

About new plant formation spreading around Alinja castle situated in the territory of Julfa region of the Nakhchivan autonomous republic

¹ Afag Aliyeva, ² Aliyar Ibragimov

¹ Doctorant Nakhchivan State University

² Doctor of Biological Sciences, professor Head of the department Systematics of plants of the Institute of Bioresources
Nakhchivan Branch of the National Academy of Sciences of Azerbaijan.

Abstract

The article provides information the new formation – *Alcanneta* found around Alinja castle which is situated in Julfa region of the Nakhchivan Autonomous Republic in the article. Botanical structure, morphobiological, physiological features and agricultural significance of this formation made on superiority of *Alcanna orientalis* (L.) Boiss. were studied.

Keywords: formation, *Alcanneta*, botanical structure, biomorphological, phytosenological

Introduction

Nakhchivan Autonomous Republic is rich in various species and kinds of *Boraginaceae* Juss. family. From this point of view, plants existing around Alinja castle of the Julfa region draw attention. We meet new formation of the following plants in the same territory.

Alcanna orientalis (L.) Boiss. – includes to the *Alcanna* Tausch species of the *Boraginaceae* Juss. family. From 30 kinds of this species occurring from Mediterranean Sea to Iran only one kind was spread in Caucasus and Azerbaijan. Plants including to the *Alcanna* Tausch species have the following general signs. Its calyx is divisible to the below. Hunks are like lancet – lined. Flower crown is a bit crooked, funnel – shaped, inner side is infolded or unscaled, sometimes small, cross wrinkled. Petal wrinkles are short and blunt. Its stamens are of short stem and are hid in the inner side of flower crown like column. The number of fruits are 1-2 which are usually very crooked, horny and wrinkled [1, p.184-188; 3, p.290; 6, p. 184].

Alcanna orientalis – are perennial herbs. Upper part of its root is thick, have stem of some flowers and round leaves on root. Its stem is flat or gets out of side, dense glandulous lanate, plain or have middle part branches. Height is 15-40 sm. Leaves on the root are longish – like lancet, blunt, length is 5-13 sm. Width is 8-16 sm. Lower part got narrow to stalk are shorter, have full edges, wavy and small rough, like lancet, like narrow lancet or longish sharp. Middle and upper part leaves are constant and have semi stem capacity All leaves are dense glandular lanate. Its curled parts are short at the beginning of blooming period, then increases to 15 sm, branchy, have dense leaves, leaves near flowers are longish, very long comparing with calyx. The length of calyx is about 5 mm, glandulous, lanate, like lancet, in fruit period its hunks become longer like star - shaped, get crooked, diameter is 15-20 mm, have short fruit stalk. The length of flower crown is 10 mm, is light yellow, bare, its tube is in length of 2 calyxes, wrinkles are big, egg- shaped, have blunt petals. Fruits are horizontal, grey, length is 3-4 mm, egg – shaped,

horny wrinkled. It blossoms in may-august and yields. It was spread in Caucasus (around Southern Caucasus) [6].

Balkans – Asia Minor, Iran, Syria it was spread. It is a plant for dying, its roots are used for making pink colour. Depicted from Palestine, Sinai, East, Asia and Iran (Northern).

But in Azerbaijan it can be met in Nakhchivan Autonomous Republic, Diabar in stony – gravelly, dry rocky – stony slopes of lower and medium mountainous zones.

Experimental Part

Alcanna orientalis – it was spread in lowlands and in mountainous places, in the areas from lower mountain slopes to medium mountainous zones of the Nakhchivan Autonomous Republic in Azerbaijan. Spreading widely in Buzkhana, Berdik mountain and around Alinja castle it makes east *Alcanna* formation. This phytosenos is represented with poly numbered association and micro groups.



Around the Alinja castle, new formation *Alcanneta*



Alkanna orientalis (L.) Boiss.

Table: Bioecological features of species including *Boraginaceae* Juss. family

№	Names	abundance	height	phenophase	tier of plants
1.	<i>Alkanna orientalis</i> (L.) Boiss.	Sos	15-40	5-7	II
2.	<i>Anchusa azurea</i> Mill.	Cop ₂	30-80	5-9	I
3.	<i>Arnebia decumbens</i> (Vent.) Coss. et Kral.	Sol	10-15	4-5	III
4.	<i>A. minima</i> Wettst.	Sol	7-18	4-5	III
5.	<i>Asperugo procumbens</i> L.	Cop ₂	15-65	4-7	II
6.	<i>Buglossoides arvensis</i> (L.) Johnst.	Cop ₂	25-70	5-7	II
7.	<i>Caccinia macranthera</i> (Banks&Soland) Brand	Cop ₂	18-45	4-6	II
8.	<i>Cerintho minor</i> L.	Sol	30-70	6-8	I
9.	<i>Cynoglossum creticum</i> Mill.	Cop ₂	35-80	5-7	I
10.	<i>C. officinale</i> L.	Cop ₂	40-85	5-7	I
11.	<i>Echium biebersteinii</i> (Lacaita) Dabrocz.	Sol	60-80	6-9	I
12.	<i>E. russicum</i> J.F.Gmel	Sp	20-70	7-9	II
13.	<i>E. vulgare</i> L.	Cop ₂	30-100	6-9	I
14.	<i>Heliotropium ellipticum</i> Ledeb.	Cop ₂	30-35	5-7	III
15.	<i>H. europaeum</i> L.	Cop ₂	8-40	5-9	II
16.	<i>H. tzvelevii</i> T.N.Pop.	Sp	8-40	5-9	II
17.	<i>H. szovitsii</i> (Stev.) Bunge.	Cop ₂	10-40	5-8	III
18.	<i>Heterocaryum macrocarpum</i> Zak.	Cop ₂	14-22	4-5	III
19.	<i>H. rigidum</i> A.DC.	Cop ₂	15-25	4-5	III
20.	<i>H. szovitsianum</i> (Fisch. & C.A.Mey.) DC.)	Cop ₂	20-30	4-5	III
21.	<i>Huynhia pulchra</i> Greuter. ex Burdet	Sp	6-30	4-5	III
22.	<i>Lappula spinocarpus</i> (Forssk.) Aschers.	Cop ₂	12-38	4-6	III
23.	<i>L. barbata</i> (Bieb.) Guerke	Cop ₂	10-60	4-6	II
24.	<i>L. patula</i> (Lehm.)	Cop ₂	9-60	4-6	II
25.	<i>L. sinaica</i> (DC.) Aschers. ex Schweinf.	Cop ₂	5-30	4-6	IV
26.	<i>L. sessiliflora</i> (Boiss.) Guerke	Sp	5-10	4-6	IV
27.	<i>Lithospermum officinale</i> L.	Cop ₁	30-100	5-7	I
28.	<i>Lycopsis orientalis</i> L.	Cop ₁	10-60	4-7	III
29.	<i>Moltkia coerulea</i> (Willd.) Lehm.	Cop ₂	5-30	5-7	IV
30.	<i>Myosotis alpestris</i> F.W.Schmidt	Cop ₂	5-30	5-7	III
31.	<i>M. arvensis</i> (L.) Hill.	Cop ₂	20-50	5-7	III
32.	<i>M. caespitosa</i> K.F.Schultz	Cop ₁	15-50	5-7	III
33.	<i>M. ramosissima</i> Rochel ex Schult	Cop ₂	5-25	4-6	IV
34.	<i>M. heteropoda</i> Trautv.	Cop ₁	10-20	4-6	IV
35.	<i>M. micrantha</i> Pall. ex Lehm.	Cop ₂	4-19	4-6	IV
36.	<i>M. propingua</i> (Turcz.) A.DC.	Cop ₁	4-10	4-6	IV
37.	<i>M. sparsiflora</i> Pop. B	Cop ₂	35-40	4-6	III
38.	<i>M. silvatica</i> Ehrh. ex Hoffm.	Cop ₁	20-50	5-8	III
39.	<i>Nonea caspica</i> (Willd.) G.Don fil.	Sp	4-30	4-6	IV
40.	<i>N. echioides</i> (L.) Roem & Schult.	Sol	5-20	4-6	IV
41.	<i>N. rosea</i> (Bieb.) Link	Cop ₁	20-30	4-6	III
42.	<i>N. pulla</i> (L.) DC.	Cop ₁	10-25	5-7	III
43.	<i>N. lutea</i> (Desr.) DC.	Sp	20-30	4-6	IV
44.	<i>Onosma caucasica</i> Levin ex M. Pop.	Cop ₃	26-35	5-8	III

45.	<i>O. setosa</i> Ledeb.	Cop ₃	30-50	5-7	III
46.	<i>O. gracilis</i> Trautv.	Sp	20-40	5-8	II
47.	<i>O. microcarpa</i> Stev. ex DC.	Cop ₁	15-39	5-8	II
48.	<i>O. tenuiflora</i> Willd.	Cop ₁	10-20	6-7	IV
49.	<i>O. sericea</i> Willd.	Cop ₃	23-40	5-8	III
50.	<i>Paracaryum strictum</i> (C.Koch) Boiss.	Cop ₁	10-60	4-7	III
51.	<i>P. laxiflorum</i> Trautv.	Cop ₁	12-55	4-7	II
52.	<i>Reichardia glauca</i> Matthews.	Sp	13-45	5-7	II
53.	<i>Rindera R. lanata</i> (Lam.) Bunge	Sp	20-60	5-7	II
54.	<i>Rochelia cardiosepala</i> Bunge	Sol	6-23	5-6	IV
55.	<i>R. disperma</i> (L.fil.) C.Koch	Cop ₁	3-25	5-6	LV
56.	<i>R. retorta</i> (Pall.) Lipsky	Cop ₁	8-40	4-5	II
57.	<i>Solenanthus circinnatus</i> Ledeb.	Cop ₃	40-80	5-7	I
58.	<i>S. stamineus</i> (Desf.) Wettst	Cop ₃	40-70	5-8	I
59.	<i>Symphytum caucasicum</i> Bieb.	Cop ₃	30-60	5-7	II
60.	<i>S. asperum</i> Lepech.	Cop ₃	30-60	6-8	II

During research abundance of species in plant phytosenos where species of *Boraginaceae* family collaborate were defined on the bases of Druden (Drude, 1913) G pointed scale. In Drude scale the following rule was adopted for the assessment of species amount.

Sos (Sotalis) – plant leans against upper part

Cop₃ (Copiosae) – plant is very plentiful

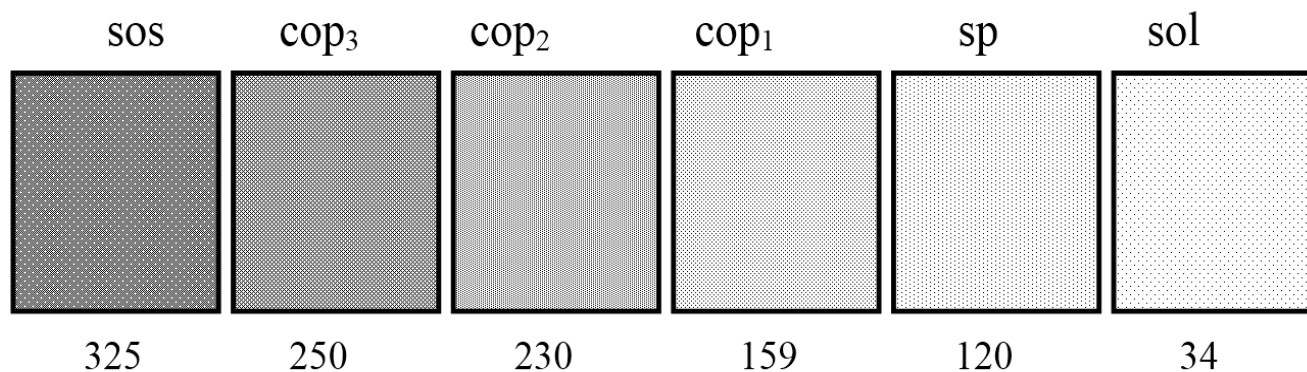
Cop₂ – plant is plentiful

Cop₁ – plant is plentiful enough

Sp (Sporsae) – plant is rare

Sol (Solitariae) – plant is separate.

V.V. Alyokhin considers that Sos (Sotalis) means upper part covering of plant not abundance. In this case 6 pointed scale of O. Druden changes to 5 pointed one. Due to some observations we consider that plant can be plentiful in various grades in the defined 100 m² sample area, but upper parts won't touch. On the other hand, there are several methods in defining project covering of phytosenoses. It would be correct if Drude expressed Sos (Sotalis) point as “plant is very plentiful”. Then 6 pointed Druden scale can be stated as following visually: (scheme)



Due the plentiful 6 pointed Druden scale exchange of abundance in 100 kv.m sample area in six separate fields of *Alcanna orientalis* formation in the territory of Alinja castle.

It makes *Alcanna orientalis* formation spreading widely in Buzkhana, Berdik mountain and around Alinja castle of Julfa region. This phytosenos is presented in poly numbered associations and micro groupings. Its main associations include bushy – a variety of herbs – alcanna, grain – leguminous – a variety of herbs – alcanna, wormwood – variety of herbs – alcanna, rue wormwood – alcanna. In Alcanneta formation various vivid plants are often met: *Koelpinia linearis* Pall., *Anchusa azurea* Mill., *Adonis flammea* Jacq., *Alyssum dasycarpum* Steph., *Artemisia lerchiana* Web., *A. absinthium* L., *Acer campestre* L., *Astracantha microcephala* Podlech., *Zosima orientalis* Hoffm., *Arum rupicola* Boiss., *Iris lycotis* Woronow, *Crepis pulcherrima* Grossh., *Cotoneaster melanocarpus* Fisch., *Chamaemelum praecox* (Bieb.) Vis., *Cirsium arvense* (L.) Scop., *Cerinth minor* L., *Lepidium perfoliatum* L. *L. vesicarium* L. *Lappula sinaica* Schweinf., *Lotus corniculatus* L. *Rhamnus pallasii* C.A. Mey., *Rosa rapinii* Boiss. et Bal., *R. canina* L., *Roemeria hybrida* (L.) DC.,

R. refracta DC., *Ranunculus sceleratus* L., *Rochelia disperma* (L.fil.) C. Koch, *R. retorta* (Pall.) Lipsky, *R. cardiosepala* Bunge., *Pseudosophora alopbcuroides* Sweet, *Pyrus salicifolia* Pall., *Papaver macrostomum* Boiss., *Peganum harmala* L., *Potentilla recta* L., *Plantago lanceolata* L., *Juniperus communis* L., *Ephedra procera* Fisch., *Eremurus spectabilis* Bieb., *Eremopyrum triticeum* Nevski, *Erodium cicutarium* (L.) L'Her., *Echium vulgare* L., *Glaucium elegans* Fisch., *Gundelia tournefortii* L., *Medicago minima* (L.) Bartalini, *Malva neglecta* Wallr., *Fumaria asepala* Boiss., *Senecio vernalis* Waldst. et Kit., *Stellaria media* (L.) Vill., *Dactylis glomerata* L., *Poa bulbosa* L., *Hordeum leporinum* Link., *Thymus collinus* Bieb., *Tragopogon graminifolius* DC., *Ornithogalum. transcaucasicum* Miscz., *Cynodon dactylon* (L.) Pers., *Lolium rigidum* Gaud., *Onobrychis cadmea* Boiss., *Onosma caucasica* Levin, *Nonea rosea* (Bieb.) Link., *N. pulla* (L.) DC., *Anisantha tectorum* (L.) Nevski, *Cardaria draba* (L.) Desv., *Centaurea behen* L., *Descurainia sophia* (L.) Webb., *Hyoscyamus niger* L., *Phlomis pungens* Willd., *Serratula coriaceae* Fisch., *Veronica microcarpa* Boiss.



Grain – a variety of herb alcanna

In Some literature sources is noted that *Alcanna orientalis* has several stems. But in various sized selected plant after 3 times counting it was defined that the number of stems change between 18-25 and 30-60 interval. This plant isn't eaten by cattle. But spreading near the areas of Khanagah and Gazanchi villages it is trampled down by intensive pastures large scaled and small cattle.

So, due to the carried researches it is cleared that majority of the plants including to the *Boraginaceae* Juss. family are plants which make medicine, ether, nectar and flower pollination. Majority of them are of industrial importance because of having plentiful natural reserve [5, p. 109-110]. Despite this, they are not used effectively.



Fragment from thick jungle of *Alcanna orientalis* L.

Its roots are used with the purpose of medicine. There are red-violet drying substances in its roots. In national medicine its roots are cut into small pieces after draining and are used as disinfectant and wound cured means after making ointment with fat of sheep's tail. Medicine is made from overground pollination of *Alcanna orientalis* in butter and used in skin wounds.

So, the carried researches show that majority plants including *Boraginaceae* Juss. family are plants having medicine, ether, nectar and flower pollination making peculiarities. Majority of them have industrial importance because of having plentiful natural reserves. But they are not used effectively yet [2, p. 361;

4, p. 237; 7, p. 348]. They are met in Nakhchivan plains Nakhchivan mountains, Diabar, lower and medium mountainous zones, gravelly places, dry rocky – stony slopes, Caucasus (around Southern Caucasus).

Its roots are used for medical purpose. There is red – violet dying substance in its zoots. In national medicine its roots are used as disinfectant and wound cured means in skin wounds treatment, making ointment in the fat of sheep's tail after it is dried and cut into small pieces. The pollination of *Alcanna orientalis* over ground part with butter makes ointment that is used in skin wounds.

Conclusion and Proposals

1. During the research in 1500 ha, area round Alinja castle which is preserved as a historical monument and which is situated 1900 m height from sea level in the territory of Julfa region (which were not known till now) was discovered new formation Alcanneta and its 5 association
2. Given the abundance of natural resources alcanna east, are encouraged to use of their biological resources in the medical and of the dyeing industry.
3. We recommend natural restore for expedient usage of *Alcanna orientalis*, increasing its productivity, making wide plantations of industrial importance by cultivating, special controlling main areas where it is spread, decreasing influence of limited anthropogenic factors.

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