Journal of Applied Science and Agriculture, 9(10) August 2014, Pages: 15-17

AENSI Journals

Journal of Applied Science and Agriculture

ISSN 1816-9112

Journal home page: www.aensiweb.com/JASA

Applying Ecological Groups on Restoration of Harvested Operated Forest Areas with the Aim of Wood Production in Gradual Shelter Wood Method

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ARTICLE INFO

Article history:
Received 15 April 2014
Received in revised form 22 May 2014
Accepted 25 May 2014
Available online 15 July 2014

Keywords:
gradual operation of shelter wood-cutting, Ecological species groups, biodiversity, forest of Agozchal

ABSTRACT

Wood harvesting through gradual shelter-wood method in uneven-aged forests of Northern Iran caused degradation of some forest areas. Recognizing ecological groups of every forest areas is considered as one of the management tools in restoration of applied forest areas. Hence, this paper pays to study the ecological groups of forest areas of about 75 hectares in Agozchal-Nowshahr. Bilateral index species to identify ecological groups and biodiversity index to compare the amount of biodiversity were used. To consider plant groups randomly, net dimensions of 150*100 and 40 sample fragments of 400 m^2 have been used. The study shows that there are 40 plant species in this area which are divided into four ecological groups: first (A), (Fagus orientalis L., and Epimedium pinnatum F.) second (B). (Alnus subcordata L., Acer cappadicicum B., and Lamium Alba). Third (C), (Acer cappadicicum B., Tamus communis L.) and forth (D), (Tilia begnifolia Stev.and Carex acuiformis L.). The analysis of variance showed that the two groups of A and D which are recognized with two tree index species of beech and linden respectively , had the least diversity (sympson) and species richness (margulave) indexes had the most species uniformity index (kamargo) . The other plant groups relatively showed the same index of biodiversity.

To Cite This Article: Ali Kialashaki., Applying Ecological Groups on Restoration of Harvested Operated Forest Areas with the Aim of Wood Production in Gradual Shelter Wood Method. ***J. Appl. Sci. & Agric.,*** *9(10): 15-17, 2014*

INTRODUCTION

Shelter-wood gradual operation has been the main procedure of operation in most forest areas of North since last years. Applying this procedure which does not conform to the uneven aged texture of the Northern forests caused ecosystem degradation (Ewald *et al*., 2003). Obviously, regenerating of degraded areas would be possible only when the raw pattern of these forests is available (Zabiholahi *et al*.,2013). For forest restoration plans, unmanaged forests (sample stand) can be considered as the best guidelines of regenerating the degraded areas. Recognizing the ecological groups and biodiversity of these areas consequently opens door for a better regeneration of degraded areas (Ammer wt al., 2005). Those plans which repeatedly grow together in areas with the same physiographic factors, share equal ecological or tolerant needs and will be classified under a group called ecological species group (Barnes, 1998). Ecological groups can help recognize and classify ecosystem through criteria such as presence or absence of relative covering. Therefore, this study tries to study the ecological species groups in one of the very many unmanaged forest areas of north of Iran and to use the obtained results in regenerating operated areas.

MATERIAL AND METHODS

The fragment understudy- No.7 from the 3rd series of 46 of kojor –named Anjil-kalle, 75hec, is located at the altitude of 500 to 900m above sea level. At first, nets of about 100*150m were considered randomly, and then sample fragments were used on the ground. To get samples of plant covering 40 sample fragments each 400 m^2 were chosen randomly (Barnes, 1998) .Then in each main sample fragment,9 sample sub-fragment each 1m^2 were applied in which the type of species, parentage of covering of different herbaceous species were registered (Barnes, 1998) .Also the name of the species and the number of tree stands were registered to obtain the indexes of biodiversity.

Results:

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To identify and to study the ecological groups concerning the amount of specific value, 4 ecologic groups were separated from each other. Therefore, 4 groups were named as: 1- Epicedium Pinnatum F. and Fagus orientalist L .which is called group A. 2- Lamium album L. and Acer cappadocicum B., Alnus subcordate L. which is called group B. 3- Tamus communis. And Acer cappadocium L. called group C. 4- Carex acutiformis L. and Tilia begonifolia stev. also called group D. The analysis of variance showed that there is a significant difference among all three indexes of Simpsons (F=5.723, p=0.003), Margalof (F=5.349, p=0.004) and Kamargo (F=5.105, p=0.005).

The indexes of diversity and species richness have shown greater amount in groups of B and C, but the least in group A. Also, groups A and D have shown greater index of Kamargo's uniformity than other groups (table1).

Table 1: The average of biodiversity index in each group.

variables	A	B	C	D
Simpsons	0/73 (0/05) *b*	0/86(0/01) *a*	0/86(0/01) *a*	0/75(0/03) *ab*
Margalof	2/98(0/34) *b*	4/06(0/21) *a*	4/21(0/18) *a*	3/32(0/3) *ab*
Kamargo	0/31(0/02) *a*	0/18(0/03) *b*	0/26(0/02) *ab*	0/32(0/03) *a*

Discussion:

Sample fragments with similar environmental characteristics (tilt, longitude, and altitude from the sea level), combination and species diversity can make similar ecological groups which are distinct from other groups concerning floristic, biodiversity and physiographic characteristics. In general, physiographic factors are the main factors in respiration ecosystem Branches (Baev *et al*., 1995).

The altitude from sea level as one of the physiographic factors is of great importance in plants release, limits of species development and forest communities or lack of a specific species or plant community. In this study, some of the ecological groups as group A are rich in land ridge and higher altitude were observed. The ecologic change depends on the increasing of sea level (Ewald ,2003 ; Shirzad, 2013). Decrease of temperature, change in the form and amount of participation and the decrease of absolute moisture ultimately cause less biodiversity in the area (Barnes, 1998), in which the amounts of biodiversity in different studies of ecological species groups also vary it (Baev *et al*., 1995) . Tilt, as one of the other important factors causes displacement in many species of groups and forest communities in comparison with each other. That's why it has been observed in this study that areas with higher altitude showed less biodiversity which are in accordance with the results obtained by Dr. Sohrabi and akbarnia (in Iran) (Sohrabi *et al*., 2005 ; Takyu *et al*., 2002). It also should be mentioned that it cannot be ignored the role of geographical direction in the amount of diversity in any area (Baev *et al*., 1995 ; Jafari *et al*., 2004).

It seems as if said, in the present study, because of limititation in geographical directions, tilt hasn't shown any significant effect involving in covering diversity. As it was observed in this article, through differentiating or repatriating ecosystemic branches in each forest area, it can be estimated both the ecological and biological potentials. By comparing the results of this study to the degraded forests in the area, it can be helped to simulate the area and to use herbaceous and wood covering to regenerate the degraded spots. It also suggests that concerning the single switching techniques with the northern forest of Iran, this method would be replaced for the former operational methods, so that it can help stop the amount of degradation and making degraded spots on both small and big forest areas (Beatty, 2003 ; Werner *et al*., 2005).

REFERENCES

Ammer, S.K., C.A. Weber, C. Ammer and J. Prietzel, 2005. Factors influencing the distribution and abundance of earthworm Communities in pure and converted spots pine stands, applied soil ecology, 121: 42-53.

Baev, P.V., L.D. Penev, 1995. BIODIV. Program for calculating biological diversity parameters, similarity, niche overlap, and cluster analysis, Version 5.1. Pensoft, 57.

Barnes, B.V., 1998. Forest ecology. John Wiley and Xons.INC.773.

Beatty, S.W., 2003. Habitat heterogeneity and maintenance of species in understory communities. In:

Ewald, J., 2003. A Critique for phytosociology, Journal of vegetation science, 14: 291-296.

Jafari, M., M. Zare, A. Chahouki, A. Tavili, H. Azarnivand and G.H. Zahedi, 2004. Effective environmental Factors in the distribution of vegetation types in poshtkioh rangelands of yazd province (Iran), Jornal of Environment, 56: 627-641.

Kubner, R., 2003. A mortality pattern of Quercus, Tilia and Farinas germinates in a floodplain in the Elbe, Germany, for. Ecol.Manage, 173: 37-48.

Shirzad, G., K. Sharifi Soraki, 2013. The impact of fire on the plants diversity in Iranian Oak forest (Case study: Kermanshah province), Advances in Environmental Biology, 7(10): 3170-3174.

Journal of Applied Science and Agriculture, 9(10) August 2014, Pages: 15-17

Sohrabi, H.M. akbarnia, 2005. the study of plants diversity in relation with physiographic factors in sorkhdeh forest area, javanrood – Kermanshah province Iran's forest & populs guarterly.

Takyu, M., S.I. Aiba and K. Kanehiro, 2002. Effects of topography on tropical lower Montana forests under different geological conditions on Mount Kinabalu, Borneo, Plant Ecology, 159: 35-49.

Werner, S.M., E.V. Nordheim, K.F. Raffa, 2005. Impacts of the introduced basswood thrips (thrips calcaratus Uzel) on forest health in the Great Lakes region, For. Ecol.Manage, 214: 183-200.

Zabiholahi, Z., M. Haidari, 2013. Study of forest structure in pruned (galazani) and undisturbed stand in the northern zagros forest (case study: baneh, kurdistan province), Advances in Environmental Biology, 7(10): 3163-3169.