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**Predicting the effects of climate change on the
potential distribution of medicinal and industrial
species of *Dorema ammoniacum* using Maxent
model (Case study: Sarbisheh rangelands in South
Khorasan**

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Abstract

The current habitat suitability of the species and the prediction of the potential distribution of rangeland species habitats are important in terms of rangeland and watershed management plans. Therefore, the study of potential habitats and the impact of climate on the habitat of rangeland species is essential. In this regard, the present study aimed to predict the effects of climate change on the potential spatial distribution of the habitat of medicinal, industrial and industrial species (*D. ammoniacum*), to identify the most important factors affecting the distribution of species in the rangelands of Sarbisheh Was performed. Accordingly, the number 65 species events were harvested from the study area using GPS during field observations and And 19 climatic variables derived from temperature and precipitation as inputs of the Maxent model were used. In this study, using maxent entropy modeling, the effect of climate change on the potential distribution of species in the current time scale and 2080 in the Hadgem RCP4/5 climate scenario was optimistically predicted. The accuracy of the prediction model for *D. ammoniacum* was very good considering the values under the curve was very good. The analysis of the importance of the variables showed that the variables of mean daily temperature(Bio3), temperature homogeneity(Bio2), maximum temperature of the coldest month(Bio6), maximum temperature of the warmest month(Bio5), total rainfall of the consecutive quarter(Bio16), total annual rainfall(Bio12), total rainfall of the coldest consecutive quarter had the most effect The analysis of the importance of the variables showed that the variables of mean daily temperature, temperature homogeneity, maximum temperature of the coldest month, maximum temperature of the warmest month, total rainfall of the consecutive quarter, total annual rainfall, total rainfall of the coldest consecutive quarter had the most effect The analysis of the importance of the variables showed that the variables of mean daily temperature, temperature homogeneity, maximum temperature of the coldest month, maximum temperature of the warmest month, total rainfall of the most consecutive quarter, total annual rainfall, total rainfall of the coldest consecutive quarter had the greatest effect On the distribution of habitats, a variety among climatic data they have. Also, the favorable conditions for the species according to the results of the relationship of the annual rainfall response curve are the highest probability of the presence and performance of the species in the total annual rainfall of 160.1 mm. In the rainfall range between 143 to 160.1 mm, the total annual rainfall the most water needs of the species provides. Also, the most probable presence and function of Vesha species in the average daily temperature is 42.2°C. Changes in the geographical distribution of Washa species at present and 2080 with RCP4.5 show results Of the total area of 202578.3 hectares in the study area, the area of 32283.91 hectares, equivalent to 1.62% of the area in the habitat class is suitable. Changes in the geographical distribution of Vesha species in 2080 under the RCP4/5 scenario showed that 1.6% of the Vesha species habitat in the appropriate class was reduced. This is while 6.95% on the habitat size of the species in a relatively suitable class And 29.27% increased the area of slightly suitable habitat areas Increased and in the unsuitable floor 34.62 the area of unsuitable areas decreases. Most species movement in the northwest and east directions of the study area will occur.

Keywords: Modeling, Climate change, *Dorema ammoniacum*, Climatic factors,

Vegetation