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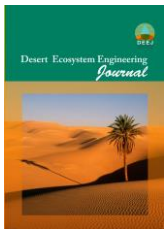

Edaphically investigation of the Somaq habitat and its relationship with biological diversity (Case study: Bideskan habitat, Ferdows, Southeastern Khorasan, Iran)

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Extended Abstract

Introduction: The natural ecosystems of Iran are the most important origins of speciation in the world and protecting this diversity is of great importance. Sumac species in Bideskan habitat is considered as one of the most important rangeland sub-products that in addition to regional economic prosperity, it provides sustainable employment for villagers and is considered as an important species for soil conservation. Therefore, by studying the environmental conditions and the needs of the Sumac species, it would be possible to judge about its geographic distribution, density and activity in different environments.

Material and methods: The habitat of Bideskan with an area of 3685 hectares is considered as one of the sub basins of the Lut Desert great basin in Iran. During May 2016, through the field visit, vegetation information and environmental factors were monitored. The area was divided into two parts of the natural Sumac beds and the control area, however with the same geological formation. In each section, 15 plots (total of 30 plots and soil samples) were taken by a random-systematic approach. A size of 10 × 10 m for the sampled plot was considered according to the type of plants and their distribution in the area. Within each plot, information related to the plants, including number and type, were recorded. During sampling, it was determined that the rootage direction of the *Rhus coriaria* L. followed the longitudinal growth in the soil and moved in the direction of the gradient, as a result, soil samples were taken from a depth of 0-30 cm. In the next step, taken soil samples were dried and in order to prepare for soil tests, they were passed through a 2 mm sieve. Subsequently, the parameters soil texture, saturation moisture content, pH, EC, OM, lime, Na, K, Ca, Mg, cation exchange capacity (CEC), and total nitrogen (N) were determined in laboratory. To determine the diversity and species richness, the number of species was counted in each plot within the two habitats of Sumac and control. Shannon-Weiner Species Diversity Index, Simpson and Fisher Alpha were calculated based on the frequency of plant species using the EstimateS win 9.1. The independent t-test was used in Statistical Package for Social Sciences (SPSS) software to compare the measured variables in two areas of Sumac habitat and control.

Results and discussion: In total 24 species belong to 14 families were identified in area. The most dominted familiy was Asteraceae having 8 species of total number of species, followed by Apiaceae, Geraniaceae,

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Poaceae with 2 species each. Hemicryptophytes were the most important biological form with 14 species (54.16%), the Trophites with 7 species (33.33%), Geophytes with 2 species (8.33%) and Phanerophytes with 1 species (4.16%) were measured. Asteraceae species had a better adaptation to climatic conditions than other families. This could be due to a better compatibility of this family with climatic harsh conditions, which gives them a high potential of distribution. The presence of 58.33% Hemicryptophyte can be attributed to the dry-cold climate and mountainous topographic conditions. Furthermore, the abundance of Therophyte (33%) revealed low rainfall, recent droughts, unfavorable conditions of the enclosure and grazing and, consequently, the degradation caused by the impact of the pressures from these factors, are among the reasons that affect annual plants. according to the Shannon-Weiner index, the Sumac habitat with the index of 1.942 is more diverse than the control area (with an index of 1.667). The higher the evenness index, the distribution of species within the plot or a range is more uniform; therefore, the Sumac habitat with uniformity equal to 0.717 has more uniform distribution compared to the control area. According to the Shannon-Weiner and Simpson diversity indices, the Sumac habitat is more diverse, although its number of species (15 species) is less than the number of species in the control area (17 species). The student's t-test of independent samples on soil data showed that the soil fctors EC, ECe, Ca, OM, TNV, pH, K and silt content had significant differences in two regions. Moreover, four factors of EC, K, OM and TNV in the Sumac habitat showed a significant increase compared to the control area. The falling of shoot organs on the soil surface could be the main reason for the increase of K and OM under the stratum of the Sumac plant. The increase in the content of litters causes the increase of soil porosity, the decrease of bulk density and thus the soil gets better permeability conditions. The results confirm the significant role of *Rhus coriaria* in soil conservation planning. Therefore, it is necessary to encourage local farmers to preserve this species.

Conclusion: Awareness of the relationship between soil characteristics and the distribution of plant species is vital for the sustainable use of rangelands. Therefore, this study was aimed to determine the effect of soil characteristics in the distribution of vegetation cover, especially *Rhus coriaria* L. in Bideskan habitat. The sampling results indicated that the most important vegetative form of the region, is Hemicryptophytes, 58.35% of the species population of the area, followed by Throphytes with 33% . The student's t-test of independent samples on soil data showed that the soil properties EC, ECe, Ca, OM, TNV, pH, K and silt content had significant differences in two regions. Moreover, four factors of EC, K, OM and TNV in the Sumac habitat showed a significant increase compared to the control area. According to the results of this research, it can be stated that it is possible to establish Sumac (*Rhus coriaria* L.) as a species compatible with arid areas (calcareous soils with higher EC) to control erosion and sedimentation and improve revival of green spaces in mountainous regions of arid and semi arid areas, especially in Khorasan province and others areas with similar ecological conditions.

Keywords: Rhus habitat, Soil analysis, Species diversity, T test.