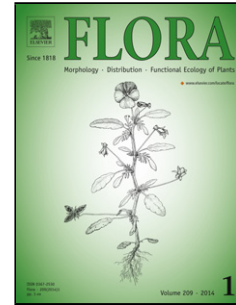# Accepted Manuscript

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Authors: Mojdeh Safei, Mostafa Tarkesh, Hossein Bashari, Mehdi Bassiri

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Modeling potential habitat of *Astragalus verus* Olivier for conservation decisions: A comparison of three correlative models

Mojdeh Safei[1], Mostafa Tarkesh[1*], Hossein Bashari[1], Mehdi Bassiri[1]

[1] Department of Natural Resources, Isfahan University of Technology, Isfahan 84156-83111, Iran;

* Corresponding author, E-mail: m_tarkesh@cc.iut.ac.ir

Tel: ++98 +31 33911025

Mobile: ++98 9133138255

Fax: ++98 +31 33912840

Highlights:

- Species distribution models can characterize the potential habitat of plant species.
- Distribution of *Astragalus verus* is affected by soil texture, pH, EC and slope.
- ENFA has better performance to predict species distribution mapping in areas highly manipulated by humans.

Abstract

Identification of potential habitats of endemic species can facilitate conservation planning and rehabilitation programs in rangeland ecosystems. This study aimed to generate potential distribution maps of *Astragalus verus* Olivier, a valuable endemic and medicinal plant, in a semi-arid part of central Iran (with an approximate area of 1,000 km^2) using logistic regression (LR), nonparametric multiplicative regression (NPMR), and ecological-niche factor analysis (ENFA) methods. A stratified-random sampling approach was used to collect the presence-absence data, along with some environmental data, from 100 sites. Soil maps were obtained from 70 profiles, and climate maps were produced using data from 10 weather stations. Geostatistical methods were used to convert the obtained data to digital maps with 90 m × 90 m resolution. The species potential habitat maps were produced using ENFA, LR, NPMR, and an ensemble method. The accuracy of the models was evaluated using Cohen's kappa coefficient and the area under the receiver operating characteristics curve (AUC) based on both calibrated and independent data sets. Although no method was superior under all circumstances, ENFA performed slightly better due to the very high