

NEWS

OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN

SERIES OF BIOLOGICAL AND MEDICAL

ISSN 2224-5308

Volume 4, Number 340 (2020), 46 – 51

<https://doi.org/10.32014/2020.2519-1629.31>

UDC 581.9 (574.3)

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**ARTEMISIA L. (SUBGEN. SERIPHIDIUM (BESS.)
PETERM. IN KAZAKH UPLAND**

Abstract. Kazakh Upland (KU) belongs to the steppe zone and the zone of northern deserts. The zoning of vegetation is disturbed by the presence of numerous mountain elevations more than 1000 m high (Karkaraly mountains, Bayan-Aul, Bektauata, Kyzylarai, Ulytau, Arganaty, Chingiztau ridge). Its territory is 641.7 km², which is about 23.5% of the territory of Kazakhstan. Kazakh uplands is located in six floristic regions and subareas: 5. Kokshetau (Koksh.); 10. Western upland (WU); 10a Ulytau (Ulyt.); 11. Eastern upland (EU); 11a. Karkaraly (Kark.); 16. Betpak-Dala (BD). A feature of the territory is the presence of steppe and desert species of *Artemisia*. In total, 17 species from 4 sections are found on the territory of KU, which is about 40% of all species of *Artemisia* subsp. *Seriphidium* in flora of Kazakhstan: Sect. 1. Junceum: *A. juncea*, *A. serotina*; sect. 2. Leocophyton: *A. turanica*; sect. 3. Sclerophyllum: *A. sublessingiana*; sect. 4. Halophyllum: *A. saissanica*, *A. scopaeformis*, *A. camelorum*, *A. gracilescens*, *A. halophila*, *A. pauciflora*, *A. lerchiana*, *A. semiarida*, *A. terrae-albae*, *A. compacta*, *A. kasakorum*, *A. nitrosa*, *A. schrenkiana*. Two species of *A. saissanica*, *A. scopaeformis* are endemic to Kazakhstan.

Key words: Kazakh Upland, Flora of Kazakhstan, *Artemisia* subsp. *Seriphidium*.

The subgenus *Seriphidium* was isolated as a separate genus Pontedera [1]. W. Besser [2] began to consider *Seriphidium* as a section of the genus *Artemisia* L. The composition of the genus *Artemisia* from four subgenus *Artemisia*, *Absinthium*, *Dracunculus*, *Seriphidium* was supported by most botanists of the XIX century [3-6], K. Lessing [7] raised the status of *Seriphidium* to a subgenus.

The number of the genus *Artemisia* L. is 450–500 species [8–10]. There are more than 100 species of the subgenus *Seriphidium* from Asia, Africa, China [11-14]. In the flora of Kazakhstan, there are 43 species of the subgenus *Seriphidium* [15].

The Kazakh upland (KU) is a low, strongly rugged mountain mass, towering above the smooth surface of the Mesozoic peneplain formed on the vast Kazakh shield. In the north, the upland passes into the West Siberian lowland, in the northeast into the wide Irtysh valley, and in the west and southwest adjoins to it the young Neogene plateaus of Turgai and southern Betpak-dala, in the southeast it rests in the mountains of Altai and Tarbagatai. The southern border of KU extends somewhat south of 46° north latitude and covers the northern and partially central part of Betpakdala. The KU area is 641.7 km², which is about 23.5% of the territory of Kazakhstan. Most of the territory of KU belongs to the steppe zone and the zone of northern deserts. The zoning of vegetation is violated by the presence of numerous mountain elevations more than 1000 m high (Karkaraly mountains, Bayan-Aul, Bektauata, Kyzylarai, Ulytau, Arganaty, Chingiztau ridge) and a very large number of individual small mountain mass scattered throughout the territory (mountains Ku, Akdym, Kyzyltas, Bekturnmys, Bugyly, etc.). According to the floristic zoning accepted in the Flora of Kazakhstan, the Kazakh upland is located in six floristic regions and subareas: 5. Kokshetau (Koksh.); 10. Western upland (WU); 10a Ulytau (Ulyt.); 11. Eastern upland (EU); 11a. Karkaraly (Kark.); 16. Betpak-Dala (BD).

The aim of this work is a critical generalization of the distribution of *Artemisia* L. species subgen. *Seriphidium* (Bess.) Peterm. in this area. The main materials for writing the summary of the flora were our

own collections, as well as materials stored in the herbarium institutions of Kazakhstan and Russia (AA, MW, LE, TK, KUZ, KG).

Subgenus *Seriphidium* (Bess.) Peterm. 1848, *Deutschl. Fl.*: 294. – *Artemisia* sect *Seriphidium* Bess. 1829, *Bull. Soc. Nat. Mosc.*, 1,8: 222; Poljak. 1961, *Fl. USSR*, 26: 562. – *Seriphidium* (Bess.) Poljak. 1961, *Тр. Инст. Бот. АН Каз ССР*, 11: 171.

Sect. 1. *Junceum* Poljak., 1961 in *Fl. USSR*. 26: 626 (descr.ross.); Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 219.

Subsect. *Juncaceae* Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 219.

A. juncea Kar. et Kir. 1842, in *Bull. Soc. Nat. Mosc.* 15, 2: 383; Filat., 1966, *Fl. Kaz.*, 9: 116; Filat., 1982, *Novit. Syst. Plant. Vascul.*, 19: 171; Bakanova, 1993, *Determ. Plants Central Asia*, 10: 578. 10: 586.

Typus: East upland, «In salsis Songoriae ad fl. Ajagus rarior VIII» (MW)

On the sands, on the gravel and rocky slopes, along temporary streams, pebbles and clayey outcrops. Rarely 10. WU; 10a. Ulyt.; 11. EU; 11a. Kark.; 16. BD.

Subsect. *Robustae* Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 220.

A. serotina Bunge, 1852, *Beitr. Kenntn.Fl. Russl.*: 165; Filat., 1966, *Fl. Kaz.*, 9: 136; Filat., 1982, *Novit. Syst. Plant. Vascul.*, 19: 177; Bakanova, 1993, *Determ. Plants Central Asia*, 10: 577.

Typus: Uzbekistan, «Zwischen Buchara und Samarkand, 31 VIII 1841, Lehmann».

Saline soils, solonetz, solonchaks, temporary drains on clayey and gravel soil. Rarely 10. WU; 11. EU; usually 16. BD.

Sect. 2. *Leocophyton* Filat. 1986., *Novit. Syst. Plant. Vascul.*, 23: 222.

Typus: *A. sieberi* Bess.

Subsect. *Turaniaceae* Filat. 1986, *Novit. Syst. Plant. Vascul.*, 23: 224.

A. turanica Krasch. 1930, *Мат. комис. эксп. исслед.* 26: 270; Filat., 1966, *Fl. Kaz.* 9: 137; Filat., 1984, *Novit. Syst. Plant. Vascul.*, 21: 180; Bakanova, 1993, *Determ. Plants Central Asia*. 10: 578.

Typus: Turgay, "Akmola region, Atbasar district, the Sary-su river in the lower reaches, the vicinity of the heights of Orta-kagaun, wormwood steppe in the valley, 8 VI 1914, No. 5251, I.M. Krasheninnikov" (LE).

On clayey, sabulous, sandy, saline soils. Rarely 16. BD.

Sect. 3. *Sclerophyllum* Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 224.

Typus: *A. cina* Berg et Poljak.

Subsect. *Kazachstanicae* Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 227.

A. sublessingiana Krasch. ex Poljakov, 1954, *Not. Sist. Herb. Inst. Bot. Acad. Sci. URSS*, 16: 395; Filat., 1966, *Fl. Kaz.* 9: 131; Filat., 1982, *Novit. Syst. Plant. Vascul.*, 19: 171; Bakanova, 1993, *Determ. Plants Central Asia*, 10: 570. – *A. polysticha* Poljak. 1954, *Bot. Mat. (Leningrad)*, 16: 420.

Typus: "Kazakhstan, southern Balkhash, on clayey hills along the Lepse River, near the village of Romanovka, 7 IX 1934, I. and O. Linchevski" (LE).

On gravelly, stony, clayey, saline slopes of hills and low mountains, in the steppes on saline soils. Usually 10. WU; 10a. Ulyt.; 11. EU; 11a. Kark.; 16. BD.

Sect. 4. *Halophyllum* Filat. 1986, *Novit. Syst. Plant. Vascul.*, 23: 227.

Typus: *A. halophilla* Krasch.

Subsect. *Heterophyllae* Filat., 1986, *Novit. Syst. Plant. Vascul.*, 23: 231.

A. saissanica (Krasch.) Poljak. et Filat. 1963, in *Тр. ин-та бот. АН КазССР* 15: 234; Filat., 1966, *Fl. Kaz.*, 9: 127; Filat., 1982, *Novit. Syst. Plant. Vascul.*, 19: 177; Bakanova, 1993, *Determ. Plants Central Asia* 10: 576.

Typus: Zaisan basin, «Ust-Kamenogorsk parish, Ozernyi district, west of the Kystav-Kurchum River, solonetz near lake Karamurza, 10 VIII 1912, n° 456, V. Reznichenko» (LE).

Wet solonetz and solonchaks, shores of salty rivers and lakes. Usually 10. WU; 11. EU; 16. BD. Endemic of Kazakhstan.

A. scopaeformis Ledeb. 1845, *Fl. Ross.* 2. 6: 575; Filat., 1966, *Fl. Kaz.* 9: 117; Filat., 1984, *Novit. Syst. Plant. Vascul.*, 21: 165; Nasimova, 1993, *Determ. Plants Central Asia*, 10: 564.

Typus: Chu river valley, «Herb. Ledebour, Tschu, N 166, A.Schrenk.» (LE).

Ancient river terraces, lake hollows, outskirts of takyr. Rarely 10. WU; 16. BD. Endemic of Kazakhstan.

Subsect. Aralocaspicae Filat. 1986, Novit. Syst. Plant. Vascul., 23: 231.

A. camelorum Krasch. 1930, Мат. комис. экспед. иссл. 26: 272; Filat., 1966, Fl. Kaz., 9: 126; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 167; Bakanova, 1993, Determ. Plants Central Asia, 10: 569.

Typus: Turgay, «Kasakstan, prov. Turgai, fl. Dschussa, prope Kargala-ksyl (Sary-in) 4 VII 1914, N. Krashennnikov» (LE).

Outbreak of tertiary carbonate clays. Rarely 10. WU; 10a. Ulyt.

A. gracilescens Krasch. et Iljin s. l. 1949 in Animadv. Syst. Herb. Univ. Tomsk. 1–2, 2: 3; Filat., 1966, Fl. Kaz., 9: 122; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 167; Nasimova, 1993, Determ. Plants Central Asia, 10: 567.

Typus: South of Western Siberia, «Altai Territory, Kulundinskaya steppe, pine-forest saline lakes, on solonchaks, 23 VII 1913, L. A. Utkin» (ТАК, isotypus LE).

Solonchak steppes, slopes and peaks of saline hills. Usually 10. WU; 10a. Ulyt.; 11. EU; 11a. Kark.

On the territory of 11. EU, subspecies are sometimes found: *A. gracilescens* subsp. *depauperata* Kupr. with small anthodes located at the end of branches and *A. gracilescens* subsp. *maxima* Kupr. with large anthodes and thick winding stems

(Kupriyanov, 1995).

A. halophila Krasch. 1930, Мат. комис. эксп. иссл. 26: 272; Filat., 1966, Fl. Kaz., 9: 117; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 167; Nasimova, 1993, Determ. Plants Central Asia, 10: 567.

Typus: «Kazakhstan, Aadaevskii district, Ustyurt – Emba, Donguz-tau, 2 X 1926, № 232, R.Yu. Rozhevits and A.O. Geirikhson» (LE).

Tertiary salted clays, solonchaks. Rarely 10. WU 16. BD.

A. pauciflora Weber, 1775, Dissert. Artem.: 26; Filat., 1966, Fl. Kaz., 9: 124; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 166; Nasimova, 1993, Determ. Plants Central Asia, 10: 567. – *A. pauciflora* subsp. *majkara* H.Krasch. 1930, Report on the work of the soil-botanical detachment of Kaz. expeditions of the USSR Academy of Sciences. 1926, 3, 2: 273. – *A. majkara* (Krasch.) Pavl. 1938, Fl. Centr. Kazak. 3: 270.

Typus: Lower reaches of the Volga river, «In ripa elata nigra Wolgae fluvii ut et Zarizinae ad Wolgam fluvium»

Solonchak steppes, solonchaks, solonchaks. Usually 5. Koksh.; 10. WU; 10a. Ulyt.; 11. EU; 11a. Kark.; 16. BD.

As noted by I.M. Krashennnikov (1926) south of 48 ° N on solonchak complexes, a special form of *A. pauciflora*, called by the local population "Maikara", with drooping branches, is very characteristic. He isolated it in a special subspecies of *A. pauciflora* subsp. *majkara*. Paratype selected from territory 10. WU: «fl. Sary-su, prope Ted-bulak, 4 VI 1914, n° 5225, leg. H. Krascheninnikov». Later N.V. Pavlov (l.c.) raised the rank to a species. According to our observations, specimens with drooping branches can occur within the same population. On the territory of KU, we did not see populations of *A. pauciflora*, consisting solely of specimens with drooping branches, there are also no differences in the ecology of this form (= *A. pauciflora* v. *majkara* comb. nov.).

A. lerchiana Web. ex Stechm. 1775, Dissert. Artem. 24: 25; Filat., 1966, Fl. Kaz. 9: 120; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 168; Nasimova, 1993, Determ. Plants Central Asia, 10: 564.

Typus: Lower reaches of the Volga river, «Astrachaniae ut et ad ripam latam nigram (Tschornoi Jar) Wolgae fluvii D. Lerche» (MW)

On sabulous saliferous and saline soils, solonchaks. Rarely 10. WU.

A. semiarida (Krasch. et Lavrenko) Filat. 1966, in Fl. Kaz. 9: 121; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 169; Nasimova, 1993, Determ. Plants Central Asia, 10: 568. – *A. terrae-albae* subsp. *semiarida* Krasch. et Lavr. ex Kryl. 1949, Fl. of West. Siberia. 11: 2787.

Typus: East upland, «Semipalatinsk region, Karkaraly district, between Ulkun and Kishkinokereptas. 18.08. 1910. S. Kucherevskaya» (LE, the lectotype was chosen by N. S. Filatova).

On light-chestnut soils in solonchak and solonchak complexes of vegetation. Rarely 10. WU; 11. EU; 16. BD.

On the territory of 10. WU, *A. semiarida* subsp. *argillaceum* Kupr. (1995, Bot. Res. Siberia and Kazakhstan, I: 20) with a thin root, loose, widely spaced panicle and omitted capitulum

A. terrae-albae Krasch. s.l. 1930, Мат. комис. эксп. иссл. 26: 269; Filat. 1966, in Fl. Kaz. 9: 120; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 169; Nasimova, 1993, Determ. Plants Central Asia, 10: 568.

Syntypi: Turgay, «Kazakhstan, Turgai, the Sarysu River in its lower reaches, environs of ur. Kizil-Dzhangil, near Kugaly-say, wormwood steppe, 29 VI 1914, № 5189, I. Krashennnikov; Mangyshlak, Aktau, the region of the village of Ogyuz, sandy slopes of the valley, wormwood and gramineous association, 11 X 1926, № 1069, I. Krashennnikov» (LE).

On the stony and gravelly slopes of hills, in sandy and clay deserts, wide intersectional basins. Usually 10. WU; 10a. Ulyt.; 16. BD.

A. terrae-albae var *pallida* (Poljak. et Krasch.) Filat. (1966, Fl. Kaz. 9: 104) found in the vicinity of Zhezkazgan. It is characterized by a wide-ovoid capitul.

Subsect. Mongolicae Filat. 1986. Novit. Syst. Plant. Vascul. 23: 234.

A. compacta Fisch. ex DC. 1838, Prodr. 6:102; Krasch. in Fl. of West. Siberia. 1949, 11:2784; Filat., 1984, Novit. Syst. Plant. Vascul., 21:170; Nasimova, 1993, Determ. Plants Central Asia, 10: 565. – *A. albida* Willd. ex Spreng. 1826. Sist. Veg. 3: 496; Filat. 1966, in Fl. Kaz.. 9:139.

Typus: Altai, «ad Tschujam, 1832, Fischer» (LE)

Saline clay, solonetz, solonchaks. Rarely 5. Koksh.; 10. WU.

A. kasakorum (Krasch.) Pavl. s. l. 1938. Fl. of Centr. Kazakh. 3: 274; Kupr. 1995, Bot. Res. Siberia and Kazakhstan, I: 22. – *A. maritima* Bess. subsp. *kasakorum* N. Krasch. 1930, Report on the work of the soil and botan. detach. of the Kazakh exped. of the Acad. of Sci. of the USSR Research. 1926, 3, 2: 272.

Typus: Ustyurt: «Kasachstan, prope Ustj-urt, inter Kaiakty et Sorpai-orpa, 17 VI 1926, Roschevitz et Iljin» (LE).

Plump solonchaks, solonetz. Rarely 10. WU; 11. EU; 16. BD.

In the first third of the 20th century, the name *A. maritima* was considered as Kazakhstani and Central Asian species of wormwood with pinnatisect leaves. The determination of the systematic location of *A. kasakorum* has been examined in various ways. N. Filatova [15], considered this species as a variation of *A. nitrosa*, since the lower stem leaves are exclusively twice pinnatisected. T. Nasimova [17] referred it to *A. scopaeformis* Ledeb. in which the lower stem leaves are once pinnatisected. N. Krashennnikov (l.c.) diagnosed “*folia caulina interior petiolata intermedia sesilia, l < 5–2 cm longa, 3–6 mm lata ambitu oblong-linearia, bipinnatisecta...*”, which excludes the proximity of *A. kasakorum* to *A. scopaeformis*. Along with a typical subspecies, *A. kasakorum* subsp. *adekenovii* Kupr. found in salt bogs 11. EU, with thin surface roots, small (1.0–1.5 cm) leaves [16].

A. nitrosa Weber s.l. 1775. Dissert. Artem.: 24; Filat., 1966, Fl. Kaz., 9: 126; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 166.

Typus: South of Krasnoyarsk region, «in montosis lacus salsi Utschjumi Krasnojarensis tractus sub finem Augusti adhuc florentem Luneni» (MW).

Solonetz, solonchaks, saline lands. Usually 5. Koksh.; 10. WU; 10a. ulyt.; 11. EU; 11a. Kark.; 16. BD.

In the mountains of Karkaraly, *A. nitrosa* subsp. *subglabra* (Krasch.) Kupr., with evanesced pubescence and straw-yellow almost bare stems.

A. schrenkiana Ledeb., s.l. 1845, Fl. Ross. 2: 575; Filat., 1966, Fl. Kaz. 9: 127; Filat., 1984, Novit. Syst. Plant. Vascul., 21: 170; Nasimova, 1993, Determ. Plants Central Asia, 10: 565.

Typus: Tarbagatai, «In Sibiria altaica ad m. Tarbagatai, VIII, 1840, Schrenk» (LE)

Solonetz, salsuginous meadows, solonchaks. Usually 5. Kosh.; 10. WU; 10a. Ulyt.; 11. EU; 11a. Kark.; 16. BD.

A. schrenkiana ssp. *compressa* Filat. located in territory of 10. 3M. with capituls grouped at the end of branches and *A. schrenkiana* ssp. *declinata* Kupr. (1995, Bot. Res. Siberia and Kazakhstan. I: 19) with branches almost horizontally located on the shoot and capituls lowered.

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**ҚАЗАҚ ҰСАҚ ШОҚЫСЫНДАҒЫ *ARTEMISIA* L.
(SUBGEN. *SERIPHIDIUM* (BESS.) PETERM**

Аннотация. Қазақ ұсақ шоқысы (ҚҰШ) дала және солтүстік шөл аймағына жатады. Өсімдіктердің аймақ биіктігі 1000 м-ден асатын тау көтермелері негізінде (Қарқаралы, Баян-ауыл, Бектауата, Қызыларай, Ұлытау, Арғанаты таулары, Шыңғыстау жотасы) бұзылады. Ұсақ шоқылар солтүстікте Батыс-Сібір ойпатына, солтүстік-шығыста Ертіс кең алқабына ауысады, ал батысы мен оңтүстік-батысында оған Торғай және Оңтүстік Бетпақдала жас неогенді үстірттері жалғасады, оңтүстік-шығыста Алтай мен Тарбағатай тауларына тіреледі. ҚҰШ оңтүстік шекарасы 46° солтүстік ендіктен біршама оңтүстікке қарай созылып, Бетпақдаланың солтүстік және ішінара орталық бөлігін қамтиды. Оның аумағы 641,7 км², яғни Қазақстан аумағының 23,5%-ын құрайды. Қазақ ұсақ шоқысы алты флористикалық және кіші аудандарда орналасқан: 5. Көкшетау (Көкш.); 10. Батыс ұсақ шоқысы (БҰШ); 10а Ұлытау (Ұлыт.); 11. Шығыс ұсақ шоқысы (ШҰШ); 11а. Қарқаралы (Қарқ.); 16. Бетпақдала (БД). Аумақтың ерекшелігі – *Artemisia* дала және шөл түрлері болып келеді. Өлемдік флорада *Artemisia* L. тегінің саны – 450-500 түр. *Seriphidium* туыс тармағының Азиядағы, Африкадағы, Қытайдағы 100-ден астам түрі бар. Қазақстан флорасында *Seriphidium* туыс тармағының 43 түрі өседі.

ҚҰШ аумағында барлығы 4 секцияның 17 түрі кездеседі, бұл Қазақстан флорасындағы *Seriphidium* туыс тармағы *Artemisia*-ның барлық түрлерінің 40%-ын құрайды: 1 Секция. *Juncum* Poljak. Juncaceae Filat. кіші секциясына *Artemisia juncea* Kar. et Kir. – қияқ жусан, *Robustae* Filat. кіші секциясына *Artemisia serotina* Bunge – күздік жусан жатады. 2 Секция. *Leocophyton* Filat. Turaniaceae Filat. кіші секциясына *Artemisia turanica* Krasch. – туран жусаны жатады. 3 Секция. *Sclerophyllum* Filat. Kazachstanicae Filat. кіші секциясына *Artemisia sublessingiana* Krasch. ex Poljakov – майкара жусан жатады. 4 Секция. *Halophyllum* Filat. Heterophyllae Filat. кіші секциясына *Artemisia saissanica* (Krasch.) Poljak. et Filat. – зайсан жусаны және *Artemisia scopaeformis* Ledeb. – шыбық тәрізді жусан жатады, *Aralocaspicae* Filat. кіші секциясына келесі түрлер жатады: *Artemisia camelorum* Krasch. – түйе жусан, *Artemisia gracilescens* Krasch. et Pjin – жұқа жусан, *Artemisia halophila* Krasch. – тұзды жусан, *Artemisia pauciflora* Weber – кара жусан, *Artemisia lerchiana* Web. ex Stechm. – Лерх жусаны, *Artemisia semiarida* (Krasch. et Lavrenko) Filat. – жартылай құрғақ жусан, *Artemisia terrae-albae* Krasch. – боз жусан жатады. *Mongolicae* Filat. кіші секциясына келесі түрлер жатады: *Artemisia compacta* Fisch. ex DC. – шағын жусан, *Artemisia kasakorum* (Krasch.) Pavl. – қазақ жусан, *Artemisia nitrosa* Weber – селитра жусаны, *Artemisia schrenkiana* Ledeb. – Шренк жусаны. *Artemisia saissanica* (Krasch.) Poljak. et Filat. – зайсан жусаны және *Artemisia scopaeformis* Ledeb. – шыбық тәрізді жусан Қазақстан эндемигі болып саналады.

Түйін сөздер: Қазақ ұсақ шоқысы, Қазақстан флорасы, *Artemisia* subsp. *Seriphidium*.

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***ARTEMISIA* L. (SUBGEN. *SERIPHIDIUM* (BESS.) PETERM.
В КАЗАХСКОМ МЕЛКОСОПОЧНИКЕ**

Аннотация. Казахский мелкосопочник (КМ) относится к степной зоне и зоне северных пустынь. Зональность растительности нарушается наличием многочисленных горных поднятий высотой более 1000 м (горы Карқаралы, Баян-Аул, Бектауата, Кызыларай, Улытау, Арғанаты, хребет Чингизтау). На севере мелкосопочник переходит в Западно-Сибирскую низменность, на северо-востоке – в широкую долину Иртыш, а на западе и юго-западе к нему примыкают молодые неогеновые плато Тургая и южной Бетпақдалы, на юго-востоке упирается в горы Алтая и Тарбағатая. Южная граница КМ простирается несколько южнее 46° с.ш. и охватывает северную и частично центральную часть Бетпақдалы. Его территория составляет 641,7 км², что охватывает около 23,5% территории Казахстана. Казахский мелкосопочник находится в шести флористических районах и подрайонах: 5. Кокшетау (Кокш.); 10. Западный мелкосопочник (ЗМ); 10а Улытау (Улыт.); 11. Восточный мелкосопочник (ВМ); 11а. Карқаралы (Карқ.); 16.

Бетпак-Дала (БД). Особенностью территории является наличие степных и пустынных видов *Artemisia*. В мировой флоре численность рода *Artemisia* L. составляет около 450-500 видов. Видов подрода *Seriphidium* из Азии, Африки, Китая насчитывается более 100 видов. Во флоре Казахстана 43 вида подрода *Seriphidium*.

Всего на территории КМ встречается 17 видов из 4 секций, что составляет около 40% всех видов *Artemisia* подрода *Seriphidium* флоры Казахстана: Секция 1. *Junceaum* Poljak. К подсекции *Juncaceae* Filat. относится *Artemisia juncea* Kar. et Kir. – полынь ситниковая к подсекции *Robustae* Filat. *Artemisia. serotina* Bunge – полынь осенняя. Секция 2. *Leosphyton* Filat., подсекции *Turaniaceae* Filat. относится *Artemisia turanica* Krasch. - полынь туранская. Секция 3. *Sclerophyllum* Filat., подсекции *Kazachstanicae* Filat. относится *Artemisia sublessingiana* Krasch. ex Poljakov – полынь лессинговидная. Секция 4. *Halophyllum* Filat., подсекции *Heterophyllae* Filat. относится *Artemisia saissanica* (Krasch.) Poljak. et Filat. – полынь зайсанская и *Artemisia scopaeformis* Ledeb. – полынь прутьевидная. К подсекции *Aralocaspicae* Filat. относятся следующие виды *Artemisia. camelorum* Krasch. – полынь верблюдов, *Artemisia gracilescens* Krasch. et Ijin – полынь тонковатая, *Artemisia halophila* Krasch. - полынь солелюбивая, *Artemisia pauciflora* Weber – полынь черная, *Artemisia lerchiana* Web. ex Stechm. – полынь Лерха, *Artemisia semiarida* (Krasch. et Lavrenko) Filat. – полынь полусухая, *Artemisia terrae-albae* Krasch. – полынь белоземельная. К подсекции *Mongolicae* Filat. относятся следующие виды *Artemisia compacta* Fisch. ex DC. – полынь компактная, *Artemisia kasakorum* (Krasch.) Pavl. – полынь казахская, *Artemisia nitrosa* Weber - полынь селитряная, *Artemisia schrenkiana* Ledeb. – полынь Шренка. Два вида *Artemisia saissanica* (Krasch.) Poljak. et Filat. – полынь зайсанская и *Artemisia scopaeformis* Ledeb. – полынь прутьевидная являются эндемиками Казахстана.

Ключевые слова: казахский мелкосопочник, флора Казахстана, *Artemisia* subsp. *Seriphidium*.

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REFERENCES

- [1] Pontedera J. Dissertationes. 1720. Patavii. 296 p.
- [2] Besser W.G. De Seriphidiis seu de sectione III Artemisiarum Linnaei // Bull. Soc. Nat. M. 1834. Vol. 7. P. 5-46.
- [3] De Candolle A.P. Prodrum systimatis naturalis regni vegetabilis. 1837. Pars. 6. Parisiis. P. 93-127.
- [4] Ledebour C.F. Flora Rossica Stuttgart. 1845-1846. T. 2, fasc. 2 (*Artemisia*: P. 560-600).
- [5] Boisser E. Flora Orientalis. 1875. Vol. 3. P. 360-376.
- [6] Hooker J.D. Flora of British India. Vol. 3. 1882. P. 321-330.
- [7] Lessing C. F. Synopsis generum Compositarum. Berlinii. 1832. 264 p.
- [8] Anderberg A.A., Baldwin B.G., Bayer R.G., et al. The families and genera of vascular plants. Vol. VIII. Flowering plants. Eudicots. Asterales / edited by K. Kubitzki; volume editors J.W. Kadereit and C. Jeffrey. Berlin: Springer. 2007. P. 61-588.
- [9] Wales J., McArthur E.D. *Artemisia* systematics and phylogeny: cytogenetic and molecular insight // Schrabland ecosystem genetics and biodiversity. 2001. Provo UT. P. 67-74.
- [10] Koul B., Taak P., Kumar A., Khatri T., Sanyal I. The *Artemisia* genus: a review on Traditional Users, Phytochemical Constituents, Pharmacologica, Properties and Germplasm Conservation // J. Glicomics Lipidomics. 2017. Vol. 7 (1). P. 142-148. DOI: 10.4172/2153-0637.1000142/
- [11] Filatova N. Generis *Artemisia* L. subgeneris *Seriphidium* (Bess.) Peterm. Species florum URSS // Novitatus systemtica plantarum vascularium. 1984. T. 21. Leningrad.: Nauca. P. 155-185.
- [12] Filatova N. Systema specierum generis *Artemisia* L. subgeneris *Seriphidium* (Bess.) Peterm. in Eurasia et Africa Boreale vigentium // Novitatus systemtica plantarum vascularium. 1986. T. 23. Leningrad.: Nauca. P. 217-240.
- [13] Ling Y. R. The chinense *Seriphidium* (Bess.) Poljak. The classification, distribution and application of *Seriphidium* (Bess.) Poljak. In China // Dul. Bot. 1988. Res. Vol. 8 (3). P. 111-123.
- [14] Ling Y.R. A. revien of the classification, distribution and application of *Artemisia* L. and *Sereiphidium* (Bess.) Poljak. In China // Guahaia. 1991. Vol. 1 (11). P. 19-35.
- [15] Filatova N. Genus *Artemisia* L. // Flora of Kazakhstan. 1966. T. 9. Alma-Ata. P. 86-140.
- [16] Kupriyanov A.N. Wormwood of Central Kazakhstan (*Artemisia* L., Asteraceae) // Bot. Res. Siberia and Kazakhstan. 1995. Vol. 1. P. 4-29.
- [17] Nasimova T.N. Genus *Atemisia* L. subgenus *Seriphidium* (Bess.) Determ. Plants Central Asia. 1993. Vol. 10. Tashkent. P. 563-586.