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Research Article

Study qualities and quantities tree parameters in the protected and non-protected areas in the Dena Biosphere Reserve

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ABSTRACT

Dena Biosphere Reserve located in Iran and is a 550 Biosphere Reserve in the worlds. This research was investigated in the two protected and non-protected areas, in a Dena Biosphere Reserve, Kohkeloye va Boyrahmad province, and central zagros forest, southwest of Iran. Inventory methods designed by systemetic-randomaiz method by use the rectangular plots that were 15×30 meters in the 100×100 m Net. In each plots information include qualities and quantities tree parameter measured. T-test was used to analysis of mean quantities tree parameter differences between protected and non-protected area. Data analyzing was done by Excel and SPSS16 software's. Results showed that the DBH distribution in the reduced uneven- aged stand in protected area and reduced even aged in the non-protected area. Results showed that the mean of forest characteristics including DBH, height, canopy cover and, and density in the protected area are 38.5 (±5.5), 6.51 (± 0.9), 38 (±5.5) and 530 (±35) and this quantities parameters in protected area higher the non-protected area. Overall results showed that the qualities and quantities tree parameters in the non-grazed area higher the grazed area, and grazing has a negative effect on the qualities and quantities tree parameters.

Keywords: Qualities and quantities parameters, Dena Biosphere Reserve, Protected area, Kohkeloye va Boyrahmad province, DBH distribution.

INTRODUCTION

Iran is located in the North Temperate Zone from 25 to 40 latitude and 44 to 63 longitude degrees, with a total area approximately 1,650,000 Km2 (Haidari *et al*, 2013 e; Haidari *et al*, 2012c). A large section of the interior is characterized by arid basins. Climatic variations are also great in Iran. The main variation is between the dry, desert interior region and humid Caspian coastal region (Mohajer, 2004 and Haidari *et al*, 2012d; Bazyar *et al*, 2013a). With due to attention to climatic conditions of Iran, 65% area includes arid and semi-aired and degradation rapid of north and west, because of degradation of natural resources will cause to degradation agricultural lands and human environmental (Dastmalchi, 1998; Haidari *et al*, 2012e, Haidari *et al*, 2012f). Forests cover about 12 million ha in Iran (Haidari *et al*, 2012b, Haidari *et al*, 2012c), Including 5 million ha in the mountainous Zagros region. The Zogros Mountains are divided into two parts: northern and Southern (Askari *et al*, 2013). The northern Zagros is consisted of the growing site of *Quercus infectoria* Oliv. And also *Q.libani*

Oliv. And *Q.persica* J. & Sp. (*Q.brantii* Lindl.) (Haidari *et al*, 2012c). Species are found in this part. However, the southern Zagros is included *Q.persica* site which it extended to Fars province (Bazyar *et al*, 2013b; Parma and Shataee, 2013; Haidari *et al*, 2013c). Increasing population, low level of development and high dependence of local communities on forests for their primary livelihood needs, are the main reasons of this destruction (Fatahii, 1994). The researcher study of Forest Stand Quantitative Factors in Protected and No protected Areas in Arasbaran Forests and results showed that the number of trees and basal area in protected area was significantly higher than that in no protected forest stands. (Alijanpour *et al*, 2004). The Comparison of tree species diversity in two protected and non-protected area in protected regions of Oshtorankooh in Lorestan province, west of Iran. Indicated trees and shrubs living in the protected regions have species significantly higher diversity, richness, evenness and better living conditions than they are living in non-protected region (Abasi *et al*, 2009). The researcher studied results the most important factors affecting oak regeneration in this region are livestock grazing, fire, acorn collecting by villagers for domestic fodder, summer drought, pests and diseases on acorns and seedlings (Shakeri *et al*, 2009). The researcher study of plant biodiversity in grazed and non-grazed areas in the Iran-o-Turanian ecological zones and results showed that the So the grazed and non-grazed increase tree, shrub and herbaceous diversity in Irano-Turanian forest, and complete protection (non-grazed) area have higher plant diversity compered the grazed region. Therefore, prevention of livestock grazing and irregular tree cutting in the degraded forest stands can be suggested as a suitable approach for natural restoration and increasing plant diversity (Haidari *et al*, 2012a). The researcher studied of tree regeneration in the grazed and non-grazed areas in the Iran-o-Turanian Ecological Zones and results showed Regeneration in non-grazed region was less than grazed region. T-test indicated significant difference between non-grazed and grazed region for sound and height seedlings. Overall results showed that the grazing have a negative effects on regeneration. To manage of this forest authors suggested that continue preservative plans (non-grazed area) and provide foliage for cattle (Haidari et al, 2013b). The researcher study of vertical and horizontal forest structure in Northern Zagros Forest and results showed that Overall results showed Blake forest was two forest story and *Quercus libani* Oliv and *Quercus infectoria* Oliv were the most dominant woody plants and located in over story (Haidari *et al*, 2013a).The aim of our study was comparing of qualities and quantities tree parameters in the protected and non-protected area in the Dena Biosphere Reserve, Kohkeloye va Boyrahmad province, central zagros forest, southwest of Iran.

MATERIALS AND METHODS

Site description

Dena Biosphere Reserve located in Iran and is a 550 Biosphere Reserve in the worlds. This Biosphere Reserve is very important in the environment, social and economic condition in Iran. This research was investigated in the Dena Biosphere Reserve, Kohkeloye va Boyrahmad province, central zagros forest, southwest of Iran (Figure 1).Two protected and non-protected area in Dena Biosphere Reserve was selected.in the two areas eastern, western and non-aspect section detected.

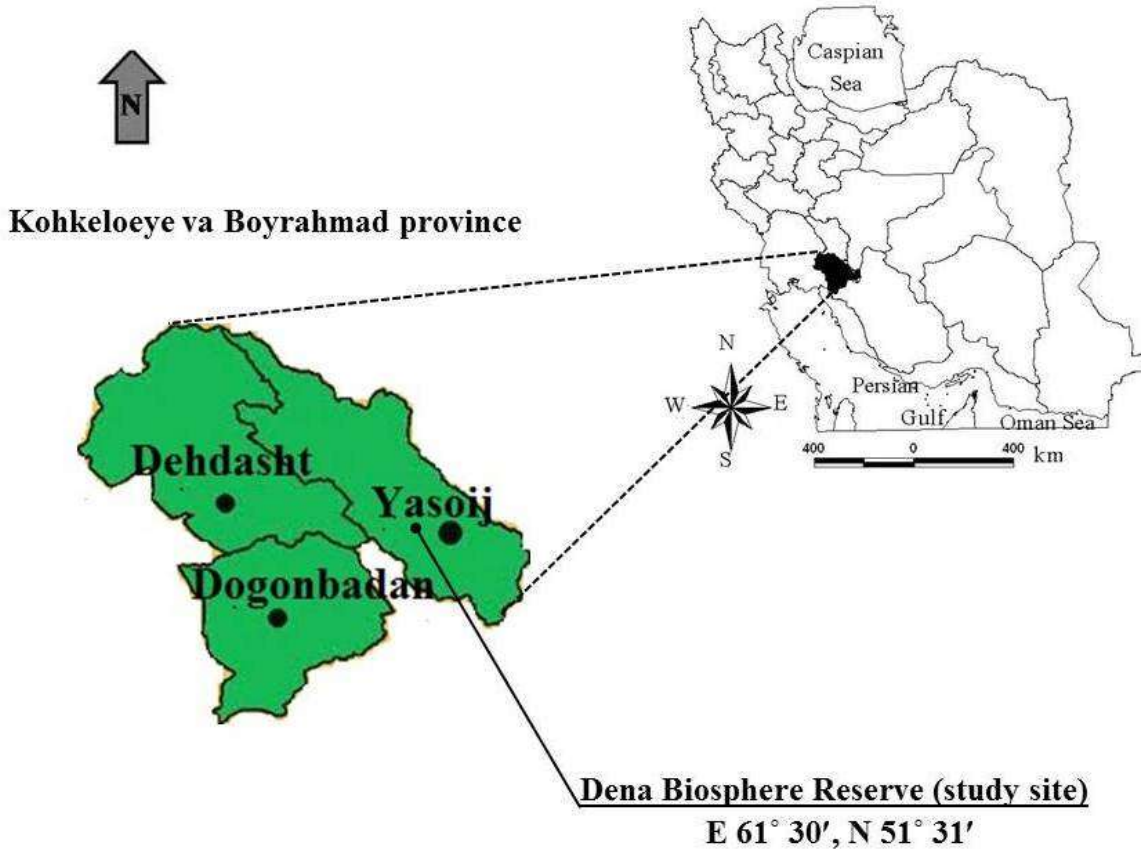

Figure 1. Study site location in the Kohkeloye va Boyrahmad province, central zagros forest, and southwest of Iran.

Field measurements

Inventory methods designed by systemetic-randomaiz method by use the rectangular plots that were 15×30 meters in the 100×100 m Net. In each plots information include qualities (health, crown symmetric and decline condition) quantities (Diameter at breath height, height and crown diameter) tree parameter measured (table 1). T-test was used to analysis of mean quantities tree parameter differences between protected and non-protected area. Data analyzing was done by Excel and SPSS16 software's.

Table 1: qualities class in the study area

Code	Crown health	crown symmetric	decline condition
Code 1	Health	symmetric	decline
Code 2	Non-health	Non- symmetric	Non- decline

RESULT AND DISCUSSION

The zagros regions are as where enough rain falls to support habitation, but humans have degraded the landscape. Agriculture, pastoralism, and woodcutting have caused the loss of natural vegetation.

Table 2. List of plant species (Tree and Shrub) in the studied areas

	Scientific name	Family name	Protected area	Non-protected area
1	*Qurecus brantii* Oliv.	Fagaceae	*	*
2	*Pistacia atlantica*	Anacardiaceae	*	*
3	*Acer monspessulanum* L.	Aceraceae	*	*
4	*Cratagus atlantica*	Rosaceae	*	*
5	*Amygdalus scoparia*	Rosaceae	*	*
6	*Loniceroa nummularifolia*	Caprifoliaceae	*	*
7	*Amygdalus nummularifolia*	Rosaceae	*	*
8	*Cotonaster integerrima*	Rosaceae	*	*
9	*Cerasus microcarpa*	Rosaceae	*	

The tree and shrub species belonged to five families and 5 tree species were identified in the study area (Table 2). Thus for the classes of Rosacea, Fagaceae, Caprifoliaceae, Aceraceae, and Anacardiaceae, five, one, one, one and one species were existed, respectively.

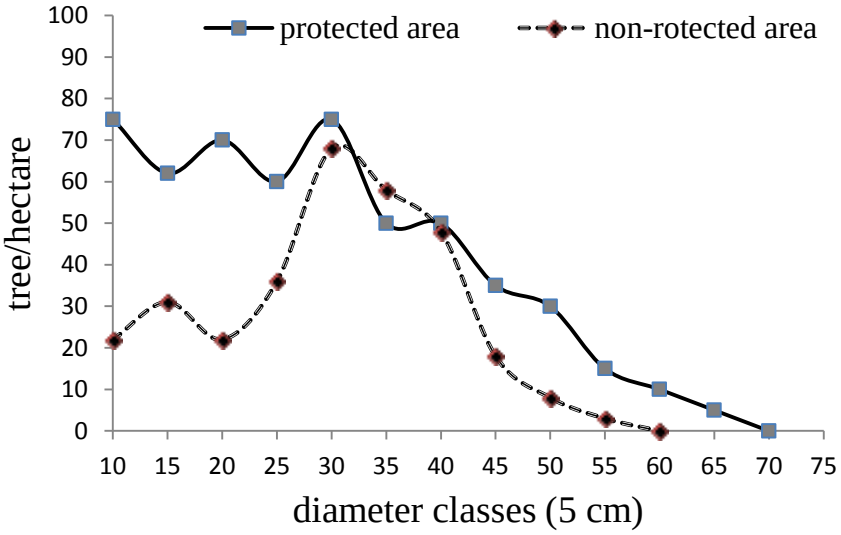

Figure 2. The number of trees in diameter classes in the protected and non-protected area

The diameters of the trees in the study site were measured at breast height and recorded in classes of 5 cm. We measured DBH of trees ranging from 5 to 55 cm and 5 to 65 cm in the protected and non-protected area, respectively. The DBH distribution graphs in the stands

indicate the reduced uneven- aged stand in protected area and reduced even aged in the non-protected area, respectively.

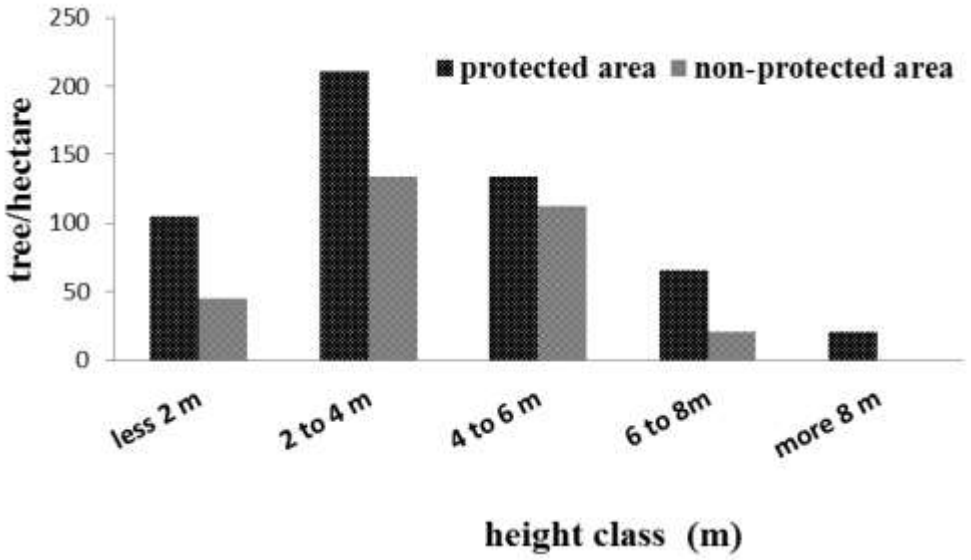

Figure 3: The number of trees in height classes in the protected and non-protected area.

showed that in protected area 2 to 4 meter height class has a maximum N/hectare, in in protected area more trees has more 4 meter height.

Table 3: Comparison of tree parameter in the protected and non-protected area.

Tree parameters	protected area		non-protected area		t-test (Sig.)
	mean	Standard deviation	mean	Standard deviation	
Diameter at breath height (DBH) (cm)	38.5	5.5	31.2	4.5	0.000
Height (m)	6.51	0.90	5.5	0.76	0.004
Crown cover (%)	38	5.5	21	3	0.000
Tree/hectare	530	35	312	23	0.000

*Different letters indicate significant differences in 5% level ** Different letters indicate significant differences in 1% level

The results showed that the mean of forest characteristics including DBH, height, canopy cover and, and density are 38.5 (±5.5), 6.51 (± 0.9), 38 (±5.5) and 530 (±35) in protected area, respectively. The mean of forest characteristics including DBH, height, canopy cover and, and density are 31.2 (±4.5), 5.5 (± 0.40), 2.2 (±0.76), 21 (±3) and 312 (±23) in non-protected area. T-test analysis showed that the mean different between DBH, height, canopy cover and, and density in the two area was significant.

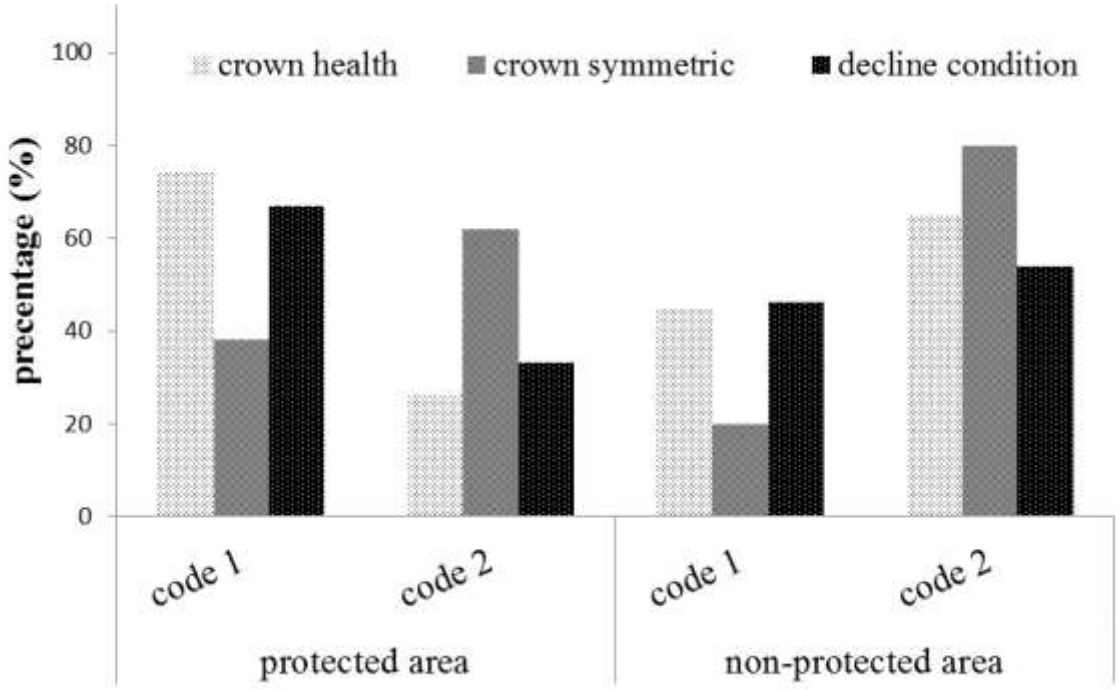

Figure 4: Compere of the quantities tree parameter in the protected and non-protected area.

Results showed that the mean percentage of code 1 (health, symmetric and non- decline) in the protected area higher the code 2. In the non-protected area code 2 higher the code 1. One of the serious threats to most of the Iranian ecosystems is drought, because much of Iran lies in the arid or semiarid regions. The other threats for plants are: overgrazing, fuel wood extraction, conversion of forest and other wild lands for agriculture, road construction, overexploitation, and unscientific extraction of plant resources for medicine, food. Dena Biosphere Reserve located in Iran and is a 550 Biosphere Reserve in the worlds. This Biosphere Reserve is very important in the environment, social and economic condition in Iran. Results showed that DBH of tree in the protected area has more distribution (5 to 65 cm) and uneven- aged stand, but in non-protected area distribution of tree in the DBH class in the 5 to 55 cm and has an even- aged stand (figure 2). The numbers of young tree (less the 30 cm DBH) in the protected area are more the non-protected area, the major problem in non-protected area is lack of the regeneration and young tree and Haidari *et al*, 2012 and Haidari *et al*, 2013a, Haidari *et al*, 2013b reached the ours results. Results showed that the heights of tree in the protected area are more the non-protected area, and human utilization has a negative effect on the quantities tree parameters (figure 3). Results showed that the mean of forest characteristics including DBH, height, canopy cover and, and density in the protected area are 38.5 (±5.5), 6.51 (± 0.9), 38 (±5.5) and 530 (±35) and this quantities parameters in protected area higher the non-protected area (table 3). Results of qualities parameters showed that the tree in protected area have the better conditions in the protected area (the percentage of health, symmetric and non- decline tree in the protected area was higher). Overall results showed that the qualities and quantities tree parameters in the non-grazed area higher the grazed area (protected area has a positive effect on forest) and this studied emphasis this results (Haidari *et al*, 2012a; Haidari *et al*, 2012b, Haidari *et al*, 2013a, Haidari *et al*, 2013b, Alijanpour *et al*, 2004; Abasi *et al*, 2009 and Shakeri *et al*, 2010).

CONCLUSION

Grazing affects plant communities and associated fauna, with implications for biodiversity and ecosystem processes (Huntly, 1991; Rooney, 2003). Overall results showed that the qualities and quantities tree parameters in the non-grazed area higher the grazed area, and grazing has a negative effect on the forest regeneration.

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