

Торайғыров университетінің
ҒЫЛЫМИ ЖУРНАЛЫ

НАУЧНЫЙ ЖУРНАЛ
Торайғыров университета

ТОРАЙҒЫРОВ УНИВЕРСИТЕТІНІҢ ХАБАРШЫСЫ

Химия-биологиялық сериясы
1997 жылдан бастап шығады



ВЕСТНИК ТОРАЙҒЫРОВ УНИВЕРСИТЕТА

Химико-биологическая серия
Издается с 1997 года

ISSN 2710-3544

№ 4 (2022)

Павлодар

НАУЧНЫЙ ЖУРНАЛ
Торайгыров университета

Химико-биологическая серия
выходит 4 раза в год

СВИДЕТЕЛЬСТВО

о постановке на переучет периодического печатного издания,
информационного агентства и сетевого издания
№ KZ84VPY00029266

выдано
Министерством информации и коммуникаций Республики Казахстан

Тематическая направленность
публикация материалов в области химии, биологии, экологии,
сельскохозяйственных наук, медицины

Подписной индекс – 76134

<https://doi.org/10.48081/YSCC3622>

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<https://doi.org/10.48081/PHWN1295>***A. H. Gulamova**University «Nakhchivan»,
Republic of Azerbaijan, Nakhchivan*e-mail: anaracan@mail.ru**NOMENCLATURE CHANGES OF SPECIES
OF THE GENUS SORBUS L. IN THE FLORA
OF THE NAKHCHIVAN AUTONOMOUS REPUBLIC**

Among the subdominant trees and shrubs, species of the genus Sorbus L. are of particular importance in the formation of the forest ecosystem of the Nakhchivan Autonomous Republic. Although the natural resources of most species belonging to the genus Sorbus L. are abundant in the territory, due to the impact of environmental and anthropogenic factors, the range of some species has decreased. Based on the conducted research and literature data, information on the distribution of 17 species of the genus Sorbus L. in the flora of the Nakhchivan Autonomous Republic are presented. In them, a species S. turcica Zinserl was given as synonym to S. umbellata (Desf) Fritsch, and S. graeca (Spach) Lood. ex Schauer as synonym to S. baldacii Degen et Fritsch ex schneid species. However, as a result of the analysis of samples collected in different years during expeditions on the territory of the Nakhchivan Autonomous Republic, analysis of literature data and identification of species reserved in the Herbarium Fund of the Institute of Bioresources of the Nakhchivan Branch of the National Academy of Sciences of Azerbaijan, S.umbellata (Desf) Fritsch and S. baldacii Degen et Fritsch ex Schneid species were identified as separate taxon. The article presents information on the biomorphological characteristics of the species S. turcica Zinserl., S. graeca (Spach) Lood. ex Schauer, S. umbellata (Desf) Fritsch and S. baldacii Degen et Fritsch ex Schneid, and their distinguishing features from each other. The statuses of the species S. umbellata (Desf) Fritsch and S. baldacii Degen et Fritsch ex Schneid were also restored. Thus, it has been established that 19 species of the genus Sorbus L. are distributed in the flora of the Nakhchivan Autonomous Republic.

Keywords: Sorbus L., genus, taxon, biomorphological characteristics, classification spectrum, species, geographical range

Introduction

Based on the conducted research and literature data, data were obtained on the distribution of 17 species of the genus *Sorbus L.* on the territory of the Nakhchivan Autonomous Republic [8, p. 426]. The mentioned data sources indicate that the species *S. turcica* Zinserl. is synonymous with the species *S. umbellata* (Desf) Fritsch, and the species *S. graeca* (Spach) Lood. ex Schauer is a synonym of the species *S. baldacii* Degen et Fritsch ex Schneid. In the process of studying the literature data and analyzing the biomorphological features of the collected herbarium materials, it became clear that the species *S. turcica* Zinserl., *S. graeca* (Spach) Lood. ex Schauer, *S. umbellata* (Desf) Fritsch and *S. baldacii* Degen et Fritsch ex Schneid differ from each other.

Methods and materials

During the research, along with the route method, classical and modern botanical-floristic, systematic, archeological, ecological, phytocenological, plant-resource chemical and statistical methods were used. Thus, «Trees and shrubs of Azerbaijan», «Higher plants of Azerbaijan», «Dendrology», «Флора Азербайджана» (Flora of Azerbaijan), in addition the works of A. A. Grossheim «Flora of Azerbaijan», «Флора Кавказа» (Flora of the Caucasus), «Флора СССР» (Flora of the USSR), «Деревя и кустарники СССР» (Trees and shrubs of the USSR), «Флора Грузии» (Flora of Georgia), «Flora of Turkey» the works of T. H. Talibov and A. Sh. Ibrahimov «Taxonomic spectrum of flora of Nakhchivan Autonomous Republic», the works of T. H. Talibov and F. A. Safarova «Taxonomic spectrum of biodiversity of flora of Nakhchivan Autonomous Republic» [5], A. M. Asgarov's «Synopsis of the Flora of Azerbaijan» and other scientific works were used when analyzing the species included in the genus *Sorbus L.* Along with this, scientific research works, methodological manuals and articles of Azerbaijani botanists were used.

The taxonomy of the species included in the genus *Sorbus L.* was carried out according to the APG IV system. Clarification of systematic taxons was carried out according to Sh. K. Cherepanov, classification of life forms – according to Serebryakov. The distribution of these species by geographical rangetype and rangeclases is given by Grossheim. In addition to field studies, based on the conducted phenological observations and literature data, information was obtained about the phytocenological features of the species, its distribution by altitude zones by sea level, and its geographical analysis was carried out.

Results and discussions

A. A. Grossheim, as a result of his studies of the genus *Sorbus L.*, distributed on the territory of the Nakhchivan Autonomous Republic, also noted the distribution of the species *Sorbus umbellata* (Dsf) Fritisch. var. *flabelifolia* (Spach) K. Schn [2, pp. 283–284]. Later published works provide data on wild species belonging to the genus *Sorbus L.*, distributed in the territory of the former USSR, it is noted that the species *S. baldaccii* Degen et Fritsch ex Schneid. and *S.umbellata* (Desf.) Fritsch are common on the territory of the Nakhchivan Autonomous Republic [9, p. 122–175].

In work «Сосудистые растения России и сопредельных государств (в пределах бывшего СССР)» (Vascular plants of Russia and neighboring countries (within the former USSR)), published by S.K.Cherepanov [13], the species *Sorbus umbellata* (Dsf) Fritisch was accepted as a type of *S. turcica* Zinserl, and *S. baldaccii* Degen et Fritsch ex Schneid. as a type of *S. graeca* (Spach) Lodd. ex Schauer.

In the electronic version of IPNI (International Plant Names Index) [17, p. 147–155] the species *Sorbus umbellata* (Dsf) Fritisch. and *S. turcica* Zinserl are listed as free species.

Thus, despite the versatility of research carried out on the territory of the Nakhchivan Autonomous Republic, the exact distribution zones and the modern taxon of species belonging to the genus *Sorbus L.* have not been fully studied.

***Sorbus turcica* Zins.** In the flora of the USSR, IX, 399 et Addenda, VIII, 497 – Grossheim, Op. 74 – *S. taurica* Zins.. in the flora of the USSR of the IX and et Addenda, VIII, 497. – *S.umbellata v.flabellifolia* C.K. Schn. – Grossheim, IV, 288 (1934)

It is a medium-sized tree or shrub. The shoots are slightly felt-pubescent. The part of the leaves closest to the rule is rounded or broadly wedge-shaped, and the pointed part is blunt. The width of its leaf is 4–6 cm, and the length is 5–7 cm. There are 6–8 pairs of lateral veins. The top is bare, and the bottom is thickly felt. The number of teeth on the edge of the sheet is 10–20 pieces. Leaf petiole 5–1. 5 cm long, felt. Shoots with a pointed tip, egg-shaped, covered with scales of 3–4 pieces, slightly sticky. The peduncle, calyx and ripe fruits are white felt-pubescent. The teeth of the calyx are triangular. The fruits are spherical, dark red in color, with 3–4 seeds. Blooms in May, bears fruit in August-September.

Typus: Asia Minor, Turcia, Marsuvani, in declivibus ad viam, X.1913, Czekalov (LE).

Geographical range: In general, it is distributed in the Crimea, in the north Caucasus, in Turkey. On the territory of the Nakhchivan Autonomous Republic, it is spread on the territory of the villages of Yukhari Buzgov, Bichanak, Ayrinj,

Kuku of Shakhbuz region, Nurgut, Urmus, Mazra of Ordubad region and on the territory of Sadarak region.

***Sorbus umbellata* (Desf) Fritisch.** 1896, in Kerner, Sched. Fl. Austro-Hung. 7: 2449. – *Crataegus umbellata* Desf. 1821, Cat. Pl. Horti Paris, ed. 3:408.

It is a woody plant with a hook-like stem growing up to 6 m, with a scattering head. The bark of the trunk is smooth, gray in color. The young shoots are reddish-brown, and the old ones are dark gray, covered with a waxy layer. Its egg-shaped shoots with a sharp end are covered with 3–4 scales and are 4–6 mm in size, slightly sticky. The leaf petiole is 5–12 (–15) mm, covered with hairs in the form of flakes. The leaf is broadly ovate or obovate. The number of teeth on the edge of the leaf is 10–20 pieces, six felt hairs of the leaf. The length and diameter of the flower plates are 3.5–7 × 4.5–9 cm, the number of flowers is (min.6) 10–45 (max.60), and the arrows of the flower plates are covered with dense cotton-like white hairs. The flowers are 15–20 mm in diameter. The fruits are dark red in color, spherical in shape. The diameter of their seeds is 5–6 mm, and each fruit has 3–4 seeds.

Typus: Described from cultivation in the Jardin des Plantes, Paris, France. 1830.

Geographic range: generally distributed in Central and Southern Europe, Southwest Asia (Syria, Lebanon, Palestine, Cyprus, Iran), the Balkans and Turkey. And in autonomous republic, it is found in Bichanak of the Shakhbuz region.

Based on the biomorphological studies that we conducted in species *Sorbus umbellata* (Dsf) Fritisch. var. and *Sorbus turcica* Zins., it was found that the main difference between these two species is in the structure of the leaf. In the species *Sorbus umbellata*, the shape of the leaf blade is rounded-broadly ovate or obovate. And in the species *Sorbus turcica*, it has the shape of an ellipse. In both species, the number of teeth on the edge of the leaf ranges are about 10–20 (Table 1).

Table 1 – Distinctive and similar features of species *Sorbus turcica* vs *S. umbellata*

№	Characteristic features	<i>Sorbus turcica</i> Zins.	<i>Sorbus umbellata</i> (Dsf) Fritisch. var.
1.	Life forms	medium-sized trees and shrubs	medium-sized trees and shrubs
2.	Distribution on height belts	middle mountain belt	low and middle mountain belt
3.	Shoots	covered with felt	covered with a layer of wax
4.	Shape of leaf apex	elleps or wide egg-shaped	rounded-broadly ovate or obovate

5.	Where the Leaf merges into the trunk	wedge-shaped	round
6.	Tip of the Leaf	sharp-oblong	blunt-round
7.	Leaf stem length (mm)	5–10	5–12
8.	The number of teeth on one side of the Leaf apex	12–20	10–20
9.	Calyx	triangle-shaped	triangle-shaped
10.	Size of fruit (mm)	6–16	9–16
11.	The color of its fruit	dark red, turns blue as it ripens	dark red
12.	The Shape of the fruit	globular	globular

The 5th volume of the book «Flora of the Caucasus» lists the species of the genus *Sorbus L.*, common in the flora of the Nakhchivan Autonomous Republic. The species *S. graeca* (Spach) Lodd. ex Schauer and *S. baldaccii* Degen et Fritsch ex Schneid are given there as separate species. In A. A. Grossheim's research paper «The Determinant of plants of the Caucasus» gave identifying keys to the species included in the genus *Sorbus L.*, and species *S. graeca* (Spach) Lodd. ex Schauer and *S. baldaccii* Degen et Fritsch ex Schneid were described as a separate species. In the 5th volume of the book «Flora of Azerbaijan», in the 3rd volume of the book «Trees and shrubs of Azerbaijan» and in the book of M. S. Mammadov, K. S. Asadov and F. M. Mammadov «Dendrology», published in subsequent years, 4 species of the genus *Sorbus L.*, as well as species *S. graeca* (Spach) Lodd. ex Schauer, *S. baldaccii* Degen et Fritsch ex Schneid were also identified on the territory of the Autonomous Republic. In the book of M. A. Museyibov «Physical geography of Azerbaijan». The species *S. baldaccii* Degen et Fritsch ex Schneid is listed as a separate species among the endemic plants distributed in the flora of the Nakhchivan Autonomous Republic [1, p. 42–45; 14, p. 31–36; 11, p. 55–58; 4, p. 253–254; 3, p. 302–308; M. A. Museyibov, 1998, p. 258].

In the scientific work “Обзор видов рода *Sorbus L. (Rosaceae)* в Азербайджане” (Overview of species of the genus *Sorbus L. (Rosaceae)* in Azerbaijan), written by T. A. Gasimova, Z. S. Aliyeva, T. D. Safiguliyeva, it is noted that 21 species of the genus *Sorbus L.* are distributed in Azerbaijan, of which 6 species növün (*Sorbus graeca* (Spach) Lood. Ex Schauer, *Sorbus persica* Hedl, *Sorbus luristanica* (Bornm.) Schönbeck-Temesy, *Sorbus roopiana* Bordz., *Sorbus takhtajanii* Gabr., *Sorbus baldacii* Degen et Fritsch ex Schneid) are distributed in the mountainous regions of the Nakhchivan Autonomous Republic [15, p.16–21]. In this research paper, *S. graeca* (Spach) Lood. Ex Schauer and *S. baldacii* Degen et Fritsch ex Schneid are mentioned as separate species.

In subsequent years, in the works published as a research result of T. H. Talybov and A. M. Ibragimov, the species *S. baldaccii* Degen et Fritsch ex Schneid was listed as part of *S. graeca* (Spach) Lodd. ex Schauer [7, p. 83–90]. In the IPNI (International Plant Names Index) list *Sorbus graeca* (Spach) Lood. Ex Schauer and *S. baldaccii* Degen et Fritsch ex Schneid are listed as separate species, and the 1972 Edition of «Flora of the USSR» volume 9 is given as a source. In this source, the species *Sorbus graeca* (Spach) Lood. Ex Schauer and *S. baldaccii* Degen et Fritsch ex Schneid were assigned to the *Aria* subgenus of the genus *Sorbus* L., and Lake Batabat in the Nakhchivan Autonomous Republic was indicated as the place of distribution of the species *S. baldaccii* Degen et Fritsch ex Schneid [12, p. 374–402].

***S. graeca* (Spach) Lodd. ex Schauer,** [9, p. 56] Mon. d. Gatt. *Sorbus*. (1901) 75; Фл. СССР, IX, (1939) 397; Гроссг., Опред. (1949) 74 – *Crataegus graeca* Spach, Hist. nat. d. Veg, II (1834) 102; – *Pyrus Aria* (non Ehrh.), M. B., I, 391; Ledeb., II, 98; – *S. aria* var. *graeca* Boiss., II, 658; Липский, (1899) 296; – *S. umbellata* var. *cretica*, Гроссг., Фл. Кавк. IV (1934) 288; – *S. obtusidentata* Zinserl. во Фл. СССР, IX (1939) 400 et Addenda. VIII, (1939) 498; Гроссг., Фл. Кавк. V (1952), p. 34; Фл. Азерб. V, (1954) 72; Trees and shrubs of Azerbaijan, III, p. 43 (1970).

This tree is 3–4 m tall, and sometimes up to 7 m. They are often found in groups, and sometimes singly, in meadows, around rocks and in forests. The coloration of young broods is brown, and the color of the bark of old stems is grayish. The leaves are simple, broad, obovate, smooth in upside, dark green, grayish and pubescent in downside. The edge of the leaves is double-serrate. The vegetation season lasts from late April to October. Blooms white in June. The fruits are spherical in shape and red in color, ripen in August. The surface of the fruit is pubescent, and turns blue when fully ripe. The surface of the fruits is pubescent, and when fully ripening it turns blue. It propagates by seeds and cuttings. It is a light-loving mesofit. Winter-resistant. It is convenient to use in gardening, landscaping as a decorative plant. The body is solid and flexible. Dyes of different colors are produced of its leaves. It is not only an ornamental plant, but also a honey plant [4, p. 58–69].

Typus: dans l'Asie Mineure et en Grece par Tournefort, Ainsi que par Sibthorp.

Geographical range: in a natural state it grows in Southern Europe, Crimea, the Caucasus, and Asia Minor. On the territory of the Nakhchivan Autonomous Republic, it is distributed in the Upper Buzgov, around the Bichanak forest and Lake Batabat of the Shahbuz district, Tillak, Lower and Upper Jalil forests around the village of Nurgut of the Ordubad district, spread in forests and shrubby land between the village of Nasirvaz and the Garangush plateau [6, p. 94–97].

***S. baldaccii* Degen et Fritsch ex Schneidin** herb Ю Цинзелинг во ФЛ. СССР, IX, 398 (1949); А. Гроссгейм, Опр. раст. Кафк., 73. – *S. meridionalis* var. *Baldacii* Asch. Et Gr., Synops., VI, 2, 100 (1906).

It is a shrubby plant. The leaves are oblong-elliptic or ovate-oblong-elliptic. Its length is 5–7 cm, and its width is 3–4 cm. The part of the leaf that connects to the trunk has a rounded wedge-shaped shape, and the tip is blunt. The upper part of the leaf is bare, the lower part is covered with thick hairs. The number of teeth on both sides of the leaf reaches 20–25. The length of its petals varies between 1–1.5 cm. Blooms little. The flowering period is May-June. Fruit ripening occurs in September-October.

Typus: Albania. Vlorë County & District: «in summo jugo m. Ćepin [Çipini Mount] distr. Kuç», 26.06.1892, *A. Baldacci* 128.

Geographical range: in the upper mountainous zone it occurs in rocky places. The description is given from Albania. In addition to its decorative appearance, it is also considered a honey plant. In general, it is common in Albania, Turkey and Armenia. In the Nakhchivan Autonomous Republic, it is distributed around Lake Batabat. Geographical type: Iran Turan (Table 2)

Table 2 – *Sorbus graeca* and *S. baldaccii*: distinctive and similar features of species

№	Characteristic features	<i>S. graeca</i> (Spach) Lodd. ex Schauer	<i>S. baldaccii</i> Degen et Fritsch ex Schneid
1.	Life forms	shrub or small-sized tree	tree or shrub
2.	Distribution on height belts	Alpine and subalpine belt	upper mountain belt
3.	Shoots	reverse elleps-shaped	oblong ellipse or ovoid oblong Ellipse
4.	Shape of leaf apex	round and wedge-shaped	round
5.	Where the Leaf merges into the trunk	blunt	blunt or pointed
6.	Tip of the Leaf	1–1.5	0.5–1.5
7.	Leaf stem length (mm)	20–35	20–25
8.	The number of teeth on one side of the Leaf apex	6–9 pairs	7–9 (10) pairs
9.	Calyx	pointed triangle-shaped	triangle-shaped
10.	Size of fruit (mm)	0.8–1	0.8–1
11.	The color of its fruit	dark red, turns blue as it ripens	dark red
12.	The Shape of the fruit	globular	globular

Conclusion

Thus, based on the results of long-term research and literature data, it was determined that 19 species of *Sorbus L.* are distributed in the territory of Nakhchivan Autonomous Republic.

Fam.: *Rosaceae* Adans. – the **rose family**

Genus: *Sorbus L.* – [whitebeam](#), [rowan](#) ([mountain-ash](#))

- 1 *Sorbus aucuparia* L. – rowan
- 2 *Sorbus boissieri* Schneid. – Buasse rowan
- 3 *Sorbus graeca* (Spach) Lood. Ex Schauer – Greece rowan
- 4 *Sorbus baldacii* Degen et Fritsch ex (Schneid) – Baldacii rowan
- 5 *Sorbus luristanica* (Bornm.) Schönbeck-Temesy – Luristan rowan
- 6 *Sorbus persica* Hedl.-Iranian rowan
- 7 *Sorbus roopiana* Bordz. – Roopiana rowan
- 8 *Sorbus subfusca* (Ledeb.) Boiss. – Brown rowan
- 9 *Sorbus takhtajanii* Gabr. – Takhtajanii rowan
- 10 *Sorbus turcica* Zinserl.-Turkish rowan
- 11 *Sorbus umbellata* (Desf) Fritsch – Umbellatta rowan
- 12 *Sorbus albovii* Zinserl. – Albovii rowan
- 13 *Sorbus armeniaca* Hedl. – Armenian rowan
- 14 *Sorbus buschiana* Zinserl. – buschiana rowan
- 15 *Sorbus caucasica* Zinserl. – Caucasian rowan
- 16 *Sorbus fedorovii* Zaikonn. – Fedorovii rowan
- 17 *Sorbus kusnetzovii* Zinserl. – Kusnetzovii rowan
- 18 *Sorbus migarica* Zinserl. – Migarica rowan
- 19 *Sorbus tamamschjanae* Gabr. – Tamamschjanae rowan

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Material received on 12.12.22.

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Әзірбайжан Республикасы, Нахчыван қ.

Материал 12.12.22 баспаға түсті.

НАХЧЫВАН АВТОНОМИЯЛЫҚ РЕСПУБЛИКАСЫНЫҢ ФЛОРАСЫНДАҒЫ *SORBUS L.* ТҰҚЫМДАС ТҮРЛЕРІНІҢ НОМЕНКЛАТУРАСЫНЫҢ ӨЗГЕРУІ

Субдоминантты ағаштар мен бұталардың ішінде *Sorbus L.* тұқымдасының түрлері Нахчыван Автономиялық Республикасының Орман экожүйесін қалыптастыруда ерекше маңызға ие. *Sorbus L.* тұқымдасына жататын көптеген түрлердің табиғи ресурстары аумақта көп болғанымен, экологиялық және антропогендік факторлардың әсерінен кейбір түрлердің ауқымы қысқарды. Жүргізілген зерттеулер мен әдеби деректер негізінде Нахчыван Автономиялық Республикасының флорасында *Sorbus L.* тұқымдасының 17 түрінің таралуы туралы ақпарат берілген. Оларда *S. turcica* Zinserl. түрі *S. umbellata* (Desf) Fritsch, және *S. graeca* (Spach) Lood. ex Schauer синонимі ретінде *S. baldacii* Degen et Fritsch ex Schneid деп аталды. Алайда, Нахчыван Автономиялық Республикасының аумағы бойынша экспедициялар кезінде әр жылдары жиналған үлгілерді талдау, әдеби деректерді талдау және Әзірбайжан Ұлттық Ғылым Академиясының Нахчыван филиалының биоресурстар институтының гербарий қорында сақталған түрлерді анықтау нәтижесінде, *S.umbellata* (Desf) Fritsch түрлері және *S. baldacii* Degen et Fritsch ex Schneid ретінде анықталды бөлек таксон. Мақалада *Sturcica* Zinserl, *Sgraeca* (Spach) Loodex Schauer, *Sumbellata* (Desf) Fritsch және *S. baldacii* Degen et Fritsch ex Schneid түрлерінің биоморфологиялық сипаттамалары және олардың бір-бірінен айрықша белгілері туралы ақпарат берілген. *S. umbellata* (Desf) Fritsch және *S. baldacii* Degen et Fritsch ex Schneid түрлерінің мәртебесі де қалтына келтірілді. Осылайша, Нахчыван Автономиялық Республикасының флорасында *Sorbus l* тұқымдасының 19 түрі кең таралғаны анықталды.

Кілтті сөздер: *Sorbus L.*, тұқым, таксон, биоморфологиялық сипаттамалары, жіктеу спектрі, түр, географиялық диапазон.

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Материал поступил в редакцию 12.12.22.

ИЗМЕНЕНИЯ НОМЕНКЛАТУРЫ ВИДОВ РОДА *SORBUS* L ВО ФЛОРЕ НАХЧЫВАНСКОЙ АВТОНОМНОЙ РЕСПУБЛИКИ

Среди субдоминантных деревьев и кустарников виды рода *Sorbus* L. имеют особое значение в формировании лесной экосистемы Нахчыванской Автономной Республики. Хотя природные ресурсы большинства видов, принадлежащих к роду *Sorbus* L., на территории в изобилии, из-за воздействия экологических и антропогенных факторов ареал некоторых видов сократился. На основе проведенных исследований и литературных данных представлена информация о распространении 17 видов рода *Sorbus* L. во флоре Нахчыванской Автономной Республики. Из них вид *S. turcica* Zinserl. был назван синонимом *S. umbellata* (Desf) Fritsch, а *S. graeca* (Spach) Lood. ex Schauer как синоним вида *is* *S. baldacii* Degen et Fritsch ex Schneid. Однако, в результате анализа образцов, собранных в разные годы во время экспедиций по территории Нахчыванской Автономной Республики, анализа литературных данных и идентификации видов, сохраненных в Гербарном фонде Института биоресурсов Нахчыванского филиала Национальной Академии наук Азербайджана, *S. umbellata* (Desf) Fritsch и *S. baldacii* Degen et Fritsch ex Schneidn были идентифицированы как отдельный таксон. В статье представлена информация о биоморфологических характеристиках видов *S. turcica* Zinserl., *S. graeca* (Spach) Lood. ex Schauer, *S. umbellata* (Desf) Fritsch и *S. baldacii* Degen et Fritsch ex Schneid, и их отличительные признаки друг от друга. Также были восстановлены статусы видов *S. umbellata* (Desf) Fritsch и *S. baldacii* Degen et Fritsch ex Schneid. Таким образом, установлено, что во флоре Нахчыванской Автономной Республики распространены 19 видов рода *Sorbus* L.

Ключевые слова: *Sorbus* L., род, таксон, биоморфологические характеристики, классификационный спектр, виды, географический ареал

Теруге 12.12.2022 ж. жіберілді. Басуға 28.12.2022 ж. қол қойылды.

Электронды баспа

2,83 МБ RAM

Шартты баспа табағы 7,71.

Таралымы 300 дана. Бағасы келісім бойынша.

Компьютерде беттеген А. К. Темиргалинова

Корректорлар: А. Р. Омарова, Д. А. Кожас

Тапсырыс № 4050

Сдано в набор 12.12.2022 г. Подписано в печать 28.12.2022 г.

Электронное издание

2,83 МБ RAM

Усл. п. л. 7,71. Тираж 300 экз. Цена договорная.

Компьютерная верстка А. К. Темиргалинова

Корректоры: А. Р. Омарова, Д. А. Кожас

Заказ № 4050

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