

Floristic Analysis of *Astracantha* and *Astragalus* Species Spreading in the Area of the Nakhchivan Autonomous Republic

DASHGYN GANBAROV
Nakhchivan State University
Azerbaijan

Abstract:

According to the literary existing herbarium materials 85 species of Astracantha and Astragalus genus are spread out in of Nakhchivan Autonomous Republic. 16 of them were given to the Astracantha species which are newly created from Astragalus genus, and the other 69 species were kept in Astragalus. The same species have systematically been analysed, their geographical areal kinds have been studied.

It has been known that most of the existing types of Astracantha and Astragalus are included into classes and groups as Atropatan, Northern Iran, Asia Minor Front Asia. The investigation of geographical elements, their groups and classes makes it possible to study out the flora genetically or historically, to be more true, to learn out the ways, the time and the place where the types have come from to this area.

Key words: Classification, flora, phytosenoz, geographical element, ecosystem, class, group

Introduction

The Nakhchivan Autonomous Republic attracts with its geographical-areal landscape and flora. One of its main natural riches is its rich plant covering. This richness has developed from its long-timed evolution process, its natural, historical, ecological and antropogen factors affecting influence from time

to time. Kseropfit typed rich flora of Nakhchivan has developed historically in close connection with the Mediterranean Sea, Front Asia and Iran flora. The plants belonging to Leguminous plants – *Fabaceae* Lindl. family are distinguished by their useful characteristics in nature and in human life, being widely used as main nourishment, food, medicine, and technical plant resources. The plants of this family live in very different landscapes, including different life forms and ecological groups. It has great importance in the formation of biosenoz. *Fabaceae* Lindl. family was introduced as 95 genus and 300 species. According to the latest taxonomic nomenclature, the family members are divided into two species. 16 of them were given to the *Astracantha* species which are newly created from *Astragalus* genus, and the other 69 species were kept in *Astragalus*.

The flora and plant environment of The Nakhchivan Autonomous Republic are widely studied systematically, biomorphologically, bioecologically phytosenologically, and its plant reserves have been studied biochemically in a complex form. The existing types of *Astracantha* and *Astragalus* were made phloristic analysis in this area. As time passes the results of researches are getting old, or other species from neighbour countries migrate to the area. That's why there is a great need of searching and investigating of their newly formed features periodically. For this reason, to find out the taxonomic spectrum and learn geographical elements of the species concerning the genus of *Astracantha* Podlech and *Astragalus* L. spread in the region is an important, actual issue too. Our aim in the article is to define rightly the phloristic analysis of the species of the *Astracantha* and *Astragalus* genuses of *Fabaceae* family spread in the area of the Nakhchivan Autonomous Republic.

Material and method

Since 2012 there have been performed studies of the species concerning the genus of *Astracantha* Podlech and *Astragalus* L. in the area of Nakhchivan AR. Regular expeditions have been made in the regions of Nakhchivan AR and the species of the genus of *Astracantha* Podlech and *Astragalus* L. have been investigated in detail. The phytosenoz in which the species are spread and the associations which they formed are studied by phenological observation during the investigation.

In the usage and determination of the gathered herbarium materials, classical and modern botanical-floristic methods, personal experiences, long-termed skills and experiences were referred here (3, 245-335). Classical and modern botanical-floristic methods, fundamental flora of USSA, Caucasus flora, “Flora of Azerbaijan” are used. Defining precisely of systematic taxons is made according to S.K.Cherepanova and “Taxonomical spectrum of the flora of Nakhchivan AR”. (2, 134-139; 3, 435-459)

Experimental part

Genesis of species and its formation ways, study of areal types of species, geographical-genetic investigation of plants are actual issues. The study of areal types of species reflects the relation between this area and big areal flora and it leads to the study of migration ways of species from the historical point of view. Nowadays the geographical analysis in the Caucasus region are mainly based on N.N.Portenier system. This system was compiled for piped plants at the same time, N.N.Portenier system was built up on phitokhorion conception and spread the characteristics of the species in the floral region. N.N.Portenier notes that geographical elements are the combination of phitokhorions in different levels. The author considers the characteristic members of khorion members within the flora as

a main factor and their adaptation to the optimal life conditioning a certain areal. During the investigation of areal flora, the great researcher of The Caucasus flora, A.A. Qrossheym based his studies on the geographical elements. Taking into the consideration of NAR flora characteristics A.A. Qrossheym includes this area as free floristic zone to Iran region. A.A. Qrossheym showed all geographical types for each plants species in “analyst flora Kafkaza” and “Flora Kafkaza”. Different plant species and their original centres are studied by A.A.Qrossheym and A.Sh.Ibrahimov. According to gathered herbarium materials in the region of NAR Botanical Institute of National Academy of Azerbaijan, Nakhchivan sector, Bioeresus Institute of Herbal Funds investigation and literary information, types of *Astracantha* and *Astragalus* belonging to diferent areal types are defined and it enables to determine the migration ways of the species to this area. Geographical elements of the species concerning the genus of *Astracantha* Podlech and *Astragalus* L. and their formation ways are grouped here. The genus of *Astracantha* and *Astragalus* of NAR are grouped according to zonal, regional principles for geographical areal types and classes.

No	Names of the species	Geographical areal type
1.	<i>Astracantha alexeenkoana</i> (B.Fedtsch. & Ivanova) Podlech	Atropotan
2.	<i>A.andreji</i> (Rzazade) Czer.	Northern Iran
3.	<i>A.aurea</i> (Willd.) Podlech	Armenia-Iran
4.	<i>A.barba-carpina</i> (Al.Theod., Fed. & Rzazade) Podlech	Northern Iran
5.	<i>A.flavirubens</i> (Al.Theod., Fed. & Rzazade) Podlech	Not known
6.	<i>A.gudrathi</i> (Al.Theod., Fed. & Rzazade) Podlech	Not known
7.	<i>A.insidiosa</i> (Boriss.) Podlech	Minor Asia
8.	<i>A.jucunda</i> (Al.Theod., Fed. & Rzazade) Czer	Northern Iran
9.	<i>A.karabaghensis</i> (Bunge) Podlech	Northern Iran
10.	<i>A.karjagini</i> (Boriss.) Podlech	Northern Iran
11.	<i>A.meyeri</i> (Boriss.) Podlech	Not known
12.	<i>A.microcephala</i> (Willd.) Podlech	Minor Asia
13.	<i>A.oleifolia</i> (DC.) Podlech	Asia Minor
14.	<i>A.stenonychioides</i> (Freyn & Bornm.) Podlech	Not known

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15.	<i>A.vedica</i> (Takht.) Czer.	Atropotan
16.	<i>A.pycnophyllus</i> Stev.	Atropotan
17.	<i>Astragalus achundovii</i> Grossh.ex Fed.	Atropotan
18.	<i>A.aduncus</i> Willd.	Front Asia
19.	<i>A.aegobromus</i> Boiss. & Hohen	Northern Iran
20.	<i>A.alpinus</i> L.	Holarctics
21.	<i>A.ammophilus</i> Kar. & Kir.	Iran-Turan
22.	<i>A.angustiflorus</i> C.Koch	Armenia-Iran
23.	<i>A.arguricus</i> Bunge	Atropotan
24.	<i>A.arguroides</i> G.Beck. ex Stapf	Atropotan
25.	<i>A.asterias</i> Stev.ex Ledeb.	Mediterranean Sea
26.	<i>A.aznabjurticus</i> Grossh.	Armenia-Iran
27.	<i>A.badamliensis</i> Chalilov	Caucasus
28.	<i>A.calycinus</i> Bieb.	Caucasus
29.	<i>A.camptoceras</i> Bunge	Southern Iran
30.	<i>A.campylorrhynchus</i> Fisch. & C.A. Mey.	Southern Iran
31.	<i>A.cancellatus</i> Bunge	Northern Iran
32.	<i>A.candolleanus</i> Boiss.	Minor Asia
33.	<i>A.chalilovii</i> Grossh. ex Fed.	Atropotan
34.	<i>A.choicus</i> Bunge	Armenia-Iran
35.	<i>A.cicer</i> L.	Europe
36.	<i>A.commixtus</i> Bunge	Southern Iran-Turan
37.	<i>A.compactus</i> Willd.	Armenia
38.	<i>A.conspicuos</i> Boriss.	Not known
39.	<i>A.cornutus</i> Pall.	Sarmat
40.	<i>A.corrugatus</i> Bertol.	Southern Iran-Turan
41.	<i>A.erivanensis</i> Bornm. & Woronow	Atropotan
42.	<i>A.euoplus</i> Trautv.	Not known
43.	<i>A.fabaceus</i> Bieb.	Northern Iran
44.	<i>A.falcatus</i> Lam.	Turan-Iran
45.	<i>A.finitimus</i> Bunge	Iran
46.	<i>A.resupinatus</i> Bieb.	Minor Asia
47.	<i>A.glycyphylloides</i> DC.	Eastern Mediterranean Sea
48.	<i>A.gezeldarensis</i> Grossh.	Northern Iran
49.	<i>A.glycyphyllos</i> L.	Westernpalearctic
50.	<i>A.goktschaicus</i> Grossh.	Northern Iran
51.	<i>A.grammocalyx</i> Boiss. & Hohen.	Northern Iran
52.	<i>A.hajastanus</i> Grossh.	Atropotan
53.	<i>A.hamosus</i> L.	Southern Iran-Turan
54.	<i>A.incertus</i> Ledeb.	Minor Asia
55.	<i>A.karakuschensis</i> Gontsch.	Northern Iran
56.	<i>A.kochianus</i> Sosn.	Northern Iran
57.	<i>A.lagurus</i> Willd.	Armenia-Northern Iran
58.	<i>A.longicuspis</i> Bunge	Northern Iran
59.	<i>A.macrostachys</i> DC.	Front Asia
60.	<i>A.mesites</i> Boiss. & Buhse	Not known

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61.	<i>A. montis-aguilis</i> Grossh.	Atropotan
62.	<i>A. nachitschevanicus</i> Rzazade	Atropotan
63.	<i>A. odoratus</i> Lam.	Minor Asia
64.	<i>A. ordubadensis</i> Grossh.	Atropotan
65.	<i>A. paradoxus</i> Bunge	Atropotan
66.	<i>A. pinetorum</i> Boiss.	Armenia-İran
67.	<i>A. polygala</i> Pall.	Asia Minor and Caucasus
68.	<i>A. prilipkoanus</i> Grossh.	Atropotan
69.	<i>A. psiloglottis</i> Stev. ex DC.	Eastern Mediterranean Sea
70.	<i>A. polyphyllus</i> Bunge	Alban
71.	<i>A. persicus</i> Fisch. & C.A.Mey. ex Bunge	Northern İran
72.	<i>A. regelii</i> Trautv.	Atropotan
73.	<i>A. robustus</i> Bunge	Atropotan
74.	<i>A. schelkovinikovii</i> Grossh.	Atropotan
75.	<i>A. strictifolius</i> Boiss.	Northern İran
76.	<i>A. saganlugensis</i> Trautv.	Armenia-İran
77.	<i>A. schachbuzensis</i> Rzazade	Garabagh
78.	<i>A. sevangensis</i> Grossh.	Northern-Atropotan
79.	<i>A. striatellus</i> Pall. ex Bieb.	Turan
80.	<i>A. strictilobus</i> Barneby	Turan
81.	<i>A. szovitsii</i> Fisch. & C.A. Mey.	Not knovn
82.	<i>A. takhtadzhjani</i> Grossh.	Not knovn
83.	<i>A. tribuloides</i> Delile	The Mediterranean Sea
84.	<i>A. uraniolimneus</i> Boiss.	Northern-İran
85.	<i>A. viridis</i> Bunge.	Atropotan

Table 1. Geographical areal types and taxonomic spectes of *Astracantha* Podlech and *Astragalus* L. species spread in Nakhchivan Autonomous Republic

As it can be seen from the table, according to geographical –areal types, kserophif-67 species, boreal-3, Caucasus-, not known-8, the rest of the classes are 1-2 species. Kseropfit character of flora is seen strongly. On the other hand, its boreal, desert and bozgir types of *Astracantha* and *Astragalus* species are spread weakly. The main reason of this decrease and weakness can be explained by the increase of Front Asia family and it shows the advantages over the other groups. Ancient, adventive and cosmopolit geographical elements concerning *Astracantha* and *Astragalus* species recur here.

№	Classes and groups of geographical areal types	Number of classes and groups	According common number (85) (with per cent)
1	Armenia-Iran	4	4,71
2	Armenia-Northern Iran	1	1,18
3	Armenia	1	1,18
4	Asia Minor	5	5,88
5	Asia Minor and Caucasus	1	1,18
6	Northern Iran	11	12,94
7	Iran	1	1,18
8	Iran-Turan	1	1,18
9	Southern Iran	1	1,18
10	Southern Iran-Turan	1	1,18
11	Atropatan	14	16,47
12	Northern - Atropatan	1	1,18
13	Front Asia	2	2,35
14	Caucasus	1	1,18
15	Europe	1	1,18
16	Sarmat	1	1,18
17	Alban	1	1,18
18	Turan	1	1,18
19	The Mediterranean Sea	1	1,18
20	Eastern Mediterranean Sea	1	1,18
21	Western-palearctic	1	1,18
22	Holarctics	1	1,18
23	Garabagh	1	1,18
Total:		55	100

Table 2 - Classes and groups of geographical areal types

As it is seen from the table, *Astracantha* and *Astragalus* genus are spread according to 23 geographical areal species. As understood from the table most of the plant species belonging to *Astracantha* and *Astragalus* sorts are included into Atropatan 14 (16,47%), Northern Iran 11 (12,94%) and Asia Minor 5 (5,88%), Front Asia 2 (2,35%) classes and groups of the Caucasus geographical areal types.

One species is included into each of the classes of Caucasus, Europe, Sarmat, Turan, the Mediterranean, Holarctic.

Available Herbarium materials and literature information don't reflect the systematic structure and objective laws of

spreading of *Astracantha* and *Astragalus* species of *Fabaceae* family completely. We consider it expedient to study real forms in a complex way in our further investigations.

Conclusion

As a result of research 85 species of *Astracantha* Podlech and *Astragalus* L. from the different regions of Nakhchivan AR are discovered. 16 of them fall to the share of *Astracantha* (6, 20%), but 69 fall to the share of *Astragalus* (26,74%). And this contains 33% of the plants concerning to *Fabaceae* Lindl. family.

For specifying the genesis and ways of formation of the species of *Astracantha* and *Astragalus*, these are classified according to the classes and groups of geographical areal types. It has been known that the majority of the species concerning the genus of *Astracantha* and *Astragalus* have been included to the classes and groups of geographical areal types of Atropatan 14(16, 47%), Northern-Iran 11(12.94%), Minor Asia 5(5, 88%) and Front Asia 2 (2, 35%). The remained classes are monotypes.

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