

ABSTRACT

The Himalayan Brown Bear plays a crucial role in maintaining the ecological balance of the western Himalayas. As an apex predator, it regulates prey populations, contributing to the overall stability of the ecosystem. Currently, the biggest threats for mammal predators are habitat losses, humans, and other factors. Brown bears are under threat in almost all over the world, and is risked for fragmented and isolated populations. It is necessary to carry out habitat suitability analysis in order to determine these risks. The study area is the Western Himalayan region and the modelling was carried out using Maximum Entropy method with presence data collected for 26 sample areas in Western Himalayas. MAXENT method was used since it reveals reliable and valid models in larger areas with little local data . Cross validation was done separating 70% of data for training and 30% for testing to validate test data in the modelling process. AUC values of the training and test data were found to be 0.91 and 0.85, respectively . The model was also evaluated according to Receiver Operating Characteristic value and Jackknife test . Environmental variables contributing to the model were Ruggedness Index, Elevation, Slope, and bioclimatic factors like mean diurnal range, maximum temperature of the warmest month, precipitation of the coldest quarter etc. For the study area a habitat suitability map was created for brown bears following the ‘modelling process’ and the map was analysed and the usability of the model was evaluated for the ‘Brown Bear Management Plans’. Brown bears must be preserved as it is a significant mammal species.

KEYWORDS: species, dominant factors, MaxEnt, AUC, bioclim, distribution