Evaluation of Ecological Capability of Amygdalus Scoparia Habitat Condition in Bolhasan Dezfol of Iran Zone by Using of MCDA Method

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Abstract: Bolhasan forest region with 5725 hectare area lies in east north of the Dezful. The region belongs to natural forests in Dezful. With regard of the fact that the area is mainly arrested by valuable species of *Amygdalus Scopartia,* it is imperative to consider principled exploitation, development and revival thereof. to identify ecological needs to provide questionnaire Delphi method were 64 and natural resources experts and university professors. In this study, 37 criteria defined 27 criteria were selected as the definitive criterion. Such evaluation of the conditions in the region was fulfilled by weighing the criteria with Analysis Hierarchy Process (AHP) in the Expert Choice soft ware. In this research, evaluation of the criteria , by AHP and geographic data setting was followed by display of ecological power status by means of such method and transfer of the inputs on the map. Results of the research indicate that about 599 hectare [35.59 percent] of Bolhasan forest region is in high, 471 hectare [27.97 percent] in good and 614 hectare [26.44 percent] in weak situation.

Keywords: Evaluation, Amygdalus Scopartia, ecological power, Analysis Hierarchy Process, city of Dezful, Bolhasan region of Iran.

1. Introduction

Ecological power assessment of land use as the main foundation of environmental studies. Thus, before the development,determination of the ecological land power is needed for different user (Makhdoom,2002). Knowledge about the possible ecological forest habitat and their classification ,Planning and how to do the appropriate actions regarding optimal management of these rare resources makes them smooth. Classification of habitat power based on recognition of environmental and ecological characteristics of habitat is performed (Adl etal, 2007).Today, the forest planning with a serious look at the concept of sustainable forest management is performed. forest lands should be managed to order the ecological aspects of sustainable always living and be able to respond social needs - economic, ecological and cultural in present and future generations. (Ammani, 2000). To respond to diverse and conflicting needs, the use of scientific techniques and efficient in forest planning is inevitable so that service continuity is guaranteed in the long term. (Safi-Abad and etal, 2004).This shrub as the first flowering shrub in spring with large white flowers with a diameter of 25mm in semiarid climate of the country offers exquisite scenery to watch. This shrub is resistant against unfavorable environmental conditions (severe dehydration and thermal fluctuations) and various climates. It has endured severe cold. in poor soils is Clement. Also,it has environmental

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compatibility on steep slopes and smooth(Khwaja Abdollahi, 2007).Almond in areas with warm, dry summers and cold winters and short fall grows well.Distribution Almond mountain areas in Zagros foothills of khuzestan begins and in altitudes 600 to 1500 meters above sea level is located.Around the city of Dezful, Izeh, Baghmalek, Masjed Soleiman and Haftgol scattered and sometimes dense to to be seen (AKhoonndaly etal, 2003).Success factors and corresponding weights were determined and Developed alternative strategies for forest industries were evaluated. AHP is used in this evaluation. AHP in this evaluation,has been combined qualitative and quantitative factors in decision.(Elfvengren etal.2007).Forest area boalhasan whit 5725 hectares area is located,whit tourist attractions of the Northest Dezful and 70 km away from this city in khuzestan in the geographical lengths 32 33 and 32 42 and between latitudes 48 45 and 48 52. The Type of regional climate is related to the dry forests and Minimum temperature of 18.11 degrees and the average temperature of 23 degrees and the maximum temperature is 48.5 degrees.

2. Methods

To prepare the necessary maps,at the first identification, preparation and production of sustainable and unsustainable resources was done and desired criteria and variables to assess the forest area was determined .Due to the nature and time-consuming process of producing maps and potential in order to access to some form of data tables and maps Backup from the information of the Department of Environmental Protection Khuzestan, Department of Natural Resources Khuzestan and Ministry of Agriculture was used. And digital maps such as vegetation type classification, geology, soil texture building, land use, altitude, slope, aspect and geographic and ... was produced.More maps produced in computer systems and AutoCAD software, was taken to GIS and Arc GIS 9.2 software.

AHP:Firstly, the primary criteria constitutes determination a pre-test through the analysis of basic studies retrospectively was collected .To determine the criteria, the list was collected, as the questionnaire. And to confirm their accuracy, the questionnaire given to a group of elites in fields related to environment, forestry, gardening . conducive Group Q, 64 people were selected from among university professors and experts. Number of questionnaires and Delphi members was calculated of a relationship 1.
Relationship 1:

$$n = \frac{N\,(t,s)^2}{ND^2 + (t-s)^2}$$

these criteria for Group of Experts (Delphi) in the two questionnaires of physicochemical and biological were sent,in order to have announced their agree or disagree to the proposed criteria and If the new criteria introduced, it should express. criteria more than 50% of the vote earned, as acceptable criteria were identified. In this study, the total of 37 criteria Specified, 27 criteria were selected as the definitive criterion. In this context, whit the hierarchical structure formation and determination of criteria, most important factors in both biological and physicochemical environment was determined.

Process of AHP: The following criteria hierarchical structure in the physicochemical environment, were classified to climatic factors, geological formation, soil, physiography, water resources and Biological environment were classified to the number of plant species, vegetation density, habitat zonation, plant diseases, and food chain model of protected area And towards the main criteria were paired comparison together. In the Physicochemical environment climatic parameters, including sunny hours, the average annual precipitation, relative humidity, absolute maximum temperature, frost days, mean annual temperature, length of dry season (dry period), soil parameters including soil color, soil texture, soil structure, soil pores, soil organic matter, soil moisture, pH, soil electrical conductivity, Soil Erosion Type, Physiographic factors including slope, aspect, geographic land form and altitude were weighted and were paired comparison together. for prioritization between the different criteria,weight was given to the selected criteria to importance of each factor or criterion in determining with the carrying capacity region Can be calculated. After determining the weights Attribute table, to all layers,fields to the name of weight were added and Weight of each class of information layers entered. Then for call the final layer,from the Query command was used in Arc GIS software. in Continue to to determine the digital values in layers, map data were

classification. This technique was performed with Raster calculator. In this method, the weight of each layer in the data layer was multiplied and Then was collected with another layers.

Wi= The weight of each layer has been calculated with using the AHP technique.

Si= it has Layers of normalization.

Result: W1 S1 + W2 S2 + … + Wi

Si with the ultimate combination maps and ecological power and the Locations suitable for growing Almond mountain in the region is shown on the map.

3. Results

To determine the potential and power of forest ecological zone Bvalhsn, maps altitude, slope and direction of geographic under Arc GIS 9.2 was produced. Slope an important factor in forest soil fertility in the boalhasan region. At low slopes, Basically soil depth of more and the fertility is high. So that the existing trees, thick and have a greater height. Maximum slope in this area is 30-20% and 2-0% . For growing almonds, 8-0% slope suitable, 15% -8 slope appropriate, -15, 30% slope average and slope over 30 percent has little power. About 33 percent of this unit lacks direction. Geometric mean combining comparative tables, were calculated from the relationship 2.

Suppose : $a_{ij}^{(k)}$ Related components to k for Comparison System I to system j.

Thus, the geometric mean for all components corresponding is calculated in this method: Relationship 2

$$\overline{a}_{ij} = \left(\underset{k=1}{\overset{N}{\pi}} a_{ij}^{(k)} \right) 1/N :$$

Climate following criteria prioritization indicate that annual rainfall regard to rainfed cultivation of almond mountain , is important. After that, respectively, relative humidity factors, absolute maximum temperature , mean annual temperatures ,sunny hours, frost days, and during dry seasons are placed. Frost days, according to the almond plan, has cooling air up to 20 - will endure, endure extreme cold and the cold altitudes above 2000. Also in the area, the number of frost days and drought periods in the region rarely occurs. These two criteria, allocated less important than the other following criteria to the climate. Figure 1, climate following criteria prioritization are shown.

times sunlit	.062	
middel rain annual	.421	
reiative moisture	.197	
maximum absolute rank temperat	.148	
freezing weather days	.039	
middle rank temperature annul	.106	
dry season(dry period)	.028	

Inconsistency = 0.06
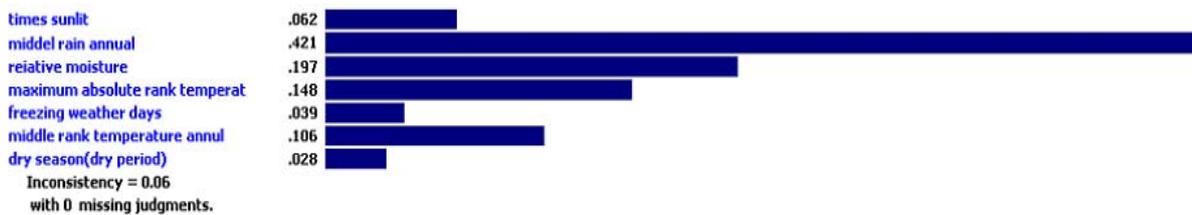with 0 missing judgments.

Figure1: climate following criteria prioritization

After soil moisture factor due to soil organic matter provides food elements in soil, soil texture and aeration of the water in the soil, soil PH with effects on Nutrient uptake by plants, soil structure and aeration of the water in soil, soil color due to soil organic matter, type of existing soil erosion, Soil EC affecting on absorb water and nutrients, soil pores with effects on water and aerated soil and being stony effect on Soil water infiltration.figure 2 is shown the pedology following criteria prioritization.
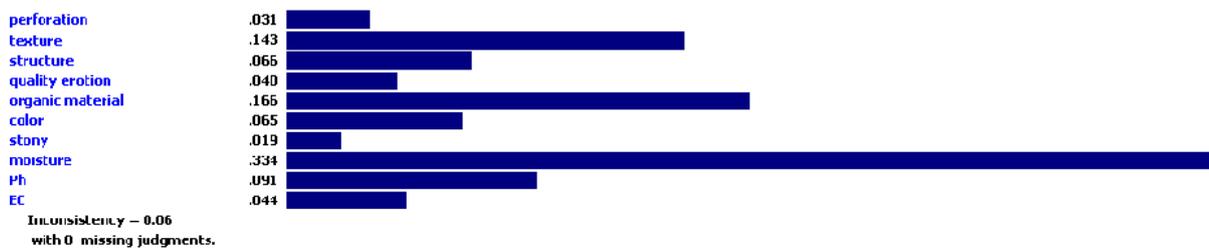
Figure 2: pedology fillowing criteria prioritization

In this region, great ecological power with an area of 617 hectares to 35/59 percent, good ecological power with an area of 471 hectares to 27/97 percent,poor ecological power with an area of 617 hectares to 59/35 percent is allocated to them. With Considering the sum of two higher and good floor as good ecological power can be sated that about 64 percent of region brigades pure almond mountain that have good ecological power and 36 percent have poor ecological power.

4. Discussion

The purpose of this study, is Almond mountain habitat condition assessment in Dezful Bolhasan region. To access this goal, after the study in this field, the different methods of AHP process as the Method chosen. The hierarchical structure of this research, with assistance from similar projects was constructed. reform of natural resource exploitation (based resources produced)and Sources of instability factors inhibiting through:

1- promotion of development indicators in rural communities and nomads In order to reduce dependency these people to utilize from forests and rangelands.

2- Reducing reliance of livestock dependent to rangeland country, through the Balance of livestock and rangeland projects, making field for converting traditional ranching to industrial and semi-industrial (fixed) ranching.

3- Preventing from cultivated annual crops in slope lands.

4- Development of resorts and ecotourism activities in utilization of forest and rangeland and desert areas

5-Promoting recognize the social values, economic and ecological forests and country rangeland.

6- Development of fossil fuels in rural and nomadic communities to reduce the use of wood fuel for energy.

7- Continuing liberalization of importing raw cellulose cellulosic materials material and wood to country in order to reduce legal and illegal exploitation of forests.

8-obligation tapping from natural resources to restore and rebuilt that.
Creating and promoting the national commitment to protect and restore the country's natural.

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