EUROPEAN ACADEMIC RESEARCH
Vol. VI, Issue 10/ January 2019

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Analysis of the Caspian Flora of Azerbaijan

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Abstract

Biodiversity of the environment as well as the problem on the protection and effective use of the flora assumes vital ecological importance. Therefore, a geobotanical map was compiled on the classification of the vegetative cover of Samur-Shabran plains, Absheron, Gobustan, Lankaran-Mugan, Lankaran plains and all botanical and geographical regions locating on the Caspian coast of Azerbaijan, the determination of its flora over the systematic taxons, the biomorphological, ecological and geographical elements, the endemic and the plants that are rare and subjected to danger of endangeredion as well as their names included in "Red" and "Green" books as well as the plant-growing.

Key words: flora, phytocenosis, ecomorph, endemic, rare, endangered

THE OBJECT AMD METHODOLOGY OF THE INVESTIGATION

The taxonomy of the Caspian flora of Azerbaijan (over the types, species and chapters) [6] was investigated. Along with that the plants spread in the area were classified as biomorphological [3,13] and ecological according to their living forms. The floral composition was investigated according to the types and classes of the geographical areal under "Summary of the North and South Caspian coasts" [22,3,4,20,14].

The herbariums collected from the phytocenosis of the investigated area were specified according to the Englere's system; the plants were defined according to "Flora of Azerbaijan" [5,6,9], "Systematics of higher plants" [12] and other floristic literatures over the cystamic taxons[5,2]. Names of the types were noted according to S.K. Cherepanova [8], V.J.Hajıyev and T.E.Gasımova[9] as well as "Red Book of Azerbaijan Republic" [17].

ANALYSIS AND DISCUSSION

We can mention the works on the scientific works of S.D. Aghajanov [3], L.I. Prilipko [18], I.M. Aghaguluyev [2], A.A. Akhundova [1] and other investigators [10,17,13] on the flora and plant-growing of the Caspian coast.

The natural plant-growing and wild flora spread in the lands and sands of meadow-brownish, podzolic yellow-forest, meadow-greyish, grey, grey-meadow, grey-brownish, meadow-swampy and sandy types formed at certain altitude of the seal level of the Caspian coast of the investigated territory of Azerbaijan (from-25 meters up to 300 meters) were studied in the scientific and methodical way [1,10,20,2,3,19,13].

The climatic condition of this area, especially, decrease of the amount of annual rainfall, infertile sandy, saline lands, strong wind (deflation) prevent the formation of the flora of the Caspian coast [14]. The climate of the region belongs to the type of the mild-warm semidesert and dry steppe with dry summer [18,16,4].

The investigations were conducted by us within the years of 2016 and 2018 under large scale geobotanical researches conducted for the analysis of the flora of the area mentioned-above.

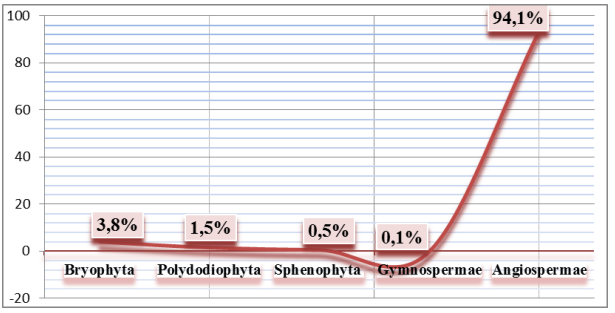
Though the information on the plant-growing and flora of the above-said area was provided [1,10,2,3,19,13], exact floristic analysis and statistical analysis have not been conducted until today.

Therefore, the composition (over the tables) and analysis of the North and South Caspian coast (on the territory of Azerbaijan Republic) is classified as follows under "Ecological properties of the flora and plant-growing of Samur-Shabran plains" [15] as well as by referring to the results of other certain researches conducted in the phytocenoses of other botanical and geographical regions and some scientific sources [2,1,10,19,22,7,11].

CONCLUSION

According to the phytocenological investigations conducted, you can find 1054 types of higher plants of 5 departments, 2 classes, 124 families and 506 species including 40 higher cryptogams, 16 polydodiophyta, 5 sphenophyta or Equisetum L., 1 gymnospermae, 992 angiospermae or flowering plants in the composition of the flora of the Caspian coast of Azerbaijan under the investigations of the flora that it makes up 23,4% (4500 types) of the flora of Azerbaijan (Table 1).

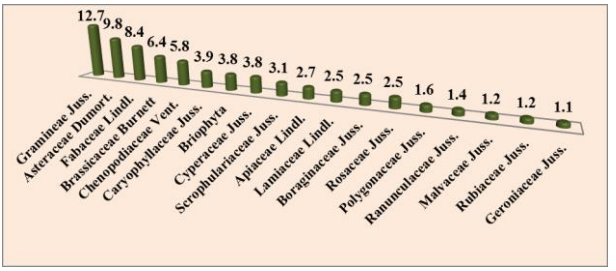
Table 1. Systematic structure of the flora of the Caspian coast of Azerbaijan.



As it is reflected in the Table 1, the angiospermae make up 992 types or 94,1% over the thematic taxons in the flora ofv the area that 22,2% (234 types) out of them belong to the monocotyledonous plants and 71,9% (758) to the dicotyledonous plants. The families (124) in the composition of the flora make up 99,2% (125) of the families of the flora of Azerbaijan and the

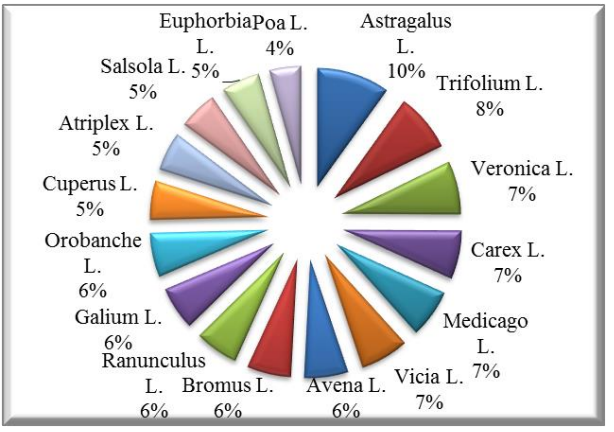
species (506) make up 54,4% (930) of the species of the flora of Azerbaijan. In this regard, the families like Gramineae (134), Asteraceae (103),Fabaceae (88), Brassicaceae (68), Chenopodiaceae (61), Caryophyllaceae (41), Bryophyta (40), Cyperaceae (40) and Scrophulariaceae (33) are represented in more types (Table 2).

Table 2. The families represented in more species and types of the flora of the Caspian coast



It is seen from the Table that the number of the types including in 18 families is equal to 74,4% (784). But 270 types (25,6%) including in the other 106 families change among 11- types.

Table 3. The species represented in more types of the flora of the Caspian coast

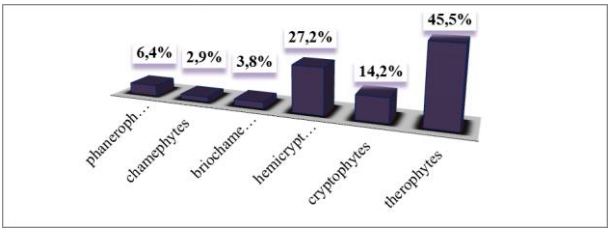


296 types (58,5%) over the species according to the number of the types of the species cover the composition of the flora by

each of the species Astragalus L. (15), Trifolium L. (12), Veronica L.(11) being in 10 types represented 30 types (6,0%) in total Carex L., Medicago L., Vicia L.; each of 5 species by 9 types in 45 types (9,0%); each of the next species by 8 types in 32 types (6,4%) in total; 8 species by 7 types in 56 types (10,4%) in total; by 6 types in 36 types (7,2%) in total; by 5 types in 65 types (13,0%) in total; 210 types (41,5%) represented by 4-1 types according to the analysis of the indexes(Table 3).

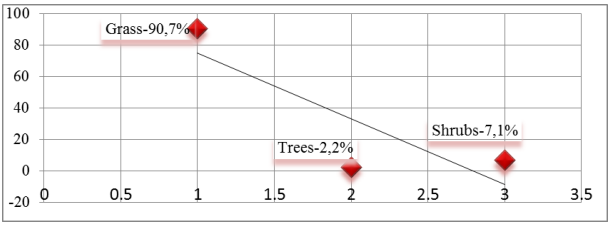
Analysis of the plants over the classification and composition over hte living forms (biomorphs) of the plants was conducted according toJ.Raunkier [16], P.D.Yaroshenko [21], B.A.Bıkov [7] (Table 4) as well as I.G.Serebryakova [19] (Table 5).

Table 4. Classification and composition of the types of the plants in the flora of the Caspian coast according to the living forms.
(According to J.Raunkier 1934)



As it is reflected in the Table 4, you can mostly find therophytes in 479 types (45,5%), hemicryptophytes in 287 types (27,2%), cryptophytes in 150 types (14,2%), phanerophytes in 67 types (6,4), chamephytes in 31 types (2,9%) and briochamephytes in 40 types in the composition of the territorial flora of the Caspian coast.

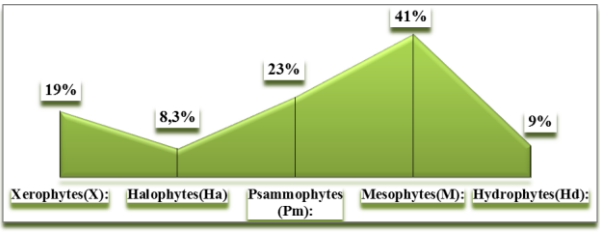
Table 5. Classification and composition of the flora of the Caspian coast over the biomorphological groups
(According to Serebryakova 1964)



As it is seen from the Table 5, it is disclosed from the analysis of the biomorphological groups that thed grass is marked in 956 (90,7%) types including parennials in 428 (40,6%) types, biennial in 50 (4,7%) types and annual plants in 478 (45,4%) types in the flora of the Caspian coast. Here the shrubs are made up by 44 (4,2%) types, trees by 23 (2,2%) types, semishrubs by 15 (1,5%) types, little shrubs by 9 (0,8%) types andlittle semishrubs by7 (0,6%) types.

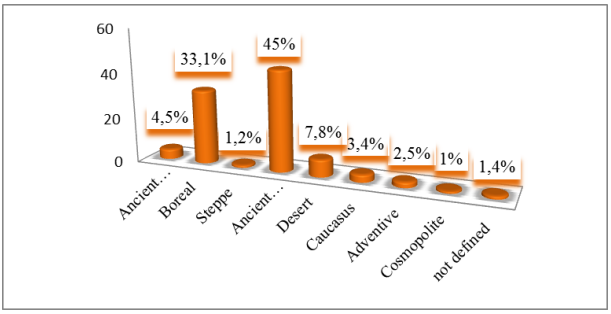
When the plants of the flora of the Caspian coast of Azerbaijan are analyzed over the ecological groups upon the demand for humidity according to A.P. Shennikova [20] and B.A. Bikov [7], the xerophytes which make up 18,9% of the territorial flora by 199 types, stand in the first place (Table 6). It is seen from the table that the xerohalophytes belonging to the xerophytes in the floristic composition, are represented by 4 (0,4%), halophytes by 53 (5,0%), haloxerophytes by 10 (0,9%), halomesophytes, halopsammophytes by 20(1,9%), m by 101 (9,6%),psammoxerophytes by 78 (7,4%), psammomesophytes by 28 (2,7%), psammomesoxerophytes by 2 (0,2%), psammohydromesophytes by 7 (0,7%), mesophytes by 151 (14,3%), mesoxerophytes by 197 (18,7%), mesopsammophytes by 10 (0,9%), mesoxeropsammophytes by 39 (3,7%), mesohalophytes by 4 (0,4%), mesohydrophytes by 28 (2,6%), and hydrophytes by 73 (6,9%), hydromesophytes or hygrophytes by 15 (1,4%) and hydroxeropsammophytes by 4 (0,4%) types.

Table 6. Classification and composition of the plants of the flora of the Caspian coast over the ecological groups
(Shennikov 1964, Bikov 1973)



According to what was mentioned in "Summary of the flora of the North and South Caspian coast", the analysis of the territorial flora over its geographical elements (areal) was divided into 9 areal types by being conducted under A.A.Grossheym [11], "Flora of the USSR" [8] monographic books.

Table 7. Composition of the flora of the Caspian coast over the geographical (areal) types



It is seen from the Table 7 that the geographical elements 474 (45,0%) of the ancient Mediterranean Sea type prevails in the formation of the flora. The next places are taken by the elements of boreal 349 (33,1%), desert 82 (7,8%), ancient (third period) 47 (4,5%), Caucasus 36 (3,4%), adventive 27 (2,5%) and steppe 13 (1,2%) areal types.

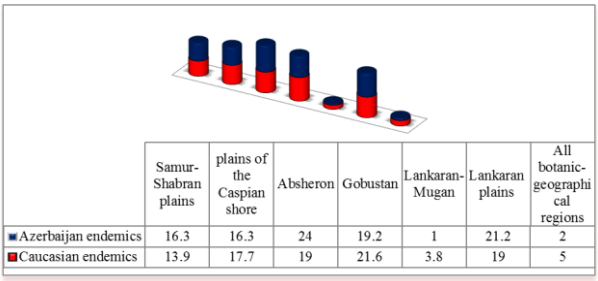
But the areal types of 15 types of plants were not defined that they make up 1,4% of the flora.

The endemicity of the types formed in the area was investigated for the protection and efficient use of the flora of the Caspian coast of Azerbaijan. In this regard, the eight volume of "Flora of Azerbaijan" [10], "Endemic flora of Azerbaijan" [4], "Subendemes of the flora of Azerbaijan" [6], "Red Book of the endemic plants of International Caucasus" [17] were considered. A.M.Asgarov [6] mentioned about the existence of 181 endemic types in the flora of our country. But "Red Bood on the endemic plants of International-Caucasus" mentions that 200 types spread over the territory of the Caspian Sea investigated (Table 8).

There was investigated the dissemination of the endemic plants of the Caucasus and Azerbaijan [11,13] in the botanic-geographical or geobotanical regions in the flora of the Caspian coast ofv Azerbaijan (Table 9).

As it is reflected in the Table, totally 183 endemic types were met in the flora of the territory according to the information of certain literature that 79 out of them are the endemic plants of the Caucasus and 104 of Azerbaijan.

Table 8. Endemic plants in the area of the geobotanical regions in the flora of the Caspian coast.



	Samur-Shabran plains	plains of the Caspian shore	Absheron	Gobustan	Lankaran-Mugan	Lankaran plains	All botanic-geographical regions
Azerbaijan endemics	16.3	16.3	24	19.2	1	21.2	2
Caucasian endemics	13.9	17.7	19	21.6	3.8	19	5

We draw a conclusion on the analysis of the types including in "Red Book" (2013) of Azerbaijan in the flora of the area that 23 families, 32 species and 38 types of plants were recorced in the floristic composition (Table 9).

Table 9. The rare and endangered plants including in "Red Book of Azerbaijan" in the lora of the Caspian coast

№	Families	№	Species	№	Types	Bot.-geogr. regions
1	2	3	4	5	6	7
1.	Hemionitidaceae Pichi.Sermolli.	1.	Anogramma Link.	1.	A.leptophylla (L.)Link.	Absheron
2.	Eqquisetaceae Rich.ex. DC.	2.	Equisetum L.	2.	E.hymale L.	SSHP
3.	Graminae Juss.	3.	Stipa L.	3.	S.pellitac Trin.et Küpr.	Absheron
		4.	Avena L.	4.	A.ventricosa. Bal. ex coss.	Absheron
		5.	Ammochloa Boiss.	5.	A.palestina Boiss.	Absheron.
4.	Ruscaecae Hutch.	6.	Tulipa L.	6.	T.bibersteinana Schult.	SShP., KhSP. Gob.
5.	Asparagaceae Juss.	7.	Asparagus L.	7.	A.persicus Bker.	Absheron
6.	İridaceae Juss.	8.	İris L.	8.	İ.pseudacorus L.	SSHP
				9.	İ.musulmanica Fomin.	LM
				10.	İ.acutiloba C.A.Mey.	XSO., Gob., Absh.
7.	Orchidaceae Juss.	9.	Ophrys L.	11.	O.oestrifera Bieb.	LO
		10.	Orchis L.	12.	O.caspia Trautv.	SSHP., Gob.
8.	Polygonaceae Juss.	11.	Calligonium L.	13.	C.bakuense Litv.	Absheron
9.	Chenopadiaceae Vent.	12.	Binertia Bunge.	14.	B.Cycloptera Bunge.	Absheron
		13.	Halothamnus Jaub. Et Spach.	15.	H.tragus L.	LP
		14.	Anabasis L.	16.	A.salsa (C.A.Mey.) Benth.ex Volkens.	Gob., Absh.
				17.	A.brachiata Fisch.et C.A.Mey.ex Kar.et Kit.	Absh.
				18.	A.aphylla L.	KHSP., Gob., Absh.
10.	Numphaceae Sabis.	15.	Nymphaea L.	19.	N.alba L.	LP
11.	Hamamelidaceae R.Br.	16.	Parrotia C.A.Mey.	20.	P.persica (DC.) C.A.Mey.	LP
12.	Rosaceae Juss.	17.	Pyrus L.	21.	P.hyrcana Fed.	LP
				22.	P.salicifolia Pall.	SSHP., Gob.
13.	Fabaceae Lindl.	18.	Gleditsia L.	23.	G.caspia Desf.	LP
		19.	Astragalus L.	24.	A.bakuensis Bunge.	Absh.
14.	Vitaceae Lindl.	20.	Vitis L.	25.	V.sylvestris G.G.Gmelin.	SSHP., Gob., LM, LP
15.	Malvaceae Juss.	21.	Alcea L.	26.	A.lenkoranika İljin.	LP
				27.	A.hyrcana (Grossh.).	LP
16.	Punicaceae	22.	Punica L.	28.	P.granatum L.	SSHP.,

	Horan.					Gob., LM., LP
17.	Trapaceae Dumort.	23.	Trapa L.	29.	T.hyrcana Woronow.	LP
18.	Araliaceae Juss.	24.	Hedera L.	30.	H.pastuchow Woronow.	LP
19.	Apiaceae Lindl.	25.	Ferula L.	31.	F.persica Willd.	Absh., Gob.
20.	Primulaceae Vent.	26.	Primula L.	32.	N.heterochroma Stapf.	LP
21.	Scrophulariaceae Juss.	27.	Veronica L.	33.	V.amoena Bieb.	Absh., Gob., LP
22.	Orobanchaceae Vent.	28.	Diphelypaea Nicolson.	34.	D.coccinnea (Bieb.) Nicolson.	KHSP., Gob.
23.	Asteraceae Dumort.	29.	Bellis L.	35.	B.hyrcana Woronow.	LP
		30.	Cladochaeta DC.	36.	C.candidissima (Bieb.) DC.	SSHP, Gob., Absh.
		31.	İnula L.	37.	İ.caspica Blum. Ex Ledeb.	LP
		32.	Centaurea L.	38.	C.hyrcanica Bornm.	LP

Learning and analyzing of the composition of the flora of the Caspian coast for its preservation and protection will enable to use the wild flora of the area.

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