

Distribution Simulation of Potential Habitats of the Medicinal and Endemic Plant, *Artemisia Khorasanica*, for Landscape Conservation and Restoration of Rangelands under Future Climatic Scenarios

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Abstract

This research has been done for several purposes: A) Simulating the distribution of potential habitats of the medicinal and endemic plant, *Artemisia Khorasanica*, B) Applying MaxEnt model utilizing a set of effective soil, geomorphological, climatic, and social-ecological variables; C) Identifying spatial options for rangeland restoration under future climatic scenarios, and D) Landscape evaluating and analyzing of habitat hot patches in scenarios. Alqurat basin is one of the habitats of the study species in South Khorasan province, Iran. The present study is conducted based on field and laboratory operations along with modeling in GIS (Geographic Information System) using a multi-stage methodology. The results of the Jackknife test showed that the variables of distance from dry rivers, roads and villages, slope direction, amount of silt and sand in the soil had the most significant impact on predicting the potential habitat of the study plant, respectively. The relatively small fluctuations between the areas of high- and medium-quality simulated habitats in RCPs scenarios indicate that this plant can survive in different climatic conditions and is not highly dependent on climate change. In other words, such conservation and restoration can be considered as insurance for ecosystems of arid and semi-arid regions since the possibility of damage due to climate change as predicted in the scenarios will be minimized. This research examined two options for rangeland ecosystems management, including “mere conservation” and “conservation along with restoration”, using landscape analysis. All metrics showed the superiority of the second option, which suggests that the sustainable conservation of hot patches depends on their interconnection and the maintenance of their ecological network connectivity. The results of this study might help the in-charge organizations and departments to identify the best potential habitat for *A. Khorasanica* and perform restorative operations in those areas with more confidence.

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