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RESEARCH ARTICLE

COMPARATIVE ANALYSIS AND WAYS OF SECURITY MEASURES OF RARE ENDANGERED TREES AND SHRUBS OF THE NORTH-EAST TERRITORIES OF THE GREATER CAUCASUS

***[1]Mammadov Tofig Sadig Oglu and [2]Ahmedova Aynur Barat Gizi**

[1]Doctor of Biological Sciences, Professor, Corresponding Member, National Academy of Sciences of Azerbaijan, Director of the Institute of Dendrology of the National Academy of Sciences of Azerbaijan
[2]PhD of the Institute of Dendrology, National Academy of Sciences of Azerbaijan, Senior laboratory assistant in Sumgait State University

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ABSTRACT

In the scientific article, carried out monitoring of flora biodiversity in the north-eastern territory of the Greater Caucasus, analyzed the vital forms of species of studied tree bushes and were used APG III-IV taxonomic classification systems. Studied rare and endangered species is grouped into threat categories adopted in İUCN (2001) 3.1 version.

Key words: Tree, Bush, Monitoring, Vital forms, Taxonomic Classification, Threat categories.

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INTRODUCTION

According to Azerbaijan's geographical position, relief, land and climate has a special plant cover and in terms of biodiversity is the richest country in the Caucasus. In recent years observed climate change in our Republic, as a result of the influence of anthropogenic factors, in cultural flora have been rapidly degraded some valuable plant species, their areas reduced, decreased the number of individuals in population, many taxa have been threatened with destruction (Rare trees and shrubs of Azerbaijan, 2016). So as a result of anthropogenic factors from many valuable trees and shrub species has dramatically changed(grapevine taxus, loose oak, ordinary chestnut, sumac leaf ash-tree, mountain almond, black quack, Hirkan maple, nut, hairy oak) the proportion of populations in the forest areas. Many laws, decrees and orders have been adopted and signed by the country's leadership, in the direction of protection of biodiversity restoration and ecological balance. Exactly for the same reason, in the last 10 years, forest areas in our republic have been increased from 478,000 hectares to 894,000 hectares and constitute 11.4% of the country's territory. As a result of a purposeful policy pursued by the state, in recent years have been established 9 national parks, 13 state natural reserves and 24 state nature sanctuary.

Corresponding author: **Mammadov Tofig Sadig Oglu**
Doctor of Biological Sciences, Professor, Corresponding Member, National Academy of Sciences of Azerbaijan, Director of the Institute of Dendrology of the National Academy of Sciences of Azerbaijan

Created in specially protected natural areas, in 1952-1964, there were 342 species of trees and shrubs in 3 volumes of the Azerbaijani Dendroflora, that 24 species included in the list of rare and endangered trees and shrubs. In the result of carried out following researches, in 1984, 28 species and in 1989, 45 species of rare and endangered trees and shrubs were written (Rare trees and shrubs of Azerbaijan, 2008 and 2016). At present, 300 rare plants and mushrooms were included to the 2nd edition of the Red Book of Azerbaijan (2013). It should be noted that about 25% of the species of trees and shrubs in the natural flora of Azerbaijan are relic plants. In recent years, carried out monitorings in the country's flora and comparatively analyzed the Azerbaijan Dendraflora and it has become known that currently, the number of rare and endangered species of trees and shrubs in our republic is 42 families, 71 genera and 189 species ("Rare trees and shrubs of Azerbaijan", 2016). There are 67 species of Caucasian endemic species, 40 species of Azerbaijan endemics and 4 species of relics.

MATERIAL AND METHODS

The researched object was the Guba-Khachmaz region of the North-Eastern part of the Greater Caucasus, was carried out monitoring in the territories, along with the analysis of the dendroflora of those areas, rare endangered trees and shrubs in the area used from 3.1 version of IUCN (2001) categories, and is grouped according to the classification of taxa of APG III-IV

Table 1. Types of rare and endangered trees and shrubs found in research areas

№	Chapter	Gender	Type	LC	VU Ca(ii)	NE	CR. B1ab (i, ii, iv).	DD	NT	EN B2ab (ii,iii, iv,v)	VU D2.
1	Aceraceae	Acer L.	Acer hyrcanum Fisch.						+		
2			*Acertrautvetteri*Medw								+
3*	Anacardicaea lindl.	Pistacia L.	Pistacia Mutica Fisch.C/A.Mey.				+				
4		Rhus L.	Rhus coriaria L.		+						
5	*Araliaceae* Juss.	*Hedera* L.	*Hederahelix*L.			+					
6*			*Hederapastuchovii*Woronow				+				
7*	Betulaceae S.F.Gray	Betula L.	Betula raddeana Trantv		+						
8			*Betulaalba*L.	+							
9			*Betula micro-lepis* I.V.Vassil.						+		
10*	Cupressacae F.G.Neger	Juniperus L.	Juniperus sabina L.						+		
11*	Sərvkimilər fəsiləsi		Juniperus foetidissima Willd.								
12	*Cannabaceae*	*Celtis* L.	*Celtisglabrata*Steven ex Planch.						+		
13	*Elaeagnaceae*	*Hippophae* L	*Hippophaerhamnoides*L								+
14	Fagaceae Dumort.	Quercus L.	Quercus longipes steven.						+		
15			*Quercuscrispata*Steven		+						
16			Quercus iberica steven.				+				
17			Quercus pubescns Wild								+
18		Fagus L.	Castanea sativa Mill	+							
19	Juglandaceae A.Rich.ex. Kunth.	Juglans L.	Juglans regia L.						+		
20		Pterocarya Kunth.	Pterocarya pterecarpa Kunth.					+			
21	*Leguminosae* Juss	*Astragalus* L.	*Astragalus beckerianus* Trautv.					+			
22			*Astragaluslussiae* Rzazade		+						
23			*Astragalus denudatus* Steven							+	
24	*Lamiaceae* Lindl.	*Thymus* L.	*Thymus collinus* Biber						+		
25	*Oleaceae Hoffmg. Link.*	*Fraxinus* L.	*Fraxinus coriariifolia* Scheele.	+							
26*	Pinaceae Lindl.	Pinus L.	Pinus kocihana Klotzsch ex K.Koch.						+		
27	*Polygonaceae* Lindl.	*Atraphaxis* L	*Atraphaxis spinosa* L.-	+							
28*	*Rhamnaceae* Juss.	*Frangula* Mill.	*Frangula grandiflora* Grub.				+				
29	*Rosaceae* Juss.	*Pyrus* L.	*Pyruscaucasica*Fed.								+
30			*Pyrus vsevolodii* Heideman						+		
31			*Pyrusgeorgica*Kuthath.						+		
32		*SorbusL.*	*Sorbuscaucasigena*Kom. ex Gatsch.		+						
33			*Sorbussubfusca*Boiss.								+
34			*Sorbus кusnetzovii* Zins.		+						
35			*Sorbus caucasica* Zins.						+		
36			*Sorbus luristanica*Schonb.-						+		
37		*Rubus* L.	*Rubusbushii*L.H. Bailey						+		
38			*Rubus iberica* Juz.	+							
39			*Rubus dolichocarpus* Juz.								+
40			*Rubus georgicus* Focкe	+							
41			*Rubus caucasicus* Focкe	+							
42*		*Rosa* L	*Rosa sosnowsкyi* Chrshan.								
43			*Rosa кomarovii* Sosn.						+		
44			*Rosa alexeenкoi* Crep. ex Juz.						+		
45			*Rosa brotherorra* Chrshan.						+		
46*			*Rosa azerbaidshanica* Novoposkr et Rzazade								
			Rosasachokian								
7			*a*P. Jarosch.								+
48			*Rosamarschalliana*Sosn								+
49			*Rosa buschiana* Ghrshan.								+
50			*Rosaoxyodon*Boiss.		+						
51		*Prunus* Mill.	*Prunus divaricata* Ledeb.						+		
52			*Prunus caspica* Koval et Ekim.								+
53	Salicaceae Lindl.	Salix L.	Salix caucasica Anderss.						+		
54			*Salix arbuscula* L.								+
55			*Salixaegyptiaca* L.						+		
56			Salix kyznetzowii laksch.ex. Goers						+		
57		*Populus L.*	Populusnigra L.	+							
58			*Populus pseudonivea* Grossh.	+							
59	Tiliaceae Juss.	Tilia L.	Tilia begoniifolia Stev.						+		
60*	Taxaceae S.F.Gray.	*Taxus* L	*Taxusbaccata* L.				+				

systems. In researched work, in addition has also been used the literature, personal research as "Flor of Azerbaijan" (Akhmatov, 1979), by T.S.Mammadov and etc. (Məmmədov, 2011), Isgandar E.O. The trees and brushes of Azerbaijan" [1], T.S.Mammadov and etc. (2011) "Dendroflora of Azerbaijan" I, II, III volumes and etc. materials.

DISCUSSION AND CONCLUSIONS

In the research work were investigated the factors that led to the decline of the number of rare and endangered trees and bushes and the disappearance of their descendants in Guba and Khachmaz administrative regions of the Greater Caucasus, including put forward the definition of threat categories. In research work used from the categories accepted in the version İUCN (2001) 3.1, and classification system APG III-IV of taxa [2, p.4]. Numerous expeditions in the north-eastern part of the Greater Caucasus and on the basis of collected herbariums, it was found out that there are 39 families, 72 genres, 203 species of trees and brushes have been found in the dendroflora of the region in natural and cultural conditions. As a result of the investigations, some species as a result of the influence of a number of anthropogenic factors and climate variabilityin the north-eastern part of the Greater Caucasus, in addition decreased the number of plant species in the area, reduced their areal, and determined that 60 species include to the rare and endangered species. In the following table has given rare, endangered trees and brushes in the north-eastern part of the Greater Caucasus, families, genres, species and the accepted categories of threats on İUCN (2001) 3.1version.

- Adopted in the version İUCN (2001) 3.1
- Extinct (EX),
- Extinct in the Wild (EW),
- Critically Endangered (CR),
- Endangered (EN),
- Vulunerable (VU),
- Near Threatener (NT),
- Least Concern (LC),
- Data Deficient (DD),
- Used from the categories Not Evalueted (NE)
- Included in the "Red Book" of Azerbaijan -*

Studied natural range of the species is not wide. The main reasons for the change in natural resources are human activity and climate change, and no special protective measures.

Thus, in the northeastern region of the Greater Caucasus, numerous expeditions, monitors, and collected herbariums revealed that, there are 19 families, 27 genres and 60 plant species that included to rare herbaceous plants. The status of the studied species has been selected for reasons of natural change of natural resources and protection measures. Factors and security measures offered as below that lead to the reduction of the number of rare and endangered species of trees and bushes in the northeastern region of the Greater Caucasus and the disappearance of their generation. The observations showed that there are no conservation strategies for some of their areas of rare and endangered species of odorous plant species in the northeastern region of the Greater Caucasus. Industrial development, new villages and settlements sometimes has been a source of danger to plants spreading on a small area. In the northeastern regions of the Greater Caucasus, in the result of tourism development, recreation centers and garden houses have diminished areas of rare plants even has arisen the threat for disappearance of their generation. In the North East of the Greater Caucasus, use of herbal medicine some of the rare plants have led to a gradual decline. Along with air, and water pollution as well as soil pollution and other factors is more utilization of pesticides. The tendency of decreasing the population of these plants, their distribution in limited areas, areas, climatic variability and anthropogenic factors because of created the danger of rare extinction, for protection of some species is recommended to include the "Red Book" of the Republic of Azerbaijan.

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