi* was recorded 207 km^2. The temperature (31%) and precipitation (15%) where is the key influential factors that affects its distribution. Jacknife test was used to evaluate the importance of the environmental variables for predictive modelling. Maxent model was highly accurate with a statistically significant AUC value of 0.89. The findings can be applied in various ways such as species restoration and conservation planning, identification of additional localities where *V. jatamansi* may already exist but has not yet been detected. This approach could be promising in predicting the potential distribution of medicinal plant species.

Keywords**:** *Valeriana jatamansi*, MaxEnt, Species distribution, Conservation