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A TAXONOMIC REVISION OF SELECTED *Carex* L. SPECIES (Cyperaceae Juss.) WITHIN THE FLORA OF AZERBAIJAN

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ТАКСОНОМИЧЕСКАЯ РЕВИЗИЯ ОТДЕЛЬНЫХ ВИДОВ *Carex* L. (Cyperaceae Juss.) ВО ФЛОРЕ АЗЕРБАЙДЖАНА

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Abstract. As part of the 2025 research program dedicated to preparing a new edition of the multi-volume "Flora of Azerbaijan", species of the genus *Carex* L. (Cyperaceae Juss.) were investigated. Globally, the family Cyperaceae Juss. comprises 105 genera and approximately 5,000 species, 17 of which occur within the flora of Azerbaijan. The present study provides a comprehensive taxonomic revision of *Carex* based on both field investigations conducted throughout Azerbaijan and the examination of herbarium samples preserved in the Herbarium of the Institute of Botany of the Ministry of Science and Education of the Republic of Azerbaijan.

Аннотация. В рамках исследовательской программы 2025 года, посвященной подготовке нового издания многотомной «Флоры Азербайджана», были изучены виды рода *Carex* L. (семейство Cyperaceae Juss.). В глобальном масштабе семейство Cyperaceae Juss. включает 105 родов и около 5000 видов, 17 из которых встречаются во флоре Азербайджана. Настоящее исследование представляет собой всестороннюю таксономическую ревизию рода *Carex*, основанную как на полевых исследованиях, проведенных по всему Азербайджану, так и на изучении гербарных образцов, хранящихся в Гербарии Института ботаники Министерства науки и образования Азербайджанской Республики.

Keywords: *Carex*, taxonomy, herbarium specimens, Flora of Azerbaijan

Ключевые слова: *Carex*, таксономия, гербарные образцы, флора Азербайджана.

This genus was described by Linnaeus (1753; 1754) in the first editions of "Species Plantarum" and "Genera Plantarum" (comprising 29 species) [3]. It is the largest genus in the tribe Cariceae Dumort., with approximately 2,000 species globally [4]. *Carex* species are perennial, rhizomatous, wind-pollinated herbs. All species have terminal inflorescences composed of one or several spikes [6]. The flowers are always unisexual. The staminate florets consist of only one to three stamens. The inflorescence axis does not extend into the utricles (the rachilla is sometimes present). Staminate and pistillate scales are usually similar but vary in size, shape, and color [5]. The style is 2–3(–4)-lobed. Achenes are trigonous or, rarely, quadrangular [7]. According to the second volume of "Flora of Azerbaijan" (1952), the genus *Carex* L. includes 63 species, whereas the subsequent edition (2016) reports 61 species. Geographically, these species occur within the eastern and western parts of the Greater Caucasus, the Alazan-Ayrichay Valley, Nakhchivan, Lankaran, Diabar, and Talysh. Their

habitats span lower to upper montane zones, encompassing arid marshes, meadows, grassy slopes, forests, as well as riparian environments and roadsides [1, 2].

Materials and Methods

The work was based on herbarium specimens stored in the Herbarium Fund of the Institute of Botany of the Ministry of Science and Education of the Republic of Azerbaijan, and on personal collections gathered at various development stages during expeditions in 2025. The study utilized classical, comparative-morphological, floristic, and systematic methods of botanical research. Species identification was carried out according to the "Flora of Azerbaijan" [1] and updated in accordance with the modern nomenclature of World Flora Online (www.worldfloraonline.org) and Euro+Med-Plantbase (www.emplantbase.org).

Species descriptions [1-7].

Carex leporina L., Sp. Pl.: 973. 1753.

Lectotypus: Morison, Pl. Hist. Univ. Oxon. 3, Section 8, Table 12, Fig. 29. 1715.

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, Gobustan, Lesser Caucasus, mountainous part of Nakhchivan; in mountain meadows.

Geographical type: Palearctic.

Carex liparocarpos Gaudin, *Étrennes* Fl.: 153.1804.

Typus: [Transcaucasia] Iberia, Tillis, in jugo Telety, 28 iv 1909, T. Roop.

Distribution and habitat: Greater Caucasus (Guba), southern and western parts of Greater Caucasus, Lesser Caucasus, Talysh; in dry meadows, stony steppes and gravelly riverbeds.

Geographical type: Mediterranean.

Carex aterrima subsp. medwedewii (Leskov) T.V.

Typus: "Caucasus occidentalis, distr. Maykop, ad fontes fl. Belaya, in Prato Subalpino ad Monte. Abago, 16 August 1929.

Syn: *Carex medwedewii*

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, northern and central parts of Lesser Caucasus, mountainous part of Nakhchivan; alpine and subalpine meadows.

Geographical type: Colchis.

Carex melananthiformis Litv.

Lectotypus: (Egorova, 1999: 399): East Siberian, Buryat., "In nemore sabuloso ad fl. Irkut prope Mondam. 1830 [French], Turchaninov]"

Distribution and habitat: Greater Caucasus (Guba); in the subalpine belt and on sandy slopes.

Geographical type: East Palearctic.

Carex melanostachya M.Bieb ex Willd., Sp. Pl. 4: 299. 1805.

Typus: [USSR] ad mare Caspium, Marschall von Bieberstein (holo. B-Willd. 17286).

Distribution and habitat: All over Azerbaijan; in shrubs, forests, gardens, on riverbanks, grassy slopes, meadows and swamps.

Geographical type: Pontic-Sarmatian.

Carex michelii Host, Syn. Pl.: 507. 1797.

Typus: <<In Austriae, Pannoniae colibus, pratis siccioribus, montanis sylvaticis>>

Distribution and habitat: Samur-Shabran, Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, northern and central parts of Lesser Caucasus; in forest and shrubland.

Geographical type: Mediterranean.

Carex microglochinus Wahlenb.

Lectotypus: [Sweden] in Lateribus irriguis alpiunt Lapponicarunt septentrionalium (BM! UPS!).

Distribution and habitat: Greater Caucasus (Guba, Shahdag); alpine meadows.

Geographical type: Holarctic.

Carex pyrenaica subsp. micropodioides (V.I.Krech.) Changjian.

Syn: *Carex micropodioides* V.I.Krech. in Komarov, Fl. URSS 3: 608. 1935

Typus: "Sukhumi district.

Distribution and habitat: Greater Caucasus (Zagatala); alpine meadows.

Geographical type: Caucasus-Colchis.

Carex muricata L., Sp. Pl.: 974. 1753.

Typus: [England] Common in woods and hedges in Norfolk and Suffolk, Mr. Woodw. [ard] (holo. LINN).

Distribution and habitat: Greater Caucasus (Guba), Samur-Davachi, Kura-Araz plain, Gobustan, Lesser Caucasus, Diabar, Lankaran; in forest, shrubs and riverbanks.

Geographical type: Atlantic.

Carex oreophila C.A.Mey., Verz. Pfl. Casp. Meyer: 29. 1831.

Typus: [Caucasia] in Regione Alpina Caucasi Occidentalis et Orientalis, in Rupestribus, 2340-2700 m [Alp. Caucasus, Shachda, 1830, California. Meyer 178] (head LE, photo! iso. H!).

Distribution and habitat: Greater Caucasus (Guba), central part of Lesser Caucasus; alpine meadows.

Geographical type: Western Asia - Caucasus.

Carex pachystylis.

Typus: « in Asia occidentali inter Halepum et Mosul, Oliver et Bruguere in herb. Mus. Paris et in Persia, Belanger. in herb. Deless».

Distribution and habitat: Diabar, mountainous part of Nakhchivan; rocky, gravelly and clayey places, on slopes.

Geographical type: Iran-Central Asia.

Carex pallescens L., Sp. Pl.: 977. 1753.

Typus: in Europe (Hb. Linn. 1100/60, photo!).

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, northern and central parts of Lesser Caucasus, Lankaran; forests, shrubs and mountain meadows.

Geographical type: Holarctic.

Carex panicea L. Sp. Pl.: 977. 1753.

Typus: in Europe (Hb. Linn. 1100/63, photo!).

Distribution and habitat: northern part of Lesser Caucasus, Diabar; in meadows of the lower and upper mountain belts.

Geographical type: Palearctic.

Carex pendula Huds. Fl. Engl.: 352. 1762.

Typus: [England] in sepibus inter Hampstead et Highgate copiose, [Hudson] (holo. destroyed).

Distribution and habitat: Samur-Davachi, eastern and western parts of Greater Caucasus, Lankaran; in forests and riverside.

Geographical type: Mediterranean.

Carex phyllostachys C. A. Mey., Verz. Pfl. Casp. Meer.: 30. 1831.

Typus: [Transcaucasus] in sylvis umbrossimis montium Talusch, 530 hexap. [954 m], [C.A. Meyer 180].

Distribution and habitat: Samur - Davachi, Greater Caucasus (Guba), Lankaran; shady forests.

Geographic type: Europe-Caucasus.

Carex polyphylla Kar. & Kir.

Typus: << Hab. in sylvaticis ad torrentem Tschcharak-Assu, circa montes Tarbagatai [1840, Karelin et Kirilow]>>)

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, Alazan-Ayrichay valley, Lesser Caucasus, mountainous part of Nakhchivan, Diabar, Lankaran; in forests, bushes, gardens and on river gravel.

Geographical type: Europe-Caucasus-Iran-Turan.

Carex pseudocyperus L.

Typus: in Europe (Hb. Linn. 1100/68, photo!).

Distribution and habitat: Kura-Araz plain, northern part of Greater Caucasus, Lankaran; in swamps.

Geographical type: Holarctic.

Carex remota L.

Typus: in Europe (Hb. Linn. 1100/31, photo!).

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, southern and central parts of Lesser Caucasus, Lankaran; in forests.

Geographical type: Europe-Mediterranean-Western Asia.

Carex riparia Curtis Fl. Londin. 4: t. 60. 1783.

Typus: the illustration in Curtis, Fl. Lond. 2(4): t. 60 (1783).

Distribution and habitat: Samur - Davachi, Gobustan, eastern part of Greater Caucasus, Bozgir, Kura-Araz plain, Kura lowland, central part of Lesser Caucasus, Lankaran; in swamps, riverbanks and lake edges).

Geographical type: Palearctic.

Carex songorica Kar. & Cyrus.

Typus: [USSR, Kazakhstan] in herbosis insularum fl. Lepsa, Karelin & Kirilow 2086 (halo. LE).

Distribution and habitat: Greater Caucasus (Quba), Diabar; in swamps.

Geographical type: Iran-Central Asia.

Carex stenophylla subsp. *stenophylloides* (V. I. Krecz.).

Syn: *Carex stenophylloides* V.I.Krecz. in Fedtschenko, Fl. Turkmen. 1(2): 230 (1932).

Lectotypus: "Frequens in pratis aridis desBrigithenau Viennae, Hedwig 1798. (HAL, Herb. Schkuhr) selected by Norlindh, l.c.: 5. 1960.

Distribution and habitat: Kura plain, Nakhchivan; on dry stony and sandy soils.

Geographical type: Iran - Central Asia.

Carex strigosa Huds.

Typus: << Hab. in sylvis et sepibus. Found in a lane at Black Notley in Essex, Mr. Dale. R. Syn. Prope Oxford. D. Sheffield >>

Distribution and habitat: Lankaran; in forests.

Geographical type: Central Europe.

Carex supina Willd. ex Wahlenb. in Kongl.

Typus: Described without indication of locality (holo. UPS! iso. B-Willd. 17205, labelled 'Habitat in rupibus Germaniae').

Distribution and habitat: mountainous part of Nakhchivan and Lankaran; on dry grassy slopes.

Geographical type: Pontic-Sarmatian.

Carex sylvatica Huds.

Lectotypus: Morison, 1715, Pl. Hist. Univ. Oxon. 3, sect. 8, tab. 12, fig. 9 – Еропова (h. l.).

Distribution and habitat: Samur - Davachi, (Guba), Kura-Araz plain, eastern and western parts of Greater Caucasus, northern and central parts of Lesser Caucasus, Lankaran; in forest.

Geographical type: Europe

Carex tomentosa L., Mant. Pl. 1: 123. 1767.

Lectotypus: (Егорова, 1976, Фл. европ. ч. СССР, 2 : 171): Зап. Sib., Krasnoyar. kr., "Sibiria, Jenisei, Schumika inter Krasnojarsk et Jeniseisk. 16VI 1876 [fr.], H. Wilh. Arnell" (sub *Carex Arnelli* Christ (ap. Scheutz) nov. nom. = *C. Maximowiczii* Bokeler, non Miquel).

Distribution and habitat: Greater Caucasus (Guba), eastern and western parts of Greater Caucasus, Alazan-Ayrichay valley, Kura plain, Lesser Caucasus, Lankaran; in forest, bushes, gardens and swamps.

Geographical type: Western-Palearctic.

Carex tristis M. Bieb., Fl.

Syn: *Carex meinshauseniana* V. I. Krecz. in Komarov, Fl. URSS 3: 606. 1935

Typus: «In subalpinis Caucasi orientalis circa Buduch et in alpe Shahdagh nascitur, Junia florens».

Distribution and habitat: Greater Caucasus (Guba), western and eastern parts of Greater Caucasus, northern and central parts of Lesser Caucasus; alpine and subalpine meadows.

Geographical type: Asia Minor-Caucasus.

Carex depressa subsp. *transsilvanica* (Schur).

Syn: *Carex transsilvanica* Schur in Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 4: 80. 1853.

Lectotypus: <<In graminosis elatioribus Transsilv. Stolzenburg, Anfang Juni, D [et.] Schur >> (LW!) – Егорова (h. l.).

Distribution and habitat: Lankaran; on grassy slopes and forests.

Geographical type: Balkan-Caucasus-Northern Iran.

Carex vesicaria L.

Typus: (<< Hab. in Europe udis silvaticis >>)

Syn: *Carex inflata* Huds., Fl. English : 354 (1762) nom. reg.

Distribution and habitat: Gobustan, Kura plain, mountainous part of Nakhchivan, Diabar, Lankaran; in swamps.

Geographical type: Palearctic.

Carex vulpina L., Sp. Pl.: 973. 1753.

Syn: *C. compacta* Lam. "Flora of Azerbaijan", 2, 1952:59.

Typus: (<< Habitat in Europae paludibus nemoris >>)

Distribution and habitat: Samur-Davachi, Kura-Araz plain, Alazan-Ayrichay valley, northern part of Lesser Caucasus, Nakhchivan; in swamps, meadows, along rivers and streams.

Geographical type: Palearctic.

Results and Discussion

During the examination of herbarium specimens of the genus *Carex* L. stored in the Herbarium Fund of the Institute of Botany of the Ministry of Science and Education of the Republic of Azerbaijan, 59 species were discovered. According to the thematic plan, the research focused on 30 species of the genus *Carex* L.: (*Carex leporina* L., *Carex liparocarpos* Gaudin, *Carex aterrima* subsp. *medwedewii* (Leskov) T. V. Egorova (= *C. medwedewii* Leskov), *Carex depressa* subsp. *transsilvanica* (Schur) T. V. Egorova (= *C. transsilvanica* Schur), *Carex pyrenaica* subsp. *micropodioides* (V. I. Krecz.) Chandjian. (= *C. micropodioides* V. I. Krecz.), *Carex stenophylla* subsp. *stenophylloides* (V. I. Krecz.) T. V. Egorova (= *C. stenophylloides* V. I. Krecz.), *Carex tristis* M. Bieb.

(= *C. meinshauseniana* V. I. Krecz.), *Carex vesicaria* L. (= *C. inflata* Huds.), *Carex vulpina* L. (= *C. compacta* Lam.), *Carex melananthiformis* Litv., *Carex melanostachya* M. Bieb ex Willd., *Carex michellii* Host, *Carex microglochin* Wahlenb., *Carex muricata* L., *Carex oreophila* C. A. Mey., *Carex pachystylis* J. Gay, *Carex pallescens* L., *Carex panicea* L., *Carex pendula* Huds., *Carex phyllostachys* C. A. Mey., *Carex polyphylla* Kar. & Kir., *Carex pseudocyperus* L., *Carex remota* L., *Carex riparia* Curtis, *Carex songorica* Kar. & Kir., *Carex strigosa* Huds., *Carex supina* Willd. ex Wahlenb., *Carex sylvatica* Huds., *Carex tomentosa* L., *Carex tristis* M. Bieb.

In the herbarium fund of the Institute of Botany of the Ministry of Science and Education of the Republic of Azerbaijan specimens belonging to the following species were verified: (*C. michellii*, *Carex pyrenaica* subsp. *micropodioides* (V. I. Krecz.) Chandjian. (= *C. micropodioides*), *C. pachystylis*, *C. pallescens*, *C. panicea*, *C. pendula*, *C. phyllostachys*, *C. polyphylla*, *C. pseudocyperus*, *Carex cuprina* (Heuff.) A. Kern. (= *C. otrubae*, *C. remota*).

Herbarium specimens of these species were collected from Shirvan, Salyan, Shamakhi, Goychay, Guba, Oguz, Gabala, Sheki, Zagatala, Lankaran, Lerik, Kalbajar and Nakhchivan.

Based on the results of modern nomenclature research (www.worldfloraonline.org, www.emplantbase.org), several species of the genus *Carex* L. described in the second volume of the "Flora of Azerbaijan", are currently synonymized as follows:

Carex aterrima subsp. *medwedewii* (Leskov) T. V. Egorova (= *C. medwedewii* Leskov)

Carex depressa subsp. *transsilvanica* (Schur) T. V. Egorova (= *C. transsilvanica* Schur)

Carex pyrenaica subsp. *micropodioides* (V. I. Krecz.) Chandjian. (= *C. micropodioides* V. I. Krecz.)

Carex stenophylla subsp. *stenophylloides* (V. I. Krecz.) T. V. Egorova (= *C. stenophylloides* V. I. Krecz.)

Carex tristis M. Bieb. (= *C. meinshauseniana* V. I. Krecz.)

Carex vesicaria L. (= *C. inflata* Huds.)

Carex vulpina L. (= *C. compacta* Lam.)

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