

# Crataegus L. (*Rosaceae*) in the Flora of Nakhchivan Autonomous Republic of Azerbaijan

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**Abstract** – The article presents the results of research data in the study of species belonging to the genus *Crataegus* L., common in the territory of the Nakhchivan Autonomous Republic. In order to clarify the current state of the genus *Crataegus* L. in the flora of the Nakhchivan Autonomous Republic, a comparative analysis of herbarium specimens contained in the herbarium of the Institute of Botany of Azerbaijan National Academy of Sciences, Institute of Bioresources of Nakhchivan Section of Azerbaijan National Academy of Sciences and Nakhchivan State University. Based on the analysis of collected materials herbarium during expeditions conducted during the years 2004-2017 and the literature data revealed that at present in the flora of the Nakhichevan Autonomous Republic there are 22 species of the genus. Of them, 17 wild species occur in natural conditions. *Crataegus chlorocarpa* Lenne et C. Koch, *C. ferganensis* Pojark., *C. sanguinea* Pall., *C. songarica* C.Koch, *C. turkestanica* Pojark. by introduction into the culture used in the landscaping of parks and gardens. The article also reflects information about synonyms species, patterns of distribution among high-altitude zones, habitats and the timing of flowering and fruiting.

**Keywords** – Biodiversity; *Crataegus* L.; Systematics; Rare Species; Areas of Distribution.

## I. INTRODUCTION

Nakhchivan Autonomous Republic lays in the south-west of the Lesser Caucasus. Zangezur and Dereleyez ranges of the Lesser Caucasus cover the most part of the Autonomous Republic. The ranges extend to the Araz River valley and form the middle and low mountainous terrain branches in the present relief.

The territory of Nakhichevan Autonomous Republic has a rich flora and variety of vegetation. In the first place it is due to the natural conditions of the area and due to the extremely complex geological and geomorphologic structure. The territory that covers the border of several botanical – geographical regions includes into the Caucasian, Central Asian and Iranian migration flora. As shown in the biological fiction there have been found 2963 species of higher plants in the territory, which are concentrated in 880 genus and 168 families (Talibov, and Ibragimov 2008). Species included to the *Crataegus* L. genus is one of the oldest representatives of the *Rosaceae* Juss. family. The antiquity of *Crataegus* genus has been confirmed by researches carried out in the field of paleobotanics. According to Kryshtofovich (1957) representatives of *Crataegus* were found in the Mesozoic era during the cholesterol, while they were widespread in the third period. It can also be determined by the traces

found in upper oligocene, Miocene and Pliocene sediments in the former USSR.

The modern area of the *Crataegus* genus is considered the area of hot and subtropical provinces located between the 30° and 60° of the northern hemisphere (Takhtajan 1978). They are mainly spread in the flora of America and very few in the Eurasian and the Mediterranean basin.

Information related to the hawthorns spread throughout the Nakhchivan Autonomous Republic has been encountered on the research work by Prilipko (1939; 1954), Grossheim (1952), “Trees and shrubs of Azerbaijan” (1970), Asadov and Asadov (2001), Gurbanov (1996), Isayev and Kasumova (1976)], Kasumova and Akhundov (2004), Kasumova et al. (1991), Talibov (2001), Talibov and Ibragimov (2010; 2013), Ibragimov (2016).

In the studies of Prilipko (1939) there have been given information about distribution of four species (*C. orientalis*, *C. pentagyna*, *C. pectinata* C.Mey. (*C. meyeri*), *C. monogyna*), “Flora of the Caucasus” (1952), “Flora of Azerbaijan” (1954) and “Trees and shrubs of Azerbaijan” (1970) six species (*C. orientalis*, *C. szovitsii*, *C. meyeri*, *C. caucasica*, *C. pseudoheterophylla*, *C. kyrtostyla*) for the area of Nakhchivan Autonomous Republic. The same information has also been reflected on the works (Asadov 2001; Asadov et al. 204) published later.

Kasumova (1991) who investigates Azerbaijani hawthorns, has identified 13 species (*C. atrosanguinea*, *C. armena*, *C. caucasica*, *C. cinovskisii*, *C. curvisepala* (*C. kyrtostyla*), *C. meyeri*, *C. pojarkovae*, *C. pontica*, *C. pseudoheterophylla*, *C. szovitsii*, *C. tournefortii*, *C. zangezura*) in the Nakhchivan Autonomous Republic that it constitutes a vast majority of the total species (19 species) included in the flora of Azerbaijan.

The latest systematic composition of species belonging to the *Crataegus* genus has been given in the book of “Taxonomic spectre of the flora of Nakhchivan Autonomous Republic” published by Talibov and Ibrahimov (2008). The authors have noted 20 species of hawthorn in the area, which of them 15 species are found in wildlife, 5 species cultivated. However, *C. atrosanguinea* and *C. tournefortii* species which were shown by Kasumova for the area, have not been reflected in the book for suspicious aspects of taxonomy. However, there have been given detailed information about spread of that species in the autonomous republic on the book “Biodiversity of the flora of the Nakhchivan Autonomous Republic and protection of its rare species” by Talibov (2001).

As you can see, though the results of research at

different times and literature information on *Crataegus* genus spread throughout the Autonomous Republic, their species content is still unclear.

## II. MATERIAL AND METHODS

In order to clarify the current situation of the representatives of *Crataegus* in the Nakhchivan Autonomous Republic flora, there have been given attention to the herbariums kept at their Herbarium Fund of the Botany Institute of Azerbaijan National Academy of Sciences, Bioresources Institute of Nakhchivan branch of Azerbaijan National Academy of Sciences, Nakhchivan State University, there have also been comparative analysis of herbarium samples concerning of organizations and various Institutions placed on their web sites. There have been determined the content of the *Crataegus* genus fulfilling of field expeditions in 2004-2017. There have been revised the scope and content of the system of *Crataegus* genus presented by Ufimov (2013) and there have been determined the systematic content of the hawthorns spread throughout the Nakhchivan Autonomous Republic. There have been used book of "Areas of trees and shrubs of the USSR" (1980) on the definition of the species areal.

## III. RESULTS AND DISCUSSION

Thus, it have been revealed that there are 17 wild species belonging to the *Crataegus* genus in the autonomous republic, they have been concentrated mainly in the *Crataegus*, *Pentagynae* and *Azaroli* branches.

**Genus *Crataegus* L.**, L. 1753, Sp. Pl. 1: 475, p.p.

**Sect. 1. *Crataegus*** - sect. *Oxyacantha* Loud. 1838, Arbor Fruit. Brit. 2: 829.

**1. *C. atrosanguinea* Pojark.** 1939, Fl. USSR 9, Addenda 8: 504.

Its height is 8-10 (12) m. It flourishes in May-June, fruits ripen in September-October. The fruits diameter are 1, 2-1, 8 cm and are round, dark-red colored. Pulped and juicy. The number of seeds in the fruit are 2.

**Type:**

"Armenia, Nork village near Jerevan, 14.10.1937, n 380, A.Pojarkova", holotype: LE., isotype: LE.

**Common Distribution:**

South Caucasus, East of the Turkey, Central and Northern Iran.

**Distribution:**

Plant spread surrounding of the Chalkhangala village of Kangarli region, in the areas between vineyards, Jahri village of Babak region, in the area of Nusnus village of the Ordubad region, in the low and middle zones at the height of 800-1800 m from the sea level at the slopes of the mountains, at the edges of the rivers and in the valleys, among the shrubs.

**2. *C. armena* Pojark.** 1939, Flora USSR, 9, Addenda 8: 509.

It is a small tree or a bush with a height of 2-2, 5 m. It flourishes in June, fruits ripen in September-October. The diameter of fruits are 1, 0-1, 2 cm, long ellipsoid, light red

colored and juicy. Fruit pulp is yellow, usually one, sometimes 2 seeds.

**Type:**

U.S.S.R., Armenia, distr. Megri, prope opp. Lishk, 01.10.1936, Pojarkova n 754 (holotype: LE; isotype: LE!).

**Common Distribution:**

South Caucasus, Northern Iran, in scrub and on rocky mountain slopes; 1300-2500 m.

**Distribution:**

Plant are found gravel-stony slopes of Gizilgishlag village of of Shahbuz region, in the low, medium and high mountain zones of Bichenek forest at the 800-2000 m (2200 m) above sea level, in arid woodlands and between the bushes.

*C. armena* species have been included in the flora of Azerbaijan by Kasumova (1983) according to the samples collected from Bichenek forest (20.X.1980) and Gizilgishlag village (10.X.1980, stony-gravel slopes) of Shahbuz region.

**3. *C. caucasica* C. Koch** 1853, Verh. Ver. Beford. Gartenb. Konigl. Preuss. Staaten, N. R. 1: 286.

The height is 5 to 7 m tree or shrub. It flourishes in May, fruit ripens in September-October. The fruit diameter is 1, 0-1, 3 cm, egg-shaped-round, when it ripens it becomes dark-purple colored and looks an open spot on top. Fruit pulp is yellow, usually 2 seeds.

**Type:**

U.S.S.R., Caucasus, Wilhelms s.n. (holotype: B, destroyed).

Neotype, here designated, following suggestion by Riedl in Rechinger, 1969, Fl. Iran. 66: 59: U.S.S.R., Azerbaijan, Kirovabad, 27.09.1937, leg. et det. Pojarkova, n 288 (LE).

**Common Distribution:**

South Caucasus, Talysh, Easternmost Turkey, Iran, Georgia, Nakhichevan, Armenia and Azerbaijan; on rocky mountain slopes and at roadsides..

**Distribution:**

The samples stored in the Herbarium of the Botany Institute of ANAS have been collected from the Bist villages Ordubad district and surroundings of Bichanak villages Shahbuz district. During the investigations, this species was found from the Nasirvaz and Nürgüt villages of the Ordubad region, in the low and middle zones of 800 to 1800 m above the sea level, in the arid rare forests, in dry stony slopes of the rivers, among the shrubs near the forest as one or groups.

**4. *C. eriantha* Pojark.** 1939, Flora USSR 9, Addenda 8: 500.

Its height is 3-5 m, tree or shrub. It flourishes in May-June, and ripens in September-October. The fruit are 2 seeded, rarely is one.

**Type:**

«In declivibus prope fluvium Gandscha, districtus Airum, 01.05.1844. n 1399 Flora Transcauc. Legit. Dr. Koilenati», holotype: LE; isotype: LE!.

**Common Distribution:**

Caucasia, South Caucasus endemic.

**Distribution:**

Plant founds Bichenek, Kuku, Ayriinj villages of Shahbuz region, Nurgut, Nasirvaz and Bist villages of the Ordubad regions, in the low and middle mountain zones, at 800 - 1800 m high altitudes above sea level, on the stony slopes of the mountains, in bushy shoots and in arid rare forests.

*C. eriantha* species is closer to *C. cultivar*, and is differ from fewer fragmented, rarely fuzzy leaves, relatively large, sparse, dense fuzzy flowering groups. There is a need for a comprehensive study of the species.

5. ***C. meyeri* Pojark.** 1939, Flora USSR 9, Addenda 8: 500.

The height is 2-6 (8) m, tree or shrub. It flourishes in May-June and fruits ripen in September-November. The fruit is oval, round, the length is 1, 2- 1, 8 cm, in dark red, 2 seeds but in some cases it has a seed.

*Type:*

U.S.S.R., Armenia, in vicinitate urbis Jerevan, in faucibus fl. Gjarni-czai, prope monasterium Gehart, 11.10.1936, Pojarkova n 792 (holotype: LE).

*Common Distribution:*

South Caucasus, Talish, Ukraine, the Crimea, Asian Turkey, northern Iraq, Armenia, Azerbaijan, and Iran; dry meadows and woodlands; 1200-2800 m.

*Distribution:*

The spreading zone of Meyer hawthorn is shown of Chalkhanqala village of Kangarli region, Kulus, Kjukju, Kolany, South Gishlag, Bichanak suburb of of villages of Shahbuz region on the research of Kasumova and Akhundov (2004). During the investigations it has been revealed that, *C. meyeri* species found as individually or groups in stony slopes, arid sparse forests and bush surround at the altitudes of 800-2000 (2200) in the low, middle and high altitude around of Havush villages of Sharur districts, Bichanek villages of Shahbuz region. It sometimes has been found in the woodland of the autonomous republic, at the 2200 m altitudes above of sea level in the woods and on the edges of the roads.

6. ***C. monogyna* Jacq.** 1775, Fl. Austr. 3:50.

It is tree or shrub. It flourishes in June, fruits ripen in September. The fruit is brown-red, egg or elliptic shaped.

*Type:*

Austria, Jacquin s. n. (lectotype, here designated: BM!; isolectotype: TO).

*Common Distribution:*

From southern Scandinavia to northern Africa, Caucasia, the Crimea, Turkey, the Middle East, northern Iraq, and northwestern Iran; on calcareous rocks, micaceous schist, volcanic rocks, as well as granite and other siliceous rocks; in openings in forest with *Fagus*, *Quercus*, *Pinus*, *Cedrus*, in macchie, garrigue, meadows, along rivers, in rocky places, at field edges, in hedges, and at roadsides.

*Distribution:*

It is found in arid sparse forests, stony slopes and forest fronts at 1200-2000 m altitude in middle and high mountainous zones, suburb area of Bichanek village of Shahbuz region, Nasirvaz and Nurgut villages of Ordubad district.

7. ***C. pallasii* Griseb.** 1843, Spicil. Fl. Rumel. et Bithyn.

1: 89.

The height is 1,5-3 m of shrub. It flourishes in May, and fruit ripens in September-October. The length of fruit is 0,8- 1,0 cm, is round, dark-red colored and it has 1-2 seeds.

*Type:*

U.S.S.R., Sarepta [Krasnoarmeiski Gorod], Pallas s.n. (holotype: LE!).

*Common Distribution:*

Southeastern Europe, Caucasus, Turkey, Checheno-Ingushskaya ASSR, Dagestan, mouth of Kuban River, and near Volgograd (Krasnoarmeiski Gorod); on mountain slopes, along rivers, and in scrub.

*Distribution:*

Plant spreads on the rocky slopes and sparse woods in the villages of Akhura, Havush, Sadarak villages of the Sharur region. During the investigations, the species has been found around Bichanek, Kjukju villages of the Shahbuz region, Nasirvaz and Nurgut villages of Ordubad region at the 1200-1800 m high altitudes above the sea level in middle mountain zones, on dry rocky slopes, on the edges of the forest, on the shrubs of the bushes and at the bottom of the rocks as individually.

8. ***C. pseudoheterophylla* Pojark.** 1939, Flora USSR 9, Addenda 8: 506.

The height is 3-6 m tree or bush. It flourishes in May, fruits ripen in September. The fruit length is 0,7-1,0 cm, broad, ovary or ellipsoid shaped, brown-red colored and one seeded.

*Type:*

U.S.S.R., Armenia, distr. Jerevan, prope monas terium Gehart, in faucibus fl. Gjarni-czai, 11.10.1936, Pojarkova n 793 (holotype: LE; isotype: LE!).

*Common Distribution:*

Eastern Europe, Caucasus, Asian Turkey, Caucasia, Crimean, Dagestan, Iran, Turcomania, Uzbekistan, Kazakhstan, Kirgizistan, Tadzikistan, Afghanistan, Pakistan?, north ern India, and Tibet; in scrub, rocky mountainous tracts, gorges, along rivers, and at field edges.

*Distribution:*

It is one of the least spread species in the autonomous republic. It has been shown that species has been spread in Ayriinj, Bichanek, South and Gold Gishlag of Shahbuz region, Chalkhangala villages of Kangarli region and foothills near Ordubad city on the reports by Kasumova and Akhundov (2004).

During the study, samples has been found in Bichanek villages of Shahbuz region, Akhura, Havush and Sadarak villages of Sharur district, in the middle and high mountain zones, at the 1200-2000 m altitude of the steep slopes of the mountains, bushes, on the banks of the rivers, on the slopes of the broad-leaved forests.

9. ***C. rhipidophylla* Gand.** (*C. curvisepala* Lindm.; *C. kyrstostyla* Pojark.) 1871, Bull. Soc. Bot. France 18: 447.

Its height is 3-8 m, tree or bush. It flourishes in May-June, fruit ripens in September - October. Fruits are red, long ellipsoid, length is 1,2- 1,4 cm, one seeded.

*Type:*

France, Rhone, Liergues, a la Combe, 2 Oct. 1870, Gandoger, holotype: LY.

*Neotype:*

Luxembourg, a 50 m de la frontiere belge, en face du pont de Romeldange surla Sure, 11 Aug 1960, Lawalree 11088 (BR).

*Common Distribution:*

From southern Scandinavia and the Baltic region to France, the Balkan Peninsula, Asian Turkey, Caucasia, the Crimea, and Ukraine, rarely planted as an ornamental within its natural range; on limestone, granite, volcanic rocks; in open woodlands with *Platanus*, *Fagus*, *Fraxinus*, *Pinus*, *Acer*, *Sambucus*, *Salix*, *Sorbus*.

*Distribution:*

Although the literature data show that it was spread only in the Kuku village of Shahbuz region, this species was collected by Kasumova to the village of Bichanak in addition. During the expeditions, this species was found in the rocky slopes around of Nasirvaz, Nurgut villages of the Ordubad district, Khazinedere of Julfa region and Garagush mountain range of Sharur region, at the height of 800-2000 m above sea level, as individually or small groups, in forests, glades, bright oak forests and arid sparse woods. Sometimes, along with other species of hawthorns, they form brushwoods on riverbeds and on dry slopes of the mountains.

**10. *C.zangezura* Pojark.** 1939, Flora USSR 9 Addenda 8: 508.

The height of plant is 1, 5-2, 5 m, it is a bush or tree. It flourishes in May, fruits ripen in September-October. The length fruit is 0, 6 - 0, 9 cm, darker-cherry-colored, pulp is juicy, usually two, and very rarely 3 seeds.

*Type:*

U.S.S.R., Armenia, Zangezur, prope opp. Goris, in parte inferiore faucium Goris-czaj, 21.09.1936, Pojarkova n 540 (holotype: LE; isotype: LE).

*Common Distribution:*

Kopet-Dagh in Turkmenia, Iran, and Caucasia; on rocky mountain slopes and in scrub.

*Distribution:*

It is found on stony slopes and sparse forests of the surrounding areas of Nusnus villages Ordubad district and Chalkhangala villages of Babak region as individually. During the investigations, the species has found around the Bichanak villages of Shahbuz region and Nusnus villages of Sharur region at the altitudes of 800-2000 m above sea level, on the rock, in sparse forests, in bushes and in valleys one by one.

The species was added to the flora of Azerbaijan as a new species in 1983 by Kasumova (1983) by the materials collected from Chalkhangala villages of Kengerli region and the Nusnus villages of the Ordubad district.

**Sect. 2. *Pentagynae*** C.K. Schneid. 1906, Ill. Handb. Laubh. 1:768.

**11. *C. pentagyna* Waldst. et Kit. ex Willd.** 1800, Sp. Pl. 2, 2: 1006.

It is tree or bush at a height of 3-8 (12) m. It flourishes in May-June, and fruit ripens in October. The fruits are in a spherical shape and black colored, with blue spots on them and 3-5 seeded. The pulp part is red.

*Type:*

"Hungary/Yugoslavia. In Dunato et Syrmio (Danube and Serbia), Kitaibel s. n.", holotype: B-W 9718.

*Common Distribution:*

From Hungary and Yugoslavia through Romania and Bulgaria to Ukraine, Crimea, Moldavia, northeastern Greece, Turkey, Caucasia, Iran, Kopet Dagh, and northeastern Iraq; on limestone, serpentine, on rocky mountain slopes, in scrub with *Rosa*, *Quercus*, etc., along rivers.

*Distribution:*

Plant is found in surround forrests and mountain slopes of Bichanak villages of Shahbuz region, Nasirvaz and Nurgut villages of Ordubad district, low and middle mountain zones, at the 800 - 1800 m height, in the brushwoods, in the forest glades, rare oak and lighted places of mixed forests.

Grossheim (1952) distinguished this species from the other species as the lower surface of the leaves felt, and the flower axis is grayish-felt fussy and called it *C. colchica*. *C.pentagyna* mainly hybridizes with other types of hawthorns and creates dark red colored pulped fruit ( $C. \times zangezura = C.pentagyna \times C.pseudoheterophylla$ ).

**Sect. 3. *Azaroli*** Loud. 1838, Arbor. frutic. Brit. 2: 826.

**12. *C.cinovskisii* Kassumova** Bot. Zurn. 1985, (Moscow & Leningrad) 70, 2: 266.

The tree height is 5-6 m. it flourishes in May, fruits ripen in September. The fruits are dark red, spheres formed, 0,6- 1,5 cm long, 0,5- 1,3 cm width and 4-5 seeded.

*Type:*

Azerbaijan. Nakhichevan, Babek district, Aznaberd (Chalkhangala) village, along the road, among vineyards, 11.10.1973, Kassumova s. n. (holotype: BAK; isotype: LE).

*Common Distribution:*

Nakhichevan and Kopet-Dagh in Turkmenia; on mountain slopes, in scrub with *Cerasus*, *Cotoneaster*, *Rhamnus*, and at roadsides.

*Distribution:*

It has been found in Çalkhanqala village of Kangarli region at 1000-1200 m above sea level at along the roadside and vineyards around. It is a Nakhchivan endemic.

According to Kasumova, *C.cinovskisii* Kassumova are close to *C. pontica* and differ from those of dark-colored fruits (not yellowish) and 4-5 (2-3) seeds. There is a need for additional research in the future.

**13. *C.orientalis* Pall. ex Bieb.** 1808, Fl. Taur. - Caucas. 1:387.

Its height is 1,5-3 (5) m, tree or bush. It flourishes in June, fruits ripen in September-October. The fruits are in the form of a spherical shape and are black, with blue spots on them and 3-5 seeded. The pulp red is red.

*Type:*

"...Frequens in Tauria meridionalis collibus Ponto euxino adjacentibus, U.S.S.R., the Crimea, Marshall von Bieberstein s. n.", holotype: BM.

*Common Distribution:*

The Mediterranean region, Turkey, Caucasia, the

Crimea, and western Iran; on calcareous rocks, quartzite and other siliceous rocks; in rocky places, steppe, meadows, along rivers, and in open forest with *Quercus*, *Fagus*, *Pyrus*, *Carpinus*, *Cornus*, *Abies*, *Pinus*, *Cedrus*, *Juniperus*.

**Distribution:**

The samples stored in the Herbarium of the Botany Institute of Azerbaijan National Academy of Sciences have been collected from the surrounding of Anagut (8.V.1947, Rzazade) village of Ordubad district, Khoshkeshin village of Julfa region (13.VIII.1938, Novruzova). According to Akhundov's and Kasumova information, there was given that plant has been found in Kjukju, Kechili, Kolani, Southern Gishlag, Yukhary Gishlag, Bichanek villages of Shahbuz region, Chalkhangala villages of Kengerli region, Nusnus villages of Ordubad district, Arafsa villages of Julfa region at the height of 800-2000 m above sea level as individually or small groups, edges of forest, glades, bright oak forests, and arid sparse forests. Sometimes, along with other species of hawthorn, they form brushwoods on dry slopes of the mountains.

**14. *C. pojarkoviae* Kossyich** 1964, Novitates systematicae plantarum non vascularium: 147.

The trees height is 3-6 m. It flourishes in June, fruits ripen in September. The fruit is sphere-ovary or pear shaped, diameter is in 1, 5-2.5 cm, ribs, yellow colored and 5 seeds.

**Type:**

U.S.S.R., the Crimea, Karadag, in parte inferiore declivatis australis jugi Sjurju-Kaja, 14.06.1960, 22.09.1960, Kossyich s.n. (holotype: YALT; isotype: LE!).

**Common Distribution:** *Caucasian, Crimea.*

**Distribution:**

It is found in stony-gravel slopes of Yukhari Gishlag village of Shahbuz region, in middle and high mountain zones of 1200-2000 m as individually in arid sparse forests.

*C. pojarkoviae* Kossyich. species was included in the flora of Azerbaijan in accordance with the collected samples from the Gizil Gishlag village of Shahbuz region by Kasumova (dried stones-gravel slopes, 20.X.1980, Kasumova).

**15. *C. pontica* C.Koch** 1853, Verh. Ver. Beford. Gartend. Konigl. Preuss. N.R. 1: 269.

Its height is 4-8 m. It flourishes in June, fruits ripen in September-October. Fruits are yellowish or orange-yellowish, with a diameter of 3,0 cm, 2- 3 seeded. The fruit is fragrant.

**Type:**

Turkey. Prov. Coruh, in der Niihe von Ardanuc, 28.08.1843, Koch n 187 (holotype: B, destroyed).

Neotype, here designated: drawing of holotype, in Pojarkova, 1939.

**Common Distribution:**

Israel, Jordan, Turkey, Caucasus, Georgia, Iraq, Iran, Turkmenia (Kopet-Dagh), southern Kazakhstan, Uzbekistan, Tadzhikistan, and Kirgizistan.

**Distribution:**

According to information by Kasumova, the distribution

of plants has been shown the around of Yukhary Gishlag of Shahbuz region. It was revealed during the field study that plant was also spread around Chalkhangala village of Babak region, around of the Ashagi Gishlag, South Gishlag, Kolani villages of the Shahbuz region and in the Lizbirt zone. There have been given information distribution of plants in the Nursu and Gecazur (Agbulag) villages of Shahbuz region, low and middle mountain zones, at high altitudes of 800 - 1800 m above sea level, on dry slopes of mountain rivers and in the arid forests as individually in the book "The flora biodiversity of Nakhchivan Autonomous Republic and protection of rare species" 13].

*C. pontica* as a new species was included to the flora of Azerbaijan by Kasumova (1981) of the samples collected by the autonomous republic.

**16. *C. szovitsii* Pojark.** 1939, Flora USSR, 9, Addenda 8: 499.

It is a small tree or a bush with a height of 2 to 3 m. It flourishes in June, fruits ripen in September-October. The ripen fruit is dark red, 3-4, and in some cases 2 seeds.

**Type:**

U.S.S.R., Azerbaijan: Nagorno-Karabagh, in collibus prope Shusha, Hohenacker n 3423 (holotype: LE,; isotypes: BM! G! W!).

**Common Distribution:**

Caucasus, European and Asian Turkey, western Iran.

**Distribution:**

According to information given by Isaev and Kasumova (1976) it has been shown that it spreads on the dry stony slopes between the Payiz and Buzgov villages of Babek region, Kolani villages of Shahbuz region. During the investigations, it was found out that plants spread around the Arafsa village of the Julfa region, Kuku and Ayrinj villages of the Shahbuz region, in the middle mountainous zones, at 1200 - 1800 m above sea level, in stony slopes of mountain, rocks, brushwoods, arid sparse forests and edges of forests.

It was added to the Nakhchivan Autonomous Republic flora as a new species during the analysis of materials collected from the Kolani (dry-stony slopes) villages of the Shahbuz region, Payiz and Buzgov villages of the Babek region in 1976 by Isayev and Kasumova. According to the author the collected herbariums differ from the typical examples of 3-5 seeds (not 2-4).

**17. *C. tournefortii* Griseb.** 1843, Spicil. Fl. Rumel. Et Bithyn. 1: 90.

A small thorned tree or bush with a height of 2-2,5 m. The leaves are dark green and the top surface is covered with short hairs. The flowers are located in multiflowered cymes. It flourishes in June, fruits ripen in September-October. The fruit is light or dark cherry colored, diameter is 1,0 - 1,6 cm, 3-5 seeds.

**Type:**

Tab. 1852 in Lindley, Bot. Reg. 22.1836 (lectotype, here designated).

**Common Distribution:**

Europe, Caucasus, Sicily (Nebrodi Mts), Albania, southern Yugoslavia, Greece, Bulgaria, Turkey, Ukraine (near Odessa), and the Crimea.

### Distribution:

Plants have been collected from Chalkhangala village of Kengerli region and Bichanek forest of Shahbuz region by Kasumova. There has been shown that plant spread in Khanbulagi areas of Sharur region, in the middle and upper mountain zones, at the 1,300-1400 m altitude above sea level, on the edges of the forests, stony slopes as individually or groups of the book of “The flora biodiversity and preservation of its rare species of Nakhchivan Autonomous Republic” by Talibov (2001).

In the literature data (Poyarkova 1939) the spread area of species are represented as Crimean and the South Caucasus. In his book, “Flora of Azerbaijan” by L.I.Prilipko (1954) has been given the name of *C.tournefortii* under the name of *C.schraderiana* and the spread has been shown of the Nakhchivan Autonomous Republic.

Thus, according to the collected herbarium materials that, collected during the expedition in 2004-2017 and literature data, it has been determined that there are 22 species of *Crataegus* genus in the Nakhichevan Autonomous region. 17 species of them are found as wild species. In addition, 5 species of *C.chlorocarpa*, *C.ferganensis*, *C.sanguinea*, *C.songarica*, *C.turkestanica* is introduced and used in greenery of parks and gardens in cultural conditions (Talibov and Ibragimov 2013; Ibragimov 2016).

In recent years, as a result of the effects of climatic and anthropogenic factors on the territory of the Autonomous Republic, there has also been a threat to the destruction of a number of precious species of hawthorns constitute the wildlife gene pool of *Crataegus* in nature. For this reason, as a result of studies conducted by Talibov and Ibrahimov taking into account the rare and endangered species of *C.orientalis* and *C.pontica* have been included the “Red book of Nakhchivan Autonomous Republic” and have been shown the ways of protection species (Talibov and Ibragimov 2010).

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