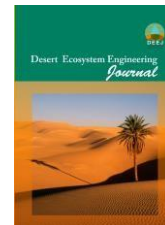




University of Kashan

Desert Ecosystem Engineering Journal

Journal homepage: <http://deej.kashanu.ac.ir>

The effect of physiographic factors on plant biodiversity of natural desert ecosystems in Kakhk Gonabad

Saeed Jahedi Pour¹, Alireza Koocheki^{2*}, Mehdi Nassiri Mahallati³, Parviz Rezvani Moghaddam⁴

Received: 18/8/2016

Accepted: 20/12/2016

Abstract

Determination of factors affecting on species distribution and diversity, especially in desert areas is the most important factor in rangeland ecosystems management for encountering biological stress. In order to evaluate the effect of physiographic factors on plant biodiversity in natural ecosystems of Kakhk Gonabad, this research was conducted in spring 2014. First, by overlaying four maps of slope, aspect, and elevation and geological formations working unit maps were prepared. Then, 4 homogeneous types were determined based on the structure, distribution, and presence of dominant species and sampling was done in each vegetation type in homogenous working units. In each type 35 plot were systematic-randomly selected and based on the minimum area method, 4 m² plots were used to estimate vegetation. Vegetation sampling was carried out in all plots. Plants were recorded in each plot and canopy coverage and physiographic properties such as slope, aspect and elevation were measured and diversity in different geological formations was determined. The study of plant biodiversity was performed by evaluating the density of different plant species per plot and using diversity indices of Shannon-Wiener and Simpson, richness index of Margalef and evenness index of Smith-Wilson in Ecological Methodology software. The results showed that altitude had significant effect on diversity, richness and evenness of plant species; at the elevation of 1700-1900 m, Simpson and Shannon-Wiener had the highest value respectively; while, evenness of species was higher in altitude between 1900-2100 m. In addition, slope had significantly affected the diversity and richness; the highest diversity and species richness were allocated to the 0-20% slope. Northern aspect had significant affects on the biodiversity indices.

Keywords: Biodiversity, Ecosystem, physiographic Factors, Rangeland.

1 . Ph.D. Candidate of Agroecology, Faculty of Agriculture, Ferdowsi University of Mashhad International Campus, Mashhad, I.R of IRAN.

2 , 3, 4. Professor, Department of Agronomy and Plant Breeding, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad, I.R of IRAN.

*Corresponding Author Email: akooch@um.ac.ir