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An annotated nomenclatural checklist of endemic vascular plants distributed in the Ukrainian Carpathians

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An annotated nomenclatural checklist of endemic vascular plants distributed in the Ukrainian Carpathians

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Abstract

Background

The nomenclatural checklist for vascular plants validated and processed as those that are (sub)endemic and present in the flora of the Ukrainian Carpathians is represented. This checklist is a part of work targeted on an inventory of endemics distributed in the Ukrainian Carpathians. It is mainly based on the analysis of primary sources (i.e., original protologues and monographic works), but also used the data provided in the recent online taxonomic aggregators such as GBIF, CoL, POWO, Euro+Med PlantBase, World Flora, and other. Over 7,000 specimens deposited in the leading Ukrainian herbaria during the work were also revised and used as a data source.

New information

The checklist provides revised nomenclature, including corrections on publication dates, rediscovered taxonomic protologues, corrected authorships, and revised taxonomic status for (sub)endemic (sub)species of vascular plants occurring in the Ukrainian Carpathians. It contains 1061 names, from which 78 species and subspecies have been accepted as valid and 983 species and infraspecific taxa provided as synonyms. It is completed with critical notes on the nomenclature of problematic taxa and brief annotations regarding their distribution in the Ukrainian Carpathians, indicating the endemism range and zoological categories for all analyzed (sub)species.

The current checklist is linked with GBIF taxonomic backbone, provides notes on detected issues, and primarily focuses on its update and correction but also points to detected issues in other popular taxonomic databases.

The new combination, *Sabulina pauciflora*, comb. nov. instead of *Minuartia pauciflora* is proposed to compile with a recent vision on the taxonomy of the genus *Sabulina*.

Keywords

GBIF, taxonomic databases, endemic flora, Ukrainian Carpathians, nomenclature, *Sabulina pauciflora*, comb. nov.

Introduction

The Ukrainian Carpathians are a part of the Eastern Carpathians located on the territory of four western regions (i.e., Lviv, Ivano-Frankivsk, Zakarpattia, and Chernivtsi) of Ukraine. These mountains stretch for over 280 km from the NW toward SE and cover about 24,000 km² (Kondracki 1989, Tassenkevich 2004, Novikov 2021). The floristic diversity of the Ukrainian Carpathians is represented by over 2500 species and subspecies of vascular plants. It comprises nearly 50% of the flora of the whole Carpathian Mountains range and almost 39% of the flora of Ukraine (Tassenkevich 2003, Chopyk and Fedoronchuk 2015). This is one of the most important centers of floristic diversity in Ukraine, having several confirmed glacial refugia and hosting many rare, relict, and endemic plant species (Malynovskiy et al. 2002, Kricsfalusy and Budnikov 2007, Mitka et al. 2014). Among them, many species are rare or have minimal distribution areas. Some authors report 125 or even more endemic plant taxa from the region, including stenoendemics and microtaxa (Stojko and Tassenkevich 1993, Tassenkevich 2003, Chorney 2006, Chorney 2011).

During our initial analysis, 70 endemic and subendemic taxa (species and subspecies) of vascular plants were selected as those taxonomically nonambiguous and confirmed present in the flora of the Ukrainian Carpathians (Novikoff and Hurdu 2015). Since that, the initial list has been critically revised based on newly available published sources and routine elaboration of herbarium material. As a result, nine taxa (i.e., *Aconitum firmum* subsp. *fussianum* Starmühl., *Leontodon kulczynskii* Popov, *Oxytropis carpatica* R. Uechtr., *Trisetum macrotrichum* Hack., *Carduus kernerii* Simk. subsp. *kernerii*, *Dactylorhiza maculata* (L.) Soó subsp. *schurii* (Klinge) Soó, *Dianthus carthusianorum* subsp. *tenuifolius* (Schur) Hegi, *Euphorbia carpatica* Wol., and *Festuca rupicola* Heuffel. subsp. *saxatilis* (Schur) Rauschert) were excluded from the initial list due to wider distribution not limited by the Carpathian region and/or due to problematic taxonomic interpretation and chorology. Some more taxa (e.g., *Astragalus australis* subsp. *krajinae* (Domin) Domin, *Carduus kernerii* Simk. subsp. *kernerii*, *Erysimum wahlenbergii* (Asch. & Engl.) Borbás, *Festuca psammophila* subsp. *dominii* (Krajina) P. Šmarda, and *Leucanthemopsis alpina* subsp. *tatrae* (Vierh.) Holub.) were considered as potential candidates for the current list but excluded from further processing due to their unclear taxonomy and/or chorology. *Viola jooi* Janka, which is a South-Eastern Carpathian endemic, has also been not included in the analysis due to its erroneous mention for the flora of the Ukrainian Carpathians (Sheliag-Sosonko et al. 1980, Chorney 2011). *Scabiosa columbaria* L. subsp. *pseudobanatica* (Schur) Jáv. & Csapody mentioned in the initial list (Novikoff and Hurdu 2015) as a valid

independent taxon was synonymized with *S. lucida* Vill. subsp. *barbata* Nyárády due to its unclear taxonomic status and chorology. Instead, 17 taxa and their verified synonyms were newly added, so the current list contains 78 accepted species from 51 genera, 29 families, 15 orders and two classes of vascular plants supported with 983 synonyms.

During the work with herbarium material, the need for a comprehensive taxonomic checklist appeared because many specimens were deposited under different names and had different taxonomic interpretations depending on the identification's author. Unfortunately, available online databases and published sources did not entirely fill the gap in nomenclature and synonymy and sometimes even provide controversial interpretations. To solve this issue, the checklist with complete nomenclatural citations was compiled based on comprehensive data analysis. I believe that this checklist will be useful for other scientists conducting taxonomic revisions of certain plant groups and it will fulfill the missing data in existing checklists and databases, especially those focused on biodiversity and conservation.

Dedication

To bright memory of my teacher and friend, Prof. Dr hab. Kazimierz Szczepanek from the Jagiellonian University

Materials and methods

The accepted taxa's names are typefaced in bold italicized font. The synonyms are typefaced in italicized font. The identity sign (\equiv) indicates homotypic synonyms. The equality sign (=) indicates the heterotypic regular synonyms. The N-dash sign (–) indicates partial heterotypic synonyms (synonyms *pro parte*), names in the interpretation of a certain author (synonyms *sensu*) or misapplied names. The names applied in the Ukrainian herbaria are marked by an asterisk. The additional information required to clarify or better understand the provided name is indicated in the square brackets [].

In some cases, the same name has been published twice in the same year by the same author(s) but in different works, or it was published first as nomen nudum and soon supported with comments and/or protologue. In such cases, extended nomenclature citation is provided with an indication of both such works delimited by the term 'et'. The term 'et' is applied to avoid confusion with an ampersand (&), which delimits different authors of the same taxon. In other words, in the nomenclature citation ampersand delimits authors, while the term 'et' delimits publications. For example, *Chrysanthemum rotundifolium* has been published by two authors, Franz Waldstein and Pál Kitaibel. Therefore its nomenclature citation is '*Chrysanthemum rotundifolium* Waldst. & Kit., Descr. Icon. Pl. Rar. Hung. III: 262, t. 236 (1812)'. The name *Thlaspi dacicum* subsp. *dacicum* has been published by János Heuffel twice in the same year but in two different journals – in the Oesterreichische botanische Zeitschrift and in the Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien. Hence, the provided nomenclature citation is '*Thlaspi dacicum* subsp. *dacicum* Heuff., Oesterr. Bot. Z. 8: 26

(1858) et Verh. K.K. Zool.-Bot. Ges. Wien 8 (Abh.): 61 (1858)'. The name *Silene transsilvanica* was first published by Philipp Schur in 1858 and later, in 1860, supported with details in the same journal Oesterreichische botanische Zeitschrift as nomen nudum. Hence, the provided nomenclature citation is '*Silene transsilvanica* Schur, Oesterr. Bot. Z. VIII: 22 (1858) [nom. nudum] et Oesterr. Bot. Z. X: 181 (1860)'.

The IUCN categories indicated for listed taxa considering the limits of Ukrainian flora and follow Onyshchenko et al. (2022). The national threat categories follow the Red Book of Ukraine (Didukh 2009).

Data resources

The present checklist has been compiled in 2017–2022 on the base of elaboration of local floras and such principal monographic works as Flora of USSR (Komarov 1934), Flora of UkrSSR (Bordzilovskiy 1938, Zerov 1950), Flora of European Part of USSR (Fedorov 1974, Tzvelev 1989), Flora of the Ukrainian Carpathians (Chopyk and Fedoronchuk 2015), Flora of Poland (Szafer and Raciborski 1919, Szafer 1921, Szafer and Pawłowski 1955, Pawłowski 1963, Pawłowski and Jasiewicz 1971, Jasiewicz 1980, Jasiewicz 1985), Flora of Romania (Săvulescu 1952), Flora of Slovakia (Futák 1966, Michalko 1984, Feráková 1993), Synopses of the flora of the Czech Republic (Opiz 1852, Domin 1935); Flora of Hungary (Jávorka 1924), Flora of Bucovina (Herbich 1859), Conspects of the flora of Galicia (Zawadski 1835, Błocki 1883a, Błocki 1883b, Błocki 1883c, Błocki 1883d, Błocki 1883e, Błocki 1883f, Błocki 1883g, Błocki 1883h, Błocki 1883i, Błocki 1884a, Błocki 1884b, Błocki 1884c, Błocki 1884d, Błocki 1884e, Błocki 1884f, Zapałowicz 1906b), Synopses of the Central European flora (Ascherson and Graebner 1896, Soó 1972), and Conspects of the flora of Transsilvania (Baumgarten 1816b, Fuss 1866, Schur 1866, Simonkai 1886). Such checklists as Czerepanov (1995), Mosyakin and Fedoronchuk (2015), Tassenkevich (1998), Mirek et al. (2020), and other specific publications listed directly in the text were also applied. BHL, Digital Library of the Royal Botanical Garden, REAL-J, Google Books, Internet Archive, Hungaricana, E-Periodica, Biblioteca Digitala BCU Cluj, Elektronikus Periodika Archivum and Knihovna Akademie věd ČR repositories have been used as a source of old printed materials containing the initial protologues of taxa.

Besides this, such databases as IPNI, CoL, Euro+Med PlantBase, POWO, World Plants, GBIF, WikiSpecies, WFO, Florenliste von Deutschland (Gefäßpflanzen), and Global Compositae Database were also intensively used to construct the initial taxonomic backbone of the present checklist and to verify listed names.

Finally, over 7,000 vouchers deposited in the leading Ukrainian herbaria (i.e., KW, KWHA, KWU, CHER, UU, LW, LWS, and LWKS – see Thiers (2022) for abbreviations) were processed. Additional information gathered from KRA and KRAM herbaria and Domin's Card Index deposited at the Institute of Botany of the SAS in Bratislava was also integrated into the checklist. The dataset of processed specimens has been published in GBIF (Novikov and Sup-Novikova 2022).

Below is the extended list of the analyzed endemic species and subspecies of vascular plants distributed in the Ukrainian Carpathians, with some critical remarks and full nomenclature citations. The brief alphabetic list compiled for quick navigation and routine work with herbarium material is provided in Suppl. material 1. The draft table version of this checklist (with some working Cyrillic annotations) used to create the current paper is deposited and freely available from Zenodo (Novikov 2023).

Endemic vascular plants distributed in the Ukrainian Carpathians

Class Liliopsida

Family Asparagaceae

Scilla kladnii Schur, Enum. Pl. Transsilv.: 668 (1866)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4VJH7>
- GBIF <https://www.gbif.org/species/2767548>

Nomenclature:

≡ *Scilla bifolia* var. *kladnii* (Schur) Nyman, Consp. Fl. Eur.: 730 (1882)

- GBIF <https://www.gbif.org/species/2767528>

= *Scilla alpina* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt III: 90 (1852)

- GBIF <https://www.gbif.org/species/2767537>

= *Scilla bifolia* subsp. *alpina* (Schur) Nyman, Consp. Fl. Eur.: 730 (1882)

- GBIF <https://www.gbif.org/species/2767527>

= *Scilla bifolia* var. *alpina* (Schur) C. Zahariadi in Nyár., Fl. Rep. Pop. Roman. XI: 314 (1966)

= *Scilla bifolia* β [unranked] *gracillima* Grecescu, Consp. Fl. Rom.: 565 (1898)

= *Scilla bifolia* subsp. *subtriphylla* (Schur) Domin, Preslia 13–15: 19 (1936)

- GBIF <https://www.gbif.org/species/6316610>

= *Scilla bifolia* var. *subtriphylla* (Schur) T. Simon, Ann. Biol. Univ. Debrecen. n.s., 1: 154 (1950)

- GBIF <https://www.gbif.org/species/5952322>

= *Scilla subtriphylla* Schur, Enum. Pl. Transsilv.: 668 (1866) *

- GBIF <https://www.gbif.org/species/2767536>

= *Scilla trifolia* Schur, Enum. Pl. Transsilv.: 668 (1866)

- GBIF <https://www.gbif.org/species/2767525>
- *Scilla bifolia* L., Sp. Pl. 1: 309 (1753) [p. p., tantum quod plantas ucrain. carpat.], non alior *
- GBIF <https://www.gbif.org/species/2767506>
- *Scilla bifolia* var. *nivalis* auct. fl. carpat, non Baker
- *Scilla bifolia* subsp. *nivalis* (Boiss.) K. Richt., Pl. Eur., 1: 220 (1890) sensu Fodor [non sensu orig.]
- *Scilla praecox* auct. fl. carpat, non Willd.

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: It was shown that *Scilla bifolia* L. is represented in the Ukrainian Carpathians by single subspecies – subsp. *subtriphyllo* (Schur) Domin, which is a synonym to *S. kladnii* (Kricsfalusy and Vajnagi 1994, Kolesnyk 2001, Kolesnyk 2003).

Family Iridaceae

Crocus banaticus J. Gay, Bull. Sci. Nat. Géol. (Bull. Férussac), XXV: 320 (1831), non Heuff.

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/ZKSS>
- GBIF <https://www.gbif.org/species/2747589>

Nomenclature:

= *Crocus herbertianus* Körn., Index Seminum (B, Berlinensis) 1854 (App.): 15 (1855)

- GBIF <https://www.gbif.org/species/2747686>

= *Crocus iridiflorus* Heuff. ex Rchb., Ic. Fl. Germ. IX: 10, figs. 802, 803 (1847)

- GBIF <https://www.gbif.org/species/8465903>

- GBIF <https://www.gbif.org/species/2747687>

= *Crocus nudiflorus* Schult., Oestr. Fl., ed. 2, 1: 101 (1814) [nom. illeg.], non Sm.

- GBIF <https://www.gbif.org/species/7380666>

= *Crocus speciosus* Baumg., Enum. Stirp. Transsilv. I: 60 (1816), non M. Bieb.

= *Crocus speciosus* var. *transsylvanicus* Hooker, Curt. Bot. Mag. 67: t. 3861 (1840–1841)

= *Crociris iridiflora* (Heuff. ex Rchb.) Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 4: 73 (1853)

- GBIF <https://www.gbif.org/species/2747450>

= *Crociris speciosa* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 4: 73 (1853)

• GBIF <https://www.gbif.org/species/2747453>

– *Crocus byzantinus* Ker Gawl., Bot. Mag. 28: t. 1111 (1808) [p. p.]

Conservation status: NT

Distribution: SE Carpathian subendemic

Notes: In Ukraine, this species occurs in Transcarpathia only and is protected by the Red Book of Ukraine as vulnerable (Mihály and Komendar 1993, Mygal 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021). In his paper Hooker (1840): t. 3861) indicated that *C. speciosus* var. *transsylvanicus* is a synonym of *C. speciosus* mentioned by Lindley (1839): t. 40). However, Lindley clearly stated that he considered *C. speciosus* sensu Baumg. (not sensu M. Bieb.) and also in the text mentioned these plants under the name *C. nudiflorus*. Both taxa, *C. speciosus* sensu Baumg. and *C. nudiflorus* are known synonyms of *C. banaticus*. Consequently, *C. speciosus* var. *transsylvanicus* is considered here as a synonym of *C. banaticus* too. Danciu and Golban (2009): p. 131) also mentioned *C. speciosus* Rochel, non alior as a synonym of *C. banaticus*. However, in the original work of Rochel (1828), there is no evidence of its synonymy with *C. banaticus*.

GBIF and POWO mistakenly indicate *Crociris iridiflora* Schur and *C. speciosa* Schur as synonyms for *Crocus salzmannii* J. Gay (• GBIF <https://www.gbif.org/species/2747449>) occurring in Spain, Morocco, and Algeria. Schur's species were described from the Carpathian region.

Family Orchidaceae

Gymnadenia carpatica (Zapat.) Teppner et E. Klein, Phytion (Horn) 38 (1): 221 (1998)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/3HP3F>
- GBIF <https://www.gbif.org/species/2840452>

Nomenclature:

≡ *Nigritella carpatica* (Zapat.) Teppner, E. Klein & Zag., Phytion (Horn) 34: 171 (1994) *

• GBIF <https://www.gbif.org/species/5323915>

≡ *Nigritella angustifolia* var. *carpatica* Zapat., Consp. Fl. Gallic. Crit. 1: 215 (1906)

• GBIF <https://www.gbif.org/species/5323917>

≡ *Nigritella nigra* subsp. *carpatica* (Zapat.) H. Baumann & R. Lorenz, J. Eur. Orch. 37: 717 (2005)

• GBIF <https://www.gbif.org/species/8213444>

≡ *Nigritella nigra* var. *carpatica* (Zapał.) Pawł., Bull. Int. Acad. Polon. Sci., Cl. Sci. Math., Sér. B 1, Bot. 1947: 85, 96 (1947)

• GBIF <https://www.gbif.org/species/5323916>

≡ *Nigritella rubra* f. *carpatica* (Zapał.) Soó, Repert. Sp. Nov. Regni Veg. 24: 33 (1927)

• GBIF <https://www.gbif.org/species/5950762>

– *Gymnadenia nigra* auct. fl. ucrain. carpat., non (L.) Rchb.fil.

– *Nigritella nigra* auct. fl. ucrain. carpat., non (L.) Rchb. *

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: The Red Book of Ukraine protects this species as obsolescent (Chorney 2009c, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

GBIF and POWO mistakenly provide *Nigritella rubra* f. *carpatica* (Zapał.) Soó among the synonyms to *Gymnadenia miniata* (Crantz) Hayek (<https://www.gbif.org/species/2840596>), which does not occur in the Carpathians.

Order Poales

Family Juncaceae

Luzula alpinopilosa subsp. *obscura* Fröhner, Preslia 40: 426 (1968)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5JFTM>
- GBIF <https://www.gbif.org/species/7870156>
- GBIF <https://www.gbif.org/species/8067039>

Nomenclature:

= *Luzula carpatica* Kitt. ex Kanitz, Linnaea 32: 327 (1863)

• GBIF <https://www.gbif.org/species/9058223>

• GBIF <https://www.gbif.org/species/7559197>

= *Luzula obscura* (Fröhner) Novikov, Byull. Moskovsk. Obshch. Isp. Priir., Otd. Biol. 95(6): 66 (1990)

• GBIF <https://www.gbif.org/species/4204323>

= *Luzula spadicea* var. *carpatica* (Kitt. ex Kanitz) Nyman, Consp. Fl. Eur., Suppl. 2: 314 (1890)

• GBIF <https://www.gbif.org/species/7629382>

= *Luzula spadicea* [unranked] *carpatica* (Kitt. ex Kanitz) Asch. & Graebn., Syn. Mitteleur. Fl. II (2): 513 (1904)

- GBIF <https://www.gbif.org/species/9651841>
= *Luzula spadicea* f. *carpatica* (Kitt. ex Kanitz) I. Grinț., Fl. Rep. Soc. Rom. XI: 594 (1966)
- GBIF <https://www.gbif.org/species/7942645>
= *Juncus spadiceus* [unranked] β *glabratus* Wahlbg., Fl. Carp. Princip.: 102 (1814), non Hoppe nec Host
– *Juncus alpinopilosus* Chaix, Hist. Pl. Dauphiné (Villars) 1: 318 (1786) [p. p., tantum quod plantas carpat.]
- GBIF <https://www.gbif.org/species/2700949>
– *Juncus spadiceus* All., Fl. Pedem. II: 216 (1785) [nom. invalid., p. p., tantum quod plantas carpat.], non alior
- GBIF <https://www.gbif.org/species/7420868>
– *Luzula alpinopilosa* (Chaix) Breistr., Bull. Soc. Sci. Dauph. 61: 609 (1947) [p. p., tantum quod plantas carpat.] *
- GBIF <https://www.gbif.org/species/2700948>
– *Luzula spadicea* (All.) Lam. & DC., Fl. Franc. [de Candolle & Lamarck], ed. 3. 3: 159 (1805) [p. p., tantum quod plantas carpat.] *
- GBIF <https://www.gbif.org/species/9449570>

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: There are three subspecies of *L. alpinopilosa* (Chaix) Breistr – subsp. *alpinopilosa* (distributed in W and Central Europe), subsp. *defflexa* (Kožuharov) Kirschner (native to S Europe), and subsp. *obscura* (the only subspecies occurring in the Carpathians). Chopyk and Fedoronchuk (2015): p. 544) considered *L. spadicea* (All.) DC. a synonym of *L. alpinopilosa* subsp. *obscura* and *L. alpinopilosa*. Similarly, Mirek et al. (2020): p. 112) considered *L. spadicea* a synonym of *L. alpinopilosa* without clarification of the subspecies. Considering the absence of other subspecies in the range, all plants from the Carpathian Mts. identified as *L. alpinopilosa* and *L. spadicea* should be regarded as belonging to *L. alpinopilosa* subsp. *obscura*.

Family Poaceae

***Alopecurus pratensis* subsp. *laguriformis* (Schur) Tzvelev, Novosti Sist. Vyssh. Rast. 8: 19 (1971)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FJ2M>
- GBIF <https://www.gbif.org/species/5672026>

Nomenclature:

≡ *Alopecurus laguriformis* Schur, Verh. Siebenb. Ver. Naturw. 1: (1850) 182 [nom. nudum] et Schur ex Gris., Iter. Hung: 362 (1852) *

• GBIF <https://www.gbif.org/species/5672208>

= *Alopecurus laguriformis* [unranked] a *abbreviatus* Schur, Oesterr. Bot. Z. IX: 13 (1859)

= *Alopecurus laguriformis* [unranked] b *elongatus* Schur, Oesterr. Bot. Z. IX: 13 (1859) et Enum. Pl. Transsilv.: 727 (1866)

• GBIF <https://www.gbif.org/species/5943426>

= *Alopecurus transsilvanicus* Schur, Enum. Pl. Transsilv.: 727 (1866)

• GBIF <https://www.gbif.org/species/5671949>

– *Alopecurus brachystachyus* auct. [e.g., Janka], non M. Bieb.

– *Colobachne gerardi* Schur, Enum. Pl. Transsilv.: 728 (1866), non Link.

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: Three to five subspecies of *A. pratensis* L. are recognized viz subsp. *pratensis* (cosmopolite), subsp. *alpestris* (Wahlenb.) Selander (occurs in N Eurasia), subsp. *laguriformis* (occurs in Romania and, probably, in Ukraine), subsp. *songaricus* (Fisch. & C.A. Mey.) N.V. Vlassova (questionable taxon declared for Asia), and subsp. *pseudonigricans* O. Schwarz. (dubious taxon mentioned for Germany and Czech republic). Presence of *A. pratensis* subsp. *laguriformis* is doubtful and requires confirmation (Chopyk and Fedoronchuk 2015).

Some taxonomic databases (e.g., POWO, WorldPlants, GBIF) mistakenly indicate *A. laguriformis* var. *elongatus* Schur and *A. transsilvanicus* Schur as synonyms of *A. brachystachyus* M. Bieb. (• GBIF <https://www.gbif.org/species/5672406> , • POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:387039-1>). Schur (1866): 727 indeed synonymized *A. transsilvanicus* with *A. laguriformis* var. *elongatus* distributed in Făgăraș Schur (1859) and Rodna Mts. Schur (1866). Schur (1866): 727–728) also pointed that Neilreich (1861): 29) believed that *A. transsilvanicus*, *A. colobachnoides* Trin. and *A. vlassovii* Trin are synonyms of *A. brachystachyus* distributed in the Carpathians (Făgăraș, Rodna, and Kronstadt [= Brașov]). However, Neilreich's taxonomic interpretation of mentioned taxa was mistaken because he relied on Janka (1858), who concluded that revised specimens of *A. laguriformis* are identical to the plants of *A. vlassovii* from the Altai and Baikal. In fact, this Janka's conclusion led to the synonymization of *A. laguriformis* with *A. vlassovii* and, consequently, with *A. colobachnoides*, which are morphologically different and geographically isolated taxa Tzvelev (1976). Such Janka's misinterpretation of *A. laguriformis* first outlined Simonkai (1886). Later, Tzvelev (1971), in his revision of the genus *Alopecurus* distinguished *A. brachystachyus* and *A. laguriformis* and downgraded the last one to the rank of subspecies *A. pratensis* subsp. *laguriformis*. Tzvelev (1974), Tzvelev (1976), Tzvelev

(1978) also pointed out that *A. pratensis* subsp. *laguriformis* is known exclusively from the Carpathians, while *A. brachystachyus* (\equiv *A. colobachnoides* and = *A. vlassovii*) occurs out of Europe far to the east, in Caucasus, Siberia, China, and Mongolia.

***Festuca amethystina* subsp. *orientalis* Krajina, Acta Bot. Bohem. 9: 214 (1930), non alior**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5HC6W>
- GBIF <https://www.gbif.org/species/5940986>

Nomenclature:

= *Festuca amethystina* subsp. *inarmata* (Schur) Krajina, Veröff. Geobot. Inst. Rübel Zürich 10: 29 (1933)

- GBIF <https://www.gbif.org/species/7651353>

= *Festuca amethystina* subsp. *amethystina* var. *amethystina* f. *marmarossica* (Zapał.) Beldie, Fl. Rep. Pop. Soc. XII: 557 (1972)

= *Festuca amethystina* subsp. *amethystina* var. *amethystina* f. *pauciflora* (A. Nyár. & Nyár.) Beldie, Fl. Rep. Soc. Rom. XII: 557 (1972)

= *Festuca amethystina* [unranked] a *marmarossica* Zapał., Consp. Fl. Galic. Crit. I: 65 (1906) [ortho. var.]

= *Festuca amethystina* [unranked] a *marmarossiensis* Zapał., Consp. Fl. Galic. Crit. III: 230 (1911)

= *Festuca amethystina* [unranked] a *marmarossiensis* f. *doamnensis* Zapał., Consp. Fl. Galic. Crit. III: 230 (1911)

= *Festuca amethystina* f. *pauciflora* A. Nyár. & Nyár., Studii Cercet. Biol. Ser. Bot. XVI (2): 109 (1964)

= *Festuca heterophylla* var. *inarmata* Schur ex Schur, Enum. Pl. Transsilv.: 792 (1866)

= *Festuca heterophylla* var. *setifolia* Schur ex Schur, Enum. Pl. Transsilv.: 792 (1866)

= *Festuca inarmata* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 177 (1859) *

- GBIF <https://www.gbif.org/species/4122548>

– *Festuca amethystina* L., Sp. Pl. 1: 74 (1753) [p. p., tantum quod plantas ucrain. carpat.] *

- GBIF <https://www.gbif.org/species/4113725>

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: Two to four subspecies of *Festuca amethystina* L. are recognized – subsp. *amethystina* (distributed almost in the whole of Europe), subsp. *orientalis* (= subsp.

inarmata, endemic to SE Carpathians; its presence in Balkans doubted by Kliment et al. (2016)), subsp. *kummeri* (Beck) Markgr.-Dann. (sporadically represented in S and Central Europe) and subsp. *ritschlii* (Hack.) Markgr.-Dann. (occurs in Germany, Czech Republic, Slovakia, Poland, and Romania – see Jakubowska-Gabara 1994, Indreica 2007, Kiedrzyński et al. 2015, Łazarski 2016, Rewicz et al. 2018). Euro+Med PlantBase (https://europlusmed.org/cdm_dataportal/taxon/d2e8901d-25eb-420d-8c69-3b4b93a622d9) also declares the presence of *F. amethystina* subsp. *ritschlii*, as well as subsp. *orientalis*, in Ukraine. Roleček et al. (2019) suggest presence of *F. amethystina* subsp. *orientalis* in the Ukrainian Carpathians instead of *F. amethystina* subsp. *orientalis*. However, at the moment, there is no evidence confirming the presence of these two subspecies in the flora of the Ukrainian Carpathians. Only *F. amethystina* subsp. *orientalis* is mentioned by Chopyk and Fedoronchuk (2015) and other Ukrainian authors (e.g., Bednarska 2007). On the other hand, Rewicz et al. (2018) recently stressed the applicability of morphological traits for the delimitation of infraspecific taxa within *F. amethystina*. They pointed out the need to provide a taxonomic revision of this species to clarify its biogeography.

***Festuca carpatica* F. Dietr., Nachtr. Vollst. Lex. Gärtn. 3: 333 (1817)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6HRFT>
- GBIF <https://www.gbif.org/species/4126785>

Nomenclature:

≡ *Amphigenes carpatica* (F. Dietr.) Janka, Linnaea 30(5): 619 (1859) & Janka ex Hack., Monogr. Fest. Eur.: 187 (1882)

• GBIF <https://www.gbif.org/species/7541275>

• GBIF <https://www.gbif.org/species/5671784>

≡ *Leucopoa carpatica* (F. Dietr.) H. Scholz, Willdenowia 35: 242 (2005)

• GBIF <https://www.gbif.org/species/4136004>

= *Amphigenes nutans* (Wahlenb.) Janka, Linnaea 30(5): 619 (1859)

• GBIF <https://www.gbif.org/species/5671783>

= *Festuca carpatica* var. *bucegica* (Krajina) Beldie, Fl. și veg. Bucegi: 330 (1967)

= *Festuca carpatica* var. *carpatica* f. *subflavescens* (Zapał.) Beldie, Fl. Rep. Soc. Rom. XII: 484 (1972)

= *Festuca carpatica* var. *carpatica* f. *umbrosa* Beldie, Fl. și veg. Bucegi: 329 (1967)

= *Festuca carpatica* f. *elatior* Krajina, Rozpr. Wydz. Mat.-Przyr. Akad. Umiejetn., Dział B, Nauki Biol. 9: 219 (1930)

• GBIF <https://www.gbif.org/species/8335125>

= *Festuca carpatica* f. *pseudolaxa* (Schur) Jáv., Magyar Bot. Lapok X: 266 (1911)

= *Festuca carpatica* f. *subflavescens* Zapal., Bull. Int. Acad. Sci. Cracovie, Cl. Sci. Math. 4B: 184. (1904)

• GBIF <https://www.gbif.org/species/7815522>

= *Festuca dimorpha* Janka, Oesterr. Bot. Z. 16: 101 (1866), non Guss.

• GBIF <https://www.gbif.org/species/8004377>

= *Festuca laxa* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 177 (1859), non Host

= *Festuca nutans* Wahlenb., Fl. Carpat. Princ.: 28 (1814), non Host nec Moench

• GBIF <https://www.gbif.org/species/7994264>

= *Festuca pseudolaxa* Schur, Oesterr. Bot. Z. 8: 22 (1858)

• GBIF <https://www.gbif.org/species/4116805>

= *Festuca pseudonutans* Schur, Enum. Pl. Transsilv. 796 (1866)

• GBIF <https://www.gbif.org/species/4116775>

= *Festuca pulchella* subsp. *scheuchzeriformis* var. *bucegica* Krajina, Veröff. Geobot. Inst. ETH Stiftung Rübel Zürich X: 52 (1933)

= *Festuca scheuchzeriformis* Schur, Enum. Pl. Transsilv. 796 (1866)

• GBIF <https://www.gbif.org/species/4145715>

Conservation status: NT

Distribution: Pancarpathian endemic

Notes: World Plants, Euro+Med Plant Base, GBIF, and POWO mistakenly consider *F. pseudonutans* Schur and *F. scheuchzeriformis* Schur as synonyms of *F. pulchella* Schrad. (• GBIF <https://www.gbif.org/species/4116614> , • POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:403363-1>). Schur (1866): p. 796, who described *F. scheuchzeriformis* and *F. pseudonutans*, later indicated them to be synonymic with *F. carpatica* and joined under the name *F. scheuchzeriformis*. Schur (1866) noted that this species occurs in the outskirts of Kronstadt (= Braşov). Merging of *F. scheuchzeriformis* with *F. pulchella*, perhaps, resulted from recombinations made by Krajina (1933): p. 51), who downgraded *F. scheuchzeriformis* to the rank of subspecies (i.e., *F. pulchella* subsp. *scheuchzeriformis* (Schur) Krajina) and delimited two varieties within this subspecies – var. *bucegica* Krajina (Muntii Bucegi, Transsylvania) and var. *plicata* (Huter. in Hackel) Krajina (S Austria and Yura, Switzerland). At the same time, Krajina (1933): p. 52) described second subspecies within *F. pulchella* – *F. pulchella* subsp. *eu-pulchella* Krajina, distributed in Italy, Austria, Slovenia, Croatia, and Germany. Hence, following Krajina (1933), only *F. pulchella* subsp. *scheuchzeriformis* var. *bucegica* occurs in the Carpathians. Therefore, only this variety corresponds to *F. scheuchzeriformis* in the sense of Schur (1866). Consequently, this variety corresponds to *Festuca carpatica*, endemic to the Carpathians (Kliment et al. 2016).

***Festuca porcii* Hack., Bot. Centralbl. 2(8): 407 (1881)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6HSGL>
- GBIF <https://www.gbif.org/species/4117145>

Nomenclature:

= *Festuca porcii* f. *hirsuta* (A. Nyár.) Beldie, Fl. Rep. Soc. Rom. XII: 524 (1972)

- GBIF <https://www.gbif.org/species/4117144>

= *Festuca porcii* var. *hirsuta* A. Nyár., Not. Bot. Cluj 2: 83 (1966)

- GBIF <https://www.gbif.org/species/6312934>

= *Festuca porcii* f. *longiaristata* Krajina, Veröff. Geobot. Inst. ETH Stiftung Rübel Zürich X: 32 (1933)

= *Festuca porcii* f. *vestita* (Hack.) Krajina, Veröff. Geobot. Inst. ETH Stiftung Rübel Zürich X: 31 (1933)

= *Festuca porcii* var. *vestita* Hack. ex Zapał., Consp. Fl. Galic. Crit. I: 67 (1906)

Conservation status: NT

Distribution: SE Carpathian endemic

Notes: A vulnerable species protected by the Red Book of Ukraine (Bednarska and Kagalo 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Festuca versicolor* subsp. *versicolor* Tausch, Flora 4(2): 559 (1821) et Tausch ex Kraj., Publ. Fac. Sc. Univ. Charles, Prague 106: 25 (1930), non J. Presl ex Kunth**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5HCKN>
- GBIF <https://www.gbif.org/species/6085148>

Nomenclature:

= *Festuca varia* f. *acuminata* Sagorski & Schneider, Fl. Centralkarp. II: 554 (1891), non (Gaudin) Bolzon

= *Festuca varia* [unranked] *giewontica* Zapał., Consp. Fl. Galic. Crit. I: 71 (1906)

= *Festuca varia* [unranked] *flavescens* Zapał., Consp. Fl. Galic. Crit. I: 70 (1906), non Gaudin

= *Festuca varia* subsp. *pumila* [unranked] *spiculis flavescentibus* Gaudin ex Hack. in Sagorski & Schneider, Fl. Centralkarp. II: 554 (1891)

= *Festuca varia* var. *scopariaeformis* Kotula, Rozmieszczenie roślin naczyniowych w Tatrach: 456 (1890)

- = *Festuca versicolor* var. *versicolor* f. *chrysantha* (Krajina) Beldie, Fl. Rep. Soc. Rom. XII: 491 (1972)
- = *Festuca versicolor* var. *versicolor* f. *debilis* (Krajina) Beldie, Fl. Rep. Soc. Rom. XII: 491 (1972)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *rodnensis* Krajina, Spisy Přír. Fak. Karlovy Univ.: 37 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *rodnensis* f. *minor* Krajina, Spisy Přír. Fak. Karlovy Univ.: 38 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *rodnensis* f. *typica* Krajina, Spisy Přír. Fak. Karlovy Univ.: 38 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *transsilvanica* Krajina, Spisy Přír. Fak. Karlovy Univ.: 38 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *transsilvanica* f. *Kotschyi* Krajina, Spisy Přír. Fak. Karlovy Univ.: 39 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *transsilvanica* f. *pallens* Krajina, Spisy Přír. Fak. Karlovy Univ.: 39 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *transsilvanica* f. *typica* Krajina, Spisy Přír. Fak. Karlovy Univ.: 39 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* Krajina, Spisy Přír. Fak. Karlovy Univ.: 31 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *chrysantha* Krajina, Spisy Přír. Fak. Karlovy Univ.: 32 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *curvala* Krajina, Spisy Přír. Fak. Karlovy Univ.: 32 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *debilis* Krajina, Spisy Přír. Fak. Karlovy Univ.: 33 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *giewontica* (Zapat.) Krajina, Spisy Přír. Fak. Karlovy Univ.: 33 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *glaucophylla* Krajina, Spisy Přír. Fak. Karlovy Univ.: 33 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *mutica* Krajina, Spisy Přír. Fak. Karlovy Univ.: 33 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *robustior* Krajina, Spisy Přír. Fak. Karlovy Univ.: 32 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *scopariaeformis* (Kotula) Krajina, Spisy Přír. Fak. Karlovy Univ.: 32 (1930)
- = *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *typica* Krajina, Spisy Přír. Fak. Karlovy Univ.: 32 (1930)

= *Festuca versicolor* subsp. *eu-versicolor* var. *genuina* subvar. *vulgaris* f. *zapalowiczii* Krajina, Spisy Přír. Fak. Karlovy Univ.: 33 (1930)

= *Festuca versicolor* var. *minor* (Schur) Krajina, Veröff. Geobot. Inst. ETH Stiftung Rübél Zürich X: 40 (1933)

= *Festuca versicolor* subsp. *pseudosulcata* Krajina, Spisy Přír. Fak. Karlovy Univ.: 43 (1930), non Drobow

– *Festuca varia* f. *pallidula* auct., non Hack.

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: Two to four subspecies are recognized within *F. versicolor* Tausch, including subsp. *versicolor* (occurs in the Carparpathians and scarcely in the Sudetes – Kliment 1999), subsp. *dominii* Krajina (endemic of the Rodna Mts. – Kliment et al. 2016), subsp. *pallidula* (Hack.) Markgr.-Dann. (endemic of the Austrian Alps occurring on the rocks and screes up to 1700 m a.s.l. – Šmarda 2008, Essl et al. 2009), and subsp. *brachystachys* (Hack.) Markgr.-Dann. (another endemic of the Austrian Alps occurring in the alpine habitats up to 2200 m a.s.l. – Essl et al. 2009).

Euro+Med Plant Base indicates the presence of *F. versicolor* subsp. *dominii* in Ukraine based on information received in 2003 during personal communication with B. Valdés (https://europlusmed.org/cdm_dataportal/taxon/0b134a8c-3aa4-4e34-bdd2-b82875b30957). However, no confirmed evidence of its presence in Ukraine has appeared since that. In the original description of *F. versicolor* subsp. *dominii*, Krajina (1930) mentioned the existence of this subspecies only in Rodna Mts. Šmarda et al. (2007) revised this subspecies as belonging to nonendemic *F. psammophila* subsp. *dominii* with distribution in Austria, Slovakia, the Czech Republic, and Poland. At the same time, Šmarda et al. (2007) considered specimens of *F. dominii* var. *margittai* Krajina belonging to *F. vaginata* Waldst. & Kit. ex Willd., which is distributed in Austria, Slovakia, Hungary, Romania, Bulgaria, and Croatia. Unfortunately, Šmarda et al. (2007) did not revise specimens from Ukraine. In Ukraine, the only discovered specimen of *F. dominii* var. *margittai* from the Szomotor village (Hungary) is deposited at the KW herbarium. Therefore, the presence of *F. versicolor* subsp. *dominii* in Ukraine remains unclear.

***Koeleria transsilvanica* Schur, Oesterr. Bot. Wochenbl. 7: 313 (1857), non Barth.**

- GBIF <https://www.gbif.org/species/4136486>

Nomenclature:

≡ *Koeleria cristata* [unranked] d) *transsilvanica* (Schur) K. Richt., Pl. Eur. 1: 75 (1890)

- GBIF <https://www.gbif.org/species/9550970>

- ≡ *Koeleria cristata* subsp. *ciliata* var. *transsilvanica* (Schur) Asch. & Graebn., Syn. Mitteleur. Fl. 2(1): 358 (1900)
- GBIF <https://www.gbif.org/species/9528021>
- ≡ *Koeleria gracilis* subsp. *transsilvanica* (Schur) Domin, Monographie d. Gattung Koeleria, Biblioth. Bot. 14(65): 239 (1907) et Flora Romaniae Exsiccatae
- GBIF <https://www.gbif.org/species/7496966>
- ≡ *Koeleria gracilis* var. *transsilvanica* (Schur) Jáv., Magyar Fl.: 87 (1925)
- ≡ *Koeleria macrantha* subsp. *transsilvanica* (Schur) Beldie, Fl. Rom. Det.: 342 (1977) [nom. illeg.]
- ≡ *Koeleria macrantha* subsp. *transsilvanica* (Schur) A. Nyár. (1965) [nom. nudum ?]
- CoL <https://www.catalogueoflife.org/data/taxon/5J7J2>
 - GBIF <https://www.gbif.org/species/9358421>
- = *Koeleria gracilis* f. *colorata* Domin, Biblioth. Bot. 65: 232 (1907)
- GBIF <https://www.gbif.org/species/4137722>
- = *Koeleria gracilis* var. *rohlena* Domin, Monographie d. Gattung Koeleria, Bibliotheca Botanica 65: 193 (1907)
- GBIF <https://www.gbif.org/species/5946130>
- = *Koeleria gracilis* var. *typica* Domin, Biblioth. Bot. 65: 230 (1907)
- = *Koeleria tenuipes* (Schur) Ujhelyi, Ann. Hist.-Nat. Mus. Natl. Hung. 57: 191 (1965)
- GBIF <https://www.gbif.org/species/4136561>
- = *Koeleria transsilvanica* subsp. *tenuipes* (Schur) Soó, Acta Bot. Acad. Sci. Hung. 17 (1–2): 122 (1972)
- GBIF <https://www.gbif.org/species/4136485>
- = *Koeleria transsilvanica* var. *tenuipes* (Schur) Domin, Magyar Bot. Lapok 3: 259 (1904)
- GBIF <https://www.gbif.org/species/6313425>
- = *Koeleria transsilvanica* var. *tenuipes* f. *discolor* Degen, Magyar. Bot. Lap. 3: 259 (1904) et Bibl. Bot. 65: 240 (1907)
- = *Koeleria transsilvanica* [unranked] a *tenuipes alpestris* Schur, Enum. Pl. Transsilv.: 750 (1866)
- = *Koeleria transsilvanica* [unranked] b *tenuipes alpestris* Schur, Oesterr. Bot. Wochenbl. 7: 313 (1857)
- *Koeleria gracilis* var. *colorata* (Heuff.) Domin [ex herb.], non alior
- *Koeleria gracilis* Pers., Syn. Pl. [Persoon] 1: 97 (1805) [p. p., ex herb.], non Guss.
- GBIF <https://www.gbif.org/species/2705920>

- *Koeleria cristata* var. *glabra* Kotschy [ex herb., nom. nudum], non alior.
- *Koeleria cristata* [unranked] *foliis vaginisque glabris* Andrä [ex herb., nom. nudum]
- *Koeleria setacea* DC. sensu Nyman, Consp. Fl. Eur.: 816 (1878–1882)

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: Deyl (1934), Deyl (1940) indicated this species for Petros Mt. in the Ukrainian part of the Maramures Mts. However, there are neither recent field confirmations (Kricsfalusy and Budnikov 2007, Kobiv et al. 2017) nor regarding herbarium vouchers discovered during my investigations. Therefore, the presence of this species in the flora of the Ukrainian Carpathians is questionable.

GBIF and POWO consider *K. tenuipes* (Schur) Ujhelyi and its homotypic derivatives as synonyms for *K. macrantha* subsp. *macrantha* (• GBIF <https://www.gbif.org/species/7262109>, • POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:77188152-1>). However, Ujhelyi (1965): pp. 191–193 indicated that this species occurs exclusively in Transsilvania and South Carpathians (Făgăraș Mts.). Ujhelyi (1965) noted that *K. tenuipes* differs from *K. transsilvanica* by generally larger sizes, larger leaves, bigger and loose panicles, and larger spikelet parts but similar by lack of stomata in the costal zone of the juvenile leaves and ciliate auriculae of the sheaths. Moreover, mentioned databases confuse the authorship of the epithet '*tenuipes*'. Ujhelyi (1965) pointed out that it was Schur who first applied this epithet in 1857 while Domin applied it only in 1903 when he described *Koeleria transsilvanica* var. *tenuipes* f. *hirsuta* (Ujhelyi re-identified Domin's plants as *Koeleria eriostachya* Pancic).

***Poa carpatica* subsp. *carpatica* (V. Jirásek) Bernátová, Májovský, Kliment & Topercer, *Biologia (Bratislava), Sect. Bot.* 61(4): 389-390 (2006)**

Nomenclature:

≡ *Poa carpatica* (V. Jirásek) Chopik, Visokogirna Fl. Ukrain'sk. Karpat 174 (1976)

• CoL <https://www.catalogueoflife.org/data/taxon/4KLGZ>

• GBIF <https://www.gbif.org/species/4137163>

≡ *Poa nemoralis* subsp. *carpatica* V. Jirásek, Veda Prir. 15: 207 (1934) *

• GBIF <https://www.gbif.org/species/6313736>

≡ *Poa nemoralis* subsp. *nemoralis* var. *carpatica* (V. Jirásek) Soó, Acta Bot. Acad. Sci. Hung. 17(1–2): 118 (1972)

• GBIF <https://www.gbif.org/species/4116723>

= *Poa balfourii* f. *carpatica* Zapal., Spraw. Komis. Fizjogr. 39: 33 (1906)

= *Poa nemoralis* subsp. *carpatica* f. *minoriformis* V. Jirásek, Věda Přír. 15: 208 (1934)

– *Poa balfourii* auct. fl. ucrain. carpat., non Pam. *

– *Poa janczewskii* Zapał., Spraw. Komis. Fizjogr. 39: 34 (1906) [p. p. minor, tantum quod plantas ucrain. carpat., alp. et subalp. altitud. solum]

• GBIF <https://www.gbif.org/species/4120046>

– *Poa nemoralis* subsp. *montana* auct., non (Gaudin) Chrtek & V. Jirásek

– *Poa nemoralis* var. *montana* auct. fl. ucrain. carpat., non Gaudin *

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: Two subspecies of *P. carpatica* (V. Jirásek) Chopik are recognized: subsp. *carpatica* (endemic to the Western and Eastern Carpathians – Bernátová et al. 2006) and subsp. *supramontana* Bernátová, Májovský, Kliment & Topercer (narrow endemic to the Veľká Fatra Mts and Krivánska Malá Fatra Mts – Bernátová et al. 2006).

Chopyk and Fedoronchuk (2015): p. 567) mention *P. janczewskii* Zapał. for rocks and screes in subalpine and alpine belts of the Ukrainian Carpathians, with synonyms *P. balfourii* auct., non Parn. and *P. nemoralis* subsp. *carpatica* V. Jirásek. At the same time, POWO, WorldPlants, and Tzvelev (1974), Tzvelev (1976), Tzvelev (1995) suggest that *P. janczewskii* is a synonym not for *P. carpatica* but for *P. palustris* L. Chopyk and Fedoronchuk (2015): p. 568) also independently recognize *P. palustris*, but indicate that it is widely distributed in the forests (i.e., lower altitudes), flooded meadows and other wet habitats of the Ukrainian Carpathians. Hence, Chopyk and Fedoronchuk (2015) delimit *P. janczewskii* and *P. palustris* by morphology and habitat preferences. In the original protologue of *P. janczewskii*, Zapałowicz (1906a): pp. 34–35) wrote that it occurs on wet places at the beginning of the river Chorniy Cheremosh near Mt. Koman in Chyvchyny Mts. at 1700 m altitude together with *P. nemoralis* var. *pocutica* Zapał. Simultaneously, Zapałowicz (1906a): p. 33) delimited *P. balfourii* f. *carpatica* Zapał. from the alpine and subalpine habitats. Hence, Zapałowicz's original description of *P. janczewskii* is close to *P. palustris*, while his consideration of *P. balfourii* is consonant with *P. carpatica*. Nevertheless, in the Ukrainian Carpathians, many specimens from the higher altitudes are incorrectly identified as *P. janczewskii* and, therefore, I include this name as a *pro parte* synonym of *P. carpatica* subsp. *carpatica*.

***Poa granitica* subsp. *disparillis* (Nyár.) Nyár., Rev. Roumaine Biol., Sér. Bot. 10: 355 (1965)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5KJCS>
- GBIF <https://www.gbif.org/species/5947645>

Nomenclature:

≡ *Poa cenisia* subsp. *granitica* var. *disparillis* (Nyár.) Nyár. & Borza, Consp. Fl. Roman. 1: 16 (1947)

≡ *Poa granitica* var. *disparillis* Nyár., Veröff. Geobot. Inst. Rübel Zürich 10: 173 (1933)

- = *Poa breazensis* Nyár., Veröff. Geobot. Inst. Rübel Zürich X: 173 (1933)
- GBIF <https://www.gbif.org/species/4136051>
- = *Poa cenisia* [unranked] b *pietrosuana* Zapał., Consp. Fl. Gallic. Crit. VI: 227 (1911) *
- GBIF <https://www.gbif.org/species/5947644>
- = *Poa deyllii* Chrtek & V. Jirásek, Feddes Repert. Spec. Nov. Regni Veg. 69: 177 (1964) *
- GBIF <https://www.gbif.org/species/4124344>
- = *Poa deyllii* var. *deyllii* f. *breazensis* (Nyár.) Ghișa & Beldie, Fl. Rep. Soc. Rom. XII: 399 (1972)
- GBIF <https://www.gbif.org/species/4124343>
- = *Poa deyllii* var. *deyllii* f. *pietrosuana* (Zapał.) Ghișa & Beldie, Fl. Rep. Soc. Rom. XII: 399 (1972)
- GBIF <https://www.gbif.org/species/4139450>
- = *Poa deyllii* var. *deyllii* f. *subgranitica* (Nyár.) Ghișa & Beldie, Fl. Rep. Soc. Rom. XII: 399 (1972)
- GBIF <https://www.gbif.org/species/4139468>
- = *Poa deyllii* subsp. *retezatensis* (A. Nyár.) Chrtek, Oesterr. Bot. Z., 115 (4–5): 424 (1968)
- GBIF <https://www.gbif.org/species/7826350>
- = *Poa deyllii* var. *retezatensis* (A. Nyár.) Ghișa & Beldie, Fl. Rep. Soc. Rom. XII: 399 (1972)
- GBIF <https://www.gbif.org/species/4139461>
- = *Poa granitica* var. *disparillis* f. *pietrosuana* (Zapał.) Nyár., Veröff. Geobot. Inst. Rübel Zürich 10: 173 (1933)
- = *Poa granitica* subsp. *disparillis* var. *subgranitica* Nyár., Rev. Roumaine Biol., Sér. Bot. 10: 355 (1965)
- GBIF <https://www.gbif.org/species/5947643>
- = *Poa granitica* subsp. *retezatensis* A. Nyár., Rev. Roumaine Biol., Sér. Bot. 10: 356 (1965)
- GBIF <https://www.gbif.org/species/5947642>
- = *Poa granitica* subsp. *subcarpatica* (V. Jirásek) Fodor, Flora Zakarpattia: 182 (1974)
- = *Poa granitica* var. *subcarpatica* V. Jirásek, Vest. Král. České Spol. Náuk 1935: 11 (1936)
- = *Poa granitica* var. *typica* Nyár., Veröff. Geobot. Inst. Rübel Zürich X: 171–172 (1933)
- = *Poa granitica* var. *typica* f. *deminuta* Nyár., Veröff. Geobot. Inst. Rübel Zürich X: 172 (1933)

– *Poa cenisia* All., Auct. Fl. Pedem.: 40 (1789) [p. p., tantum quod plantas ucrain. carpat.]

• GBIF <https://www.gbif.org/species/4137228>

– *Poa granitica* Braun-Blanq., Arch. Bot., Caen, Bull. III: 46 (1929) [p. p., tantum quod plantas ucrain. carpat.] *

• GBIF <https://www.gbif.org/species/4121637>

– *Poa granitica* subsp. *granitica* sensu Tassenkevich, non sensu orig. [ex herb. LWS] *

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: Two to three subspecies are recognized within *P. granitica* Braun-Blanq. viz subsp. *granitica* (distributed in the Polish and Slovakian Carpathians), subsp. *disparillis* (= *P. deyllii* Chrtek & V. Jirásek; distributed in the Polish, Ukrainian, and Romanian Carpathians), and subsp. *retezatensis* Nyár. (distributed exclusively in the Romanian Carpathians and is sometimes considered a synonym of *P. granitica* subsp. *disparillis*).

POWO indicates the presence of both subspecies (i.e., subsp. *granitica* and subsp. *disparillis*) in the Ukrainian Carpathians. These two subspecies seem to be phylogenetically close but considered to be geographically isolated (Chrtek and Jirásek 1964, Filipaş et al. 2009, Băcilă et al. 2010). However, there are no confirmed occurrences of *P. granitica* subsp. *granitica* from the Ukrainian Carpathians yet. Only a few specimens in LWS were identified by L. Tassenkevich as *P. granitica* subsp. *granitica*, but she also indicated on the label that it is a synonym of *P. deyllii*, what confuses.

***Poa pannonica* subsp. *scabra* (Asch.) Soó, Acta Bot. Acad. Sci. Hung. 5: 483 (1959)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7KNSV>
- GBIF <https://www.gbif.org/species/4932360>

Nomenclature:

≡ *Poa pratensis* var. *scabra* (Asch.) Asch. & Graebn., Syn. Mitteleur. Fl. 2(1): 414 (1900) [nom. invalid.]

• GBIF <https://www.gbif.org/species/5947834>

≡ *Poa scabra* Asch., Verh. K.K. Zool.-Bot. Ges. Wien XVII: 568 (1867) [nom. inval.], non Ehrh.

• GBIF <https://www.gbif.org/species/7933600>

≡ *Poa scabra* Kit. ex Steud., Nomencl. Bot. [Steudel], ed. 2. II: 362 et Linnaea, XXXII: 311 (1863) [nom. nudum], non Ehrh. *

• GBIF <https://www.gbif.org/species/8481689>

- GBIF <https://www.gbif.org/species/8162992>

≡ *Poa sterilis* subsp. *eu-sterilis* var. *scabra* (Asch.) Asch. & Graebn., Syn. Mitteleur. Fl. 2(1): 414 (1900), non alior

= *Poa perscabra* Holub, Folia Geobot. Phytotax. 18(2): 204 (1983)

- GBIF <https://www.gbif.org/species/4114872>

= *Poa sterilis* Kerner, Oesterr. Bot. Z. XIV: 85 (1864), non M. Bieb.

Conservation status: NE

Distribution: Pancarpathian subendemic

Notes: There are two subspecies of *P. pannonica* A. Kern. – subsp. *pannonica* (distributed in Serbia, Moldova, Hungary, Romania, Slovakia, and, probably, Ukraine) and subsp. *scabra* (distributed in Slovakia, Hungary, Romania, and, presumably, Ukraine). Both subspecies are mentioned for Ukraine in most online databases. However, reports of *P. pannonica* subsp. *pannonica* are instead related to *P. podolica* (Asch. & Graebn.) Blocki ex Zapal., which taxonomic status is unclear since it is considered a synonym of *P. versicolor* Bess. subsp. *versicolor* by Tzvelev (1976): 472) and Ghişa and Beldie (1972): 407). Regarding *P. pannonica* subsp. *scabra*, there is no recent evidence of its presence in the flora of the Ukrainian Carpathians (Chopyk and Fedoronchuk 2015, Kliment et al. 2016).

In online databases, the authorship of the epithet *scabra* is dedicated to Ascherson & Graebner (e.g., *P. pannonica* subsp. *scabra* (Asch. & Graebn.) Soó). This is not totally correct because it was Ascherson who applied the epithet *scabra*, alone and much earlier Ascherson (1867), and only later it reappeared in the synopsis of Ascherson and Graebner (1896). Moreover, IPNI (<https://www.ipni.org/n/77288290-1>) contains incorrect nomenclature citation *P. pratensis* var. *scabra* Asch. & Graebn., Syn. Mitteleur. Fl. 2(1): 414 (1900) that should be avoided. Ascherson and Graebner (1896) did not apply such a combination; instead, they used *P. sterilis* subsp. *eu-sterilis* var. *scabra*.

***Poa rehmannii* (Asch. & Graebn.) Woł., Fl. Polon. Exs., 10-11: Nr 1020 (1904)**

- GBIF <https://www.gbif.org/species/8323860>

Nomenclature:

≡ *Poa caesia* [unranked] d) *rehmannii* K. Richt., Pl. Europ. I: 83 (1890)

≡ *Poa nemoralis* subsp. *rehmannii* Asch. & Graebn., Syn. Mitteleur. Fl. 2(1): 412 (1900)

- GBIF <https://www.gbif.org/species/5947595>

= *Poa anceps* Rehmann, Spraw. Komis. Fizjogr. 7: 5 (1873), non G. Forst.

- GBIF <https://www.gbif.org/species/7789150>

– *Poa rehmannii* (Asch. & Graebn.) K. Richt., Pl. Europ. 1: 83 (1889) [nom. inval.]

• CoL <https://www.catalogueoflife.org/data/taxon/4KMN8>

• GBIF <https://www.gbif.org/species/4112622>

– *Poa rehmannii* Asch. & Gürke sensu Wol. [nom. confus., ex herb. LWS]

Conservation status: VU

Distribution: SE Carpathian endemic

Notes: A rare species with only a few known occurrences in the Ukrainian Carpathians (Chorney et al. 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

POWO (<https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:417893-1>), CoL (<https://www.catalogueoflife.org/data/taxon/4KMN8>) and GBIF (<https://www.gbif.org/species/4112622>) incorrectly provide nomenclature citation *P. rehmannii* (Asch. & Graebn.) K. Richt., Pl. Europ. I: 83 (1889). Richter (1889) did not apply such a name to the rank of species. Instead of this, he delimited unranked taxon within *P. caesia* Sm. Therefore, the correct citation should be *P. caesia* [unranked] d) *rehmanii* K. Richt., Pl. Europ. I: 83 (1890).

***Sesleria bielzii* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt I: 109 (1850) et IV: 84 (1853) non Schur, Enum. Pl. Transsilv.: 743 (1866)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4WZRV>
- GBIF <https://www.gbif.org/species/4119647>

Nomenclature:

≡ *Sesleria coeruleans* subsp. *bielzii* (Schur) Gergely & Beldie, Fl. Rep. Soc. Rom. XII: 223 (1972) *

• GBIF <https://www.gbif.org/species/4119544>

≡ *Sesleria rigida* [unranked] β *bielzii* (Schur) Heuff., Enum. Pl. Banat.: 227 (1858)

= *Sesleria caerulea* Janka, Linnaea XXX: 615 (1859), non Ard.

= *Sesleria capitata* Schur, Enum. Pl. Transsilv.: 743 (1866)

• GBIF <https://www.gbif.org/species/4119575>

= *Sesleria coeruleans* var. *borsae* Deyl, Opera Bot. Čechina III: 139 (1946)

• GBIF <https://www.gbif.org/species/5948416>

= *Sesleria coeruleans* f. *pseudorigida* (Schur) Beldie, Bul. Șt. Acad. R.P.R. II (5): 248 (1950)

= *Sesleria haynaldiana* [unranked] g *pseudorigida* Schur, Verh. K.K. Zool.-Bot. Ges. Wien VI: 209 (1856)

- GBIF <https://www.gbif.org/species/5948414>
= *Sesleria pseudorigida* Schur, Enum. Pl. Transsilv.: 745 (1866)
- GBIF <https://www.gbif.org/species/4118994>
= *Sesleria rigida* Griseb., Arch. Naturgesch. (Berlin) XXV: 361 (1852), non Heuff. ex Rchb.
= *Sesleria rigida* [unranked] a *capitata* Schur, Verh. K.K. Zool.-Bot. Ges. Wien VI: 201 (1856)
= *Sesleria rigida* [unranked] b *ovoidea* Schur, Verh. K.K. Zool.-Bot. Ges. Wien VI: 201 (1856)
– *Sesleria caerulea* Scap. sensu Rehman [nom. confus. ex herb. LWS] *
– *Sesleria coeruleans* Friv., Flora 19(2): 438 (1836) [p. p., tantum quod plantas ucrain. carpat.] *
- GBIF <https://www.gbif.org/species/4119531>

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: It is a problematic taxon with unclear chorology and phylogeny. Ambiguous interpretation of *S. bielzii* has been pointed out in the Flora of Romania (Gergely and Beldie 1972), where two subspecies of *S. coeruleans* Friv. are represented – subsp. *coeruleans* and subsp. *bielzii* (Schur) Gergely & Beldie. For both subspecies, *S. bielzii* has been indicated as a synonym with only difference in its consideration by Schur – *S. bielzii* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt I: 109 (1850) has been indicated as a synonym for *S. coeruleans* subsp. *bielzii* while *S. bielzii* Schur, Enum. Pl. Transsilv.: 743 (1866) has been indicated as a synonym for *S. coeruleans* subsp. *coeruleans*. Later, Chorney (2011) noted that *S. bielzii*, being in fact Carpatho-Balkan species, is erroneously considered endemic and referenced to Deyl (1980). Tzvelev (1976) and Chopyk and Fedoronchuk (2015) also considered *S. bielzii* a synonym of non-endemic *S. coeruleans*. On the other hand, Comănescu and Ștefănuț (2010) showed that these two species have similar distribution ranges; nevertheless, they treated these two species independently. Similarly, Lazarević et al. (2015) and Kuzmanović et al. (2015), Kuzmanović et al. (2017) conducted phylogenetic studies with *S. bielzii* considered an independent species within *Coeruleans* group.

***Sesleria heufleriana* subsp. *heufleriana* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 84 (1853) et Verh. Zool.-Bot. Ges. Wien VI: 203 (1856)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5L62R>
- GBIF <https://www.gbif.org/species/9445568>

Nomenclature:

- ≡ *Sesleria heufleriana* Błocki, Oesterr. Bot. Z. 39: 155 (1889) [nom. inval.]*
- = *Sesleria caerulea* [unranked] a *interrupta* Schur, Enum. Pl. Transsilv. 743 (1866)
- GBIF <https://www.gbif.org/species/5948424>
- = *Sesleria caerulea* [unranked] b *prorepens* Schur, Enum. Pl. Transsilv. 743 (1866)
- GBIF <https://www.gbif.org/species/5948423>
- = *Sesleria caerulea* [unranked] c *praelonga* Schur, Enum. Pl. Transsilv. 743 (1866)
- GBIF <https://www.gbif.org/species/4119322>
- = *Sesleria caerulea* var. *transilvanica* (Schur) Jáv., Magyar Fl. I: 84 (1924)
- = *Sesleria heufleriana* var. *digitata* Schur, Verh. Zool.-Bot. Ges. Wien VI: 204 (1856)
- = *Sesleria heufleriana* [unranked] a *praelonga* Schur, Enum. Pl. Transsilv.: 744 (1866)
- GBIF <https://www.gbif.org/species/5948422>
- = *Sesleria heufleriana* [unranked] b *digitata* Schur, Enum. Pl. Transsilv.: 744 (1866)
- = *Sesleria heufleriana* var. *polydactyla* Schur, Verh. Zool.-Bot. Ges. Wien VI: 204 (1856)
- = *Sesleria heufleriana* var. *elongata* Schur, Verh. Zool. -Bot. Ges. Wien VI: 204 (1856), non Host
- = *Sesleria heufleriana* f. *interrupta* (Schur) Soó, Acta Bot. Acad. Sci. Hung. 17(1–2): 119 (1972)
- GBIF <https://www.gbif.org/species/6312632>
- = *Sesleria heufleriana* f. *praelonga* (Schur) Gergely & Beldie, Fl. Rep. Soc. Rom. XII: 224 (1972)
- GBIF <https://www.gbif.org/species/6312633>
- = *Sesleria heufleriana* f. *prorepens* (Schur) Soó, Acta Bot. Acad. Sci. Hung. 17(1–2): 119 (1972)
- GBIF <https://www.gbif.org/species/6312631>
- = *Sesleria prorepens* Schur, Enum. Pl. Transsilv. 743 (1866)
- = *Sesleria transilvanica* Schur, Verh. Zool.-Bot. Vereins Wien 6: 205 (1856) et Enum. Pl. Transsilv. 745 (1866)
- GBIF <https://www.gbif.org/species/4118752>
- *Sesleria caerulea* Baumg., Enum. Stirp. Transsilv. III: 228, Nr 2013 (1816) [p. p.], non (L.) Ard.
- *Sesleria heufleriana* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 84 (1853) et Verh. Zool.-Bot. Ges. Wien VI: 203 (1856) [p. p., tantum quod plantas fl. ucrain.]
- *Sesleria nitida* Heldr. ex Nyman, Consp. Fl. Eur. 4: 796 (1882) [nom. illeg.], non Ten.

- GBIF <https://www.gbif.org/species/8701233>
 - GBIF <https://www.gbif.org/species/7576396>
- *Sesleria robusta* Pávai, Oesterr. Bot. Z. 12: 214 (1862) [nom. nudum], non Schott et al.
- GBIF <https://www.gbif.org/species/7612267>

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: Two subspecies of *S. heufleriana* Schur are delimited – subsp. *heufleriana* (occurs in Slovakia, Hungary, Romania, and Ukraine) and subsp. *hungarica* (Ujhelyi) Deyl (occurs in Hungary and Slovakia). In the Ukrainian Carpathians only *S. heufleriana* subsp. *heufleriana* is present. Therefore, all reports of *S. heufleriana* from the Ukrainian Carpathians should be considered to belong to this subspecies.

In the WorldPlants database, *S. transilvanica* Schur is erroneously indicated among synonyms of *S. sadleriana* Janka. However, Janka (1882): pp. 309–310 and Janka (1884): pp. 28–29) found plants described as *S. sadleriana* different from those occurring in Transsilvania. Ascherson and Graebner (1898): p. 320) pointed to peculiar Janka's treatment of *S. heufleriana* and, at the same time, synonymized *S. sadleriana* Janka and *S. heufleriana* Janka non Schur under the name *S. budensis* (Borbás) Asch. & Graebn. Hence, *S. sadleriana* Janka and *S. heufleriana* Janka, non Schur are not synonyms of *S. transilvanica*.

***Trisetum fuscum* (Kit. ex Schult.) Schult. in Roem. et Schult., Syst. Veg. 2: 664 (1817)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/592G5>
- GBIF <https://www.gbif.org/species/4112815>

Nomenclature:

≡ *Avena fusca* Kit. ex Schult., Oestr. Fl. ed. 2, I: 268 (1814), non Ard.

- GBIF <https://www.gbif.org/species/7744598>
- GBIF <https://www.gbif.org/species/9231558>

≡ *Trisetum flavescens* subsp. *fuscum* (Kit. ex Schult.) Hack., Magyar Bot. Lap. 2: 111 (1903)

- GBIF <https://www.gbif.org/species/12096667>

≡ *Trisetaria fusca* (Kit. ex Schult.) Banfi & Soldano, Atti Soc. Ital. Sci. Nat. Mus. Civico Storia Nat. Milano 135 (2): 383 (1996)

- GBIF <https://www.gbif.org/species/4114671>

= *Avena ciliaris* Kit. ex Schult., Oestr. Fl. ed. 2, I: 268 (1814)

- GBIF <https://www.gbif.org/species/4154500>
- GBIF <https://www.gbif.org/species/7470202>
= *Trisetum ciliare* (Kit. ex Schult.) Domin, Preslia XIII–XV: 41 (1935) *
- GBIF <https://www.gbif.org/species/4113396>
= *Trisetum flavescens* [unranked] c *carpathicum* f. *majus* Zapal., Rozpr. Wydz. Mat.-Przyp. Akad. Umiejtn., Dzial B, Nauki Biol. 4: 108 (1904) et Consp. Fl. Galic. Crit. I: 35 (1906), non Asch. & Graebn.
- GBIF <https://www.gbif.org/species/12027006>
= *Trisetum transylvanicum* Steud., Syn. Pl. Glumac. 1(3): 226 (1855), non Schur
- GBIF <https://www.gbif.org/species/4109945>
= *Trisetum varium* var. *violaceum* Schur, Oesterr. Bot. Z. 10: 75 (1860)
- GBIF <https://www.gbif.org/species/7770879>
 - *Avena carpatica* auct. [e.g., Błocki ex herb.], non Host
 - *Trisetaria carpatica* auct. fl. carpat., non (Host) Baumg
 - *Trisetum carpathicum* auct., non (Host) Roem. & Schult. *
 - *Trisetum tenue* Baumg. ex Steud., Syn. Pl. Glumac. 1(3): 226 (1854) [nom. illeg.], non Leers
- GBIF <https://www.gbif.org/species/8461326>
- GBIF <https://www.gbif.org/species/8061303>

Conservation status: LC

Distribution: Pancarpathian endemic

Class Magnoliopsida

Order Apiales

Family Apiaceae

***Heracleum carpaticum* Porcius, Magyar Növénytani Lapok 2: 25 (1878) et Fl. Naséud.: 144 (1881)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/3KXBD>
- GBIF <https://www.gbif.org/species/7358227>

Nomenclature:

≡ *Heracleum sphondylium* subsp. *carpaticum* (Porcius) Soó, Acta Bot. Acad. Sci. Hung. 23(3–4): 380 (1978)

- GBIF <https://www.gbif.org/species/3642778>
 - = *Heracleum alpinum* Baumg., Enum. Stirp. Transsilv. I: 215 (1816), non alior
 - = *Heracleum carpaticum* f. *alpinum* (Baumg.) Borza, Consp. Fl. Rom. II: 204 (1949)
 - = *Heracleum carpaticum* f. *palmatifidum* Jáv., Magyar Bot. Lapok IX: 162 (1910)
 - = *Heracleum carpaticum* f. *porcii* Pax, Grundz. Pfl. Karp. II: 70 (1908)
 - = *Heracleum carpaticum* f. *typicum* Nyár & Todor, Fl. Rep. Pop. Roman. VI: 625, 660 (1958)
 - *Heracleum carpaticum* var. *aconitifolium* M. Pop. & Chrshan. [ex herb., nom. inval.], non Woronow
 - *Heracleum pollinianum* Nyman, Consp. Fl. Eur. 2: 289 (1879) [p. p., tantum quod plantas ucrain. carpat.], non Bertol.
 - *Heracleum simplicifolium* Herb. ex Nyman sensu Borza
 - *Heracleum simplicifolium* Herb., Fl. Bucov.: 302 (1859) et Herb. ex Nyman, Consp. Fl. Eur. 2: 289 (1879) [p. p., tantum quod plantas ucrain. carpat.]
- GBIF <https://www.gbif.org/species/8444536>
- GBIF <https://www.gbif.org/species/7724113>

Conservation status: NT

Distribution: SE Carpathian endemic

***Heracleum sphondylium* subsp. *transsilvanicum* (Schur) Brummitt, Feddes Repert. 79: 65 (1968)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5HNL9>
- GBIF <https://www.gbif.org/species/4928236>

Nomenclature:

- ≡ *Heracleum palmatum* subsp. *transsilvanicum* (Schur) Nyman, Consp. Fl. Eur. 2: 289 (1879)
 - GBIF <https://www.gbif.org/species/7497351>
- ≡ *Heracleum sphondylium* subsp. *transsilvanicum* (Schur) Thellung, Österr. Bot. Zeitschr. 73: 211 (1924) [nom. invalid.]
- ≡ *Heracleum transsilvanicum* Schur, Enum. Pl. Transsilv. 267 (1866)
 - GBIF <https://www.gbif.org/species/3642249>
 - = *Heracleum alpinum* subsp. *palmatum* (Baumg.) Briquet, Candollea 2: 16 (1924)
 - GBIF <https://www.gbif.org/species/8099962>
 - = *Heracleum palmatum* Baumg., Enum. Stirp. Transsilv. I: 215 (1816) *
 - GBIF <https://www.gbif.org/species/3628887>

= *Pastinaca palmata* (Baumg.) Calest., Webbia 1: 245 (1905)

• GBIF <https://www.gbif.org/species/5538686>

– *Heracleum simplicifolium* Herb., Fl. Bucov.: 302 (1859) et Herb. ex Nyman, Consp. Fl. Eur. 2: 289 (1879) [p. p., tantum quod plantas ucrain. carpat.]

• GBIF <https://www.gbif.org/species/8444536>

• GBIF <https://www.gbif.org/species/7724113>

Conservation status: NT

Distribution: SE Carpathian endemic

Notes: *Heracleum sphondylium* L. comprises nearly 15 subspecies in the world flora. However, only three subspecies (i.e., *H. sphondylium* subsp. *sphondylium*, *H. sphondylium* subsp. *sibiricum* (L.) Simonk., and *H. sphondylium* subsp. *transsilvanicum*) occurs in Ukraine and, in particular, are present in the flora of the Ukrainian Carpathians. From these three subspecies, only *H. sphondylium* subsp. *transsilvanicum* is endemic, and the other two subspecies have narrow distribution ranges.

Order Asterales

Family Asteraceae

***Achillea oxyloba* subsp. *schurii* (Sch. Bip.) Heimerl, Denkschr. Kaiserl. Akad. Wiss., Wien. Math.-Naturwiss. Kl. 48: 137 (1884)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FD98>
- GBIF <https://www.gbif.org/species/4215221>

Nomenclature:

≡ *Achillea schurii* Sch. Bip., Österr. Bot. Wochenbl. 6: 300 (1856) *

• GBIF <https://www.gbif.org/species/4214718>

≡ *Anthemis schurii* Heimerl, Denkschr. Acad. Wien XLVIII: 137 (1884)

• GBIF <https://www.gbif.org/species/3120193>

≡ *Anthemis tenuifolia* (Schur) Schur., Verh. Siebenb. Ver. Naturw. 2: 171 (1851) [nom. inval.], non *Achillea tenuifolia* Lam.

• GBIF <https://www.gbif.org/species/4240009>

≡ *Parmica tenuifolia* (Schur) Schur, Enum. Pl. Transsilv.: 327 (1866), non *Achillea tenuifolia* Lam. *

• GBIF <https://www.gbif.org/species/4215545>

= *Achillea atrata* Baumg., Enum. Stirp. Transsilv. III: 141 (1816), non L.

= *Achillea dacica* Simonk., Termesz. Füzet. 10: 181 (1886) et Enum. Fl. Transsilv.: 317 (1886)

• GBIF <https://www.gbif.org/species/3120195>

= *Achillea schurii* var. *dacica* (Simonk.) Prodan & Nyár., Fl. Rep. Pop. Roman. IX: 369 (1964)

= *Achillea schurii* f. *pleiocephala* Bommüller, Mitt. Thüringischen Bot. Vereins XXX: 56 (1913)

= *Achillea schurii* var. *polycephala* (Schur) Prodan & Nyár., Fl. Rep. Pop. Roman. IX: 369 (1964)

= *Anthemis alpina* Baumg., Enum. Stirp. Transsilv. III: 145 (1816), non alior

= *Anthemis caespitosa* Herbich, Flora XL: 509 (1857)

• GBIF <https://www.gbif.org/species/4242092>

= *Anthemis oxyloba* Schur, Enum. Pl. Transsilv.: 884 (1866), non *Achillea oxyloba* (DC.) Sch. Bip.

• GBIF <https://www.gbif.org/species/3120196>

= *Anthemis pseudo-atrata* Schur ex Schur, Enum. Pl. Transsilv.: 327 (1866)

• GBIF <https://www.gbif.org/species/4240513>

= *Ptarmica oxyloba* Schur, Enum. Pl. Transsilv.: 327 (1866), non DC., non *Achillea oxyloba* (DC.) Sch. Bip.

= *Ptarmica pseudo-atrata* Schur ex Schur, Enum. Pl. Transsilv.: 327 (1866)

• GBIF <https://www.gbif.org/species/4215659>

= *Ptarmica tenuifolia* [unranked] b *polycephala* Schur, Enum. Pl. Transsilv.: 327 (1866)

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: Sometimes *A. oxyloba* subsp. *schurii* is confused with *A. tenuifolia* Schur, which is an independent species. Despite of LC status given to it by Onyshchenko et al. (2022), *Ptarmica tenuifolia* (= *A. oxyloba* subsp. *schurii*) is considered a rare species by Zyman and Chorney (2009) and was recently approved for inclusion in the new edition of the Red Book of Ukraine (Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Antennaria carpatica* subsp. *carpatica* (Wahlenb.) Hook. in Bluff et Fingerh., Comp. Fl. German. 2: 348 (1825)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FN57>
- GBIF <https://www.gbif.org/species/7222270>

Nomenclature:

- ≡ *Antennaria carpatica* (Wahlenb.) Hook., Fl. Bor.-Amer. 1(suppl.): 329 (1834)
- GBIF <https://www.gbif.org/species/8243354>
- ≡ *Antennaria carpatica* (Wahlenb.) Hook. in Bluff & Fingerh., Comp. Fl. German. 2: 348 (1825)
- GBIF <https://www.gbif.org/species/7847414>
- ≡ *Antennaria carpatica* (Wahlenb.) R. Br., Trans. Linn. Soc. London 12: 123 (1818) [nom. inval.]*
- GBIF <https://www.gbif.org/species/8252547>
- ≡ *Antennaria carpatica* (Wahlenb.) Trautv., Acta Horti Petropolitani VI (1): 24 (1879)
- ≡ *Chamaezelum carpaticum* (Wahlenb.) Link, Handbuch Erkennung nutz. häufigsten vorkomm. Gewächse 1: 719 (1829)
- GBIF <https://www.gbif.org/species/3088158>
- ≡ *Gnaphalium carpathicum* Wahlenb., Fl. Carpat. Princ.: 258, tab. III, 260 (1814) et Fl. Suec., ed. 2, 2: 535 (1833)
- GBIF <https://www.gbif.org/species/5697227>
- = *Gnaphalium wahlenbergii* Sieber ex Steud., Nomencl. Bot., ed. 2. 1: 696 (1841)
- GBIF <https://www.gbif.org/species/5385621>
- *Antennaria alpina* Ledeb., Fl. Ross. II, 2: 612 (1845–1846) [p. p., tantum quod plantas ucrain. carpat.], non (L.) Gaertn.
- *Antennaria alpina* auct. fl. carpat. [e.g., Baumg.; Schur], non (L.) Gaertn.
- *Gnaphalium alpinum* Willd., Sp. Pl., ed. 4 3(3): 1883 (1803), non L. [p.p., tantum quod plantas ucrain. carpat.]
- GBIF <https://www.gbif.org/species/7859021>

Conservation status: EN

Distribution: Pancarpathian endemic

Notes: *Antennaria carpatica* subsp. *carpatica* is listed in the Red Book of Ukraine as a rare taxon (Zyman and Bulakh 2009). However, its threat status recently has been increased to an 'obsolescent' level (Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

There are two commonly recognized subspecies of *A. carpatica* (Wahlenb.) Bluff & Fingerh. – subsp. *carpatica* and subsp. *helvetica* (Chrtek & Pouzar) Chrtek & Pouzar. Only *A. carpatica* subsp. *carpatica* occurs in Carpathians, while *A. carpatica* subsp. *helvetica* present in the Alps. Chrtek and Pouzar (1985) also described *A. carpatica* subsp. *amphilanata* Chrtek & Pouzar occurring in Alps and Pyrenees, but it was later synonymized with *A. carpatica* subsp. *helvetica* (Greuter 2006). Worth to note that

many collectors and authors out of Carpathians under the name *A. carpatica* considered exactly *A. carpatica* subsp. *helvetica*.

Moreover, there is a close species, *A. lanata* Chrtek & Pouzar (= *A. carpatica* var. *lanata* Hook., = *A. carpatica* var. *laestadiana* Trautv., = *A. villifera* Boris.), which occurs not only in Eurasia but also in North America. Another close species, *A. lanatula* Chrtek & Pouzar, occurs exclusively in SW of North America.

***Centaurea marmarosiensis* (Jáv.) Czerep., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR. 20: 395 (1960)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/S6XN>
- GBIF <https://www.gbif.org/species/4251406>
- GBIF <https://www.gbif.org/species/3089524>

Nomenclature:

≡ *Centaurea mollis* subsp. *marmarosiensis* (Jáv.) Soó, Acta Bot. Acad. Sci. Hung. 13: 309 (1967)

- GBIF <https://www.gbif.org/species/6450873>

- GBIF <https://www.gbif.org/species/10972838>

- GBIF <https://www.gbif.org/species/6293888>

≡ *Centaurea mollis* f. *marmarosiensis* Jáv., Magyar Fl. III: 1170 (1925)

- GBIF <https://www.gbif.org/species/6076144>

≡ *Centaurea montana* subsp. *marmarosiensis* (Jáv.) Soják, Čas. Nár. Mus., Odd. Přír. 140(3–4): 131 (1972)

- GBIF <https://www.gbif.org/species/9594652>

≡ *Centaurea montana* subsp. *mollis* var. *typica* f. *marmarosiensis* (Jáv.) Dostál, Acta Bot. Bohem. X: 69 (1931)

≡ *Cyanus marmarosiensis* (Jáv.) Dostál, Folia Mus. Rerum Nat. Bohemiae Occid., Bot. 21: 14 (1984)

- GBIF <https://www.gbif.org/species/9145130>

≡ *Cyanus montanus* subsp. *marmarosiensis* (Jáv.) Soják, Čas. Nár. Mus., Odd. Přír. 140 (3–4): 131 (1972)

≡ *Cyanus mollis* subsp. *marmarosiensis* (Jáv.) Soó [nom. et. des. invalid]

- GBIF <https://www.gbif.org/species/9700012>

= *Centaurea mollis* f. *ramosa* Czákó in Jáv., Magyar Fl. III: 1170 (1925), non *Centaurea ramosa* (Gugler) Hayek

= *Centaurea montana* subsp. *mollis* var. *ramosa* (Czákó) Dostál, Acta Bot. Bohem. X: 69 (1931), non *Centaurea ramosa* (Gugler) Hayek

Conservation status: LC

Distribution: SE Carpathian endemic

***Centaurea phrygia* subsp. *carpatica* (Porcius) Dostál, Bot. J. Linn. Soc. 71(3): 207 (1976)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7JJJ4>
- GBIF <https://www.gbif.org/species/4249913>

Nomenclature:

≡ *Centaurea carpatica* (Porcius) Porcius, Magyar Növényt. Lapok 9: 128 (1885) *

- GBIF <https://www.gbif.org/species/8237713>

≡ *Centaurea carpatica* (Porcius) Wagn., Cent. Hung.: 157 (1910)

≡ *Centaurea carpatica* (Porcius) Formánek, Österr. Bot. Zeit. 37: 153 (1887)

- GBIF <https://www.gbif.org/species/3097081>

≡ *Centaurea plumosa* var. *carpatica* Porcius, Enum. Pl. Phan. Naszód.: 34 (1878) [nom. inval.]

- GBIF <https://www.gbif.org/species/6076567>

≡ *Centaurea pseudophrygia* f. *intercedens* subf. *carpatica* (Porcius) Gugler, Ann. Hist.-Nat. Musei Nat. Hungarici 6: 92 (1908)

≡ *Jacea carpatica* (Porcius) Soják, Čas. Nár. Mus., Odd. Přír. 140(3–4): 132 (1972)

- GBIF <https://www.gbif.org/species/5695987>

≡ *Jacea phrygia* subsp. *carpatica* (Porcius) Dostál, Folia Mus. Rer. Nat. Bohem. Occid., Bot. 21: 14 (1984)

- GBIF <https://www.gbif.org/species/5695845>

= *Centaurea plumosa* β [unranked] *polycephala* Porcius, Enum. Pl. Phanerogam. Distr. Quondam Naszódiensis: 34 (1878)

= *Centaurea rodnensis* Simonk., Enum. Fl. Transsilv.: 620 (1886) *

- GBIF <https://www.gbif.org/species/7223238>

– *Centaurea montana* subsp. *mollis* (Waldst. & Kit.) Gugler, Ann. Hist.-Nat. Mus. Natl. Hung. VI: 104 (1907) sensu Katina

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: *Centaurea phrygia* L. includes 14–15 subspecies. Only three subspecies (i.e., subsp. *phrygia*, subsp. *carpatica*, and subsp. *melanocalathia* (Borbás ex Czakó) Dostál) occur from this number in the Ukrainian Carpathians. Even though the last subspecies has a limited distribution and is considered Pancarpathian endemic (

Tasenkevich 2003), Carpathian subendemic (Kricsfalusy and Budnikov 2002), or Carpatho-Balcanic taxon (Dostál 1989, Malynovskiy et al. 2002), it has a hybridogenous origin (Koutecký et al. 2012, Kliment et al. 2016) and therefore is not considered here. Hence, the only endemic representative in the Ukrainian Carpathians from the *C. phrygia* complex is *C. phrygia* subsp. *carpatica*.

The Euro+Med PlantBase (Greuter 2006) among the homotypic synonyms of *C. phrygia* subsp. *carpatica* provides *C. plumosa* var. *carpatica* Porcius that is supposed to be published on p. 34 of “Enumeratio plantarum phanerogamicarum districtus quondam naszódiensis” (Porcius 1878). Similarly, this combination is also mentioned by Prodan and Nyárády (1964): p. 890 and Czerepanov (1994): p. 276). However, in this publication, there is no such combination published. Instead, Porcius (1878): p. 34) published a new combination *C. plumosa* β *polycephala* Porcius, and only indicated *C. carpatica* as its synonym. I was also unable to detect where *C. plumosa* var. *carpatica* could be published by Porcius. Most probably, the combination *C. plumosa* var. *carpatica* Porcius arose mistakenly due to misinterpretation of this name by other authors and has never been published by Porcius.

***Doronicum carpaticum* (Griseb. et Schenk) Nyman, Syll. Fl. Eur. suppl.: 1 (1865)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/37DTP>
- GBIF <https://www.gbif.org/species/3142985>

Nomenclature:

≡ *Doronicum grandiflorum* subsp. *carpaticum* (Griseb. & A. Schenk) Rouy, Rev. Bot. Syst. Geogr. Bot. 1: 53 (1903)

- GBIF <https://www.gbif.org/species/4231483>

≡ *Doronicum columnae* subsp. *carpaticum* (Griseb. & Schenk) Sóo, Scripta Bot. Mus. Transsilv. 3(3–5): 10 (1944)

- GBIF <https://www.gbif.org/species/10954590>

≡ *Aronicum carpaticum* (Griseb. & Schenk) Schur, Bot. Rundr.: 71 (1853) et Verh. Siebenb. Ver. Naturw. 10: 137 (1859) *

- GBIF <https://www.gbif.org/species/3142986>

≡ *Aronicum carpathicum* (Griseb. & Schenk) Schur, Bot. Rundr.: 71 (1853) et Verh. Siebenb. Ver. Naturw. 10: 137 (1859) [ortho. var.] *

- GBIF <https://www.gbif.org/species/3142986>

≡ *Aronicum carpathicum* (Griseb. & Schenk) Fuss, Progr. Gymn. Hermannstadt: 12 (1854)

≡ *Aronicum scorpioides* var. *carpaticum* Griseb. & Schenk in Wieg., Arch. Naturgesch. 18(1): 342 (1852)

- GBIF <https://www.gbif.org/species/4232202>
- = *Aronicum barcense* Simonk., Enum. Fl. Transsilv.: 322 (1886)
- GBIF <https://www.gbif.org/species/3142997>
- = *Aronicum carpaticum* [unranked] a *polyphyllum* Schur, Enum. Pl. Transsilv.: 341 (1866)
- = *Aronicum latifolium* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt II: 171 (1837) [nom. nudum], non Rchb.
- = *Doronicum carpaticum* var. *barcense* (Simonk.) Borbás, Termr. Füz XIX: 219 (1896)
- = *Doronicum cordatum* var. *asperum* Borbás, Österr. Bot. Zeit. XXVIII: 311 (1878)
- = *Doronicum pardalianches* Heuff., Enum. Pl. Banat. Temes.: 137 (1858), non alior
- = *Doronicum orientale* Kotschy, Verh. Zool.-Bot. Vereins Wien III: 140 (1853) [nom. nudum], non alior
- *Arnica scorpioides* Baumg., Enum. Stirp. Transsilv. 3: 135 (1816), non alior

Conservation status: LC

Distribution: SE Carpathian endemic

***Leucanthemum rotundifolium* (Waldst. et Kit. in Willd.) DC., Prodr. VI: 46 (1838), non Opiz**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6PRWY>
- GBIF <https://www.gbif.org/species/5400956>

Nomenclature:

- ≡ *Leucanthemum rotundifolium* (Waldst. & Kit. in Willd.) Baumg., Enum. Stirp. Transsilv. 3: 107 (1817)
- ≡ *Leucanthemum rotundifolium* (Waldst. & Kit. in Willd.) Schur, Enum. Pl. Transsilv. 339 (1866)
- GBIF <https://www.gbif.org/species/8333000>
- ≡ *Chrysanthemum rotundifolium* Waldst. & Kit. in Willd., Sp. Pl. III(3): 2144 (1803) *
- ≡ *Chrysanthemum rotundifolium* Waldst. & Kit., Descr. Icon. Pl. Rar. Hung. III: 262, t. 236 (1812)
- GBIF <https://www.gbif.org/species/3134081>
- ≡ *Matricaria rotundifolia* (Waldst. & Kit. in Willd.) Poir., Encycl. [J. Lamarck et al.] Suppl. 3.: 608 (1814)
- GBIF <https://www.gbif.org/species/4232595>
- ≡ *Tanacetum rotundifolium* (Waldst. & Kit. in Willd.) Simonk., Enum. Fl. Transsilv.: 313 (1886), non DC. *

- GBIF <https://www.gbif.org/species/8145981>
= *Leucanthemum waldsteinii* (Sch. Bip.) Pouzar, Preslia 47: 158 (1975)
- GBIF <https://www.gbif.org/species/5400957>
= *Pyrethrum waldsteinii* (Sch. Bip.) Janka, Bot. Jahresber. (Just) 4: 1062 (1878)
- GBIF <https://www.gbif.org/species/5692501>
= *Tanacetum waldsteinii* Sch. Bip., Tanaceteen: 35 (1844)
- GBIF <https://www.gbif.org/species/3134080>
= *Tanacetum waldsteinii* var. *ramosum* Ilse & Fritze, Verh. K.K. Zool.-Bot. Ges. Wien XX: 488 (1870)
– *Chrysanthemum montanum* Csató, Erd. Muz. IV: 82 (1868), non alior

Conservation status: LC

Distribution: Pancarpathian subendemic

***Saussurea porcii* Degen, Magyar Bot. Lapok 3: 811 (1904)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6Y3D4>
- GBIF <https://www.gbif.org/species/5404478>

Nomenclature:

- = *Saussurea alata* Porcius & Czetz, Transilvania 15–16: 118 (1881), non DC.
- = *Saussurea serrata* Janka, Oesterr. Bot. Z. VIII: 200 (1858), non DC.
- *Saussurea parviflora* auct., non (Poir.) DC.
- *Saussurea serrata* auct. Transsilv., non DC.

Conservation status: NT

Distribution: SE Carpathian endemic

Notes: This species is listed as rare in the last edition and has been recently approved for the new edition of the Red Book of Ukraine (Chorney and Danylyk 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Scorzonerooides pseudotaraxaci* (Schur) Holub, Folia Geobot. Phytotax. 12: 307 (1977)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4VXKC>
- GBIF <https://www.gbif.org/species/3133494>

Nomenclature:

- ≡ *Leontodon pseudotaraxaci* Schur, Enum. Pl. Transsilv.: 357 (1866) *

- GBIF <https://www.gbif.org/species/3133496>
- ≡ *Leontodon montanus* subsp. *pseudotaraxaci* (Schur) Finch & P.D. Sell, Bot. J. Linn. Soc. 71: 242 (1976)
- GBIF <https://www.gbif.org/species/4253414>
- ≡ *Scorzoneroides montana* (Lam.) J. Holub subsp. *pseudotaraxaci* [des. et nom. inval.]
- GBIF <https://www.gbif.org/species/6082260>
- = *Leontodon clavatus* Sagorski & Schneider, Fl. Centralkarpath. 2: 254 (1890–1891) *
- GBIF <https://www.gbif.org/species/3133495>
- = *Leontodon medius* Simonk., Enum. Fl. Transsilv.: 352 (1886) et Bot. Centralbl. 49: 268 (1892), non *Apargia media* Host
- GBIF <https://www.gbif.org/species/4253470>
- = *Leontodon taraxaci* var. *tatricus* Kotov, Distr. pl. in mont. Tatr.: 356 (1890)
- = *Leontodon tatricis* Woł., Fl. Pol. Exs.: 545 (1897)
- = *Leontodon tatricus* (Kotov) Woł., Fl. Pol. Exs.: 545 (1897)
- *Apargia aurea* Baumg., Enum. Stirp. Transsilv. III: 16 (1816), non (L.) F.W. Schmidt, non *Leontodon aureum* L., nec *Ceracium aureum* Schur.
- *Leontodon taraxaci* auct., non (L.) Loisel.

Conservation status: DD

Distribution: Pancarpathian endemic

***Senecio hercynicus* subsp. *ucranicus* (Hodálová) Greuter, Willdenowia 33: 247 (2003)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5L5FB>
- GBIF <https://www.gbif.org/species/4232604>

Nomenclature:

≡ *Senecio ucranicus* Hodálová, Folia Geobot. 34 (3): 334 (1999), non Besser.

- GBIF <https://www.gbif.org/species/4215062>

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: *Senecio ucranicus* Hodálová has been described for montane and subalpine belts. In the Ukrainian Carpathians, it is mentioned for Chyvychny and Chornohora Mts. (Hodálová 1999) . Unfortunately I did not find any specimen of *S. ucranicus* (≡ *S. hercynicus* subsp. *ucranicus*) in the Ukrainian herbaria.

Family Campanulaceae

Campanula carpatica Jacq., Hort. Bot. Vindob. 1: 22, tab. 57 (1770), non *C. carpatha* Halácsy

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5X8SY>
- GBIF <https://www.gbif.org/species/5410826>

Nomenclature:

≡ *Campanula cordifolia* Vuk., Linnaea 26(3): 328 (1854), non K. Koch

- GBIF <https://www.gbif.org/species/7407199>

≡ *Neocodon carpaticus* (Jacq.) Kolak. & Serdyuk, Zаметki Sist. Geogr. Rast. 40: 28 (1984)

- GBIF <https://www.gbif.org/species/3163033>

= *Campanula carpatica* [unranked] *alba* (Voss) J.R. Duncan & V.C. Davies, Nursery Cat. (Duncan & Davies) 1925: XVII (1925)

= *Campanula carpatica* var. *brachyphylla* Morariu, Fl. Rep. Pop. Roman. IX: 76, 960 (1964)

= *Campanula carpatica* var. *dasycarpa* Schur, Enum. Pl. Transsilv.: 440 (1866)

- GBIF <https://www.gbif.org/species/5410828>

= *Campanula carpatica* f. *dasycarpa* (Schur) Tacik, Fl. Polska 12: 84 (1971)

- GBIF <https://www.gbif.org/species/7665609>

= *Campanula carpatica* var. *grandiflora* Schur, Enum. Pl. Transsilv.: 440 (1866)

- GBIF <https://www.gbif.org/species/5410836>

= *Campanula carpatica* var. *hemisphaerica* Schur, Enum. Pl. Transsilv. 440 (1866)

- GBIF <https://www.gbif.org/species/5410841>

= *Campanula carpatica* var. *hendersonii* (C. Wolley Dod) W.T. Mill., Cycl. Amer. Hort. 231 (1900) [hort.]

- GBIF <https://www.gbif.org/species/5410837>

= *Campanula carpatica* var. *longifolia* Morariu, Fl. Rep. Pop. Roman. IX: 79, 960 (1964)

= *Campanula carpatica* var. *longifolia* f. *parviflora* Săvul. ex Morariu & Nyár., Fl. Rep. Pop. Roman. IX: 79, 960 (1964)

= *Campanula carpatica* var. *oreophila* Schur, Enum. Pl. Transsilv.: 440 (1866)

- GBIF <https://www.gbif.org/species/5410842>

= *Campanula carpatica* [unranked] *pelviformis* Froebel ex André, Rev. Hort. (Paris) 54: 509 (1882)

- GBIF <https://www.gbif.org/species/5410840>
- = *Campanula carpatica* [unranked] *riverslea* J.R. Duncan & V.C. Davies, Nursery Cat. (Duncan & Davies) 1925: XVII (1925)
- = *Campanula carpatica* var. *porrecta* Morariu, Fl. Rep. Pop. Roman. IX: 76, 959 (1964)
- = *Campanula carpatica* var. *porrecta* f. *minor* Morariu, Fl. Rep. Pop. Roman. IX: 76, 959 (1964)
- = *Campanula carpatica* var. *schuriana* Săvul. ex Morariu & Nyár., Fl. Rep. Pop. Roman. IX: 76, 960 (1964)
- = *Campanula carpatica* var. *subdasycarpa* Morariu & Nyár., Fl. Rep. Pop. Roman. IX: 79, 960 (1964)
- = *Campanula carpatica* [unranked] b *subpilosa* Schur, Enum. Pl. Transsilv.: 440 (1866)
- GBIF <https://www.gbif.org/species/5410838>
- = *Campanula carpatica* Jacq. f. *subpilosa* (Schur) Tacik, Fl. Polska 12: 84 (1971)
- GBIF <https://www.gbif.org/species/8353661>
- = *Campanula carpatica* subsp. *turbinata* (Schott, Nyman & Kotschy) Nyman, Consp. Fl. Eur. 482 (1879)
- GBIF <https://www.gbif.org/species/5410830>
- = *Campanula carpatica* var. *turbinata* (Schott, Nyman & Kotschy) Fuss, Fl. Transsilv. Exc.: 420 (1866)
- = *Campanula carpatica* var. *turbinata* (Schott, Nyman & Kotschy) Nichols, Garden (London, 1871–1927) 45: 171 (1893)
- GBIF <https://www.gbif.org/species/11989529>
- GBIF <https://www.gbif.org/species/168085137>
- = *Campanula carpatica* var. *turbinata* f. *rotundata* Morariu, Fl. Rep. Pop. Roman. IX: 79, 960 (1964)
- = *Campanula carpatica* var. *tomentosa* Kotschy, Verh. Zool.-Bot. Ges. Wien III: 140 (1853)
- = *Campanula carpatica* Baumg. ex Schur, Enum. Pl. Transsilv.: 440 (1866) [nom. inval.]
- = *Campanula carpatica* L. ex Schur, Enum. Pl. Transsilv.: 440 (1866) [nom. inval.]
- = *Campanula dasycarpa* Schur, Enum. Pl. Transsilv.: 440 (1866) [nom. illeg.]
- GBIF <https://www.gbif.org/species/7907817>
- = *Campanula oreophila* Schur ex Schur, Enum. Pl. Transsilv.: 441 (1866)
- GBIF <https://www.gbif.org/species/5410835>
- = *Campanula pseudocarpatica* Schur, Enum. Pl. Transsilv.: 441 (1866)
- GBIF <https://www.gbif.org/species/5604956>

- = *Campanula reniformis* Schur, Enum. Pl. Transsilv.: 440 (1866)
- GBIF <https://www.gbif.org/species/5604927>
- = *Campanula turbinata* Schott, Nyman & Kotschy, Analect. Bot.: 14 (1854)
- GBIF <https://www.gbif.org/species/5410839>
- = *Campanula turbinata* f. *alba* Voss, Vilm. Blumengärtn. ed. 3, 1: 570 (1894)
- GBIF <https://www.gbif.org/species/5410827>
- = *Campanula turbinata* f. *lilacina* Voss, Vilm. Blumengärtn. ed. 3, 1: 570 (1894)
- GBIF <https://www.gbif.org/species/5410832>
- = *Campanula turbinata* f. *pelviformis* (Froebel ex André) Voss, Vilm. Blumengärtn. ed. 3, 1: 570 (1894)
- GBIF <https://www.gbif.org/species/5410833>
- GBIF <https://www.gbif.org/species/7407199>
- *Campanula fergusonii* A.M. Ferguson, Rev. Hort. 76: 557 (1904)
- GBIF <https://www.gbif.org/species/11265590>
- *Campanula hendersonii* C. Wolley Dod, Gard. Chron. n.s., 18: 502 (1882) [hort.]
- GBIF <https://www.gbif.org/species/12053643>

Conservation status: NT

Distribution: Pancarpathian endemic

Notes: This rare species is listed in the last edition (Kagalo and Sytschak 2009a) and has been approved for the new edition (Ministry of Environmental Protection and Natural Resources of Ukraine 2021) of the Red Book of Ukraine with a status 'rare'.

***Campanula kladniana* (Schur) Witasek, Abh. Zool.-Bot. Ges. Wien 1: 39 (1902)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5X8SK>
- GBIF <https://www.gbif.org/species/5411315>

Nomenclature:

≡ *Campanula scheuchzeri* var. *kladniana* Schur, Enum. Pl. Transsilv.: 443 (1866)

- GBIF <https://www.gbif.org/species/5411313>

≡ *Campanula rotundifolia* subsp. *kladniana* (Schur) Tacik in Pawłowski & Jasiewicz, Fl. Polska 12: 76 (1971)

- GBIF <https://www.gbif.org/species/5411317>

Conservation status: NT

Distribution: SE Carpathian endemic

Notes: *Campanula kladniana* is a rare alpine species protected by the Red Book of Ukraine (Zyman et al. 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Campanula serrata* (Kit. ex Schult.) Hendrych, Taxon 11: 123 (1962)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/QBXQ>
- GBIF <https://www.gbif.org/species/5411208>

Nomenclature:

≡ *Thesium serratum* Kit. ex Schult., Oestr. Fl. ed. 2, 1: 437 (1814)

- GBIF <https://www.gbif.org/species/7614045>

- GBIF <https://www.gbif.org/species/7390879>

= *Campanula arcuata* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 138 (1859)

- GBIF <https://www.gbif.org/species/5411245>

= *Campanula hornungiana* Schur, Enum. Pl. Transsilv.: 442 (1866)

- GBIF <https://www.gbif.org/species/5411233>

= *Campanula kitaibeliana* Roem. & Schult., Syst. Veg., ed. 15 bis 5: 90 (1819)

- GBIF <https://www.gbif.org/species/5411255>

= *Campanula lanceolata* Neir., Aufzählung: 145 (1866), non alior

= *Campanula lanceolata* subsp. *arcuata* (Schur) Simonk., Enum. Fl. Transsilv.: 385 (1887)

- GBIF <https://www.gbif.org/species/5411228>

= *Campanula lanceolata* var. *hornungiana* (Schur) Simonk., Enum. Fl. Transsilv.: 385 (1887)

- GBIF <https://www.gbif.org/species/5411242>

= *Campanula microphylla* Kit. ex Schult., Oestr. Fl. ed. 2: 400 (1814), non Cav. [nom. illeg.]

- GBIF <https://www.gbif.org/species/5411213>

- GBIF <https://www.gbif.org/species/7654241>

= *Campanula napuligera* Schur, Enum. Pl. Transsilv.: 444 (1866) *

- GBIF <https://www.gbif.org/species/5411231>

= *Campanula napuligera* f. *albiflora* Raclaru, Analele Univ. București, Biol. Veg. 22: 125 (1973) [nom. nudum]

- GBIF <https://www.gbif.org/species/5604644>

- = *Campanula napuligera* var. *alpiniformis* Nyár. ex Morariu, Fl. Rep. Pop. Roman. 9: 96 (1964)
- GBIF <https://www.gbif.org/species/8554545>
 - GBIF <https://www.gbif.org/species/5411220>
- = *Campanula napuligera* f. *angustifrons* Hruby, Magyar Bot. Lapok 29: 217 (1930)
- GBIF <https://www.gbif.org/species/5411211>
- = *Campanula napuligera* subf. *angustifrons* Hruby, Magyar Bot. Lapok 29: 217 (1930)
- = *Campanula napuligera* f. *arcuata* (Schur) Hruby, Magyar Bot. Lapok 29: 217 (1930)
- GBIF <https://www.gbif.org/species/7645517>
- = *Campanula napuligera* var. *arcuata* (Schur) Morariu, Fl. Rep. Pop. Roman. 9: 93 (1964)
- GBIF <https://www.gbif.org/species/5411239>
- = *Campanula napuligera* subf. *brachyantha* Hruby, Magyar Bot. Lapok 29: 220 (1930)
- = *Campanula napuligera* var. *elatior* (Sävul.) Morariu, Fl. Rep. Pop. Roman. 9: 94 (1964)
- GBIF <https://www.gbif.org/species/5411225>
- = *Campanula napuligera* f. *genuina* Hruby, Magyar Bot. Lapok 29: 220 (1930)
- GBIF <https://www.gbif.org/species/5411250>
 - GBIF <https://www.gbif.org/species/12125287>
- = *Campanula napuligera* f. *glabrescens* Hruby, Magyar Bot. Lapok 29: 218 (1930)
- GBIF <https://www.gbif.org/species/5411229>
 - GBIF <https://www.gbif.org/species/12159969>
- = *Campanula napuligera* var. *hirsuta* Hruby, Magyar Bot. Lapok 29: 220 (1930)
- GBIF <https://www.gbif.org/species/5411217>
- = *Campanula napuligera* var. *hornungiana* (Schur) Morariu, Fl. Rep. Pop. Roman. 9: 97 (1964)
- GBIF <https://www.gbif.org/species/5411209>
- = *Campanula napuligera* f. *humilis* Hruby, Magyar Bot. Lapok 29: 218 (1930)
- GBIF <https://www.gbif.org/species/5411252>
- = *Campanula napuligera* f. *intermedia* Hruby, Magyar Bot. Lapok 29: 218 (1930)
- GBIF <https://www.gbif.org/species/5411243>
- = *Campanula napuligera* f. *latifrons* Hruby, Magyar Bot. Lapok, 29: 216 (1930)
- GBIF <https://www.gbif.org/species/5411221>
- = *Campanula napuligera* subf. *latifrons* Hruby, Magyar Bot. Lapok 29: 218 (1930)

- = *Campanula napuligera* f. *longisepala* (Nyár.) Morariu, Fl. Rep. Pop. Roman. 9: 101 (1964)
- GBIF <https://www.gbif.org/species/8397712>
- = *Campanula napuligera* var. *longisepala* Nyár., Bul. Grad. Bot. Univ. Cluj 14: 95 (1934)
- GBIF <https://www.gbif.org/species/5411212>
- = *Campanula napuligera* f. *minima* (Săvul.) Morariu, Fl. Rep. Pop. Roman. 9: 97 (1964)
- GBIF <https://www.gbif.org/species/5411247>
- = *Campanula napuligera* f. *parvula* Morariu, Fl. Rep. Pop. Roman. 9: 96 (1964)
- GBIF <https://www.gbif.org/species/5411240>
- = *Campanula napuligera* var. *redux* (Schott, Nyman & Kotschy) Hruby, Magyar Bot. Lapok 29: 219 (1930) [nom. inval.]
- GBIF <https://www.gbif.org/species/7690740>
- = *Campanula napuligera* var. *redux* (Schott, Nyman & Kotschy) Nyman, Consp. Fl. Eur.: 479 (1879)
- GBIF <https://www.gbif.org/species/5411226>
- = *Campanula napuligera* f. *robusta* Hruby, Magyar Bot. Lapok 29: 220 (1930)
- GBIF <https://www.gbif.org/species/5411216>
- = *Campanula napuligera* f. *savulescui* Morariu, Fl. Rep. Pop. Roman. 9: 97 (1964)
- GBIF <https://www.gbif.org/species/5411251>
- = *Campanula napuligera* var. *savulescui* Morariu, Fl. Rep. Pop. Roman. 9: 96 (1964)
- GBIF <https://www.gbif.org/species/7891049>
- = *Campanula napuligera* f. *scheuzeriformis* (Nyár.) Morariu, Fl. Rep. Pop. Roman. 9: 98. (1964)
- GBIF <https://www.gbif.org/species/5411230>
- = *Campanula napuligera* var. *scheuzeriformis* Nyár., Bul. Grad. Bot. Univ. Cluj 14: 95 (1934)
- GBIF <https://www.gbif.org/species/7733859>
- = *Campanula napuligera* f. *semiamplexicaulis* (Vladescu & Săvul.) Morariu, Fl. Rep. Pop. Roman. 9: 98 (1964)
- GBIF <https://www.gbif.org/species/5411218>
- = *Campanula napuligera* f. *setulosa* Morariu, Fl. Rep. Pop. Roman. 9: 97 (1964)
- GBIF <https://www.gbif.org/species/5411254>
- = *Campanula napuligera* f. *simplex* Hruby, Magyar Bot. Lapok 29: 216 (1930)
- GBIF <https://www.gbif.org/species/5411244>

- = *Campanula napuligera* f. *stenophylloides* Nyár., Bul. Grad. Bot. Univ. Cluj 14: 96 (1934)
- GBIF <https://www.gbif.org/species/5411232>
- = *Campanula napuligera* var. *stenophylloides* (Nyár.) Morariu, Fl. Rep. Pop. Roman. 9: 98 (1964)
- GBIF <https://www.gbif.org/species/7996662>
- = *Campanula napuligera* var. *stricta* Hruby, Magyar Bot. Lapok 29: 216 (1930)
- GBIF <https://www.gbif.org/species/5411222>
- = *Campanula napuligera* subf. *tenella* Hruby, Magyar Bot. Lapok 29: 220 (1930)
- = *Campanula napuligera* var. *transsilvanica* (Săvul.) Morariu, Fl. Rep. Pop. Roman. 9: 93 (1964)
- GBIF <https://www.gbif.org/species/5411241>
- = *Campanula napuligera* var. *umbrosa* Hruby, Magyar Bot. Lapok 29: 218 (1930)
- GBIF <https://www.gbif.org/species/5411236>
- = *Campanula polymorpha* f. *pseudolanceolata* (Pant.) Hruby, Magyar Bot. Lapok 29: 203 (1930)
- GBIF <https://www.gbif.org/species/5411248>
- = *Campanula pseudolanceolata* Pant., Magyar Növényt. Lapok VI: 162 (1882) et Pant. ex. Kern., Sched. Fl. Exs. Austro-Hung. [Kerner] IX: 37 (1902) *
- GBIF <https://www.gbif.org/species/5411219>
- = *Campanula pseudolanceolata* f. *albiflora* Săvul., Stud. Sp. Campanula: 81 (1916)
- GBIF <https://www.gbif.org/species/5411210>
- = *Campanula pseudolanceolata* var. *arcuata* (Schur) Porcius, Analele Acad. Romane ser. 2, 14: 196 (1893)
- GBIF <https://www.gbif.org/species/5411256>
- = *Campanula pseudolanceolata* f. *elatior* Săvul., Stud. Sp. Campanula: 78 (1916)
- GBIF <https://www.gbif.org/species/5411246>
- = *Campanula pseudolanceolata* var. *hornungiana* (Schur) Porcius, Analele Acad. Romane ser. 2, 14: 202 (1893)
- GBIF <https://www.gbif.org/species/5411238>
- = *Campanula pseudolanceolata* f. *minima* Săvul., Stud. Sp. Campanula: 81 (1916)
- GBIF <https://www.gbif.org/species/5411234>
- = *Campanula pseudolanceolata* var. *porcii* Săvul., Stud. Sp. Campanula: 84 (1916)
- GBIF <https://www.gbif.org/species/5411224>

- = *Campanula pseudolanceolata* subsp. *semiamplexicaulis* Vladescu & Săvul., Stud. Sp. Campanula: 86 (1916)
- GBIF <https://www.gbif.org/species/5411257>
- = *Campanula pseudolanceolata* f. *transsilvanica* Săvul., Stud. Sp. Campanula: 78 (1916)
- GBIF <https://www.gbif.org/species/5411249>
- = *Campanula pseudolanceolata* f. *umbraticola* Săvul., Stud. Sp. Campanula: 78 (1916)
- GBIF <https://www.gbif.org/species/5411237>
- = *Campanula redux* Schott, Nyman & Kotschy, Analect. Bot.: 9 (1854)
- GBIF <https://www.gbif.org/species/5411223>
- = *Campanula rhomboidalis* var. *angustifolia* Neilr., Aufz. Ungarn Slavon. Gefässpfl.: 145 (1866)
- GBIF <https://www.gbif.org/species/5411227>
- = *Campanula rhomboidalis* subsp. *pseudolanceolata* (Pant.) Nyman, Consp. Fl. Eur. Suppl. 2: 208 (1889)
- GBIF <https://www.gbif.org/species/5411215>
- Campanula rhomboidea* [unranked] β *foliis ovato-oblongis* Wahlenberg, Fl. Carpat.: 60 (1814), non L.
- = *Campanula rotundifolia* var. *alpina* Schur, Enum. Pl. Transsilv.: 444. (1866) [nom. illeg.]
- GBIF <https://www.gbif.org/species/8234052>
- = *Campanula rotundifolia* var. *arcuata* (Schur) Nyman, Consp. Fl. Eur.: 479 (1879)
- GBIF <https://www.gbif.org/species/5411253>
- = *Campanula rotundifolia* var. *dentata* Schur, Enum. Pl. Transsilv.: 444 (1866)
- GBIF <https://www.gbif.org/species/5410676>
- = *Campanula rotundifolia* var. *grandiflora* J.A. Knapp, Pfl. Galiz.: 173 (1872) [nom. illeg.]
- GBIF <https://www.gbif.org/species/7764236>
- = *Campanula serrata* var. *elatior* (Săvul.) Tassenkevych [nom. provis. et inval., ex herb. LWS]
- = *Campanula serrata* var. *elatior* f. *latifrons* Hruby [comb. inval. ex herb. CHER] *
- = *Campanula serrata* var. *hornungiana* (Schur.) Tassenkevych [nom. provis. et inval., ex herb. LWS]
- *Campanula lancifolia* Schur, Enum. Pl. Transsilv.: 445 (1866) [nom. illeg., p. p.], non Witasek

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: This morphologically variable complex basically includes three hardly distinguished species – *C. serrata*, *C. napuligera*, and *C. pseudolanceolata*. Recent checklists (i.e., POWO, WFO and WorldPlants) also includes to this complex *C. arcuata*, *C. hornungiana*, *C. kitaibeliana*, *C. microphylla*, *C. redux* and some infraspecific taxa from *C. rotundifolia*, making it one of the most saturated by synonyms. *Campanula lancifolia* Schur, non Witasek is considered a synonym of *C. rotundifolia* L. subsp. *rotundifolia* (see POWO or WorldPlants); however Błocki (original label on the specimen LWS 92206) indicated it a synonym of *C. pseudolanceolata* Pant., so it is included here as a partial synonym.

Campanula serrata subsp. *recta* (Dulac) Podlech (≡ *C. recta* Dulac) is a confusing name applied for Pyreneinian plants that, in fact, does not belong to *C. serrata* species but rather to *C. scheuchzeri* subsp. *lanceolata* (Lapeyr.) J.-M. Tison.

***Campanula tatrae* subsp. *tatrae* Borbás, Magyar Bot. Lapok 1: 319 (1902)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7JFNM>
- GBIF <https://www.gbif.org/species/7222073>

Nomenclature:

= *Campanula kladniana* subsp. *polymorpha* (Schur) Witasek, Magyar Bot. Lapok 5: 239 (1906)

- GBIF <https://www.gbif.org/species/5410038>

= *Campanula kladniana* var. *polymorpha* (Witasek) Pawł., Acta Soc. Bot. Pol. 1: 5 (1923)

- GBIF <https://www.gbif.org/species/8038018>

= *Campanula kladniana* subsp. *stenophylla* (Schur) Witasek, Magyar Bot. Lapok 5: 238 (1906)

- GBIF <https://www.gbif.org/species/5410040>

= *Campanula polymorpha* (Witasek) Prain, Index Kew. Suppl. 4: 35 (1913), non Banks & Sol. ex A. DC. *

- GBIF <https://www.gbif.org/species/5410057>

= *Campanula polymorpha* var. *intercedens* Hruby, Magyar Bot. Lapok 29: 199 (1930), non *C. witasekiana* var. *intercedens* Hruby

- GBIF <https://www.gbif.org/species/5410061>

= *Campanula polymorpha* var. *intercedens* f. *angustifolia* Hruby, Magyar Bot. Lapok 29: 200 (1930)

- GBIF <https://www.gbif.org/species/5410043>

- = *Campanula polymorpha* var. *intercedens* f. *exigua* Hruby, Magyar Bot. Lapok 29: 200 (1930)
- GBIF <https://www.gbif.org/species/5410058>
- = *Campanula polymorpha* var. *intercedens* f. *latifolia* Hruby, Magyar Bot. Lapok 29: 199 (1930)
- = *Campanula polymorpha* var. *intercedens* f. *reflectans* Hruby, Magyar Bot. Lapok 29: 200 (1930)
- = *Campanula polymorpha* var. *intercedens* f. *umbrosa* Hruby, Magyar Bot. Lapok 29: 200 (1930)
- = *Campanula polymorpha* var. *lepida* Nyár. ex Hruby, Magyar Bot. Lapok 29: 201 (1930)
- = *Campanula polymorpha* var. *pluriflora* Nyár. ex Hruby, Magyar Bot. Lapok 29: 198 (1930)
- = *Campanula polymorpha* var. *praticola* Hruby, Magyar Bot. Lapok 29: 198 (1930), non *C. witasekiana* var. *praticola* Hruby
- GBIF <https://www.gbif.org/species/5410053>
- = *Campanula polymorpha* var. *praticola* f. *hirta* (Nyár.) Hruby, Magyar Bot. Lapok 29: 199 (1930)
- = *Campanula polymorpha* var. *praticola* f. *pluriflora* (Nyár.) Hruby, Magyar Bot. Lapok 29: 199 (1930)
- = *Campanula polymorpha* var. *stenophylla* (Schur) Hruby, Magyar Bot. Lapok 29: 205 (1930)
- GBIF <https://www.gbif.org/species/5410054>
- = *Campanula polymorpha* var. *stenophylla* f. *brachyphylla* Hruby, Magyar Bot. Lapok 29: 206 (1930)
- GBIF <https://www.gbif.org/species/5410056>
- = *Campanula polymorpha* var. *stenophylla* f. *genuina* Hruby, Magyar Bot. Lapok 29: 206 (1930)
- = *Campanula polymorpha* var. *stenophylla* f. *gracilis* Hruby, Magyar Bot. Lapok 29: 206 (1930)
- GBIF <https://www.gbif.org/species/5410050>
- = *Campanula polymorpha* var. *typica* Hruby, Magyar Bot. Lapok 29: 198, 201 (1930)
- GBIF <https://www.gbif.org/species/5410048>
- = *Campanula polymorpha* var. *typica* f. *fasciculata* Nyár. ex Hruby, Magyar Bot. Lapok 29: 202 (1930)
- = *Campanula polymorpha* var. *typica* f. *fasciculata* subf. *deltoidea* Hruby, Magyar Bot. Lapok 29: 203 (1930)

- = *Campanula polymorpha* var. *typica* f. *kladnianioides* Nyárady ex Hruby, Magyar Bot. Lapok 29: 201 (1930)
- GBIF <https://www.gbif.org/species/8517923>
 - GBIF <https://www.gbif.org/species/5410051>
- = *Campanula polymorpha* var. *typica* f. *latifolia* Hruby, Magyar Bot. Lapok 29: 201 (1930)
- GBIF <https://www.gbif.org/species/5410046>
- = *Campanula polymorpha* var. *typica* f. *latifolia* subf. *umbrosa* Hruby, Magyar Bot. Lapok 29: 202 (1930)
- GBIF <https://www.gbif.org/species/5410036>
- = *Campanula polymorpha* var. *typica* f. *lepida* (Nyár.) Hruby, Magyar Bot. Lapok 29: 202 (1930)
- GBIF <https://www.gbif.org/species/5410037>
- = *Campanula polymorpha* var. *typica* f. *lepida* subf. *reflectans* Hruby, Magyar Bot. Lapok 29: 202 (1930)
- GBIF <https://www.gbif.org/species/5410039>
- = *Campanula polymorpha* var. *typica* f. *saxiphila* Hruby, Magyar Bot. Lapok 29: 204 (1930)
- = *Campanula polymorpha* var. *typica* f. *saxiphila* subf. *reflectans* Hruby, Magyar Bot. Lapok 29: 205 (1930)
- = *Campanula rotundifolia* subsp. *polymorpha* (Witasek) Tacik in Jasiewicz, Monogr. Bot. 20: 254 (1965)
- GBIF <https://www.gbif.org/species/7685150>
- = *Campanula scheuchzeri* [unranked] β *dacica* Porcius, Enum. Pl. Phan. Naszód.: 37 (1878)
- = *Campanula scheuchzeri* var. *dacica* Porcius, Fl. Naseud.: 98 (1885)
- GBIF <https://www.gbif.org/species/5410055>
- = *Campanula scheuchzeri* var. *stenophylla* Schur, Enum. Pl. Transsilv. 443 (1866)
- GBIF <https://www.gbif.org/species/5410059>
- = *Campanula stenophylla* (Schur) Prain, Index Kew. Suppl. 4: 35 (1913) [nom. inval.]
- GBIF <https://www.gbif.org/species/5410042>
- = *Campanula stenophylla* (Schur) Witasek, Magyar Bot. Lapok 5: 238 (1906), non Boiss. & Heldr.
- GBIF <https://www.gbif.org/species/7633288>
- *Campanula carnica* auct. fl. transsilv., non Schiede

- *Campanula consaguinea* Simonk., Enum. Fl. Transsylv.: 385 (1886) [p. p.], non Schott
- *Campanula kladniana* (Schur) Witasek, Abh. Zool.-Bot. Ges. Wien 1: 39 (1902) [p. p. min., non sensu Schur orig.]
- GBIF <https://www.gbif.org/species/5411315>
- *Campanula linifolia* auct. [e.g., Wahlenb.], non Jacq.
- *Campanula polymorpha* f. *sciaphila* Hruby, Magyar Bot. Lapok 29: 204 (1930) [nom. et des. inval.]
- GBIF <https://www.gbif.org/species/5410041>
- *Campanula rotundifolia* L., Sp. Pl. 1: 163 (1753) [p. p. minor, tantum quod plantas ucrain. carpat.], non alior *
- GBIF <https://www.gbif.org/species/5410907>
- *Campanula pusilla* auct. fl. ucrain. carpat., non Haenke
- *Campanula scheuchzeri* auct. [e.g., Reuss, Května Slov.: 278 (1853); Sagorski & Schneider, Fl. Centralkarp.: 369 (1891)], non Vill. *

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: In general, there are three subspecies of *C. tatrae* – subsp. *tatrae*, subsp. *mentiens* (Witasek) Kovanda and subsp. *sudetica* (Hruby) Kovanda. The last two subspecies occur exclusively in the Western Carpathians; therefore, only *C. tatrae* subsp. *tatrae* is represented in the flora of the Ukrainian Carpathians.

However, *C. tatrae* subsp. *tatrae* has a long and complex naming history. In the Ukrainian Carpathians, it combines two main taxa that are often distinguished as independent species (i.e., *C. polymorpha* (Witasek) Prain and *C. rotundifolia* L., p.p.) by certain authors (e.g., Dremliuiga and Zyman 2012, Chopyk and Fedoronchuk 2015). However, Kovanda (1975) reasonably stressed the application of the name *C. polymorpha* and proposed using the name *C. tatrae*. Many infraspecific taxa from *Campanula scheuchzeri* auct., non Vill. seem to be a part of *C. tatrae* subsp. *tatrae* too. On the other side, in the recent checklists (i.e., POWO, EuroMed, and WorldPlants), *C. scheuchzeriformis* Hayek and derived *C. balcanica* var. *scheuchzeriformis* (Hayek) Hruby are wrongly listed among synonyms of *C. tatrae* subsp. *tatrae*. *Campanula scheuchzeriformis* occurs in North Albania (Hayek 1921, Hruby 1930). Such synonymization probably results from confusion because Hayek (1921), in the protologue of *C. scheuchzeriformis* mentioned that it is similar to *C. scheuchzeri*. Another taxon, *C. rotundifolia* var. *alpicola* Hayek (\equiv *C. rotundifolia* f. *alpicola* (Hayek) Hruby) is also mistakenly indicated as a synonym of *C. tatrae* subsp. *tatrae* in the WorldPlants checklist (also in GBIF backbone taxonomy), where it is, nevertheless, simultaneously correctly placed among synonyms of *C. rotundifolia* subsp. *rotundifolia*. Finally, WorldPlants wrongly indicate the presence of *C. carnica* subsp. *carnica* Mert. &

W.D.J. Koch for Ukraine. This species and subspecies do not occur in Ukraine. Such confusion of *C. rotundifolia* f. *alpicola* probably is a result of mistaken synonymization of *C. kladniana* with *C. carnica* subsp. *carnica* due to an ambiguous interpretation of the taxonomic limits of *C. kladniana* (Podlech 1965, Kovanda 1975).

***Phyteuma tetramerum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 4: 47 (1853)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4HK3D>
- GBIF <https://www.gbif.org/species/3166600>

Nomenclature:

≡ *Phyteuma spicatum* var. *tetramerum* (Schur) Nyman, Consp. Fl. Eur.: 484 (1879)

- GBIF <https://www.gbif.org/species/3166601>

= *Phyteuma spicatum* Baumg., Enum. Stirp. Transsilv. I: 158 (1816), non L. nec Lapeyr.

Conservation status: LC

Distribution: SE Carpathian endemic

***Phyteuma vagneri* A. Kern in Vágner, Máram. Növ.: 192 (1875) et A. Kern., Sched. Fl. Exs. Austro-Hung. [Kerner] III: 107 (1884)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4HK3J>
- GBIF <https://www.gbif.org/species/3166602>

Nomenclature:

≡ *Phyteuma atropurpureum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 3: 85, 88 (1852) [nom. nudum], non Hoppe

- GBIF <https://www.gbif.org/species/8164990>

≡ *Phyteuma nigrum* var. *atropurpureum* Schur, Enum. Pl. Transsilv.: 430 (1866)

- GBIF <https://www.gbif.org/species/3166605>

≡ *Phyteuma spiciforme* Rochel, Bot. Reise Banat: 69 (1838) [nom. nudum] et Rochel ex Domin & Podp., Klic K Ulpne Kvetene Rep. Ceskoslov.: 542 (1928)

- GBIF <https://www.gbif.org/species/7536094>

= *Phyteuma betonicaefolium* Baumg., Mant.: 16 (1846) et auct. transsilv., non Vill.

= *Phyteuma michelii* Sternh., Fl. Sieb.: 20 (1846), non alior

= *Phyteuma vagneri* f. *alpinum* Rich. Schulz, Monogr. Phyteuma: 79 (1904)

- GBIF <https://www.gbif.org/species/3166606>

= *Phyteuma vagneri* f. *brevibracteatum* Rich. Schulz, Monogr. Phyteuma: 78 (1904)

- GBIF <https://www.gbif.org/species/3166603>

= *Phyteuma vagneri* f. *grossidentatum* Rich. Schulz, Monogr. Phyteuma: 78 (1904)

• GBIF <https://www.gbif.org/species/3166604>

= *Phyteuma vagneri* f. *latibracteatum* Rich. Schulz, Monogr. Phyteuma: 78 (1904)

• GBIF <https://www.gbif.org/species/3166608>

= *Phyteuma vagneri* var. *pallida* Porcius, Enum. Pl. Phanerogam. Distr. Quondam Naszódiensis: 37 (1878)

– *Phyteuma halleri* auct. transsilv., non All.

– *Phyteuma nigrum* auct. [e.g., Baumg.], non Schmalh.

– *Phyteuma ovatum* auct. [e.g., Baumg.], non Schmalh.

Conservation status: LC

Distribution: SE Carpathian endemic

Order Boraginales

Family Boraginaceae

***Pulmonaria filarszkyana* Jávorka, Bot. Közlem. 15: 52 (1916)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4QGPK>
- GBIF <https://www.gbif.org/species/9193276>
- GBIF <https://www.gbif.org/species/7506258>

Nomenclature:

≡ *Pulmonaria rubra* subsp. *filarszkyana* (Jáv.) Domin, Preslia XIII-XV: 175, in adnot. (1935)

• GBIF <https://www.gbif.org/species/7763716>

≡ *Pulmonaria rubra* var. *filarszkyana* (Jáv.) Guşul., Bul. Fac. St. Cern. III: 330 (1929)

– *Pulmonaria angustifolia* Kern., Monogr. Pulm.: 9 (1878) [p. p., quoad plantas marmaros. et rodn.], non L.

– *Pulmonaria dacica* (Simonk.) Simonk., Enum. Fl. Transsilv.: 406 (1886) [p. p.] *

• GBIF <https://www.gbif.org/species/8393929>

– *Pulmonaria dacica* (Simonk.) Porcius [p. p., nom et des. invalid]

• GBIF <https://www.gbif.org/species/5660545>

– *Pulmonaria rubra* var. *dacica* Simonk., Math. Termesztud. Közlem. 15: 583 (1878) [p. p.]

• GBIF <https://www.gbif.org/species/7372640>

Conservation status: LC

Distribution: SE Carpathian endemic

***Symphytum cordatum* Waldst. & Kit. ex Willd., Neue Schriften Ges. Naturf. Freunde Berlin II: 121 (1799), non M. Bieb.**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/53QF8>
- GBIF <https://www.gbif.org/species/7377391>

Nomenclature:

≡ *Symphytum cordatum* Waldst. & Kit., Descr. Icon. Pl. Hung. 1: 6, t. 7 (1799–1802), non M. Bieb.

- GBIF <https://www.gbif.org/species/4067440>

= *Symphytum cordifolium* Baumg., Enum. Stirp. Transsilv. 1: 126 (1816) *

- GBIF <https://www.gbif.org/species/4067436>

= *Symphytum pannonicum* Pers., Syn. Pl. [Persoon] 1: 161 (1805) *

- GBIF <https://www.gbif.org/species/4067084>

– *Symphytum cordatum* M. Bieb., Fl. Taur.-Caucas. 1: 130 (1808) [p. p., nom. inval.]

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: This species is closely and primarily associated with the Carpathian Mts. (Novikoff and Hurdu 2015); however, it also sparsely occurs in the Ukrainian lowland areas in Volhyn (Chopyk 1976) and Podillia (Kobiv 2007, Chorney 2011) going far from the mountain range. As a result, Malynovskiy et al. (2002) considered it Carpathian-Volhynia-Podolian species, and Chorney (2011) threatened it as a non-endemic taxon with a Central European distribution range. Nevertheless, numerous authors (e.g., Pawłowski 1961, Piękoś-Mirkowa and Mirek 2011, Tassenkevich 2003, Kobiv 2007, Hurdu et al. 2012, Negrean et al. 2015, Novikoff and Hurdu 2015, Mráz et al. 2016, Kliment et al. 2016) threatened *S. cordatum* a Carpathian endemic or subendemic species. Considering the extension of *S. cordatum* distribution range to lowlands, it cannot be threatened as endemic, and therefore it is listed here as a subendemic. However, further phylogeographical studies of this species are of great interest and would clarify its disjunctive distribution pattern.

Order Brassicales

Family Brassicaceae

Arabidopsis neglecta (Schult.) O'Kane et Al-Shehbaz, Novon 7(3): 326 (1997)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/G266>
- GBIF <https://www.gbif.org/species/3052529>

Nomenclature:

≡ *Arabis neglecta* Schult., Oesterr. Fl., ed. 2: 248 (1814) *

- GBIF <https://www.gbif.org/species/5377122>

≡ *Cardaminopsis neglecta* (Schult.) Hayek, Fl. Steiermark I: 480 (1908) *

- GBIF <https://www.gbif.org/species/3052532>

≡ *Erysimum neglectum* (Schult.) Kuntze, Revis. Gen. Pl. 2: 933 (1891)

- GBIF <https://www.gbif.org/species/3692864>

= *Arabis transsilvanica* Schur, Enum. Pl. Transsilv. 43 (1866)

- GBIF <https://www.gbif.org/species/5377124>

= *Arabis floribunda* Schur, Enum. Pl. Transsilv. 44 (1866)

- GBIF <https://www.gbif.org/species/5377121>

= *Arabis glareosa* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt I: 106 (1850) et Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 59 (1853)

- GBIF <https://www.gbif.org/species/5377123>

= *Cardaminopsis neglecta* subsp. *glareosa* (Schur) Soó, Acta Bot. Acad. Sci. Hung. 16 (3–4): 371 (1971)

- GBIF <https://www.gbif.org/species/3689071>

– *Cardamine enneaphyllos* Turcz. [nom. inval., ex herb. KW], non (L.) Crantz ex Crantz

– *Dentaria enneaphyllos* auct. flora ucrain. carpat., non L. [ex herb. LWS] *

Conservation status: NT

Distribution: Pancarpathian endemic

Notes: The distribution of *A. neglecta* in the Ukrainian Carpathians remains unclear due to often confusion with *A. arenosa* (L.) Lawalrée, which is widely spread either in mountains and lowlands (Pachschwöll and Pachschwöll 2019). Schmickl et al. (2012) recognized two cytotypes of *A. neglecta* – subsp. *neglecta* (diploid from the alpine habitats) and subsp. *robusta* Schmickl et al. [nom. illeg.] (tetraploid occurring in different vegetation belts, including montane and submontane). Contrary to Schmickl et al. (2012), Knotek et al. (2020) reported that tetraploids are more successful in colonizing alpine habitats, but, in general, both cytotypes can be present at different elevations. For Ukraine, Kolář et al. (2016) used only three diploid samples of *A.*

arenosa subsp. *arenosa* sampled in lowermost altitudes near road and railway banks in the Lviv region (Ciscarpathia and Beskyds). Similarly, Knotek et al. (2020) used only two tetraploid alpine samples from the only mesoregion of the Ukrainian Carpathians, Svydovets Mts. Therefore, the ploidy level and diversity of *Arenosa* group in the Ukrainian Carpathians remain unclear, but it seems that *A. neglecta* is associated here with subalpine and alpine habitats only (Chopyk and Fedoronchuk 2015).

***Cardamine glanduligera* O. Schwarz, Repert. Spec. Nov. Regni Veg. 46: 188 (1939)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5WZLN4>
- GBIF <https://www.gbif.org/species/3045875>

Nomenclature:

= *Dentaria glandulosa* Waldst. & Kit., Descr. Icon. Pl. Hung. 3: 302, t. 272 (1801)

- GBIF <https://www.gbif.org/species/5374792>

= *Cardamine glandulosa* (Waldst. & Kit.) Schmalh., Fl. Sredn. Yuzhn. Rossii I. 50 (1895) [nom. illeg.], non Blanco

- GBIF <https://www.gbif.org/species/3045876>

= *Crucifera novemfolia* E.H.L. Krause, Deutschl. Fl. (Sturm), ed. 2. 6: 118 (1902)

- GBIF <https://www.gbif.org/species/5551108>

Conservation status: LC

Distribution: Pancarpathian subendemic

***Erysimum witmanni* subsp. *transsilvanicum* (Schur) P.W. Ball, Feddes Repert. 69: 151 (1964)**

- GBIF <https://www.gbif.org/species/8043371>

Nomenclature:

≡ *Erysimum transsilvanicum* Schur, Enum. Pl. Transsilv. 57 (1866) *

- CoL <https://www.catalogueoflife.org/data/taxon/3BBTL>

- GBIF <https://www.gbif.org/species/3048278>

= *Erysimum baumgartenianum* Jáv., Magyar Bot. Lapok XI: 30 (1912), non Schur

= *Erysimum czetzianum* Schur, Enum. Pl. Transsilv.: 57 (1866)

- GBIF <https://www.gbif.org/species/3048279>

= *Erysimum czetzianum* Jáv., Magyar Bot. Lapok XI: 29 (1912) [nom. inval.]

= *Erysimum witmannii* subsp. *czetzianum* (Schur) Zapał. [ex herb. Małdalski, nom. nudum]

- = *Erysimum witmannii* var. *czetzianum* (Schur) Borza, Bul. Grăd. Bot. Cluj XXVI: (1946)
- = *Erysimum witmannii* var. *czetziano* Nyár., Fl. Rep. Pop. Roman. III: 174 (1955)
- = *Erysimum transsilvanicum* f. *czetzianum* (Schur) Nyár., Fl. Rep. Pop. Roman. III: 177 (1955)
- = *Erysimum transsilvanicum* f. *luxurians* Nyár., Fl. Rep. Pop. Roman. III: 177, 640 (1955)
- = *Erysimum transsilvanicum* f. *rarifolium* Nyár., Fl. Rep. Pop. Roman. III: 177, 640 (1955)
- *Erysimum odoratum* Baumg., Enum. Stirp. Transsilv. 2: 262 (1816) [p. p.], non Ehr.
- GBIF <https://www.gbif.org/species/7699439>
- *Erysimum wahlenbergii* Simonk., Enum. Fl. Transsilv.: 85 (1886), non Asch. & Engl.
- GBIF <https://www.gbif.org/species/7583006>
- *Erysimum witmannii* auct. flora ucrain. carpat. et Grec., Consp. Fl. Rom.: 61 (1891) [p. p.], non Zaw. *

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: There are three subspecies recognized within *E. witmanni* – subsp. *witmanni* (Pancarpathian endemic), subsp. *pallidiflorum* (Szepligeti ex Jav.) Soó (W Carpathian endemic), and subsp. *transsilvanicum* (SE Carpathian endemic – Kliment et al. 2016). In the Ukrainian Carpathians, only *E. witmanni* subsp. *transsilvanicum* is very narrowly present in the Chorniy Dil Mt. range (Chopyk and Fedoronchuk 2015). During my explorations, I have found in KW herbarium a few specimens collected by Ilyinska from lowlands (Brody and Zolochiv districts of Lviv region and Tlumach district of Ivano-Frankivsk region) that were mistakenly identified as *E. witmanni*.

***Noccaea dacica* subsp. *dacica* (Heuff.) F.K. Mey, Feddes Repert. 84 (5-6): 464 (1973)**

- GBIF <https://www.gbif.org/species/7225610>

Nomenclature:

≡ *Noccaea dacica* (Heuff.) F.K. Mey., Feddes Repert. 84: 464 (1973)

- CoL <https://www.catalogueoflife.org/data/taxon/47KQH>

- GBIF <https://www.gbif.org/species/8622945>

≡ *Thlaspi dacicum* Heuff., Oesterr. Bot. Z. 8: 26 (1858) et Verh. K.K. Zool.-Bot. Ges. Wien 8 (Abh.): 61 (1858) *

- GBIF <https://www.gbif.org/species/3045405>

≡ *Thlaspi dacicum* subsp. *dacicum* Heuff., Oesterr. Bot. Z. 8: 26 (1858) et Verh. K.K. Zool.-Bot. Ges. Wien 8 (Abh.): 61 (1858)

• GBIF <https://www.gbif.org/species/3045404>

= *Thlaspi dacicum* [unranked] β *rodnense* Porcius, Enum. Pl. Phanerogam. Distr. Quondam Naszódiensis: 7 (1878)

= *Thlaspi dacicum* [unranked] β *transsilvanicum* Porcius, Fl. Näsäud: 169 (1881)

= *Thlaspi commutatum* Rochel, Bot. Reise Banat: 83 (1838)

• GBIF <https://www.gbif.org/species/3045398>

= *Thlaspi korongianum* Czetz ex Nyman, Syll. Suppl.: 37 (1865)

• GBIF <https://www.gbif.org/species/8601316>

• GBIF <https://www.gbif.org/species/3045399>

= *Thlaspi corongianum* Czetz ex Nyman, Consp. Fl. Eur. 1: 63 (1878) [ortho. var.]

• GBIF <https://www.gbif.org/species/8492602>

• GBIF <https://www.gbif.org/species/3692457>

– *Thlaspi alpestre* auct. [e.g., Schur, Fuss., Baumg.], non L.

– *Thlaspi rotundifolium* auct. fl. transsilv., non Gaud

– *Thlaspi trojagense* Zapal., Rozprawy Wydziału Mat.-Przyrod. Akad. Um., Dział B. Nauki Biol. XIII: 316, 317 (1913) [p. p.]

• GBIF <https://www.gbif.org/species/3045402>

– *Thlaspi trojagense* f. *abbreviatum* Zapal., Rozprawy Wydziału Mat.-Przyrod. Akad. Um., Dział B. Nauki Biol. XIII: 317 (1913) [p. p.]

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: There are two subspecies of *Noccaea dacica* – subsp. *dacica* and subsp. *montenegrina* F.K. Mey. (distribution is limited to Montenegro – Meyer 1973). The close species *Noccaea banatica* (R. Uechtr.) F.K. Mey. (≡ *Thlaspi dacicum* subsp. *banaticum* (R. Uechtr.) Nyár.) is sometimes nested within *N. dacica* subsp. *dacica* (e.g., in the World Plants database). However, Al-Shehbaz (2014) distinguished *N. banatica* as an independent species, while Kliment et al. (2016) indicated it as an S Carpathian endemic taxon. So only *N. dacica* subsp. *dacica* occurs in the Ukrainian Carpathians.

Order Caryophyllales

Family Caryophyllaceae

***Dianthus spiculifolius* Schur, Enum. Pl. Transsilv.: 98 (1866), non Borbás**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/35B4J>
- GBIF <https://www.gbif.org/species/3808113>

Nomenclature:

≡ *Dianthus kitaibelii* subsp. *spiculifolius* (Schur) Novák, Sborník Klubu Přírodověd. v Praze. Sv. IV. 1914–1920. Č. 4: 23 (1) (1922) et Věst. Král. české spol. nauk. Tř. mat.-přírod. 1923 (XI): 30 (1924)

≡ *Dianthus petraeus* subsp. *spiculifolius* (Schur) Ciocârlan, Illustr. Fl. Romania: 217-223 (2000)

≡ *Dianthus plumarius* subsp. *spiculifolius* (Schur) Baksay, Symposia Biol. Hung. 12: 153 (1972)

= *Dianthus acicularis* Schur, Enum. Pl. Transsilv. 98 (1866), non Fisch. ex Ledeb.

= *Dianthus brachyanthus* Schur, Enum. Pl. Transs. 96 (1866), non Boiss.

= *Dianthus carpathicus* Borbás, Termesz. Fuzet. 12: 44 (1889), non Wolf. [nom. inval.]

• GBIF <https://www.gbif.org/species/3813900>

= *Dianthus hungaricus* Andrae ex Simonk., Enum. Fl. Transsilv.: 121 (1886), non alior

= *Dianthus microchelus* B.S. Williams, Pinks Centr. Eur.: 37 (1890) et B.S. Williams ex Wettst., Österr. Bot. Zeitschr. 41: 176 (1891)

• GBIF <https://www.gbif.org/species/3810687>

= *Dianthus petraeus* Janka, Bot. Közlem. XII: 187 (1913), non Waldst. & Kit. nec M. Bieb.

= *Dianthus petraeus* Kerner, Oesterr. Bot. Z. XVIII: 18, 126 (1868) [nom. nudum], non Waldst. & Kit. nec M. Bieb.

= *Dianthus plumarius* Baumg., Enum. Stirp. Transsilv. I: 390 (1816) et auct. transsilv., non L. nec Gunnerus

= *Dianthus plumarius* var. *erythrocalyx* Schott ex Simonk., Enum. Fl. Transsilv.: 121 (1886)

= *Dianthus plumarius* var. *hungaricus* Andrae, Botanische Zeitung XI: 436 (1853), non alior

= *Dianthus serotinus* Barth, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt XIX: 144 (1868) [nom. nudum], non Waldst. & Kit.

= *Dianthus serotinus* Salzer, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt XV. 50 (1864) [nom. nudum], non Waldst. & Kit.

= *Dianthus spiculifolius* f. *petraeiformis* Novák, Sborník Klubu Přírodověd. v Praze. Sv. IV. 1914–1920. Č. 4: 25 (3) (1922)

Conservation status: DD

Distribution: SE Carpathian endemic

Notes: This species is probably absent in the recent Ukrainian Carpathians flora since no new finding confirms its presence. It was mentioned for Chyvchyny Mts. (South Bukovina) based on old herbarium specimens by Fedoronchuk and Chorney (2005). However, it is not listed for the flora of the Ukrainian Carpathians by Chopyk and Fedoronchuk (2015). During my work in the Ukrainian herbaria, I was also unable to locate any specimen of *D. spiculifolius*. Probably such specimens could be refined in the Schur' collection hosted at LW, but, unfortunately, this collection has remained permanently unavailable for the last few years.

Borbás (1889): p. 44) indicated that *D. carpathicus* Borbás (*D. callizonus* × *D. tenuifolius*) is a synonym of *D. brachyanthus* Schur, non Boiss. and indicated in protologue “in rupibus calcareis alp. Kyrálikő (i.e., Piatra Craiului Mts. in Hungarian), circa 2000 mt. s.m. Aug. 1858 (Schur !)”. Schur (1866): p. 96), in protologue to *D. brachyanthus* indicated “Auf Kalkfelsen des Königstein (i.e., Piatra Craiului Mts. in German) bei Kronstadt (i.e., Braşov). 6000–7000'. Aug.” Williams (1890): p. 37 and Williams (1893): p. 415) synonymized *D. brachyanthus* with *D. microchelus* Williams, and also cited it for Kronstadt in Transsilvania.

It is unclear why POWO and WorldPlants provide *D. brachyanthus* Schur among synonyms for *D. microlepis* Boiss. Because Boissier (1843): p. 22) described *D. microlepis* out of the Carpathian region, i.e., from Rumelia, Balkans. The current known distribution of *D. microlepis* is limited to Bulgaria, Greece, Montenegro, Bosnia and Herzegovina, North Macedonia, Serbia, Slovenia, Croatia, and Kosovo (Marhold 2022). Perhaps, the synonymization of the Carpathian *D. brachyanthus* Schur with Balcanian *D. microlepis* is a result of a confusion of *D. brachyanthus* in the sense of Schur (1866): p. 96) [= *D. microchelus* Williams] with *D. brachyanthus* in the sense of earlier Boissier's publication (Boissier 1837: p. 85). Therefore, *D. brachyanthus* Schur, non Boiss. should be considered a synonym of *D. microchelus* Williams and *D. carpathicus* Borbás, non Wolf., and, consequently, a synonym of *D. spiculifolius* Schur.

Interestingly, in all mentioned databases, including IPNI, *D. microchelus* is misspelled as *D. microche[il]lus*, and the incorrect place of publication of this name is indicated. It is wrongly stated that Williams published this species in 1891 in Oesterreichische Botanische Zeitschrift. Instead, Williams published it a year before, in 1890, in his monography “The pinks of central Europe” (Williams 1890: p. 37), while later, in Oesterreichische Botanische Zeitschrift, the editor of this journal, Richard R. von Wettstein, published a brief review on his book with the indication of newly proposed taxa (Wettstein 1891: p. 176). So, Williams never personally published this name in Oesterreichische Botanische Zeitschrift.

Sabulina oxypetala (Wot.) Mosyakin & Fedor., Phytotaxa 231(1): 96 (2015)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/78YD9>
- GBIF <https://www.gbif.org/species/8565536>

Nomenclature:

≡ *Alsine oxypetala* Wot., Spraw. Komis. Fizjograf. 22(2): 214 (1888)

- GBIF <https://www.gbif.org/species/7758064>

≡ *Alsine verna* [unranked] *oxypetala* Zapal. [nom. nudum]

≡ *Alsine zarencznyi* var. *oxypetala* Wot., Sprawozd. Kom. Fizjograf. 21(2): 111–139 (1887) [?]

≡ *Minuartia oxypetala* (Wot.) Kulczyński, Fl. Polska II: 231 (1921) *

- GBIF <https://www.gbif.org/species/7504529>

≡ *Minuartia verna* subsp. *oxypetala* (Wot.) G. Halliday, Feddes Repert. 69: 13 (1964)

- GBIF <https://www.gbif.org/species/8333640>

≡ *Minuartia verna* var. *oxypetala* (Wot.) Prodan, Fl. Rep. Pop. Rom. II: 86 (1953)

≡ *Minuartia verna* [unranked] B *attica* [unranked] *oxypetala* Graebn. in Asch. & Graebn., Syn. Mitteleur. Fl. V (I): 745 (1918)

≡ *Sabulina verna* subsp. *oxypetala* (Wot.) Dillenb. & Kadereit, Taxon 63(1): 88 (2014)

- GBIF <https://www.gbif.org/species/7684653>

= *Alsine zarencznyi* var. *neglecta* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Alsine zarencznyi* var. *neglecta* f. *ramificans* Zapal., Consp. Fl. Galic. Crit. III: 27 (1911)

= *Alsine zarencznyi* var. *neglecta* f. *subcaespitosa* Zapal., Consp. Fl. Galic. Crit. III: 27 (1911)

= *Alsine zarencznyi* var. *neglecta* f. *subcolorata* Zapal., Consp. Fl. Galic. Crit. III: 27 (1911)

= *Alsine zarencznyi* [unranked] c *oxypetala* f. *acutissima* Zapal., Consp. Fl. Galic. Crit. III: 27 (1911)

= *Alsine zarencznyi* [unranked] c *oxypetala* f. *micropetala* Zapal., Consp. Fl. Galic. Crit. III: 28 (1911)

= *Minuartia verna* var. *oxypetala* f. *micropetala* (Zapal.) Prodan, Fl. Rep. Pop. Rom. II: 86 (1953)

– *Minuartia zarencznii* auct. [i.e., Chopyk 1976], non (Zapal.) Klokov

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: A rare stenoendemic, which occurs in the Ukrainian Carpathians only in the Chyvychny Mts. (Fedoronchuk and Chorney 2009, Chorney 2011).

***Sabulina pauciflora* (Kit.) A. Novikov, comb. nov.**

Nomenclature:

≡ *Alsine pauciflora* Kit. ex Nyman, Consp. Fl. Eur. 1: 119 (1878)

• GBIF <https://www.gbif.org/species/8455786>

• GBIF <https://www.gbif.org/species/3807842>

≡ *Arenaria pauciflora* Kit., Linnaea 32 (4–5): 510 (1864)

• GBIF <https://www.gbif.org/species/7644104>

≡ *Minuartia pauciflora* (Kit.) Dvořáková, Preslia 75(4): 350 (2003) *

• CoL <https://www.catalogueoflife.org/data/taxon/43KDB>

• GBIF <https://www.gbif.org/species/3811893>

= *Alsine verna* [unranked] *δ carpatica* Porcius, Enum. Pl. Phanerogam. Distr. Quondam Naszódienensis: 11 (1878) et Anal. Acad. Rom.: 54 (1893)

= *Alsine verna* [unranked] a. *zarencnyi* Hermann, Fl. Deutschl. Fennoskand.: 185 (1912)

= *Alsine zarencnyi* Zapal., Consp. Fl. Galic. Crit. III: 25 (1911) [excl. var. c]

• GBIF <https://www.gbif.org/species/3817114>

= *Alsine zarencnyi* var. *devestita* Zapal., Consp. Fl. Galic. Crit. III: 27 (1911)

= *Alsine zarencnyi* var. *pseudogerardiana* Zapal., Consp. Fl. Galic. Crit. III: 28 (1911)

= *Alsine zarencnyi* var. *zarencnyi* f. *bryophila* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Alsine zarencnyi* var. *zarencnyi* f. *minima* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Alsine zarencnyi* var. *zarencnyi* f. *paucicaulis* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Alsine zarencnyi* var. *zarencnyi* f. *subpurpurea* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Alsine zarencnyi* var. *zarencnyi* f. *supraglandulosa* Zapal., Consp. Fl. Galic. Crit. III: 26 (1911)

= *Minuartia verna* subsp. *gerardii* [unranked] b. *carpatica* Graebn. in Asch. & Graebn., Syn. Mitteleur. Fl. V (I): 749 (1918) *

= *Minuartia zarencnyi* (Zapal.) Klokov, Fl. UkrSSR 4: 480 (1952) *

- GBIF <https://www.gbif.org/species/7267413>
- = *Minuartia zarecznii* (Zapał.) Klokov, Fl. UkrSSR 4: 480 (1952) [ortho. var.]
- = *Minuartia zarecznyi* var. *divestita* (Zapał.) Tzvelev, Bot. Zhurn. 87 (3): 125 (2002)
- GBIF <https://www.gbif.org/species/3810712>
- *Alsine gerardii* auct. flora carpat., non Willd.
- *Arenaria gerardii* auct. fl. carpat., non Willd.
- *Alsine verna* auct. fl. carpat., non (L.) Wahlenb. nec Bartl
- *Alsine verna* Knapp, Pfl. Galic. u. Bukov.: 331 (1872) [p. p.], non Wahlenb. s. str. *
- *Minuartia gerardii* auct. fl. carpat., non (Willd.) Hayek *
- *Minuartia verna* auct. flora carpat., non (L.) Hiern *
- *Minuartia verna* Kulczyński, Fl. Polska, II: 230 (1921), non (L.) Hiern.
- *Minuartia verna* [unranked] α *caespitosa* (Ehrn.) Graebn. in Asch. & Graebn., Syn. Mitteleur. Fl. V (I): 742 (1918) sensu Tovt [ex herb. UU] *
- *Minuartia verna* subsp. *gerardii* (Willd.) Graebn. in Asch. & Graebn., Syn. Mitteleur. Fl. V (I): 747 (1918) [p. p., tantum quod plantas carpat.], non *Sabulina verna* subsp. *gerardii* (Willd.) Dillenb. s. str. *
- *Minuartia verna* var. *gerardi* Kulczyński, Fl. Polska, II: 230 (1921), non Schinz. & Keller
- *Sabulina gerardii* auct. fl. carpat., non (Willd.) Rchb.
- *Sabulina verna* subsp. *gerardii* auct. fl. carpat., non (Willd.) Dillenb.
- *Tryphane gerardi* auct. fl. carpat., non (Willd.) Rchb.

Conservation status: VU

Distribution: Pancarpathian endemic

Notes: A rare species mentioned (as *M. pauciflora*) only for three regions of the Ukrainian Carpathians – Chornohora, Maramures, and Svydovets (Chorney and Fedoronchuk 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

In general, *Sabulina verna* (L.) Rchb. (= *Minuartia verna* (L.) Hiern) has a wide distribution and branched infraspecific subdivision with variable acceptance by different authors. In particular, *M. verna* auct. fl. carpat., together with *M. zarecznyi* (Zapał.) Klokov, is considered a synonym of *M. pauciflora* (Mirek et al. 2020). Moreover, *M. pauciflora* is often wrongly reported from the Carpathians as *M. gerardii* (Willd.) Hayek, which is an Alpin species though (Chorney 2011, Kliment et al. 2016, Nunvářová Kabátová et al. 2019). Inconsistency in the taxonomic interpretation and unclear chorology of *M. gerardii* lead to its consideration, including Carpathian plants, a synonym of *M. verna* s. str. (i.e., *M. verna* subsp. *verna* or *Sabulina verna* subsp. *verna*

) (Fedoronchuk and Mosyakin 2016). However, recent investigations showed that *M. pauciflora* is clearly distinguished from *M. verna* s. str. *Nunvářová Kabátová et al. (2019)* also confirmed the belonging of Carpathian plants identified as *M. gerardii* to *M. pauciflora*.

The POWO and World Plants databases still provide *M. pauciflora* as independent species from the genus *Minuartia*, while *M. verna* was reconsidered as belonging to the genus *Sabulina* Rchb. as *S. verna* (Fedoronchuk and Mosyakin 2016). To keep the nomenclatural consistency within *S. verna* group, the new combination *Sabulina pauciflora* (Kit.) A. Novikov, *comb. nov.* is proposed here.

Only two taxa from the *Sabulina verna* group are present in the Ukrainian Carpathians (Chopyk and Fedoronchuk 2015) viz *S. pauciflora*, *comb. nov.* (\equiv *M. pauciflora*) and *S. oxypetala* (Wol.) Mosyakin & Fedor. (\equiv *M. oxypetala* (Wol.) Kulczyński). Both species were previously interpreted as belonging to *Alsine* L. and were recently reconsidered within the genus *Sabulina* Rchb. (Mosyakin and Fedoronchuk 2015, Fedoronchuk and Mosyakin 2016, Nunvářová Kabátová et al. 2019).

***Silene nutans* subsp. *dubia* (Herbich) Zapał., Bull. Int. Acad. Sci. Cracovie, Cl. Sci. Math., Sér. B, Sci. Nat. 11: 151 (1911)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7J3SQ>
- GBIF <https://www.gbif.org/species/7719003>

Nomenclature:

\equiv *Silene dubia* Herbich, Fl. Bucovina: 388 (1859), non alior

- GBIF <https://www.gbif.org/species/7592009>

\equiv *Silene dubia* Herbich ex Rohrb., Monogr. Silene: 217 (1869), non alior

- GBIF <https://www.gbif.org/species/8297181>

\equiv *Silene nutans* var. *dubia* (Herbich) Zapał., Sprawozd. Kom. Fizjograf. XXIV: 111 (1889)

= *Silene dubia* var. *glabriuscula* (Zapał.) Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)

= *Silene dubia* var. *hormuzakii* Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)

= *Silene dubia* var. *hormuzakii* f. *acaulis* Guşul., Fl. Rep. Pop. Rom. II: 179, 665 (1953) [monster forma]

= *Silene dubia* var. *hormuzakii* f. *apricorum* (Zapał.) Graebn. in Asch. & Graebn. emend. Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)

= *Silene dubia* var. *hormuzakii* f. *herbichii* (Zapał.) Graebn. in Asch. & Graebn. emend. Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)

= *Silene dubia* var. *hormuzakii* f. *kelemenensis* (Zapał.) Graebn. in Asch. & Graebn. emend. Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)

- = *Silene dubia* var. *hormuzakii* f. *lilacina* (Zapał.) Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)
- = *Silene dubia* var. *hormuzakii* f. *robustior* (Schur) Graebn. in Asch. & Graebn. emend. Guşul., Fl. Rep. Pop. Rom. II: 179 (1953)
- = *Silene nutans* subsp. *dubia* var. *dubia* f. *apricorum* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* subsp. *dubia* [unranked] b *herbichii* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* subsp. *dubia* [unranked] a *kelemenensis* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* subsp. *dubia* [unranked] a *kelemenensis* f. *lilacina* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* subsp. *dubia* var. *dubia* f. *luxuriosa* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* subsp. *dubia* var. *dubia* f. *tenuis* Zapał., Consp. Fl. Galic. Crit. III: 195 (1911)
- = *Silene nutans* [unranked] c. *glabriuscula* Zapał., Consp. Fl. Galic. Crit. III: 192 (1911)
- = *Silene nutans* [unranked] β *transsilvanica* Grec., Consp. Fl. Rom.: 109 (1898)
- = *Silene transsilvanica* Schur, Oesterr. Bot. Z. VIII: 22 (1858) [nom. nudum] et Oesterr. Bot. Z. X: 181 (1860)
- GBIF <https://www.gbif.org/species/5587908>
- = *Silene transsilvanica* var. *angustifolia* Hormuz., Oesterr. Bot. Z. LXI: 147 (1911)
- *Silene saxatilis* Schur, Enum. Pl. Transsilv.: 101 (1866), non Sims nec M. Bieb.
- *Silene saxatilis* [unranked] a *racemosa* Schur, Enum. Pl. Transsilv.: 101 (1866)
- *Silene saxatilis* [unranked] a *robustior* Schur, Enum. Pl. Transsilv.: 101 (1866)

Conservation status: LC

Distribution: SE carpathian endemic

Notes: *Silene nutans* L. includes four subspecies – subsp. *nutans* (most widely distributed, with Eurasian range), subsp. *insubrica* (Gaudin) Soldano (distributed mainly in the Alps, but also occurs in Greece, Hungary, Romania, and some other countries), subsp. *smithiana* (Moss) Jeanm. & Bocquet (distributed in France, Belgium, Great Britain, and the Netherlands – Jeanmonod and Bocquet 1983), and subsp. *dubia* (occurs exclusively in SE Carpathians). POWO also recognizes *S. nutans* subsp. *livida* (Willd.) Gremli as an independent subspecies. However, it is a direct synonym of *S. nutans* subsp. *insubrica* (Jeanmonod and Bocquet 1983, Soldano 1991, Soldano 2001). *Silene nutans* subsp. *smithiana* is sometimes synonymized with *S. nutans* subsp. *nutans* (e.g., in POWO and Euro+Med PlantBase). However, recent studies showed

that this subspecies is a separate taxon represented by two haplotypes (Martin et al. 2016).

In the Ukrainian Carpathians occur two of the four mentioned subspecies – *S. nutans* subsp. *nutans* (occupies light forestal and adjacent habitats in the montane belt) and *S. nutans* subsp. *dubia* (occupies rocky and stony slopes in the montane and subalpine belts).

***Silene zawadzki* Herbich, Enum. Pl. Galic. Bucow.: 191 (1835)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/9YK58>
- GBIF <https://www.gbif.org/species/5587094>

Nomenclature:

≡ *Melandrium zawadzki* (Herbich) A. Braun, Flora 26: 387 (1843)

≡ *Elisanthe zawadzki* (Herbich) Fuss, Fl. Transsilv. 106 (1866)

- GBIF <https://www.gbif.org/species/10950560>

≡ *Elisanthe zawadskii* (Herbich) Klokov, Fl. UkrSSR 4: 574 (1952) [nom. illeg.]

- GBIF <https://www.gbif.org/species/3815102>

≡ *Silenanthe zawadskii* (Herbich) Griseb. & Schenk, Arch. Naturgesch. (Berlin) 18(1): 300 (1852)

- GBIF <https://www.gbif.org/species/3811613>

Conservation status: VU

Distribution: SE Carpathian endemic

Notes: A rare species that occurs in the Ukrainian Carpathians only in the Chyvchyny Mts. (Chorney 2009a, Chopyk and Fedoronchuk 2015, Ministry of Environmental Protection and Natural Resources of Ukraine 2021). This species was considered belonging to the genera *Melandrium* Röhl., *Elisanthe* Rchb. or *Silenanthe* Griseb. & Schenk. It was also considered a synonym of *Silene vulgaris* (Moench) Garcke subsp. *vulgaris*, but recent molecular studies showed that this narrow endemic is an independent and well-separated species nested within the *Silene* sect. *Physolichnis* s. l. (Petri and Oxelman 2019, Martyniuk et al. 2018, Jafari et al. 2020).

Family Plumbaginaceae

***Armeria pocutica* Pawł., Fragm. Florist. Geobot. VIII: 399 (1962)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5W4RS>
- GBIF <https://www.gbif.org/species/5668250>

Nomenclature:

- *Armeria elongata* auct., non (Hoffm.) Koch
- *Armeria maritima* subsp. *elongata* auct., non (Hoffm.) Bonnier
- *Armeria vulgaris* auct., non Willd.

Conservation status: RE

Distribution: SE Carpathian endemic

Notes: This species is extinct in the Ukrainian Carpathians (Kagalo and Sytschak 2009b, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

Order Dipsacales

Family Caprifoliaceae

***Scabiosa lucida* subsp. *barbata* Nyár., Enum. Pl. Vasc. Cheia Turz'ii: 280 (1939)**

Nomenclature:

≡ *Scabiosa barbata* Nyár. ex Chopyk & Fedoronchuk, Fl. Ukr. Carpath.: 436 (2015) [des. et nom. invalid.]*

≡ *Scabiosa pseudobanatica* subsp. *barbata* (Nyár.) Chrtek, Preslia 57: 201 (1985)

= *Asterocephalus lucidus* [unranked] a. *alpicolus* Schur, Enum. Pl. Transsilv.: 300 (1866)

= *Asterocephalus lucidus* [unranked] b. *subalpinus* Schur, Enum. Pl. Transsilv.: 300 (1866)

= *Scabiosa columbaria* subsp. *subalpina* Brügger, Flora Curiensis. Naturgeschichtliche Beiträge zur Kenntniss der Umgebungen von Chur: 65 (1874) [nom. nudum]

= *Scabiosa columbaria* subsp. *subalpina* (Brügger) Killias, Jahresber. Naturf. Ges. Graubündens XXXI: 82 (1887–1888)

= *Scabiosa columbaria* subsp. *lucida* var. *subalpina* (Brügger) Braun-Blanq., Jahresber. Naturf. Ges. Graubünd. LVIII: 94 (1918)

• GBIF <https://www.gbif.org/species/12141628>

= *Scabiosa lucida* subsp. *barbata* f. *alpicola* (Schur) Prodan, Fl. Rep. Pop. Rom. VIII: 685 (1961)

= *Scabiosa lucida* subsp. *barbata* f. *hirticaulis* (Nyár.) Prodan, Fl. Rep. Pop. Rom. VIII: 685 (1961)

= *Scabiosa lucida* subsp. *barbata* f. *perramosa* (Nyár.) Prodan, Fl. Rep. Pop. Rom. VIII: 685 (1961)

- = *Scabiosa lucida* subsp. *barbata* f. *subalpina* (Schur) Prodan, Fl. Rep. Pop. Rom. VIII: 685 (1961)
- = *Scabiosa lucida* f. *elata* Nyár., Enum. Pl. Vasc. Cheia Turzii: 280 (1939)
- = *Scabiosa lucida* f. *hirticaulis* Nyár., Enum. Pl. Vasc. Cheia Turzii: 280 (1939)
- = *Scabiosa lucida* f. *perramosa* Nyár., Enum. Pl. Vasc. Cheia Turzii: 280 (1939)
- = *Scabiosa lucida* f. *scaposa* Nyár., Enum. Pl. Vasc. Cheia Turzii: 280 (1939)
- = *Scabiosa lucida* var. *subalpina* (Brügger) Hayek & Hegi, Ill. Fl. Mitt.-Eur. VI (1): 308 (1908)
- = *Scabiosa opaca* Klokov, Novosti Sist. Vyssh. Nizsh. Rast.: 112 (1974) *
- CoL <https://www.catalogueoflife.org/data/taxon/6Y55F>
- GBIF <https://www.gbif.org/species/4103554>
- = *Scabiosa subalpina* Brügger, Jahresber. Nat. Gesell. Graubünd. XXIX: 137 (1886)
- GBIF <https://www.gbif.org/species/4104181>
- *Scabiosa lucida* Vill., Prosp. Hist. Pl. Dauphiné: 18 (1779) [p. p., tantum quod plantas ucrain. carpat.], non W.T. Aiton *
- *Scabiosa lucida* subsp. *lucida* Vill. sensu Tasenkevych [non sensu orig.]

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: There are four to five generally accepted subspecies of *S. lucida* Vill. – subsp. *lucida* (non-endemic taxon distributed in European mountains, starting from ca. 1000 m of elevation – Štěpánek and Holub 1997), subsp. *calcicola* Bloński (endemic of W Carpathians – Štěpánek and Holub 1997, Danihelka et al. 2012), subsp. *pseudobanatica* (Schur) Holub (problematic taxon with Carpathian-Pannonian distribution range that prefers lower elevations and occurs in Ukraine, Slovakia, and Romania but often overlooked or confused – Chrtek 1985, Chrtek and Goliašová 1985, Tasenkevich 2006), subsp. *stricta* (Waldst. & Kit.) Jasiewicz (Distributed in S Europe), and subsp. *barbata* Nyár. (SE Carpathian endemic – Kliment et al. 2016).

In the Flora of UkrSSR (Kotov 1961: p. 378) *S. lucida* is indicated as having var. *subalpina* (Brügger) Hegi and indicated *S. subalpina* Brügger, Zur. Fl. Tirol (1860) as a synonym for it. However, POWO indicated *S. subalpina* to be a synonym for *S. columbaria* L., a quite distinct species. After checking, it was found that Brügger did not describe *S. subalpina* in mentioned work “Zur Flora Tirols” (Brügger 1860). IPNI says that Brügger described this species much later, in 1887–1888 (i.e., *S. subalpina* Brügger, Jahresber. Naturf. Ges. Graubündens XXXI, Beil. 82 (1887-88) – <https://www.ipni.org/n/320160-1>). However, it is also wrong information because, in fact, IPNI references the work of Killias (1887), who only repeated an epithet *subalpina* for *S. columbaria* subsp. *subalpina* (the rank of subspecies is indicated by the author in the taxon’s description) following publication of Brügger (1874), who, in turn, published this

subspecies without protologue. Considering the mistake in IPNI, it is worth noting that the full and correct nomenclatural citations for this subspecies should be *S. columbaria* subsp. *subalpina* Brügger, Fl. Cur.: 65 (1874) [nom. nudum] and *S. columbaria* subsp. *subalpina* (Brügger) Killias, Jahresber. Naturf. Ges. Graubündens XXXI: 82 (1887–1888). Nevertheless, this does not answer the question of where the initial Brügger's species name has been applied. After some investigations, it was found that Brügger first applied the epithet *subalpina* in 1874 (without any protologue provided) and later in 1886 with consequent self-reprint of the last paper in the same 1886 that, however, has changed pagination he described it at the species rank (Brügger 1874, Brügger 1886a, Brügger 1886b). Therefore the correct nomenclatural citation for this species should be *S. subalpina* Brügger, Fl. Cur.: 65 (1874) [nom. nudum] & *Jahresber. Nat. Gesell. Graubünd.*: 137 (1886). Brügger (1886a) and Brügger (1886b) described *S. subalpina* as intermediate species between *S. columbaria* and *S. lucida*. It was Hayek and Hegi (1908): p. 308, who determined *S. subalpina* belonging to *S. lucida* and applied combination *S. lucida* var. *subalpina* (Brügger) Hayek & Hegi, Ill. Fl. Mitt.-Eur. VI (1): 308 (1908). Schur (1866) also believed that *subalpina* plants belong to *lucida* group and applied the new name *Asterocephalus lucidus* [unranked] b. *subalpinus* Schur, Enum. Pl. Transsilv.: 300 (1866). Later, Pawłowski (Planta Poloniae Exsiccata deposited at KW) synonymized *S. lucida* var. *subalpina* with *S. lucida* var. *lucida*. Considering this, I believe that POWO mistakenly synonymizes *S. subalpina* (and derivatives) with *S. columbaria*. Instead, *S. subalpina* should be considered a synonym of *S. lucida*. Moreover, after herbarium inspection, I found that at least part of the specimens identified as *S. lucida* var. *subalpina* belongs to *S. lucida* subsp. *barbata*.

It is important to note that Brügger mentioned many taxa (e.g., *Hepatica rhaetica*, *Malus hortensis*, *Batrachium micranthum*, *Nasturtium montanum*, etc.) for the first in Flora Curiensis (Brügger 1874) however this book is entirely ignored by IPNI and, consequently, many other databases, for some reason.

Order Ericales

Family Ericaceae

***Pyrola carpatica* Holub et Křisa, Folia Geobot. Phytotax. 6(1): 82 (1971)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6WQBQ>
- GBIF <https://www.gbif.org/species/4171403>

Nomenclature:

≡ *Pyrola rotundifolia* subsp. *carpatica* (Holub & Křisa) Váczy & Beldie, Fl. Rep. Soc. Rom. XIII: 46 (1976)

– *Pyrola intermedia* auct., non Schleich. ex Arcang.

- *Pyrola intermedia* Schleich. ex Szafer in Kulczyński & Pawłowski, Rośliny Polskie: 459 (1924) [nom. illeg.], non Schleich. ex Arcang., Comp. Fl. Ital.: 460 (1882)
- *Pyrola rotundifolia* [unranked] *arenaria* Scheele sensu Jáv., Magyar Fl.: 797 (1924)
- *Pyrola rotundifolia* subsp. *intermedia* (Alef.) Wohlfahrt, W.D.J. Koch's Syn. Deut. Schweiz. Fl., Bd. 2: 1946 (1902) [p. p., tantum quod plantas carpat.]
- *Pyrola rotundifolia* subsp. *intermedia* (Schleich.) Dostál, Květena ČSR: 1115 (1949) [p. p., tantum quod plantas carpat., excl. var. *arenaria* Koch; nom. illeg.]

Conservation status: CR

Distribution: Pancarpathian endemic

Notes: High-mountain species occurring in the Ukrainian Carpathians only in a few subalpine and alpine habitats on Chornohora and Svydovets (Holub and Křisa 1971, Parnikoza and Gilchuk 2002, Chopyk and Fedoronchuk 2015).

Family Primulaceae

***Soldanella hungarica* Simonk., Enum Fl. Transsilv.: 461 (1886) et Oest. Bot. Zeitschr. 39: 219 (1889)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4Y57T>
- GBIF <https://www.gbif.org/species/4005274>

Nomenclature:

A. *Soldanella hungarica* Simonk., Enum Fl. Transsilv.: 461 (1886) et Oest. Bot. Zeitschr. 39: 219 (1889) [s. str.] *

≡ *Soldanella hungarica* subsp. *hungarica* Simonk., Enum Fl. Transsilv.: 461 (1886) et Oest. Bot. Zeitschr. 39: 219 (1889) [s. str.]

- CoL <https://www.catalogueoflife.org/data/taxon/5L7SN>

- GBIF <https://www.gbif.org/species/7683860>

≡ *Soldanella montana* subsp. *hungarica* (Simonk.) Lüdi in Hegi, Illustr. Fl. Mittel-Europa 5 (3): 1827 (1927)

- GBIF <https://www.gbif.org/species/7912534>

≡ *Soldanella montana* var. *hungarica* (Simonk.) Grinț., Gen. Soldan. Soldan. Haretii: 10 (1908)

≡ *Soldanella alpina* var. *hungarica* (Simonk.) Stojanoff & Stefanoff, Ann. Arch. Min. Agri. Dom. Roy. Bulg. 5: 865 (1925) [p. p.]

= *Soldanella alpina* [unranked] a *minor* Schur, Enum. Pl. Transsilv.: 556 (1866), non Seringe

= *Soldanella alpina* [unranked] β *minor* Neilr., Nachtraege Fl. Wien: 219 (1851) et Fl. Wien, Bd. 2: 219 (1868), non Seringe *

• GBIF <https://www.gbif.org/species/9326958>

= *Soldanella major* f. *parviflora* Morariu in Morariu, Nyár. & Guşul., Fl. Rep. Pop. Rom. VII: 642 (1960) [nom. inval.]

= *Soldanella major* f. *purpureifolia* R. Rös., Comun. Bot. 7: 58 (1963) [nom. inval.]

= *Soldanella pseudomontana* F.K. Meyer, Haussknechtia 2: 15 (1985)

• GBIF <https://www.gbif.org/species/4005090>

– *Soldanella hungarica* var. *minor* (Schur) Vierh. in Hannig & Winkler, Pflanzenareale 1 (1): Karte 7–8 (1926) [p. p.]

– *Soldanella major* f. *hungarica* (Simonk.) Jáv., Fl. Hung.: 811 (1925) [p. p.]

– *Soldanella major* f. *macrocarpa* Morariu in Morariu, Nyár. & Guşul., Fl. Rep. Pop. Rom. VII: 642 (1960) [p. p., nom. inval.]

– *Soldanella montana* subsp. *hungarica* var. *minor* (Schur) Vierch. [nom. inval., ex herb. LWS] *

– *Soldanella montana* var. *hungarica* f. *minor* (Schur) G. Kozij [nom. inval., ex herb. LWS] *

– *Soldanella montana* var. *minor* (Schur) Borbás, Beih. Bot. Centralb. 10: 282 (1901) [p. p.]

B. *Soldanella major* (Neilr.) Vierh. in Urban & Graebn., Festschr. Asch.: 502 (1904), emend. Zhang & Kadereit, Nordic J. Bot. 22 (2): 153 (2002) *

• GBIF <https://www.gbif.org/species/8202303>

\equiv *Soldanella alpina* [unranked] α *major* Neilr., Nachtraege Fl. Wien: 219 (1851) et Fl. Wien, Bd. 2: 219 (1868) *

• GBIF <https://www.gbif.org/species/8334456>

\equiv *Soldanella montana* subsp. *hungarica* var. *major* (Neilr.) Lüdi in Hegi, Illustr. Fl. Mittel-Europa 5 (3): 1827 (1930)

= *Soldanella stiriaca* F.K. Meyer, Haussknechtia 2: 20 (1985) [nom. inval., superfl.]

• GBIF <https://www.gbif.org/species/4005020>

– *Soldanella hungarica* subsp. *major* (Neilr.) Pawłowska, Fragm. Florist. Geobot. 9: 11 (1963) [p. p.] *

• CoL <https://www.catalogueoflife.org/data/taxon/5L7SP>

• GBIF <https://www.gbif.org/species/7505299>

– *Soldanella alpina* var. *vulgaris* Seringe, Mus. Helv. Hist. Nat., Ser. Bot. 1: 83 (1823) [p. p., nom. inval.]

- GBIF <https://www.gbif.org/species/9560877>
- *Soldanella major* subsp. *margittaniana* Fodor [nom. nudum, ex herb. UU] *

C. *Soldanella marmorossiensis* Klášť., Preslia 9: 19 (1930), **emend. Zhang & Kadereit**, Nordic J. Bot. 22 (2): 148 (2002) *

- GBIF <https://www.gbif.org/species/10930409>
- ≡ *Soldanella richteri* subsp. *marmorossiensis* (Klášť.) Niederle, Skalnickáruv rok 75: 27 (2017)
- GBIF <https://www.gbif.org/species/11089257>
- GBIF <https://www.gbif.org/species/9291156>
- = *Soldanella haretii* Grinț., Gen. Soldan. Soldan. Haretii: 7 (1908)
- GBIF <https://www.gbif.org/species/10744534>
- = *Soldanella major* f. *haretii* (Grinț.) Guşul. in Morariu, Nyár. & Guşul., Fl. Rep. Pop. Rom. VII: 67 (1960)
- = *Soldanella montana* var. *repanda* Grinț., Gen. Soldan. Soldan. Haretii: 12 (1908)
- *Soldanella montana* subsp. *faceta* A. Kress, Primulaceen-Studien 11: 22 (1993) [p. p.]
- GBIF <https://www.gbif.org/species/4005175>
- *Soldanella montana* subsp. *hungarica* var. *marmorossiensis* (Klášť.) Fodor, Fl. Zakarpattia: 57 (1974) [p. p.]

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: *Soldanella hungarica* is a critical taxon considered here in a broad sense due to its unclear chorology and taxonomy in the Ukrainian Carpathians, with provisional aggregation of *S. hungarica* Simonk. [s. str.], *S. major* (Neilr.) Vierh. in Urban & Graebn., and *S. marmorossiensis* Klášť. that are recognized separately by Zhang and Kadereit (2004).

Order Fabales

Family Fabaceae

***Genista tinctoria* subsp. *oligosperma* (Andrae) Soó, Feddes Reperit. 83(3): 169 (1972)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/9DRQQ>
- GBIF <https://www.gbif.org/species/8231729>

- GBIF <https://www.gbif.org/species/7840990>

Nomenclature:

≡ *Genista oligosperma* (Andrae) Simonk., Enum. Fl. Transsilv.: 169 (1886) *

- GBIF <https://www.gbif.org/species/5347633>

≡ *Genista tinctoria* subsp. *oligosperma* (Andrae) Malinovsky, Ukr. Bot. J. 19(3): 75 (1962) [comb. invalid.]

≡ *Genista tinctoria* var. *oligosperma* Andrae, Botanische Zeitung XI: 440 (1853)

= *Genista alpicola* Schur, Enum. Pl. Transsilv.: 145 (1866)

- GBIF <https://www.gbif.org/species/5627746>

= *Genista oligosperma* f. *alpicola* (Schur) Morariu, Fl. Rep. Pop. Rom. V: 62 (1957)

= *Genista oligosperma* f. *ghisae* Pawlowski, Bul. Grăd. Bot. Cluj XIX: 6 (1939)

= *Genista rupestris* Schur, Enum. Pl. Transsilv.: 145 (1866) *

= *Genista sigeriana* Fuss, Fl. Transs.: 149 (1866)

= *Genista tinctoria* var. *prostrata* auct., non Bab., Man. Brit. Bot.: 70 (1843)

– *Genista procumbens* Baumg. ex Fuss, Fl. Transs.: 150 (1866) [nom. inval.], non alior

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: There are two to five subspecies accepted within *G. tinctoria* L. – subsp. *tinctoria* (has a wide Eurasian distribution with a secondary presence on other continents), subsp. *ovata* (Waldst. & Kit.) Arcang. (has a WSE European distribution), subsp. *insubrica* (Brügger) Pignatti (endemic to Italy, sometimes, e.g., by World Plants, considered as a synonym of subsp. *tinctoria*), subsp. *littoralis* (Corb.) Rothm. (occurs in France and Italy, sometimes considered a synonym of subsp. *tinctoria*), and subsp. *oligosperma* (occurs in Ukrainian and Romanian Carpathians).

Genista tinctoria subsp. *oligosperma* has been considered extinct for the Ukrainian Carpathians and previously has been reported only from the Maramures Mts. (Kagalo 2009). However, Kobiv et al. (2017) recently rediscovered its small population on Mt. Berlebashka (Latundur) in the Maramures Mts. Chopyk and Fedoronchuk (2015) also mentioned this subspecies for Pip Ivan Chornohirskiy Mt. (Chornohora Mts.). However, the presence of *G. tinctoria* subsp. *oligosperma* in Chornohora Mts. requires validation because I found no respective herbarium material except a doubtful (hard to identify unambiguously) specimen of Fodor collected from 'Polonyna Kvasy' in 1966 (unnumbered specimen deposited at UU).

POWO mistakenly indicates that *G. tenuifolia* Loisel. and *G. tinctoria* subsp. *tenuifolia* (Loisel.) Pignatti (• GBIF <https://www.gbif.org/species/5347632>, • GBIF <https://www.gbif.org/species/11406566>) are synonyms of *G. tinctoria* subsp. *oligosperma*.

Genista tenuifolia has been described from Cavaglià in Piedmont, Italy, and has nothing in common with *G. tinctoria* subsp. *oligosperma*.

***Lathyrus transsilvanicus* (Spreng.) Rchb. f., Icon. Fl. Germ. Helv. XXII: t. 220, fig. IV, nr. 8-12 (1886)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/9D78Y>
- GBIF <https://www.gbif.org/species/5356553>

Nomenclature:

≡ *Lathyrus transsilvanicus* (Spreng.) R.M. Fritsch, Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1, 104: 517 (1895)

- GBIF <https://www.gbif.org/species/8329194>

≡ *Lathyrus laevigatus* subsp. *transsilvanicus* (Spreng.) Breistr., Bull. Soc. Bot. France 87: 53 (1940)

- GBIF <https://www.gbif.org/species/5356554>

≡ *Lathyrus linnaei* f. *transsilvanicus* (Spreng.) Rouy in Rouy & Foucad, Fl. France V: 269 (1899)

≡ *Lathyrus luteus* subsp. *transsilvanicus* (Spreng.) Dostal, Květena ČSR: 821 (1949)

- GBIF <https://www.gbif.org/species/5356555>

≡ *Lathyrus luteus* [unranked] a *transsilvanicus* (Spreng.) Ascherson & Graebn., Syn. Mitteleur. Fl. VI (2): 1044 (1906–1910)

≡ *Lathyrus luteus* [unranked] c *transsilvanicus* (Spreng.) Beck in Rchb., Icon. Fl. Germ. Helv. 22: 155 (1903)

- GBIF <https://www.gbif.org/species/11385726>

≡ *Orobus luteus* subsp. *transsilvanicus* (Spreng.) Nyman, Consp. Fl. Eur. 1: 204 (1878)

- GBIF <https://www.gbif.org/species/11408855>

≡ *Orobus transsilvanicus* Spreng., Syst. Veg., ed. 16, 3: 260 (1826)

- GBIF <https://www.gbif.org/species/2962476>

= *Lathyrus transsilvanicus* f. *trichocarpus* Borbás in Nyár., Herb. Kv. fl.: 335 (1941-1944)

– *Orobus laevigatus* Baumg., Enum. stirp. Transsilv. II: 329 (1816), non Waldst. & Kit.

Conservation status: EN

Distribution: Pancarpathian subendemic

Notes: Obsolescent species, which is narrowly distributed only in the volcanic part of the Ukrainian Carpathians. It is protected by the Red Book of Ukraine (Prots and Kish 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

GBIF also provides the name *Lathyrus laevigatus* subsp. *transsylvanicus* (Spreng.) Soó (• GBIF <https://www.gbif.org/species/8318457>) without indication of publication details, which seems to be some technical mistake since I could not locate such a publication where Soó applied such a name.

***Trifolium sarosiense* Hazsl., Éjsz. Magyarh. Vir.: 76 (1864) et Hazsl. ex Neilr., Diagn. Gefaesspfl.: 35 (1864)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/58Q5X>
- GBIF <https://www.gbif.org/species/5358815>
- GBIF <https://www.gbif.org/species/8013811>

Nomenclature:

≡ *Trifolium flexuosum* subsp. *sarosiense* (Hazsl.) Gibelli & Belli, Mem. Reale Accad. Sci. Torino ser. 2, 39 (1): 333 (1889)

- GBIF <https://www.gbif.org/species/11394034>

≡ *Trifolium medium* subsp. *sarosiense* (Hazsl.) Simonk., Enum. Fl. Transsilv.: 180 (1887) *

- GBIF <https://www.gbif.org/species/5358814>

≡ *Trifolium medium* var. *sarosiense* (Hazsl.) A. Nyár. in Sävil., Fl. Rep. Pop. Rom. V: 208 (1952)

- GBIF <https://www.gbif.org/species/7456349>

= *Trifolium banaticum* (Heuff.) Májovský, Acta Fac. Rerum Nat. Univ. Comen., Bot. 35: 6 (1988)

- GBIF <https://www.gbif.org/species/5633914>

= *Trifolium medium* subsp. *banaticum* (Heuff.) Hendrych, Preslia 28: 405 (1956)

- GBIF <https://www.gbif.org/species/5358817>

= *Trifolium medium* var. *banaticum* Heuff., Verh. K. K. Zool.-Bot. Ges. Wien 8(Abh.): 89 (1858)

- GBIF <https://www.gbif.org/species/8309775>

= *Trifolium medium* var. *sarosiense* f. *bracteolatum* A. Nyár. in Sävil., Fl. Rep. Pop. Rom. V: 208, 540 (1952)

= *Trifolium medium* var. *sarosiense* f. *eciliatum* A. Nyár. in Sävil., Fl. Rep. Pop. Rom. V: 208, 540 (1952)

= *Trifolium sarosiense* subsp. *banaticum* (Heuff.) Holub, Folia Geobot. Phytotax. 18(2): 205 (1983)

- GBIF <https://www.gbif.org/species/5632674>

= *Trifolium medium* [unranked] e *humile* Schur, Enum. Pl. Transsilv.: 155 (1866)

Conservation status: NE

Distribution: Pancarpathian subendemic

Notes: For *Trifolium medium* var. *sarosiense*, GBIF mistakenly indicated the authorship (Hazsl.) Sävil. & Rayss (• GBIF <https://www.gbif.org/species/7456349>), instead of this, it should be (Hazsl.) A. Nyár. in Sävil.

Order Gentianales

Family Gentianaceae

Gentiana laciniata Kit. ex Kanitz, Verh. Zool.-Bot. Ges. Wien 12: 572 (1862)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/3FMQ4>
- GBIF <https://www.gbif.org/species/7483254>
- GBIF <https://www.gbif.org/species/7654718>
- GBIF <https://www.gbif.org/species/9234218>

Nomenclature:

≡ *Ciminalis dshimilensis* subsp. *laciniata* (Kit. ex Kanitz) Zuev, Turczaninowia 22(3): 147 (2019)

- GBIF <https://www.gbif.org/species/11090477>

≡ *Gentiana pyrenaica* var. *laciniata* (Kit. ex Kanitz) Jav., Shed. Fl. Hung. Exs. 8: Nr 786 (1927) *

– *Gentiana pyrenaica* auct. fl. ucrain. carpat., non L. *

– *Gentiana vagneriana* Janka, Öestr. Bot. Zeitschr. 35: 109 (1885) [nom. nud.]

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: The Red Book of Ukraine protects this species as rare (Zyman and Shiyani 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

This species has unclear taxonomy and chorology. In Ukraine, it is often equated with *G. pyrenaica* L. (Mosyakin and Fedoronchuk 2015). Tutin (1972) also considered *G. laciniata* a synonym of *G. pyrenaica*. In some taxonomic databases (e.g., Euro+Med PlantBase, and World Plants – https://europlusmed.org/cdm_dataportal/taxon/eea7efa0-65c0-4870-963d-199a771d42d8), *G. laciniata* is also regarded as a synonym of *G. pyrenaica*. However, Tzvelev (1978) argued its independent position due to

differences in calyx morphology (3–5 mm long lacinate vs. 2–3 mm long ovate-lacinate segments) and distribution (Carpathian vs. Pyrenean). Kliment et al. (2016), based on the studies of Rybczyński et al. (2014), who showed it's isolated from *G. pyrenaica* position, also concluded that *G. laciniata* is an independent species, an Eastern Carpathian endemic narrowly distributed in the Ukrainian Carpathians. Nevertheless, Zuev (2019) later reconsidered it as a subspecies within the genus *Ciminalis*, i.e., *C. dshimilensis* subsp. *laciniata* (Kit. ex Kanitz) Zuev and indicated a much wider, Caucasian-Balkan-Carpathian, distribution. Zuev (2019) also proposed a new combination for *G. pyrenaica* – *Ciminalis pyrenaica* (L.) Zuev and placed it together with *C. dshimilensis* subsp. *laciniata* in the same section *Pyrenaicae* (Grossh.) Zuev. However, he did not indicate either distribution or morphological difference between *C. pyrenaica* and *C. dshimilensis* subsp. *laciniata*. Later, Favre et al. (2020) made several taxonomic recombinations based on molecular data. In particular, Favre et al. (2020) placed *G. pyrenaica* to the section *Chondrophyllae* Bunge (\equiv *Ciminalis* sect. *Chondrophyllae* (Bunge) Zuev), but the position and identity of *G. laciniata* remained unclear. Hence, due to controversial opinions, the taxonomic status and chorology of *G. laciniata* require further discussion.

***Swertia punctata* Baumg., Enum. Stirp. Transsilv. 1: 190 (1816)**

- GBIF <https://www.gbif.org/species/5595494>

Nomenclature:

\equiv *Swertia perennis* subsp. *punctata* (Baumg.) Ciocârlan, Fl. Ilustr. Rom. Vol. 2: 104 (1990), non *S. dichotoma* var. *punctata* T.N. Ho & J.X. Yang

= *Swertia perennis* M. Bieb. ex Boiss., Fl. Orient. [Boissier] 4(1): 78 (1879), non L.

- GBIF <https://www.gbif.org/species/8516331>

- GBIF <https://www.gbif.org/species/7945478>

= *Swertia stigmantha* K. Koch, Linnaea 23: 586 (1850)

- GBIF <https://www.gbif.org/species/5595375>

– *Swertia perennis* subsp. *perennis* L. [p.p.]

- CoL <https://www.catalogueoflife.org/data/taxon/9KSFD>

- GBIF <https://www.gbif.org/species/7270211>

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: POWO provides *S. stigmantha* K. Koch (• POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:371096-1>) among the synonyms of *S. punctata*. However, *S. stigmantha* has been described from Kazbek Mt. in the Caucasus, and in its protologue, it was indicated that this species is just similar to *S. perennis* L. and *S. punctata* (Koch 1850: pp. 586–587). Perhaps, due to the occasional synonymization of

S. stigmantha and *S. punctata* within the frames of *S. perennis*, these two species were considered as direct synonyms. However, they are not – *S. punctata* occurs in the Carpathians and has only a few confirmed localities outside these mountains – in Bulgaria and Kosovo (Tan and Vladimirov 2001, Anchev et al. 2009, Kliment et al. 2016).

Boissier (1879): 78) mentioned *S. punctata* for Hungarian Mts. and Transylvania and provided *S. perennis* in the sense of M. Bieb., non L. among its synonyms. However, for some reason, he also included Caucasian plants *S. iberica* Fisch. ex C.A. Mey. and *S. obtusa* var. *albiflora* Ledeb. to *S. punctata*.

Family Rubiaceae

Galium album* subsp. *suberectum* (Klokov) E. Michálek., *Biología, Bot. (Czechoslovakia) 48(1): 48 (1993)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7JSZR>
- GBIF <https://www.gbif.org/species/2915138>

Nomenclature:

≡ *Galium erectum* subsp. *suberectum* Kobiv et al., *Visnyk Lviv Univ., Ser. Biol.* 49: 68 (2009) [nom. illeg.]

≡ *Galium suberectum* Klokov, *Fl. UkrSSR* 10: 463 (1961) *

- GBIF <https://www.gbif.org/species/2915139>

= *Galium mollugo* subsp. *erectum* f. *longifolium* Kučowa in Pawł., *Fl. Polska* XI: 311, 324 (1967)

– *Galium erectum* auct. fl. ucrain. carpat., non Huds.

– *Galium mollugo* subsp. *erectum* (Huds.) Syme sensu Kučowa in Pawł., *Fl. Polska* XI: 311, 324 (1967) [p. p.]

Conservation status: LC

Distribution: SE Carpathian endemic

***Galium transcarpaticum* Stojko et Tasek., *Ukr. Bot. Zhurn.* 36(6): 594 (1979)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/3F6MG>
- GBIF <https://www.gbif.org/species/2914196>

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: Controversial species (probably a local morphotype of *Galium album* subsp. *suberectum*) with an unclear systematic position (Stojko and Tassenkevich 1979). It was excluded from the new edition of the Flora of the Ukrainian Carpathians (Chopyk and Fedoronchuk 2015) due to its ambiguous delimiting morphological features and almost total absence of specimens identified as *G. transcarpaticum* by other, besides Tassenkevich, researchers. However, it was accepted by Mosyakin and Fedoronchuk (1999) and still listed as an endangered species by Onyshchenko et al. (2022) due to absence of any further investigations on this species. For this reason only, despite solid doubts, I remained this species as valid in the current list.

Order Lamiales

Family Lamiaceae

***Thymus alternans* Klokov, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 16: 293 (1954)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/56QNV>
- GBIF <https://www.gbif.org/species/5607756>

Nomenclature:

- *Thymus marschallianus* auct., non Willd. *
- *Thymus glabrescens* auct., non Willd.
- *Thymus serpyllum* f. *margittaianus* auct., non Lyka in Jav.
- *Thymus roegneri* K. Koch, Linnaea 21(6): 666 (1849) [p. p., tantum quod plantas ucrain. carpat.]*
- GBIF <https://www.gbif.org/species/5605565>

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: Euro+Med PlantBase and World Plants consider *T. alternans* a synonym of *T. roegneri* K. Koch (https://euoplusmed.org/cdm_dataportal/taxon/d4cedbae-5fc0-4f8a-b5cc-deeb11ca2ad4), which is widely distributed. However, Kliment et al. (2016) suggest it to be a valid subendemic species. Mártonfi (1996), Nachychko (2014), and Nachychko and Honcharenko (2017) also support the independence of *T. alternans*. Nevertheless, *T. alternans* plants from the Ukrainian Carpathians were indeed sometimes misidentified as *T. roegneri*.

***Thymus pulcherrimus* subsp. *pulcherrimus* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 140 (1859) et Enum. Pl. Transsilv.: 526 (1866)**

Nomenclature:

= *Thymus rotundifolius* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 1: 108 (1850), non alior

• GBIF <https://www.gbif.org/species/8345586>

= *Thymus serpyllum* f. *oreades* Lyka ex Jáv., Magyar Fl.: 902 (1925)

• GBIF <https://www.gbif.org/species/8043403>

= *Thymus pulcherrimus* var. *oreades* (Lyka) Borza, Consp. Fl. Rom.: 233 (1947)

= *Thymus pulcherrimus* f. *oreades* (Lyka) Guşul. in Săvul., Fl. Rep. Pop. Rom. VIII: 330 (1961)

= *Thymus pulcherrimus* f. *beldiei* Guşul. in Săvul., Fl. Rep. Pop. Rom. VIII: 689 (1961) [nom. invalid.]

= *Thymus circumcinctus* Klokov, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 16: 294 (1954) *

• GBIF <https://www.gbif.org/species/5607459>

– *Thymus carpathicus* auct. fl. ucrain. carpat., non Čelak. *

– *Thymus chamaedrys* subsp. *pulcherrimus* (Schur) Simonk., Enum. Fl. Transsilv.: 442 (1886) [p. p., tantum quod plantas ucrain. carpat.]

• GBIF <https://www.gbif.org/species/9273406>

– *Thymus montanus* auct., non Waldst. & Kit.

– *Thymus pulcherrimus* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt 10: 140 (1859) [p. p., tantum quod plantas ucrain. carpat.] *

• CoL <https://www.catalogueoflife.org/data/taxon/56RBT>

• GBIF <https://www.gbif.org/species/7306766>

– *Thymus serpyllum* subsp. *pulcherrimus* (Schur) Lyka in S.A.Jávorka, Magyar Fl.: 902 (1925) [p. p., tantum quod plantas ucrain. carpat.]

• GBIF <https://www.gbif.org/species/7921817>

– *Thymus serpyllum* var. *pulcherrimus* (Schur) Nyman, Consp. Fl. Eur., Suppl. 2: 257 (1890) [p. p., tantum quod plantas ucrain. carpat.]

• GBIF <https://www.gbif.org/species/8243035>

– *Thymus sudeticus* Opiz ex Rchb., Fl. Germ. Excurs.: 312 (1830–1832) et Opiz ex Borbás, Math. Term. Közlem. 24(2): 103 (1890) [p. p., tantum quod plantas ucrain. carpat.] *

- GBIF <https://www.gbif.org/species/5605220>
- GBIF <https://www.gbif.org/species/8040934>
- GBIF <https://www.gbif.org/species/8594373>

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: Mártonfi (1997) delimited *T. pulcherimus* subsp. *carpaticus* (= subsp. *sudeticus* (Lyka) P.A. Schmidt) distributed in the W Carpathians and Sudetes from the Eastern Carpathian subspecies *T. pulcherimus* subsp. *pulcherimus* (Mártonfi and Marhold 1998, Štěpánek and Tomšovic 2000). Among synonyms of *T. pulcherimus* subsp. *carpaticus*, Mártonfi (1997) surprisingly indicated *T. circumcinctus* Klokov, which has been described from E Carpathians (Klokov 1960: pp. 301–302). However, in the following paper (Mártonfi and Marhold 1998), this confusing synonym and some other synonyms have been excluded.

Family Oleaceae

***Syringa josikaea* J. Jacq. ex Rchb. f., Iconogr. Bot. Pl. Crit. 8: 32 (1830)
et J. Jacq., Flora 14(1): 67, 399 (1831)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/8X5YV>
- GBIF <https://www.gbif.org/species/7636833>
- GBIF <https://www.gbif.org/species/5549698>

Nomenclature:

= *Syringa henryi* var. *eximia* Rehder, Mitt. Deutsch. Dendrol. Ges. 24: 227 (1915)

- GBIF <https://www.gbif.org/species/7903992>

= *Syringa josikaea* var. *eximia* Froebel ex Olbrich, Möller's Deutsche Gärtn.-Zeitung 16: 561 (1901)

- GBIF <https://www.gbif.org/species/12061256>

= *Syringa josikaea* [unranked] *eximia* hort. ex Beissner, Schelle & Zabel, Handb. Laubholzben.: 415 (1903)

- GBIF <https://www.gbif.org/species/11982022>

= *Syringa josikaea* f. *monstrosa* Jägger ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* f. *pallida* Jägger ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* [unranked] *pallida* hort. ex Beissner, Schelle & Zabel, Handb. Laubholzben.: 415 (1903)

= *Syringa josikaea* f. *rosea* Miemetz ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* f. *rubra* hort. ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* [unranked] *rubra* hort. ex Beissner, Schelle & Zabel, Handb. Laubholzben.: 415 (1903)

= *Syringa josikaea* f. *simia* Froebel ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* f. *zabelii* Froebel ex Morariu, Fl. Rep. Pop. Rom. VIII: 513 (1961)

= *Syringa josikaea* [unranked] *zabeli* hort. ex Beissner, Schelle & Zabel, Handb. Laubholzben.: 415 (1903)

• GBIF <https://www.gbif.org/species/7596635>

= *Syringa prunifolia* Kit. ex Lingelsh., Pflanzenr. (Engler) Oleac. Fraxin.-Syring.: 78 (1920)

= *Syringa vincetoxifolia* Baumg. ex Steud., Nomencl. Bot., ed. 2, 2: 656 (1841)

• GBIF <https://www.gbif.org/species/8462335>

• GBIF <https://www.gbif.org/species/5549581>

Conservation status: VU

Distribution: SE Carpathian endemic

Notes: This vulnerable species is protected by the Red Book of Ukraine (Mygal et al. 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021) and by IUCN Red List (Höhn and Lendvay 2018).

Vasiliev (1952) and Macalik et al. (2013) mentioned *S. prunifolia* as a synonym of *S. josikaea* but provided incorrect taxonomic authorship Kit. in Sched. ex Borbás while the proper authorship is Kit. ex Lingelsh.

Family Orobanchaceae

Euphrasia tatrae Wettst., Oesterr. Bot. Z. 44: 248 (1894)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/3CS5Z>
- GBIF <https://www.gbif.org/species/3736062>

Nomenclature:

≡ *Euphrasia minima* subsp. *tatrae* (Wettst.) Hayek in Hegi, Ill. Fl. Mitteleur. 6(1): 91 (1913) *

• GBIF <https://www.gbif.org/species/7531784>

≡ *Euphrasia minima* var. *tatrae* (Wettst.) Pawł., Fl. Polska XI: 17 (1967)

≡ *Euphrasia tatrae* Wettst. subsp. *tatrae*, Oesterr. Bot. Z. 44: 248 (1894)

• GBIF <https://www.gbif.org/species/8882257>

= *Euphrasia minima* var. *carpathica* Freyn in Sagorski & Schneider, Fl. Centralkarpat. II: 421 (1891) non *Euphrasia carpatica* Zapal.

= *Euphrasia minima* var. *tatrae* f. *glandulifera* (Wettst.) Rāvāruṭ, Fl. Rep. Pop. Rom. VII: 586 (1960)

= *Euphrasia officinalis* [unranked] ♂ *alpestris* Freyn, Verh. K.K. Zool.-Bot. Ges. Wien XXII: 350 (1872)

= *Euphrasia tatrae* subsp. *glandulifera* (Wettst.) Stasz., Fragm. Florist. Geobot. 22(2): 292 (2015)

• GBIF <https://www.gbif.org/species/8923251>

= *Euphrasia tatrae* f. *glandulifera* Wettst., Monogr. Gatt. Euphrasia: 165 (1896)

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: Wettstein, who described *E. tatrae* in 1894, later distinguished *E. tatrae* f. *glandulifera* Wettst. by the presence of glandular trichomes (Wettstein 1894, Wettstein 1896). However, he noted that plants with glandular and eglandular trichomes cooccur and can probably hybridize. Staszkiwicz (2015) raised this form to rank of subspecies and delimited subsp. *tatrae* and subsp. *glandulifera* (Wettst.) Stasz. Staszkiwicz (2015) also noted that *E. tatrae* subsp. *glandulifera* is a hybrid of *E. rostkoviana* Hayne and *E. nemorosa* (Pers.) Wallr. *Euphrasia tatrae* subsp. *glandulifera* is not mentioned for the flora of the Ukrainian Carpathians, but both mentioned parental species occur there, and, therefore, the presence of their hybrid is highly possible. Also worth noting is that Mirek et al. (2020) consider *E. tatrae* as a synonym of *E. minima* Jacq. ex DC. At the same time, Tzvelev (1981) and Peregrym (2010) believed that *E. minima* and *E. tatrae* are two different species. He pointed out that *E. minima* occurs in more western areas of Europe and does not occur in the USSR (i.e., in the Ukrainian Carpathians), where it is displaced by *E. tatrae*. Hence, due to the absence of special morphological studies of *E. tatrae* in the Ukrainian Carpathians and its questionable taxonomy, here I am not delimiting the subspecies or forms within this species and consider *E. tatrae* subsp./f. *glandulifera* an inclusive synonym of *E. tatrae*.

Family Plantaginaceae

***Plantago atrata* subsp. *carpathica* (Pilg.) Soó, Acta Geobot. Hung. 3: 61 (1940)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5KH8H>
- GBIF <https://www.gbif.org/species/7624228>

Nomenclature:

≡ *Plantago atrata* subsp. *atrata* var. *carpathica* (Pilg.) Pilg., Pflanzenr. (Engler) 102: 296 (1937)

• GBIF <https://www.gbif.org/species/8397828>

≡ *Plantago montana* subsp. *atrata* var. *carpathica* Pilg., Repert. Spec. Nov. Regni Veg. 23: 256 (1926–1927)

• GBIF <https://www.gbif.org/species/7564352>

≡ *Plantago montana* subsp. *carpatica* (Pilg.) Soó ex Balázs, Acta Geobot. Hung. 2: 40 (1938–1939)

= *Plantago atrata* subsp. *atrata* var. *carpathica* subvar. *rigidior* (Pilg.) Pilg., Pflanzenr. (Engler): 296 (1937)

= *Plantago atrata* subsp. *atrata* var. *carpathica* subvar. *vestita* (Pilg.) Pilg., Pflanzenr. (Engler): 296 (1937)

= *Plantago atrata* var. *carpathica* f. *vestita* (Pilg.) Borza, Consp.: 255 (1949)

= *Plantago atrata* subsp. *carpathica* f. *vestita* (Pilg.) Soó, Acta Geobot. Hung. 3: 61 (1940)

= *Plantago lanceolata* [unranked] β *alpestris* Wahlenb., Fl. Carpat.: 44 (1814)

= *Plantago montana* [unranked] *alpestre* Wahlenb., Fl. Carpat. Princip.: 44 (1814)

= *Plantago montana* subsp. *atrata* var. *carpathica* subvar. *rigidior* Pilg., Repert. Spec. Nov. Regni Veg. 23: 257 (1926–1927)

= *Plantago montana* subsp. *atrata* var. *carpathica* subvar. *vestita* Pilg., Repert. Spec. Nov. Regni Veg. 23: 257 (1926–1927)

= *Plantago montana* subsp. *carpatica* subvar. *rigidior* (Pilg.) Balázs, Acta Geobot. Hung. 2: 40 (1938–1939)

= *Plantago montana* subsp. *carpatica* subvar. *vestita* (Pilg.) Balázs, Acta Geobot. Hung. 2: 40 (1938–1939)

– *Plantago alpina* Vill. sensu Rochel, Pl. Banat. Rar.: 32; Nr. IV, Tab. I, fig. 4 (1828)

– *Plantago alpina* Vill. sensu Schur, Enum. Pl. Transsilv.: 564 (1866), non alior

– *Plantago atrata* Hoppe, Bot. Taschenb. 1799: 85 (1799) [p. p., tantum quod plantas ucrain. carpat.]*

• GBIF <https://www.gbif.org/species/8083357>

– *Plantago montana* Lam. sensu Schur, Enum. Pl. Transsilv.: 564 (1866), non alior *

– *Plantago saxatilis* M. Bieb., Fl. Taur.-Caucasus 1: 109 (1808) [p. p.]

• GBIF <https://www.gbif.org/species/4156187>

Conservation status: LC

Distribution: Pancarpathian endemic

Notes: There are nine subspecies of *P. atrata* Hoppe, from which only *P. atrata* subsp. *carpatica* is usually reported for the Ukrainian Carpathians. However, Chrtek (2000) also delimited *P. atrata* subsp. *ucrainica* Chrtek that, as he indicated, mainly occurs in the Sydovets Mts. Besides this, he mentioned the presence of this subspecies in

Romania (Slănic Moldova and Retezat). *Plantago atrata* subsp. *ucrainica* differs by erect ascending (vs. decumbent to prostrate in *P. atrata* subsp. *carpatica*), longer (up to 17 cm long vs. 14 cm in *P. atrata* subsp. *carpatica*), and more narrow (up to 8 mm wide vs. 16 mm *P. atrata* subsp. *carpatica*) leaves. Distribution and phylogenetic position of *P. atrata* subsp. *ucrainica* still requires clarifications since after Chrtek (2000), there were no further corresponding investigations on this subspecies.

The combination *P. montana* subsp. *carpatica* Soó, Acta Geobot. Hung. 2: 40 (1938–1939) and consequent recombination *P. atrata* subsp. *carpatica* (Soó) Soó, Acta Geobot. Hung. 3: 61 (1940) commonly circulated in the checklists seem to be incorrect because it was Pilger who first applied the epithet *carpathica* in the name *P. montana* subsp. *atrata* var. *carpathica* Pilg. in 1926 (Pilger 1926). Later, in 1937, Pilger introduced a new combination *P. atrata* subsp. *atrata* var. *carpathica* (Pilg.) Pilg. (Pilger 1937). It looks like Soó made further taxonomic recombinations based on these two Pilger's names, but, unfortunately, I could not re-find the original works of Soó regarding *P. atrata* to check.

GBIF incorrectly provides the name *P. atrata* subsp. *carpathica* (Pilg.) Pilg. (• GBIF <http://www.gbif.org/species/11030083>). It should be either *P. atrata* var. *carpathica* (Pilg.) Pilg. (incorrect taxonomic rank is indicated) or *P. atrata* subsp. *carpatica* (Pilg.) Soó (the incorrect authorship is provided). In both cases, the entry is duplicating other existing.

Family Scrophulariaceae

Melampyrum saxosum Baumg., Enum. Stirp. Transsilv. II: 199 (1816)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/6R9T5>
- GBIF <https://www.gbif.org/species/3725032>

Nomenclature:

≡ *Melampyrum sylvaticum* [unranked] *M. saxosum* (Baumg.) Nyman, Consp. Fl. Eur.: 556 (1881)

≡ *Melampyrum sylvaticum* subsp. *saxosum* (Baumg.) G. Beauvis., Bull. Soc. Bot. Geneve 4: 418 (1912) et Mem. Soc. Phys. Hist. Nat. Geneve 38: 581 (1916) *

= *Melampyrum herbichii* Wołosz., Spraw Kom. Fizyi. Krajow. 21: 133 (1888) *

• CoL <https://www.catalogueoflife.org/data/taxon/3Z5BY>

• GBIF <https://www.gbif.org/species/7331709>

= *Melampyrum herbichii* subsp. *csatoi* (Soó) Soó, Feddes Repert. 83(3): 181 (1972)

• GBIF <https://www.gbif.org/species/3725616>

= *Melampyrum herbichii* subsp. *woloszczakii* Jasiewicz, Fragm. Florist. Geobot. 4: 112 (1958)

- GBIF <https://www.gbif.org/species/7867330>
= *Melampyrum saxosum* subsp. *baumgartenii* (Soó) Soó, Feddes Repert. 24: 176 (1927)
- GBIF <https://www.gbif.org/species/8046716>
= *Melampyrum saxosum* [unranked] *baumgartenii* (Soó) Jáv., Magyar Fl.: 1011 (1925)
- GBIF <https://www.gbif.org/species/8117461>
= *Melampyrum saxosum* var. *baumgartenii* (Soó) Nyár., Flora Rep. Pop. Rom. VII: 637, 646 (1960)
= *Melampyrum saxosum* subsp. *javorkae* (Soó) Soó, Feddes Repert. 24: 176 (1927)
- GBIF <https://www.gbif.org/species/7459548>
= *Melampyrum saxosum* [unranked] *javorkae* (Soó) Jáv., Magyar Fl.: 1011 (1925)
- GBIF <https://www.gbif.org/species/7653737>
= *Melampyrum saxosum* var. *javorkae* (Soó) Nyár., Flora Rep. Pop. Rom. VII: 637, 646 (1960)
= *Melampyrum saxosum* var. *typicum* Nyár., Flora Rep. Pop. Rom. VII: 637, 646 (1960)
= *Melampyrum sylvaticum* f. *csatoi* Soó, Feddes Repert. 24: 174 (1927)
- GBIF <https://www.gbif.org/species/8389454>
= *Melampyrum sylvaticum* subsp. *moeszianum* Soó, Feddes Repert. 24: 190 (1927)
- GBIF <https://www.gbif.org/species/7632053>
= *Melampyrum sylvaticum* [unranked] α *pictum* Herbich, Select. Pl. Rar. Galic. Bucov.: Nr 39 (1836) et Fl. Bucov.: 275 (1859)
= *Melampyrum sylvaticum* var. β *saxosum* Willkomm, Führer Pfl. Deutsch., Österr. und Schweiz: 535 (1881)
= *Melampyrum sylvaticum* subsp. *saxosum* var. *herbichii* (Wolosz.) G. Beauvis., Mem. Soc. Phys. Hist. Nat. Geneve 38: 582 (1916)
= *Melampyrum sylvaticum* subsp. *saxosum* var. β *pictum* (Herbich) G. Beauvis., Mem. Soc. Phys. Hist. Nat. Geneve 38: 581 (1916)
= *Melampyrum sylvaticum* subsp. *saxosum* var. *pictum* subvar. *eu-pictum* G. Beauvis., Mem. Soc. Phys. Hist. Nat. Geneve 38: 582 (1916)
= *Melampyrum sylvaticum* subsp. *saxosum* var. *pictum* subvar. *eu-saxosum* G. Beauvis., Mem. Soc. Phys. Hist. Nat. Geneve 38: 582 (1916)
– *Melampyrum pictum* Herbich [nom inval., ex herb LWS] *
– *Melampyrum sylvaticum* Simonk., Enum. Fl. Transsilv.: 429 (1886) [p. p.], non L.

Conservation status: LC

Distribution: SE Capathian endemic

Notes: GBIF (<https://www.gbif.org/species/7331709>), CoL (<https://www.catalogueoflife.org/data/taxon/3Z5BY>), World Plants, and Euro+Med PlantBase consider *M. herbichii* Woł. an independent species. However, Štech and Drábková (2005) and Těšitel and Štech (2007) concluded that *M. herbichii* is morphologically identical to *M. saxosum* and differs only by perianth coloration. Later, Těšitel et al. (2009), based on comprehensive morphological and molecular analyses, confirmed that these two species are unite.

Order Malpighiales

Family Linaceae

Linum extraaxillare Kit. ex Rochel, Pl. Banat. Rar.: 26 (1828) [nom. nudum] et Kit., Linnaea 32 (4-5): 573 (1864)

- GBIF <https://www.gbif.org/species/4049149>

Nomenclature:

≡ *Linum perenne* subsp. *extraaxillare* (Kit. ex Rochel) Nyman, Consp. Fl. Eur., Suppl. 2: 71 (1889)

- CoL <https://www.catalogueoflife.org/data/taxon/7K9NB>

- GBIF <https://www.gbif.org/species/6711238>

– *Linum montanum* auct. fl. transsilv., non Schleich.

– *Linum alpinum* auct. fl. transsilv., non L.

Conservation status: NT

Distribution: Pancarpathian subendemic

Family Salicaceae

Salix kitaibeliana Willd., Sp. Pl., ed. 4 [Willdenow] 4(2): 683-684 (1806)

- GBIF <https://www.gbif.org/species/5583534>

Nomenclature:

≡ *Salix retusa* subsp. *kitaibeliana* (Willd.) Jáv., Magyar Fl.: 235 (1924) *

≡ *Salix retusa* f. *kitaibeliana* (Willd.) Rouy, Fl. France [Rouy & Foucaud]: XII: 219 (1910)

≡ *Salix retusa* [unranked] γ *kitaibeliana* (Willd.) Rchb., Reichenbachianae Fl. German.: XV (1833) et Icon. Fl. Germ. Helv. [H.G.L. Reichenbach]: 16, fig. 1187 (1849)

- GBIF <https://www.gbif.org/species/9285964>

= *Salix retusa* [unranked] b *serrulata* Roch., Pl. Banat., 78, tab. 38, fig. 80 (1828)

= *Salix retusa* var. *major* Rchb., Fl. Germ. Excurs.: 166 (1830–1832)

= *Salix retusa* [unranked] β *major* W.D.J. Koch, Syn. Fl. Germ. Helv.: 660 (1837) [nom. superfl.]

• GBIF <https://www.gbif.org/species/11966312>

Conservation status: EN

Distribution: Pancarpathian endemic

Notes: A rare species protected by the Red Book of Ukraine (Danylyk 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021) with an unclear taxonomic position.

In the online databases (i.e., POWO, Euro+Med PlantBase, CoL, WorldPlants, GBIF) *S. kitaibeliana* is provided as a synonym for *S. retusa* L., a Paneuropean mountainous species. Similarly, it is synonymized with *S. retusa* by many Ukrainian authors (e.g., Mosyakin and Fedoronchuk 1999, Danylyk 2009, Chorney 2011, Ishchuk 2017). It is also synonymized by Kucowa (1954) and Mirek et al. (2020). However, Kliment et al. (2016), like some other authors (e.g., Piscová et al. 2021), consider *S. kitaibeliana* as independent species. Chopyk and Fedoronchuk (2015) noted that these two species are very close but also still delimited them based on the differences in the leaf morphology (leaves are up to 2 cm long obovate, with a retuse tip in *S. retusa* and up to 4 cm long, oblong-obovate, with a pointed tip in *S. kitaibeliana*). The same differences in the leaf morphology applied to delimit *S. kitaibeliana* and *S. retusa* in the Flora of Romania (Beldie 1952), where they are, however, provided in the rank of varieties. *Salix retusa* s. str. is considered in the Flora of Romania as *S. retusa* var. *genuina* Rchb. and *S. kitaibeliana* – as *S. retusa* var. *kitaibeliana* (Willd.) Rchb. Additionally, Beldie (1952) mentioned differences in their habitus (short creeping stems and branches in *S. retusa* and firm and sometimes ascending stems in *S. kitaibeliana*). The difference in the leaf morphology of these two species was statistically confirmed by Kosiński and Adreas Hilpold (2017). However, later phylogenetic studies (Kosiński et al. 2019) regarding ploidy did not allow to delimit *S. kitaibeliana*.

Worth to note that Pawłowski (1946) also recognized *S. retusa* and *S. kitaibeliana* separately. He pointed out that, despite these two species often co-occur, *S. retusa* prefers lime substrates while *S. kitaibeliana* mostly grows on granite outcrops and rocks. Myklestad and Birks (1993) partially confirmed such ecological differentiation of these two species in their ecogeographical studies – on the provided graphs, *S. kitaibeliana* is well separated from *S. retusa*.

Family Violaceae

Viola declinata Waldst. et Kit., Descr. Icon. Pl. Rar. Hung. 3: 248 (1807)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5BGMT>
- GBIF <https://www.gbif.org/species/5664655>

Nomenclature:

= *Viola declinata* var. *knechtelii* Grec., Consp. Fl. Roman.: 88 (1898)

= *Viola declinata* var. *major* (Roch.) Grec., Consp. Fl. Roman.: 88 (1898)

= *Viola declinata* [unranked] b *montana* Schur, Enum. Pl. Transsilv.: 86 (1866)

= *Viola gracilis* Rchb., Fl. Germ. Excurs. 709 (1832), non alior

- GBIF <https://www.gbif.org/species/7951755>

= *Viola mutabilis* [unranked] b *intermedia* Roch., Enum. Pl. Banat.: 6 (1828) [nom. nudum]

= *Viola mutabilis* [unranked] e *major* Roch., Enum. Pl. Banat.: 6 (1828) [nom. nudum]

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: *Viola declinata* is often considered a Carpatho-Balkan species (Kricsfalusy and Budnikov 2002, Oprea 2005, Ciocârlan 2009). However, Velev and Apostolova (2009) reported that it does not occur in Serbia and Bulgaria, as suggested before. Considering the questionable presence of *V. declinata* in the Balkans (perhaps it is introduced), Chorney (2011) and Kliment et al. (2016) considered it a Carpathian endemic.

POWO erroneously indicates *V. latisejala* Wettst. (• POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:868508-1>) among synonyms of *V. declinata* (• POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:868009-1>). Instead of this, *V. latisejala* (= *V. elegantula* subsp. *latisejala* (Wettst.) W. Becker) is a synonym to *V. tricolor* L. subsp. *tricolor*.

Order Ranunculales

Family Ranunculaceae

Aconitum bucovinense Zapał., Rozpr. Wydz. Mat.-Przyr. Akad. Umiej., Dział B. Nauki Biol. 48: 89-90 (1908)

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/8S2V7>
- GBIF <https://www.gbif.org/species/3926782>

Nomenclature:

- ≡ *Aconitum callibotryon* subsp. *bucovinense* (Zapał.) Grinț., Fl. Rep. Pop. Rom. II: 481 (1953)
- GBIF <https://www.gbif.org/species/8002043>
- ≡ *Aconitum firmum* subsp. *bucovinense* (Zapał.) Aschers. & Graebn., Syn. Mitteleurop. Fl. 5/2: 781 (1929)
- GBIF <https://www.gbif.org/species/8007137>
- = *Aconitum bucovinense* f. *orthotricha* Gáyér, Magyar Bot. Lap. 9: 168 (1909)
- GBIF <https://www.gbif.org/species/12044665>
- = *Aconitum callibotryon* subsp. *bucovinense* f. *altum* Grinț., Fl. Rep. Pop. Rom. II: 482, 685 (1953)
- = *Aconitum callibotryon* subsp. *bucovinense* f. *densum* Grinț., Fl. Rep. Pop. Rom. II: 482, 685 (1953)
- = *Aconitum callibotryon* subsp. *bucovinense* f. *glaberrimum* Grinț., Fl. Rep. Pop. Rom. II: 482, 684 (1953)
- = *Aconitum callibotryon* subsp. *bucovinense* f. *laxum* Grinț., Fl. Rep. Pop. Rom. II: 482, 685 (1953)
- = *Aconitum callibotryon* subsp. *bucovinense* f. *pilosum* Grinț., Fl. Rep. Pop. Rom. II: 482, 684 (1953)
- = *Aconitum callibotryon* subsp. *bucovinense* f. *pyramidatum* Grinț., Fl. Rep. Pop. Rom. II: 482, 685 (1953)
- = *Aconitum callibotryon* subsp. *rigidum* (Rchb.) Grinț., Fl. Rep. Pop. Rom. II: 482 (1953)
- = *Aconitum callibotryon* subsp. *rigidum* f. *glabrum* Grinț., Fl. Rep. Pop. Rom. II: 482, 683 (1953)
- = *Aconitum callibotryon* subsp. *rigidum* f. *pubescens* Grinț., Fl. Rep. Pop. Rom. II: 482, 684 (1953)
- = *Aconitum commutatum* Rchb., Uebers. Aconitum: 36 (1819)
- GBIF <https://www.gbif.org/species/3926625>
- = *Aconitum firmum* f. *rigidum* Gáyér, Magyar Bot. Lapok VIII: 165 (1909)
- = *Aconitum laetum* [unranked] β *rigidum* Rchb., Icon. Fl. Germ. Helv. IV: 25, tab. 97, fig. 4708b (1840)
- = *Aconitum napellus* f. *commutatum* (Rchb.) Gáyér in G. Hegi, Ill. Fl. Mitt.-Eur. 3: 499 (1912)
- GBIF <https://www.gbif.org/species/12132273>
- *Aconitum bernhardianum* Rchb., Illustrat. Spec. Aconitum: tab. 68 (1823–1827), non Wallr.
- GBIF <https://www.gbif.org/species/3926951>

Conservation status: EN

Distribution: SE Carpathian endemic

Notes: The nomenclature and synonymy of the genus *Aconitum* L. follow Mitka (2003), Mitka (2008) and Mitka et al. (2021) with my minor additions and some notes.

***Aconitum firmum* subsp. *firmum* Rchb., Uebers. *Aconitum*: 20 (1819)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FDHQ>
- GBIF <https://www.gbif.org/species/7277350>

Nomenclature:

≡ *Aconitum koelleianum* var. *firmum* (Rchb.) Rchb., Mon. *Aconitum*: 85, Tab. XIV, fig. 1 (1821)

• GBIF <https://www.gbif.org/species/12133197>

• GBIF <https://www.gbif.org/species/8102235>

≡ *Aconitum napellus* subsp. *firmum* (Rchb.) Gáyér in G. Hegi, Ill. Fl. Mitt.-Eur. 3: 498 (1912)

• GBIF <https://www.gbif.org/species/8325653>

≡ *Aconitum napellus* var. *firmum* (Rchb.) Pawł., Fl. Tatr. Vol. 1: 274 (1956) *

• GBIF <https://www.gbif.org/species/11952496>

= *Aconitum napellus* [unranked] e *babigorense* Zapł., Consp. Fl. Gal. Crit. 2: 226 (1908)

• GBIF <https://www.gbif.org/species/12106242>

• GBIF <https://www.gbif.org/species/7637895>

= *Aconitum napellus* [unranked] e *babigorense* f. *babigorense* Zapł., Consp. Fl. Gal. Crit. 2: 226 (1908)

• GBIF <https://www.gbif.org/species/8383207>

= *Aconitum napellus* [unranked] e *babigorense* f. *subfissum* Zapł., Consp. Fl. Gal. Crit. 2: 227 (1908)

• GBIF <https://www.gbif.org/species/8104841>

• GBIF <https://www.gbif.org/species/12048859>

= *Aconitum napellus* [unranked] d *carpaticum* f. *carpaticum* Zapł., Consp. Fl. Gal. Crit. 2: 226 (1908)

• GBIF <https://www.gbif.org/species/12091834>

• GBIF <https://www.gbif.org/species/12091834>

= *Aconitum napellus* [unranked] b *subtatrense* Zapł., Consp. Fl. Gal. Crit. 2: 225 (1908)

- GBIF <https://www.gbif.org/species/8026543>
- GBIF <https://www.gbif.org/species/12162386>
- = *Aconitum napellus* [unranked] b *subtatrense* f. *abnorme* Zapal., Consp. Fl. Gal. Crit. 2: 225 (1908)
- GBIF <https://www.gbif.org/species/7907677>
- = *Aconitum napellus* [unranked] b *subtatrense* f. *latisectum* Zapal., Consp. Fl. Gal. Crit. 2: 225 (1908)
- GBIF <https://www.gbif.org/species/7593018>
- GBIF <https://www.gbif.org/species/12063034>
- = *Aconitum napellus* [unranked] b *subtatrense* f. *subtatrense* Zapal., Consp. Fl. Gal. Crit. 2: 225 (1908)
- GBIF <https://www.gbif.org/species/7982741>
- = *Aconitum napellus* [unranked] g *tatrense* Zapal., Consp. Fl. Gal. Crit. 2: 227 (1908)
- GBIF <https://www.gbif.org/species/7478935>
- GBIF <https://www.gbif.org/species/11994294>
- *Aconitum palmatifidum* Rchb., Uebers. Gat. Aconitum 48 (1819) [p. p.]
- GBIF <https://www.gbif.org/species/3922207>
- *Aconitum skerisorae* auct [e.g., Seitz, Soó], non Gáyer *
- *Aconitum tatrae* Borb. in Pallas, Nagy Lexikona 15: 15 (1897) [p. p.]
- GBIF <https://www.gbif.org/species/7278294>
- *Aconitum tauricum* auct. fl. carpat., non Wulfen

Conservation status: NT

Distribution: Pancarpathian endemic

Notes: GBIF incorrectly provides *A. callibotryon* subsp. *scarisorensense* Grinț. (• GBIF <https://www.gbif.org/species/7569378>) as synonyms for *A. firmum* subsp. *firmum* Rchb. At the same time, GBIF correctly indicates that *A. napellus* subsp. *scarisorensense* (Grinț.) Jalas (• GBIF <https://www.gbif.org/species/3922734>), a homotypic synonym of *A. callibotryon* subsp. *scarisorensense*, belongs to *A. firmum* subsp. *skerisorae* (Gáyer) Starm. (• GBIF <https://www.gbif.org/species/10985587>).

***Aconitum firmum* subsp. *fissurae* Nyár., Enum. Pl. Cheia Turzii: 132 (1939)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/8S9QC>
- GBIF <https://www.gbif.org/species/7501250>

Nomenclature:

≡ *Aconitum napellus* subsp. *fissuræ* (Nyár.) W. Seitz, Feddes Repert. 80: 42 (1969)

• GBIF <https://www.gbif.org/species/7688050>

= *Aconitum flerovii* Steinb. in Komarov, Fl. USSR VII: 221, 730 (1937)

• GBIF <https://www.gbif.org/species/3925362>

= *Aconitum hunyadense* Degen, Magyar Bot. Lapok 5: 196 (1906)

• GBIF <https://www.gbif.org/species/3924541>

= *Aconitum romanicum* Woł., Fl. Polon. Exsicc. no. 905. *

• GBIF <https://www.gbif.org/species/8006246>

= *Aconitum tatrae* subsp. *hunyadense* (Degen) Soó, Feddes Repert. 83: 135 (1972)

• GBIF <https://www.gbif.org/species/3931258>

Conservation status: NT

Distribution: Pancarpathian subendemic

Notes: GBIF incorrectly provides *A. napellus* subsp. *fissuræ* among synonyms to *A. firmum* subsp. *skerisoræ* (Gáyer) Starm. (• GBIF <https://www.gbif.org/species/10985587>). *Aconitum firmum* subsp. *skerisoræ* is an independent subspecies endemic to Transsilvania (Starmühller 2000).

***Aconitum degenii* subsp. *degenii* Gáyer, Magyar Bot. Lapok V: 123 (1906)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FDH6>
- GBIF <https://www.gbif.org/species/7276900>

Nomenclature:

= *Aconitum degenii* f. *craciunelense* Gáyer, Magyar Bot. Lap. 5: 126 (1906)

• GBIF <https://www.gbif.org/species/12141980>

= *Aconitum molle* Rchb., Uebers. Gat. Aconitum: 47 (1819)

• GBIF <https://www.gbif.org/species/3926208>

= *Aconitum paniculatum* [unranked] b *czerebossicum* Zapal., Consp. Fl. Gal. Crit. 2: 220 (1908)

• GBIF <https://www.gbif.org/species/8037520>

= *Aconitum paniculatum* [unranked] d *intermedium* Zapal., Consp. Fl. Gal. Crit. 2: 221 (1908)

= *Aconitum paniculatum* f. *latusculum* Zapal., Consp. Fl. Gal. Crit. 2: 220 (1908)

= *Aconitum paniculatum* [unranked] a *percalabense* Zapal., Consp. Fl. Gal. Crit. 2: 220 (1908)

• GBIF <https://www.gbif.org/species/7721719>

- = *Aconitum paniculatum* [unranked] c *prutense* Zapal., Consp. Fl. Gal. Crit. 2: 221 (1908)
- GBIF <https://www.gbif.org/species/7793959>
- = *Aconitum paniculatum* [unranked] c *prutense* f. *lobatum* Zapal., Consp. Fl. Gal. Crit. 2: 221 (1908)
- = *Aconitum paniculatum* [unranked] c *prutense* f. *subintermedium* Zapal., Consp. Fl. Gal. Crit. 2: 221 (1908)
- = *Aconitum paniculatum* f. *tenuifissum* Zapal., Consp. Fl. Gal. Crit. 2: 220 (1908)
- GBIF <https://www.gbif.org/species/8294225>
- = *Aconitum prutense* (Zapal.) Tzvelev, Bot. Zhurn. (Moscow & Leningrad) 81(12): 115 (1997) *
- GBIF <https://www.gbif.org/species/3921802>
- *Aconitum hebegynum* auct. fl. carpat., non DC. [p. p.] *
- *Aconitum paniculatum* Lam., Fl. Fr. III: 646 (1778) [p. p., nom. inval.] *
- GBIF <https://www.gbif.org/species/7276809>
- *Cammarum paniculatum* (Arcang.) Fourr., Ann. Soc. Linn. Lyon sér. 2, 16: 327 (1868) [p. p.]
- GBIF <https://www.gbif.org/species/5616149>
- *Delphinium paniculatum* (Arcang.) E.H.L. Krause, Deutschl. Fl. (Sturm), ed. 2. V: 234 (1901) [p. p.], non Host
- GBIF <https://www.gbif.org/species/3929050>

Conservation status: LC

Distribution: Pancarpathian endemic

***Aconitum lasiocarpum* subsp. *kotulae* (Pawl.) Starm. & Mitka, Acta Soc. Bot. Polon. 69 (2): 150 (2000)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/7J77P>
- GBIF <https://www.gbif.org/species/3923695>

Nomenclature:

≡ *Aconitum variegatum* subsp. *kotulae* Pawl., Fl. Tatr 1: 275 (1956)

- GBIF <https://www.gbif.org/species/12058061>

- GBIF <https://www.gbif.org/species/7777045>

≡ *Aconitum variegatum* f. *kotulae* (Pawl.) Skalický, Preslia 54(2): 119 (1982)

- GBIF <https://www.gbif.org/species/3930764>

= *Aconitum beskidense* (Zapal.) Gáyer, Magyar Bot. Lapok X: 201 (1911)

- GBIF <https://www.gbif.org/species/7861353>
= *Aconitum cammarum* [unranked] a *beskidense* Zapal., Consp. Fl. Gal. Crit. 2: 215 (1908)
- GBIF <https://www.gbif.org/species/12167522>
= *Aconitum cammarum* [unranked] c *koscieliskanum* Zapal., Consp. Fl. Gallic. Crit., 2: 215 (1908)
- GBIF <https://www.gbif.org/species/7787241>
= *Aconitum gracile* subsp. *grosserratum* f. *beskidense* (Zapal.) Grinț., Fl. Rep. Pop. Rom. II: 485 (1953)
- GBIF <https://www.gbif.org/species/11985202>
- GBIF <https://www.gbif.org/species/8257779>
= *Aconitum paniculatum* [unranked] e *podolicum* Zapal., Consp. Fl. Gal. Crit. 2: 221 (1908)
- GBIF <https://www.gbif.org/species/8236504>
- GBIF <https://www.gbif.org/species/8149503>
= *Aconitum paniculatum* [unranked] e *podolicum* f. *latilobum* Zapal., Consp. Fl. Gal. Crit. 2: 222 (1908)
- GBIF <https://www.gbif.org/species/12053893>
- GBIF <https://www.gbif.org/species/7668283>
= *Aconitum podolicum* (Zapal.) Voroshylov, Bjul. Glav. Bot. Sada 158: 39 (1990) *
- GBIF <https://www.gbif.org/species/3921913>
– *Aconitum lasiocarpum* Rchb., Uebers. Gat. Aconitum.: 55 (1819) [p. p., nom. nudum]
- GBIF <https://www.gbif.org/species/7277094>

Conservation status: VU

Distribution: Pancarpathian subendemic

Notes: *Aconitum lasiocarpum* (Rchb.) Gáyer is listed in the Red Book of Ukraine as vulnerable species without delimitation of subspecies (Melnik and Batochenko 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Aconitum lasiocarpum* subsp. *lasiocarpum* (Rchb.) Gáyer, Magyar Bot. Lapok XI: 199 (1911)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5FDJF>
- GBIF <https://www.gbif.org/species/7277095>

Nomenclature:

≡ *Aconitum nasutum* var. *lasiocarpum* Rchb., Illustr. Spec. Aconitum: Nr. 47, Tab. IX (1823–1827)

• GBIF <https://www.gbif.org/species/7616758>

≡ *Aconitum paniculatum* subsp. *lasiocarpum* (Rchb.) Soó, Acta Bot. Hung. 5: 213 (1943)

• GBIF <https://www.gbif.org/species/8127169>

≡ *Aconitum toxicum* subsp. *lasiocarpum* (Rchb.) Grinț., Fl. Rep. Pop. Rom. II: 491 (1953)

• GBIF <https://www.gbif.org/species/8405975>

= *Aconitum dasycarpum* Schur ex Gáyer, Magyar Bot. Lapok X: 199 (1911)

• GBIF <https://www.gbif.org/species/8459344>

• GBIF <https://www.gbif.org/species/3926069>

= *Aconitum toxicum* [unranked] a *dasycarpum* Schur, Enum. Pl. Transsilv.: 33 (1886)

• GBIF <https://www.gbif.org/species/7883173>

= *Aconitum vagneri* Kern. ex Gáyer, Magyar Bot. Lapok X: 199 (1911)

• GBIF <https://www.gbif.org/species/8665182>

• GBIF <https://www.gbif.org/species/3930829>

– *Aconitum lasiocarpum* Rchb., Uebers. Gat. Aconitum.: 55 (1819) [p. p., nom. nudum]

• GBIF <https://www.gbif.org/species/7277094>

Conservation status: VU

Distribution: SE Carpathian endemic

Notes: This vulnerable species is listed in the Red Book of Ukraine without clarification of the subspecies (Melnyk and Batochenko 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

***Aconitum moldavicum* subsp. *hosteanum* (Schur) Graebn. & P. Graebn., Syn. Mitteleur. Fl. 5(2): 725 (1929)**

• GBIF <https://www.gbif.org/species/8062401>

Nomenclature:

≡ *Aconitum hosteanum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt II: 77 (1851) [nom. nudum] et Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 49 (1853) *

• GBIF <https://www.gbif.org/species/3924597>

≡ *Aconitum moldavicum* [unranked] e *hosteanum* (Schur) Zapal., Consp. Fl. Gal. Crit. 2: 213 (1908)

- = *Aconitum hosteanum* f. *borbasii* Gáyer, Magyar Bot. Lap. VIII: 316 (1909)
- = *Aconitum hosteanum* var. *geraniifolium* Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 499, 678 (1953)
- = *Aconitum moldavicum* var. *australe* f. *dissectifolium* (Zapał.) Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 497 (1953)
- = *Aconitum moldavicum* var. *australe* f. *fragile* Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 496, 676 (1953)
- = *Aconitum moldavicum* var. *australe* f. *grandiflorum* (Schur) Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 497 (1953)
- = *Aconitum moldavicum* var. *australe* f. *leopoliensis* (Zapał.) Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 497 (1953)
- = *Aconitum moldavicum* var. *australe* f. *obtusidentatum* Simonk. ex Gáyer, Magyar Bot. Lap. VIII: 315 (1909)
- = *Aconitum moldavicum* var. *australe* f. *thyaicum* (Blocki) Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 497 (1953)
- = *Aconitum moldavicum* [unranked] a *dissectifolium* Zapał., Consp. Fl. Gal. Crit. 2: 212 (1908)
- = *Aconitum moldavicum* [unranked] b *grandicassum* Zapał., Consp. Fl. Gal. Crit. 2: 212 (1908)
- = *Aconitum moldavicum* [unranked] c *grandiflorum* Schur, Enum. Pl. Transsilv.: 32 (1866)
- = *Aconitum moldavicum* [unranked] d *leopoliense* Zapał., Consp. Fl. Gal. Crit. 2: 213 (1908)
- = *Aconitum thyaicum* Blocki, Allg. Bot. Z. Syst. I: 59 (1895) *
- GBIF <https://www.gbif.org/species/7986865>
- = *Aconitum moldavicum* [unranked] e *hosteanum* f. *czywczynense* Zapał., Consp. Fl. Gal. Crit. 2: 213 (1908)
- = *Aconitum moldavicum* [unranked] e *hosteanum* f. *rodnense* Zapał., Consp. Fl. Gal. Crit. 2: 213 (1908)
- *Aconitum moldavicum* Hacq., Reis. Dac. Sarm. Karpathen 1: 169 (1790) et Hacq. ex Rchb., In: Übers. Gen. Acon.: 67 (1819) [p. p.]
- GBIF <https://www.gbif.org/species/8058146>
- GBIF <https://www.gbif.org/species/7276954>
- *Aconitum moldavicum* var. *australe* (Rchb.) Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 496 (1953) [p. p.]
- *Delphinium moldavicum* (Hacq.) Bránadza, Prodr. Fl. Rom.: 11 (1879) [p. p., nom. inval.]

Conservation status: LC

Distribution: Pancarpathian subendemic

Notes: Following the World Plants database, CoL and GBIF provide outdated taxonomy for *A. moldavicum* Hacq. and consider it belonging to *A. lycoctonum* subsp. *moldavicum* (Hacq.) Jalas (• GBIF <https://www.gbif.org/species/3923267>, • CoL <https://www.catalogueoflife.org/data/taxon/5FDJJ>). Such consideration is based, perhaps, on the research of Utelli et al. (2000), who showed the phylogenetic affinity of *A. moldavicum* and *A. lycoctonum* L. in Europe and proposed to delimit its morphs as subspecies. Mitka et al. (2013), Mitka et al. (2016) have further discussed and stressed this question in the context of the biogeography of the genus *Aconitum* L. in the Carpathians. Anatomical studies (Novikov 2010) also showed that, besides the common features (well-developed differentiated two-layered lignified parenchymal ring and occurrence of peripheral vascular bundles in the stem), *A. lycoctonum* and *A. moldavicum* differ by position of sclerenchymatic strands supporting the vascular bundles in their stems. In *A. moldavicum* the parenchymatic layer present between the vascular bundles and sclerenchymatic strands, while in *A. lycoctonum* it is absent. Morphological variation allowing to delimit subspecies within *A. moldavicum* was not taken into account by Utelli et al. (2000) but was studied in details by Mitka (2008). Hence, *A. moldavicum* is currently considered an independent species with a developed infraspecific structure (Mitka and Koziol 2009, Novikov and Mitka 2020).

GBIF has a technical mistake and provides the name *A. moldavicum* subsp. *nothoconfusum* (Grin.) A. Novikov (• GBIF <https://www.gbif.org/species/11040564>) – it should be *A. moldavicum* nothosubsp. *confusum* (Grinț.) A. Novikov.

***Aconitum moldavicum* subsp. *moldavicum* Hacq. ex Rchb., Uebers. Gat. Aconitum: 67 (1819)**

Nomenclature:

≡ *Aconitum lycocotum* subsp. *moldavicum* (Hacq.) Jalas, Ann. Bot. Fenn. 22(3): 219 (1985)

• CoL <https://www.catalogueoflife.org/data/taxon/5FDJJ>

• GBIF <https://www.gbif.org/species/3923267>

= *Aconitum lycoctonum* [unranked] β *caeruleum* Wahlenb., Fl. Carp. Princip.: 163 (1814)

• GBIF <https://www.gbif.org/species/8350826>

= *Aconitum moldavicum* subsp. *hacquetianum* Grinț., Cat. Sem. Grăd. Bot. Bucovin.: 6 (1945) [nom. nudum]

= *Aconitum moldavicum* var. *hacquetianum* Grinț., in Săvul., Fl. Rep. Pop. Rom. 2: 496 (1953)

- = *Aconitum moldavicum* var. *hacquetianum* f. *flexuosum* Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 498, 677 (1953)
- = *Aconitum moldavicum* var. *hacquetianum* f. *macrocassis* Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 498, 677 (1953)
- = *Aconitum moldavicum* var. *hacquetianum* f. *piliferum* Grinț, in Săvul., Fl. Rep. Pop. Rom. 2: 498, 677 (1953)
- = *Aconitum moldavicum* var. *rubicundum* Borbás, Kárp. Egly. Évk. V: 247 (1886) et Oesterr. Bot. Z. XXXVI: 318 (1886)
- = *Aconitum moldavicum* f. *stenanthum* Gáyer, Magyar Bot. Lap. VI: 297 (1907)
- = *Aconitum septentrionale* Baumg., Enum. Stirp. Transsilv. II: 98 (1816), non Koelle *
- = *Aconitum transsilvanicum* Lerchenf. ex Schur., Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 165 (1850)
- *Aconitum carpathicum* (DC.) Sagorski & Schneider, Fl. Centralkarpat.: 45 (1891) [p. p.]
- *Aconitum jacquiniqnum* Host, Fl. Austr. II: 68 (1831) [quoad pl. carpat.]
- *Aconitum lycoctonum* subsp. *carpathicum* (DC.) Dostal, Květ. ČSR 2: 150 (1950) [p. p.]
- *Aconitum lycoctonum* var. *carpathicum* (DC.) Ser., Mus. helv. d'hist. nat. I: 136 (1822) [p. p.]
- *Aconitum moldavicum* Hacq., Reis. Dac. Sarm. Karpathen 1: 169 (1790) et Hacq. ex Rchb., In: Übers. Gen. Acon.: 67 (1819) [p. p. major]
- GBIF <https://www.gbif.org/species/8058146>
- GBIF <https://www.gbif.org/species/7276954>
- *Aconitum moldavicum* [unranked] c. *parvicassum* Zapał., Consp. Fl. Gal. Crit. 2: 212 (1908) [p. p.]
- *Aconitum moldavicum* f. *puberulum* Zapał., Consp. Fl. Gal. Crit. 2: 212 (1908) [p. p.]
- *Aconitum phallacinum* Blocki, Allg. Bot. Z. Syst. I: 117 (1895) [p. p.]
- *Aconitum septentrionale* [unranked] β *carpathicum* DC., Syst. Nat. I: 370 (1818) [p. p.]
- *Delphinium moldavicum* (Hacq.) Bránadza, Prodr. Fl. Rom.: 11 (1879) [p. p. major, nom. inval.]

Conservation status: LC

Distribution: Pancarpathian subendemic

Ranunculus carpaticus Herbich, Sel. Pl. Rar. Gallic.: 15 (1836), non Wahlenb. ex Nyman

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4RFXM>
- GBIF <https://www.gbif.org/species/3921904>

Nomenclature:

= *Ranunculus aduncus* Schur, Enum. Pl. Transsilv. 16 (1866), non Gren. & Godr.

= *Ranunculus carpaticus* f. *anomalus* A. Nyár., Fl. Rep. Pop. Rom. II: 620, 687 (1953)

= *Ranunculus carpaticus* f. *flabellatus* A. Nyár., Fl. Rep. Pop. Rom. II: 620, 687 (1953)

= *Ranunculus carpaticus* f. *plenus* Zapat., Consp. Fl. Galic. Crit. II: 274 (1908)

= *Ranunculus carpaticus* f. *pygmaeus* Porcius, Phaner. Näsáud: 152 (1881)

= *Ranunculus carpaticus* var. *rupicolus* Zapat., Consp. Fl. Galic. Crit. II: 274 (1908)

= *Ranunculus dentatus* (Baumg.) Freyn in A. Kern., Sched. Fl. Austro-Hung. V: 47 (1888) *

- GBIF <https://www.gbif.org/species/3930794>

= *Ranunculus gouani* Baumg., Enum. Stirp. Transsilv. 2: 125 (1816), non alior

= *Ranunculus lerchenfeldianus* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt III: 84 (1852) [nom. nudum] et Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 14 (1853)

- GBIF <https://www.gbif.org/species/3924099>

= *Ranunculus montanus* Willd. [unranked] α *dentatus* Baumg., Enum. Stirp. Transsilv. 2: 124 (1816)

- GBIF <https://www.gbif.org/species/6710384>

= *Ranunculus pombachiensis* Lerchenf. ex Schur, Enum. Pl. Transsilv. 16 (1866)

= *Ranunculus schurii* Fuss ex Schur, Enum. Pl. Transsilv. 16 (1866)

- GBIF <https://www.gbif.org/species/8666188>

- GBIF <https://www.gbif.org/species/3925490>

= *Ranunculus tuberosus* Schur, Oesterr. Bot. Z. 11: 82 (1861) et Enum. Pl. Transsilv.: 16 (1866), non alior.

- GBIF <https://www.gbif.org/species/7688016>

– *Ranunculus szurulensis* Lerchenf. ex Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV: 14 (1853) [p. p.]

- GBIF <https://www.gbif.org/species/8534706>

- GBIF <https://www.gbif.org/species/3923469>

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: POWO and World Plants indicate *R. szurulensis* Lerchenf. ex Schur as a synonym for *R. montanus* Willd. However, Domin and Krajina (on some herbarium labels) indicated that *R. szurulensis* is a synonym for *R. carpaticus*. This controversion requires further explorations, but at least in the sense of Domin and Krajina, *R. szurulensis* should be considered a partial synonym to *R. carpaticus*.

***Ranunculus malinovskii* Elenevsky et Derv.-Sok., Novosti Sist. Vyssh. Rast. 23: 59 (1986)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/4RGWJ>
- GBIF <https://www.gbif.org/species/3922948>

Nomenclature:

= *Ranunculus kladnii* auct. fl. ucrain. carpat., non Schur *

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: Euro+Med PlantBase considers *R. malinovskii* as a synonym for *R. acris* L. Indeed, *R. malinovskii* and *R. acris* are morphologically similar, but *R. malinovskii* differs by smaller habitus, developed rhizome, weak pubescence of the leaves and stem, and longer beak of the fruits (Visjulina 1953, Jelenevsky and Derviz-Sokolova 1986, Chopyk and Fedoronchuk 2015).

Some plants from the higher altitudes in the Ukrainian Carpathians were identified as *R. kladnii* Schur. POWO (like some other databases, e.g., Euro+Med PlantBase and World Plants) synonymize *R. kladnii* (• POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:713013-1>) with *R. serbicus* Vis. (• POWO <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:713807-1>). GBIF, instead, considers *R. kladnii* (• GBIF <https://www.gbif.org/species/3925121>) to be a synonym for *Ranunculus acris* subsp. *acris* (• GBIF <https://www.gbif.org/species/7277719>). However, Jelenevsky and Derviz-Sokolova (1986) pointed out that mentioned plants from higher altitudes differ from those described by Schur as *R. kladnii*. Jelenevsky and Derviz-Sokolova (1986) also found these plants different from *R. acris* and *R. serbicus*, and, as a result, proposed a new name – *R. malinovskii*. Hence, all specimens from the Ukrainian Carpathians identified as *R. kladnii* appeared to be *R. malinovskii* (Tzvelev 2001, Chopyk and Fedoronchuk 2015).

Order Saxifragales

Family Crassulaceae

***Sempervivum carpathicum* subsp. *carpathicum* Wettst. ex Prodan, Fl. Rep. Pop. Rom. I: 530 (1923)**

Nomenclature:

≡ *Sempervivum carpathicum* Wettst. in A. Kern., Sched. Fl. Exs. Austro-Hung. 10: 25. 1913, [nom. nudum] et Wettst. ex Prodan, Fl. Roman. 1: 530 (1923)

• GBIF <https://www.gbif.org/species/8594037>

• GBIF <https://www.gbif.org/species/7334507>

≡ *Sempervivum montanum* subsp. *carpathicum* (Wettst. ex Prodan) A. Berger in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 18a: 422 (1930)

• GBIF <https://www.gbif.org/species/7940262>

≡ *Sempervivum montanum* subsp. *carpathicum* Wettst. in Sched., Flora Exs. Austro-Hung. (1913) [nom. nudum]

≡ *Sempervivum montanum* subsp. *carpathicum* Wettst. ex Hayek in Hegi, Ill. Fl. Mitt.-Eur. 4 (2): 554 (1923) [nom. nudum]

• CoL <https://www.catalogueoflife.org/data/taxon/5L5BR>

• GBIF <https://www.gbif.org/species/8493204>

≡ *Sempervivum montanum* var. *carpathicum* (Wettst. ex Prodan) Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Prír., 42 (29): 28 (1933)

• GBIF <https://www.gbif.org/species/7373462>

≡ *Sempervivum montanum* var. *carpathicum* (Wettst. ex Prodan) Praeger, An account of the *Sempervivum* group: 46 (1932) [comb. inval.]

≡ *Sempervivum montanum* subsp. *eumontanum* var. *carpathicum* (Wettst. ex Prodan) Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Prír., 42 (29): 28 (1933)

= *Sempervivum montanum* f. *brachypetalum* Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Prír. 42 (29): 28 (1933)

= *Sempervivum montanum* f. *congestum* Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Prír. 42 (29): 28 (1933)

= *Sempervivum montanum* var. *pallidum* Wettst. ex Hayek in Hegi, Ill. Fl. Mitt.-Eur. 4 (2): 554 (1923) [nom. inval.]

= *Sempervivum montanum* f. *pallidum* (Wettst. ex Hayek) Fiori, Nuov. Fl. Italia 1: 716 (1923)

= *Sempervivum montanum* f. *pallidum* (Wettst. ex Hayek) Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Prír. 42 (29): 28 (1933) [comb. illeg.]

• GBIF <https://www.gbif.org/species/7872574>

- = *Sempervivum montanum* f. *neopallidum* Hadrava & Miklánek, Kaktusy (Brno) 43 (Special 1): 11 (2007) [nom. illeg.]
- GBIF <https://www.gbif.org/species/4199474>
- = *Sempervivum montanum* f. *speciosum* Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Přír. 42 (29): 28 (1933)
- = *Sempervivum montanum* f. *stenophyllum* Domin, Rozpr. České Akad. Ved, Tr. 2, Vedy Mat. Přír. 42 (29): 28 (1933)
- = *Sempervivum montanum* var. *pallidum* Wettst. ex Schinz & R. Keller, Fl. Schweiz (Schinz), ed. 2. 2: 96 (1905)
- = *Sempervivum wettsteinii* subsp. *wettsteinii* Letz, Vybrané Problémy Taxonomickej Diferenciácie rodov *Sempervivum* a *Jovibarba* v Európe, Thèse Bratislava: 184 (1998) [nom. invalid.] *
- *Sempervivum arachnoideum* auct. [e.g., G. Reuss], non L.
- *Sempervivum heterophyllum* Jáv., Magyar Fl.: 456 (1925), non Haszl.
- *Sempervivum montanum* L., Sp. Pl. 1: 465 (1753) [p.p., tantum quod plantas ucrain. carpat.], non alior *
- *Sempervivum montanum* subsp. *debile* auct., non (Schott.) Dostál
- *Sempervivum montanum* subsp. *heterophyllum* auct., non (Haszl.) Jáv. ex Soó
- *Sempervivum montanum* subsp. *montanum* auct. [e.g., Pawłowski, Dostál, Lippert], non L.

Conservation status: NT

Distribution: Pancarpathian endemic

Notes: The Red Book of Ukraine protects this species as *S. montanum* s. l. (Kobiv 2009, Ministry of Environmental Protection and Natural Resources of Ukraine 2021).

There are two subspecies within *S. carpathicum* Wettst. ex Prodan – subsp. *carpathicum* and subsp. *heterophyllum* (Haszl.) Letz (occurs in Slovakia – Letz 2002). However, *S. carpathicum* is sometimes (e.g., in the World Plants database) considered nested within *S. montanum* L. with a wider distribution range and five delimited subspecies (i.e., subsp. *montanum*, subsp. *burnatii* Wettst. ex Hayek, subsp. subsp. *carpathicum* Wettst. ex Hayek, subsp. *rex* Niederle, and subsp. *stiriicum* (Wettst. ex Hayek) Hayek). Nevertheless, even in such a case, only *S. montanum* subsp. *carpathicum* occurs in the Ukrainian Carpathians (Chopyk and Fedoronchuk 2015). World Plants also mentions the presence of *S. montanum* subsp. *montanum* for Ukraine, but no recent reports confirm this. Previous reports of *S. montanum* subsp. *montanum* from Ukraine probably result from some mistaken taxonomic interpretation (Letz and Marhold 1998) of lowland plants of *S. montanum* that also occur in the flora of Poland and Slovakia (Pawłowski 1956, Zahradníková 1985, Dostál 1989, Jalas 1999). Moreover, World Plants and GBIF synonymize *S. heterophyllum* Haszl. (≡ *S.*

carpathicum subsp. *heterophyllum* (Hazsl.) Letz – • GBIF <https://www.gbif.org/species/7771274>, • GBIF <https://www.gbif.org/species/8674343>) with *S. carpathicum* subsp. *carpathicum*, which is not entirely correct. Only a part of *S. carpathicum* subsp. *heterophyllum* (i.e., in the sense of Jávorka) can be treated as a synonym for *S. carpathicum* subsp. *carpathicum* (Letz 2002).

***Sempervivum globiferum* subsp. *preissianum* (Domin) M. Werner, Avonia 28(4): 191 (2011)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5L5BC>
- GBIF <https://www.gbif.org/species/7943221>

Nomenclature:

≡ *Jovibarba preissiana* (Domin) Omelczuk & Chopik, Bot. Zhurn. 60(8): 1184 (1975) *

- GBIF <https://www.gbif.org/species/9627483>

≡ *Jovibarba globifera* subsp. *preissiana* (Domin) Holub, Preslia 70(2): 106 (1998)

- GBIF <https://www.gbif.org/species/6441825>

≡ *Jovibarba globifera* var. *preissiana* (Domin) Hadrava & Miklánek, Kaktusy (Brno) 43 (Special 1): 28 (2007)

- GBIF <https://www.gbif.org/species/4201475>

≡ *Jovibarba hirta* subsp. *preissiana* (Domin) Soó, Acta Bot. Hung. 23: 380 (1977)

≡ *Sempervivum hirtum* subsp. *preissianum* (Domin) Dostál, Květena ČSR: 537 (1948)

- GBIF <https://www.gbif.org/species/7440878>

≡ *Sempervivum preissianum* Domin, Bull. Internat. Acad. Sc., Prague, XXXIII: 126 (1932) *

- GBIF <https://www.gbif.org/species/4199066>

≡ *Sempervivum soboliferum* subsp. *preissianum* (Domin) Pawłowska, Fl. Polska VII: 48, 294 (1955)

- GBIF <https://www.gbif.org/species/8342394>

= *Jovibarba hirta* subsp. *tatrensis* (Domin) Á. Löve & D. Löve, Bot. Not. 114: 53 (1961)

- GBIF <https://www.gbif.org/species/7520442>

= *Jovibarba hirta* var. *tatrensis* (Domin) Soó, Feddes Repert. 83: 174 (1972)

- GBIF <https://www.gbif.org/species/4201255>

= *Sempervivum hirtum* f. *glabrescence* Sabransky, Oesterr. Bot. Z. XXXII: 378 (1882)

= *Sempervivum hirtum* subsp. *glabrescence* (Sabransky) Jáv., Magyar Fl. II: 458 (1924)

= *Sempervivum hirtum* subsp. *tatrense* (Domin) Dostál, Květena ČSR: 537 (1948)

- GBIF <https://www.gbif.org/species/7844009>

- = *Sempervivum soboliferum* f. *hirtellum* (Schott) Jáv., Magyar Fl. II: 458 (1924)
- = *Sempervivum soboliferum* subsp. *preissianum* var. *hirtellum* (Schott) Pawłowska, Fl. Polska VII: 48 (1955)
- = *Sempervivum soboliferum* subsp. *preissianum* f. *minus* Domin ex Pawłowska, Fl. Polska VII: 48 (1955)
- = *Sempervivum soboliferum* subsp. *preissianum* var. *tatrense* (Domin) Pawłowska, Fl. Polska VII: 48, 294 (1955)
- = *Sempervivum tatrense* Domin, Rozpr. České Akad. Věd, Tř. 2, Vědy Mat. Přír. 42/29: 20–21 (1933)
- GBIF <https://www.gbif.org/species/4198415>
- *Jovibarba globifera* subsp. *hirta* (L.) J. Parnell, Bot. J. Lin. Soc. 103 (3): 219 (1990) [p. p., tantum quod plantas ucrain. carpat.]
- *Jovibarba sobolifera* (Sims) Opiz, Seznam: 54 (1852) [p. p., tantum quod plantas ucrain. carpat.]*
- *Sempervivum soboliferum* Sims, Bot. Mag. 35: t. 1457 (1812) [p. p., tantum quod plantas ucrain. carpat.], non Fleisch. & Lindem. *

Conservation status: NT

Distribution: Pancarpathian subendemic

Notes: *Jovibarba* Opiz. is often synonymized with *Sempervivum* L. but is sometimes considered an independent genus (Chopyk and Fedoronchuk 2015, Kliment et al. 2016, Mirek et al. 2020). In Ukraine, this genus is traditionally recognized as *Jovibarba*. Here, two geographically well-separated *Jovibarba* species occur – lowland *J. sobolifera* Opiz and high-mountainous *J. preissiana* (Domin) Omelczuk et Chopik. Both species are rare and listed in the Red Book of Ukraine (Andriyenko et al. 2009, Chorney 2009b, Ministry of Environmental Protection and Natural Resources of Ukraine 2021). Also *J. heuffelii* (Schott) Á. Löve & D. Löve is sometimes mistakenly mentioned for the Ukrainian Carpathians – this species occurs in Romania but was never discovered in the Ukrainian Carpathians (Bialt 2001, Chopyk and Fedoronchuk 2015).

World Plants and GBIF databases among synonyms of *S. globiferum* subsp. *preissianum* mentioned *J. hirta* subsp. *preissiana* (Domin) Holub (<https://www.gbif.org/species/8264808>), which is, perhaps, a technical mistake. Holub (1998) did not apply such a combination but instead used a combination *J. globifera* subsp. *preissiana* (Domin) Holub. It is also interesting that Omelczuk-Mjakushko and Chopik are often mentioned as the authors of *J. preissiana*. This is not a principal mistake but a result of a complicated publication case. Omelczuk-Mjakushko and Chopik (1975) are indeed the authors of the paper where the species is published. However, in the species protologue, near the new name (p. 1184), they provided the maiden name of the first

author (i.e., Omelczuk). Therefore the proper authority of this species should be provided as Omelczuk & Chopik.

Family Saxifragaceae

***Chrysosplenium alpinum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt III: 86 (1852) et Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt X: 133 (1859)**

- Catalogue of Life <https://www.catalogueoflife.org/data/taxon/5YTN5>
- GBIF <https://www.gbif.org/species/5567560>

Nomenclature:

≡ *Chrysosplenium oppositifolium* var. *alpinum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt, IV (8): 28 (1853) et Enum. Pl. Transsilv.: 241 (1866) *

- GBIF <https://www.gbif.org/species/7964184>

= *Chrysosplenium glaciale* Fuss, Fl. Transs.: 247 (1866) *

- GBIF <https://www.gbif.org/species/5567435>

= *Chrysosplenium oppositifolium* var. *rosulare* Schott ex Engl., Nat. Pflanzenfam. ed. 2, 18a: 165 (1930)

- GBIF <https://www.gbif.org/species/8660071>

- GBIF <https://www.gbif.org/species/8009567>

= *Chrysosplenium rosulare* Schott ex Maxim., Gartenflora VI: 115 (1857) [nom. nudum] et Bull. Acad. Imp. Sci. Saint-Petersbourg XXIII: 345 (1877)

- GBIF <https://www.gbif.org/species/8560914>

- GBIF <https://www.gbif.org/species/5567837>

= *Chrysosplenium transsilvanicum* Schur, Verh. Mitth. Siebenbürg. Vereins Naturwiss. Hermannstadt IV (8): 28 (1853) et Enum. Pl. Transsilv.: 241 (1866)

- GBIF <https://www.gbif.org/species/5567792>

– *Chrysosplenium oppositifolium* auct. fl. roman. et ucrain. [e.g., Baumg., Enum. Stirp. Transsilv. I: 338, Nr. 699 (1816)], non L. *

Conservation status: LC

Distribution: SE Carpathian endemic

Notes: *Chrysosplenium alpinum* and *C. oppositifolium* L. are two closely related species that are sometimes synonymized (e.g., Maximowicz 1877, Răvăruț 1956).

Chrysosplenium alpinum plants are glabrous with entire or almost entire leaves (occur in Romanian and Ukrainian Carpathians), while *C. oppositifolium* plants are pubescent

at least in their base and have distinctly dentate leaves (occur in the Western and Central Europe, but not in Romania or Ukraine – Hrouda and Šourková 1992). The affinity of these two species resulted in their misinterpretation and inevitable confusion. For example, World Plants and GBIF provide *C. glaciale* Fuss (• GBIF <https://www.gbif.org/species/5567435>) among the synonyms of *C. oppositifolium* (• GBIF <https://www.gbif.org/species/7526486>). Perhaps, this synonymy resulted from Maximowicz's (1877) observations. Similarly, GBIF provides *C. rosulare* Schott ex Maxim. (• GBIF <https://www.gbif.org/species/8560914>, • GBIF <https://www.gbif.org/species/5567837>) among synonyms to *C. oppositifolium*. This is because Maximowicz (1877): p. 345) indicated that *C. rosulare*, *C. alpinum*, and *C. glaciale*, are synonyms for *C. oppositifolium*. Maximowicz (1877) noted that Transsilvanian plants slightly differ but concluded that this difference is taxonomically unimportant. In the original protologue of *C. glaciale*, Fuss (1866): p. 247) indeed provided *C. oppositifolium* as a synonym for *C. glaciale*, but he considered *C. oppositifolium* in the sense of Baumgarten, not in the original sense of Linnaeus. In turn, Baumgarten (1816a): p. 338) mentioned glabrous plants with slightly dentate leaves from Romania (i.e., *C. alpinum*, not *C. oppositifolium*). Hence, after analysis of the original protologues, it looks like both species, *C. glaciale* and *C. rosulare*, should be interpreted as synonyms for *C. alpinum*.

Analysis

The work on a current checklist has been a part of inventory of endemics distributed in the flora of the Ukrainian Carpathians (Novikoff and Hurdu 2015, Novikov and Sup-Novikova 2022). During the inventory, creating a working list of taxa and their most often applied synonyms was necessary because herbarium specimens could be stored under different names. Later, the initial list was updated following the recent taxonomy and extended with other synonyms, including rare ones from the old publications. This work found that different taxonomic databases have different visions of the structure and status of certain taxa, sometimes providing controversial data. Hence, the need to appeal to original protologues and monographic studies arose.

Taking into account that the data were prepared specially to deposit in GBIF, the GBIF backbone taxonomy was the main target to stress. Moreover, each taxonomic record in GBIF has hyperlinks to principal taxonomic databases, including IPNI, Tropicos, POWO, WFO, and CoL. The only exclusion is the database World Plants – it is not directly crosslinked with GBIF but is applied as a source of taxonomic data by CoL. Hence, GBIF seems to be the most comprehensive aggregator gathering all taxonomic information. Moreover, GBIF uses for its backbone taxonomy checklist datasets published directly in GBIF. As a result, surprisingly, many rare taxonomic citations are present in GBIF and absent in other specialized taxonomic databases. Therefore, GBIF backbone taxonomy has been chosen as a starting point for the explorations.

Besides the inconsistency in nomenclatural and taxonomic visions, when different taxa are considered to be independent or merged as synonyms (e.g., *Aconitum moldavicum* Hacq. and *A. lycocotum* L.) or considered at different taxonomic ranks (e.g., *Koeleria*

transsilvanica Schur versus *Koeleria macrantha* subsp. *transsilvanica* (Schur) A. Nyár.) by different data providers, several other issues were detected and resolved. In particular (with examples provided based on GBIF backbone taxonomy):

1) Some taxa have two or more **duplicated checklist records**. For example, in GBIF, there are duplicated checklist records for *Campanula microphylla* Kit. ex Schult. (<https://www.gbif.org/species/5411213> and <https://www.gbif.org/species/7654241>), *Thesium serratum* Kit. ex Schult. (<https://www.gbif.org/species/7614045> and <https://www.gbif.org/species/7390879>), *Alsine pauciflora* Kit. ex Nyman (<https://www.gbif.org/species/8455786> and <https://www.gbif.org/species/3807842>) and many other species. Such issues, in most cases, including other databases, result from data aggregation from different sources that can provide data of different quality. Providing the same data but containing even minor differences (mistakes or technical errors) or incomplete data can result in their automatic interpretation as independent records. Therefore, it is necessary to revise and catch such duplicated records manually.

2) Some taxonomic records provide **incomplete and/or incorrect authorship** for taxa. For example, all databases provide for *Jovibarba preissiana* authorship (Domin) Omel'chuk-Myakushko & Chopik (<https://www.gbif.org/species/9627483>), but it should be (Domin) Omelczuk & Chopik (this is clearly indicated in the original protologue of the species). For *Koeleria tenuipes* and its homonyms, all databases display Domin as an author of the basionym. However, Ujhelyi (1965) 191 pointed out that it is Schur and provided the correct name – *Koeleria tenuipes* (Schur) Ujhelyi. Another example, GBIF provides the record for *Lathyrus transsilvanicus* Fritsch (<https://www.gbif.org/species/8329194>), while it should be *Lathyrus transsilvanicus* (Spreng.) Fritsch. Some similar authorship issues were also revealed and fixed while elaborating on the current checklist.

3) Some taxonomic records provide **missing, incomplete and/or incorrect protologue data**. For example, in GBIF, pages are not indicated for protologues of *Campanula napuligera* f. *longisepala* (Nyár.) Morariu (<https://www.gbif.org/species/8397712>), *Campanula rotundifolia* var. *grandiflora* J.A. Knapp (<https://www.gbif.org/species/7764236>) and many other taxa. Protologue data are missing for *Minuartia oxypetala* (Wot.) Kulczyński (<https://www.gbif.org/species/7504529>), *Minuartia verna* subsp. *oxypetala* (Wot.) G. Halliday (<https://www.gbif.org/species/8333640>), *Genista oligosperma* (Andrae) Simonk. (<https://www.gbif.org/species/5347633>) and many other taxa. For some taxa, GBIF provides empty taxonomic records with missing protologue data. For example, for *Campanula napuligera* var. *alpiniformis* Nyár. ex Morariu (<https://www.gbif.org/species/8554545>).

4) Occasionally taxonomic records provide with **not the first published protologue**. For example, the name *Dianthus microchelus* B.S. Williams (<https://www.gbif.org/species/3810687>, <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:153597-1>) has been first published in 1890 (not in 1891 as indicated in World Plants, GBIF, and POWO). Similarly, the name *Trifolium sarosienense* Hazsl. (<https://www.gbif.org/species/5358815>, <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:523672-1>) has been first published in 1864 (not in 1867). Such dating mistakes occur mostly due to the inaccessibility of many

old publications, especially periodicals that were published locally. In some cases, such mistakes had resulted from publication tardiness – before many journals published their volumes in the consequent year (e.g., the last volume from 1912 could be published in 1913). Sporadically, such dating mistakes are resulted due to the use of re-prints instead of original publications. Fortunately, currently, BHL and other virtual libraries provide access to more and more rarities allowing the detection of such dating issues and discovering the first publications with the original protologues of many taxa.

5) For many taxa, all elaborated databases provide an **incomplete list of synonyms**. Some taxa, especially those published in old local periodicals and monographs, are missing from the databases. In particular, there are often missing taxa published by Zapałowicz (1906b) in the “Conspectus florae Galiciae criticus” – e.g., many infraspecific taxa of *Alsine zarencznyi* Zapał. Also, there are missing some taxa published in “Flora Reipublicae Populare România” (Săvulescu 1952) – e.g., infraspecific taxa of *Aconitum callibotryon* Rchb. GBIF has no taxonomic record about the name *Melandrium zawadzki* (Herbich) A. Braun, which is often applied as an alternative name for *Silene zawadzki* Herbich (<https://www.gbif.org/species/5587094>) in the Ukrainian herbaria. World Plants, CoL, and GBIF completely miss the data on *Scabiosa lucida* subsp. *barbata* Nyár., its homonyms, and infraspecific derivatives.

6) In some cases, the **taxonomic rank is indicated incorrectly**. For example, GBIF provides a taxonomic record for *Campanula polymorpha* f. *reflectans* Hruby (<https://www.gbif.org/species/5410039>). However, this taxon has been described as a subform, and hence, the correct citation should be *Campanula polymorpha* var. *typica* f. *lepida* subf. *reflectans* Hruby. Similarly, GBIF mistakenly indicates the rank of subspecies for *Aconitum koelleianum* var. *firmum* (Rchb.) Rchb. (<https://www.gbif.org/species/12133197>), *Aconitum paniculatum* f. *latilobum* Zapał. (<https://www.gbif.org/species/12053893>) and many other *Aconitum* L. taxa.

7) The **lack of synonymic interlinkage** for existing taxonomic records has been observed in some cases. For example, in GBIF, there is a taxonomic record for *Campanula stenophylla* (Schur) Witasek (<https://www.gbif.org/species/7633288>), but it is not linked to the record of valid taxon *C. tatrae* subsp. *tatrae* (<https://www.gbif.org/species/7222073>). Similarly, the taxonomic record of *Trifolium sarosiense* Hazsl. ex Neilr. (<https://www.gbif.org/species/8013811>) is not linked to the parental record of *Trifolium sarosiense* Hazsl. (<https://www.gbif.org/species/5358815>).

8) Many databases **seek orthographical variants** that often appear in taxonomy. For example, GBIF provides only variant *Minuartia zarencznyi* (Zapał.) Klokov (<https://www.gbif.org/species/7267413>), while it is often written as *Minuartia zarencznii*. In this checklist, such orthographical variants are considered.

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References

- Al-Shehbaz IA (2014) A synopsis of the genus *Noccaea* (Coluteocarpeae, Brassicaceae). *Harvard Papers in Botany* 19 (1): 25-51. <https://doi.org/10.3100/hpib.v19iss1.2014.n3>
- Anchev ME, Apostolova I, Assyov B, Bancheva ST, Denchev CM, Dimitrov D, Dimitrova DI, Evstatieva L, Genova E, Georgiev V, Goranova V, Gussev C, Ignatova P, Ivanova D, Meshinev T, Peev D, Petrova A, Petrova AS, Sopotlieva D, Stanev S, Stoeva MP, Stoyanov S, Tashev AN, Tosheva A, Tsoneva S, Tzonev R, Vitkova A, Vladimirov V (2009) Red List of Bulgarian vascular plants. *Phytologia Balcanica* 15 (1): 63-94.
- Andriyenko TL, Konischuk VV, Panchenko SM (2009) Boridnyk parostkoviy. *Jovibarba sobolifera* (Sims.) Opiz. In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 414 pp. [In Ukrainian].
- Ascherson P (1867) Bemerkungen über einige Pflanzen des Kitaibel'schen Herbariums. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 12: 565-590. URL: <https://www.biodiversitylibrary.org/item/239512>
- Ascherson PF, Graebner P (1896) Synopsis der mitteleuropäischen Flora (1896-1910). Bds. 1-6. Verlag von Wilhelm Engelmann <https://doi.org/10.5962/bhl.title.35810>
- Ascherson PF, Graebner P (1898) Synopsis der mitteleuropäischen Flora. Bd. 2, Abt. 1. Verlag von Wilhelm Engelmann <https://doi.org/10.5962/bhl.title.10838>
- Băcilă I, Șuteu D, Coste A, Filipaș L, Ursu T, Stoica IA, Hurdu B-, Pușcaș M, Coldea G (2010) The *Poa granitica* group in the Carpathian Mountains: some molecular insights. *Contributii Botanice* 45: 7-12.
- Baumgarten JC (1816a) Enumeratio stirpium magno Transsilvaniae principatui præprimis indigenarum. 1. Vindebonae URL: <https://books.google.com/books?id=e50BfzBFkHgC&dq>
- Baumgarten JC (1816b) Enumeratio stirpium magno Transsilvaniae principatui præprimis indigenarum (1816-1846). 1-4. Vindebonae
- Bednarska I (2007) Genus *Festuca* L. (Poaceae) in the flora of the western regions of Ukraine. Doctoral dissertation. Institute of the Ecology of the Carpathians, Lviv. [In Ukrainian].
- Bednarska I, Kagalo O (2009) Kostrytsia Porciusa. *Festuca porcii* Hack. In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 228 pp. [In Ukrainian].
- Beldie A (1952) Fam. 14. Salicaceae Lindl. In: Săvulescu T (Ed.) Flora Republicii Populare Române. 1. Editura Academiei Republicii Populare Române, 267-322 pp.

- Bernátová D, Májovský J, Kliment J, Topercer J (2006) Taxonomy and distribution of *Poa carpatica* in the Western Carpathians. *Biologia* 61 (4): 387-392. <https://doi.org/10.2478/s11756-006-0069-x>
- Bialt VV (2001) Sem. 86. Crassulaceae J. St.-Hill. – Tolstiankoviye. In: Tzvelev NN (Ed.) *Flora of Eastern Europe*. 10. Mir i Semiya, Moscow, 250-285 pp. [In Russian].
- Błocki B (1883a) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 427-428. URL: <https://www.biodiversitylibrary.org/item/35444>
- Błocki B (1883b) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 397-400. <https://doi.org/10.1007/BF01662880>
- Błocki B (1883c) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 361-364. <https://doi.org/10.1007/BF01638400>
- Błocki B (1883d) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 257-259. <https://doi.org/10.1007/BF01638737>
- Błocki B (1883e) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 220-223. <https://doi.org/10.1007/BF01638359>
- Błocki B (1883f) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 175-176. <https://doi.org/10.1007/BF01673789>
- Błocki B (1883g) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 144-147. <https://doi.org/10.1007/BF01701574>
- Błocki B (1883h) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 116-119. <https://doi.org/10.1007/BF01665440>
- Błocki B (1883i) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 33: 37-40. <https://doi.org/10.1007/BF01641992>
- Błocki B (1884a) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 427-428. <https://doi.org/10.1007/BF01643170>
- Błocki B (1884b) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 359-360, 427. <https://doi.org/10.1007/BF01643354>
- Błocki B (1884c) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 249-251. <https://doi.org/10.1007/BF01641853>
- Błocki B (1884d) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 212-216. <https://doi.org/10.1007/BF01638379>
- Błocki B (1884e) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 120-122. <https://doi.org/10.1007/BF01665933>
- Błocki B (1884f) Ein Beitrag zur Flora Galiziens und der Bukowina. *Österreichische Botanische Zeitschrift* 34: 51-55. <https://doi.org/10.1007/BF01665613>
- Boissier E (1879) *Flora orientalis: sive enumeratio plantarum in oriente a graecia et aegypto ad indiae fines hucusque observatarum*. 4. Appud H. Georg, Bibliopolam, Ludguni. URL: <https://www.biodiversitylibrary.org/item/60323>
- Boissier PE (1837) *Voyage botanique dans le midi de l'Espagne pendant l'année*. 2. Gide et Cie, Paris. URL: https://books.google.com/books?id=Ps-S1bh4_FgC&dq
- Boissier PE (1843) *Diagnoses plantarum orientalium novarum*. Vol. 1, Sisteus fasciculos 1–7. 1. Appud B. Herrmann, Lipsiae. URL: <https://archive.org/details/e.-boissier-diagnoses-plantarum-orientalium-novarum-series-1-vol.-1-no.-1-7-1843-1846>
- Borbás V (1889) A Lembergi egyetem herbáriumában lév Schur-féle erdélyi szegfűvekről. *Természetrizai Füzetek kiadja a Magyar nemzeti Muzeum* 12: 40-53. URL: <https://www.biodiversitylibrary.org/item/97426>

- Bordzilovskiy YI (1938) Flora of UkrSSR (1938-1940). 1 & 2. Academy of Sciences of UkrSSR, Kyiv. [In Ukrainian].
- Brügger CG (1860) Zur flora tirols. Wagner'schen Buchdr URL: <https://books.google.com/books?id=C2uH8PVZlqMC&hl>
- Brügger CG (1874) Flora Curiensis: Systematische übersicht der in der Umgebung von Chur Wildwachsenden und Häufig Cultivirten Gefässpflanzen. In: Naturforschende Gesellschaft Graubünden (Ed.) Naturgeschichtliche Beiträge zur Kenntniss der Umgebungen von Chur. Druck von Gebrüder Casanova, 47-104 pp. URL: https://books.google.com.ua/books?id=ItpWzQB_WjQC&hl
- Brügger CG (1886a) Mittheilungen über neue und kritische formen der bündner- und nachbar-floren. Selbstverlag des Verfassers <https://doi.org/10.5962/bhl.title.9765>
- Brügger CG (1886b) Mittheilungen über neue und kritische formen der bündner- und nachbar-floren. Jahresbericht Der Naturforschenden Gesellschaft Graubündens 29: 46-178. URL: <https://www.e-periodica.ch/cntmng?pid=ngg-002%3A1884%3A29%3A%3A244>
- Chopyk V, Fedoronchuk M (2015) Flora of the Ukrainian Carpathians. Terno-graph, Ternopil. [In Ukrainian].
- Chopyk VI (1976) High-mountain flora of the Ukrainian Carpathians. Naukova dumka, Kyiv. [In Ukrainian].
- Chorney II (2006) Toward the question of endemism of the flora of Ukrainian Carpathians. Protection Affairs in Ukraine 12 (2): 7-16. [In Ukrainian].
- Chorney II (2009a) Smilkokvitka Zavadskoho (Smilka Zavadskoho). *Silenanthe zavadskii* (Herbich) Griseb. et Schenk (*Elisanthe zavadskii* (Herbich) Klokov; *Silene zavadskii* Herbich. In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 400 pp. [In Ukrainian].
- Chorney II (2009b) Boridnyk sherstystovolosystiy. *Jovibarba hirta* (L.) Opiz (*J. preissiana* (Domin) Omelczuk et Czopik, *J. hirta* (L.) Opiz subsp. *preissiana* (Domin) Soó, *Sempervivum hirtum* L.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 413 pp. [In Ukrainian].
- Chorney II (2009c) Chornianka karpatska (nigritelia karpatska). *Nigritella carpatica* (Zapał.) Teppner, Klein et Zagulski (*Gymnadenia carpatica* (Zapał.) Teppner et E. Klein, *Nigritella angustifolia* Rich. var. *carpatica* Zapał., *N. nigra* auct. non (L.) Rchb. f.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 198 pp. [In Ukrainian].
- Chorney II, Danylyk IM (2009) Sossureya Porciosa. *Saussurea porcii* Degen. In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 335 pp. [In Ukrainian].
- Chorney II, Fedoronchuk MM (2009) Minuartsia ridkokvitkova. *Minuartia pauciflora* (Kit. ex Kanitz) Dvořaková (*M. gerardii* auct. non (Willd.) Hayek; *M. verna* auct. non (L.) Hierr; *M. zarczyni* (Zapał.) Klokov). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 397 pp. [In Ukrainian].
- Chorney II, Korotchenko IA, Shevera MV (2009) Tonkonig Remana. *Poa rehmannii* (Asch. et Graebn.) Woł. (*P. nemoralis* L. subsp. *rehmannii* Asch. et Graebn.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 233 pp. [In Ukrainian].

- Chorney II (2011) Critical revision of the taxa, mentioned as endemic for flora of Ukrainian Carpathians. Scientific Proceedings of Bukovina Society of Naturalists 1 (1-2): 23-59. [In Ukrainian].
- Chrtek J, Jirásek V (1964) *Poa deylii* sp. nova, eine neue Rispengrasart in den Karpaten. Feddes Repertorium Specierum Novarum Regni Vegetabilis 69: 176-180.
- Chrtek J (1985) Poznámky k druhu *Scabiosa lucida* s. l. v Karpatech. Preslia 57: 199-203.
- Chrtek J, Goliašová K (1985) *Scabiosa* L. Hlaváč. In: Bertová L (Ed.) Flóra Slovenska. IV/2. Veda, Bratislava, 178-190 pp.
- Chrtek J, Pouzar Z (1985) Further comments on the problem of *Antennaria carpatica*. Preslia 57: 193-198.
- Chrtek J (2000) Observations on Carpathian populations of *Plantago atrata*. Journal of the National Museum (Prague), Natural History Series - Časopis Národního muzea 169 (1-4): 47-52.
- Ciocârlan V (2009) Flora ilustrată a României. Pteridophyta et Spermatophyta. Editura Ceres, București.
- Comănescu P, Ștefănuț S (2010) Preliminary data about the chorology of the species *Sesleria bielzii* in Romania. Acta Horti Botanici Bucurestiensis 37: 51-62. URL: <https://ahbb.unibuc.ro/wp-content/uploads/2019/04/AHBB-37-53-65.pdf>
- Czerepanov SK (1994) Rod 110. Vasiliek – *Centaurea* L. In: Tzvelev NN (Ed.) Flora of the European part of USSR. 7. Nauka, 260-288 pp. [In Russian].
- Czerepanov SK (1995) Vascular plants of Russia and adjacent states (the former USSR). Cambridge University Press, Cambridge.
- Danciu VM, Golban D (2009) The herbarium of Simonkai L. in the collection of the Cris County Museum (Part II). Nymphaea. Folia Naturae Bihariae 36: 37-166.
- Danihelka J, Chrtek J, Kaplan Z (2012) Checklist of vascular plants of the Czech Republic. Preslia 84: 647-811.
- Danylyk IM (2009) Verba tupolysta. *Salix retusa* L. (*S. kitaibeliana* Willd.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 587 pp. [In Ukrainian].
- Deyl M (1934) Tři transsilvanské subspecie trav na Podkarpatské Rusi. Věda Přírodní 15: 224-245.
- Deyl M (1940) Plants, soil and climate of Pop Ivan. Synecological study from Carpathian Ukraine. Opera Botanica Čechica (2)1-290.
- Deyl M (1980) *Sesleria* Scop. In: Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM (Eds) Flora Europaea. 5. Cambridge University Press, Cambridge, 173-177 pp.
- Didukh YP (Ed.) (2009) Red book of Ukraine. The plant world. Globalconsulting, Kyiv. [In Ukrainian].
- Domin K (1935) Plantarum Cechoslovakiae enumeratio: species vasculares indigenas et introductas exhibens. Vytiskla Státní Tiskárna v Praze, Prague.
- Dostál J (1989) Nová Květena ČSSR. 1-2. Academia Press, Praha.
- Dremlíuga N, Zyman S (2012) Biomorphological analysis of species of the genus *Campanula* L. in the flora of Ukraine. Biological Systems 5 (1): 31-38. [In Ukrainian].
- Essl F, Staudinger M, Stöhr O, Schrott-Ehrendorfer L, Rabitsch W, Niklfeld H (2009) Distribution patterns, range size and niche breadth of Austrian endemic plants.

- Biological Conservation 142 (11): 2547-2558. <https://doi.org/10.1016/j.biocon.2009.05.027>
- Favre A, Pringle J, Heckenhauer J, Kozuharova E, Gao Q, Lemmon EM, Lemmon A, Sun H, Tkach N, Gebauer S, Sun S, Fu P (2020) Phylogenetic relationships and sectional delineation within *Gentiana* (Gentianaceae). TAXON 69 (6): 1221-1238. <https://doi.org/10.1002/tax.12405>
 - Fedoronchuk MM, Chorney II (2005) Genus *Dianthus* L. (Caryophyllaceae Juss.) of the flora of Ukraine: taxonomical and zoological analysis. Protection Affairs in Ukraine 11 (2): 9-18. [In Ukrainian].
 - Fedoronchuk MM, Chorney II (2009) *Minuartia gostropelustkova*. *Minuartia oxypetala* (Wol.) Kulcz. (*Alsine oxypetala* Wol., *Minuartia verna* (L.) Hier subsp. *oxypetala* (Wol.) Halliday). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 398 pp. [In Ukrainian].
 - Fedoronchuk MM, Mosyakin SL (2016) The genus *Minuartia* s. l. (Caryophyllaceae) in the flora of Eastern Europe: an overview of nomenclatural changes in the light of new molecular phylogenetic data. Ukrainian Botanical Journal 73 (2): 134-143. [In Ukrainian]. <https://doi.org/10.15407/ukrbotj73.02.134>
 - Fedorov A (1974) Flora of the European part of USSR (1974-1987). 1-6. Nauka [In Russian].
 - Feráková V (Ed.) (1993) Flóra Slovenska. VI/1–VI/4. Veda, Bratislava.
 - Filipaş L, Puşcaş M, Ursu T, Stoica IA, Coldea G (2009) On the occurrence of the *Poa granitica* group in the Romanian Carpathians. Contributii Botanice 44: 13-19.
 - Fuss M (1866) Flora transsilvaniae excursoria. Typis haeredum Georgii de Closius URL: <https://books.google.com/books?id=zDQ-AAAACAAJ&hl>
 - Futák J (Ed.) (1966) Flóra Slovenska (1966-1982). I-III. Veda, Bratislava.
 - Gergely I, Beldie A (1972) Genul 177. *Sesleria* Scop. In: Săvulescu T (Ed.) Flora Republicii Socialiste România. XII. Editura Academiei Republicii Socialiste România
 - Ghişă E, Beldie A (1972) Genul 739. *Poa* L. In: Săvulescu T (Ed.) Flora Republicii Socialiste România. XII. Editura Academiei Republicii Socialiste România
 - Greuter W (2006) Compositae (pro parte majore). In: Greuter W, Raab-Straube E (Eds) Compositae. Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity. URL: https://euoplusmed.org/cdm_dataportal/taxon/599e0bdb-a2e8-49b9-9907-5398259c4f00
 - Hayek A, Hegi G (1908) Illustrierte Flora von Mittel-Europa: Mit besonderer Berücksichtigung von Deutschland, Oesterreich und der Schweiz. Zum Gebrauche in den Schulen und zum Selbstunterricht. Bd. VI, H. 1. Lehmanns Verlag URL: <https://bibdigital.rjb.csic.es/ldurl/1/16573>
 - Hayek A (1921) Diagnosen neuer von J. Dörfner und H. Zerny in den Jahren 1916 und 1918 in Albanien gesammelter Pflanzenformen. Österreichische Botanische Zeitschrift 70: 12-22. <https://doi.org/10.1007/bf01635690>
 - Herbich F (1859) Flora der Bucovina. F. Volckmar, Leipzig. URL: <https://books.google.com/books?id=n0U-AAAACAAJ&dq>
 - Hodálová I (1999) Multivariate analysis of the *Senecio nemorensis* group (Compositae) in the Carpathians with a new species from the East Carpathians. Folia Geobotanica 34: 321-335. <https://doi.org/10.1007/BF02912818>
 - Höhn M, Lendvay B (2018) *Syringa josikaea*. IUCN Red List of Threatened Species <https://doi.org/10.2305/iucn.uk.2018-1.rlts.t162267a99428926.en>

- Holub J, Křisa B (1971) *Pyrola carpatica* Holub et Křisa, a new species among European Wintergreens; with remarks on the name "*Pyrola intermedia*". *Folia Geobotanica et Phytotaxonomica* 6 (1): 81-92. <https://doi.org/10.1007/bf02851839>
- Holub J (1998) Reclassifications and new names in vascular plants 1. *Preslia* 70: 97-122.
- Hooker W (1840) *Crocus speciosus*. Curtis's botanical magazine. Series II 67 (14): t. 3861. URL: <https://www.biodiversitylibrary.org/item/14345>
- Hrouda L, Šourková M (1992) *Chrysosplenium* L. – mokryš. In: Hejný S, Slavík B, Kirschner J, Křisa B (Eds) Květena České republiky. 3. Academia, Praha, 420-422 pp.
- Hruby J (1930) Campanulastudien innerhalb der Vulgares und ihrer Verwandten. *Magyar Botanikai Lapok* 29: 152-269. URL: <http://real-j.mtak.hu/9913/>
- Hurdu BI, Pușcaș M, Turtureanu PD, Niketić M, Vonica G, Coldea G (2012) A critical evaluation of the Carpathian endemic plant taxa list from the Romanian Carpathians. *Contributii Botanice* 47: 39-47.
- Indreica A (2007) *Festuca amethystina* in the sessile oak forests from upper basin of Olt river. *Revista Contributii Botanice* 42: 11-18.
- Ishchuk L (2017) Analysis of willow (*Salix* L.) flora in Ukrainian Carpathians. *Revista Botanică* 9 (1): 50-55.
- Jafari F, Zarre S, Gholipour A, Eggens F, Rabeler R, Oxelman B (2020) A new taxonomic backbone for the infrageneric classification of the species-rich genus *Silene* (Caryophyllaceae). *TAXON* 69 (2): 337-368. <https://doi.org/10.1002/tax.12230>
- Jakubowska-Gabara J (1994) Distribution of *Festuca amethystina* L. subsp. *ritschilli* (Hackel) Lemke ex Markgr.-Dannenb. in Poland. *Acta Societatis Botanicorum Poloniae* 63 (1): 87-95. <https://doi.org/10.5586/asbp.1994.014>
- Jalas J (1999) Atlas florae europaeae: distribution of vascular plants in Europe. Vol. 12. Resedaceae to Platanaceae. Committee for Mapping the Flora of Europe, Societas Biologica Fennica Vanamo
- Janka V (1858) Zur Flora von Siebenbürgen. *Oesterreichische Botanische Zeitschrift* 8 (6): 196-201. <https://doi.org/10.1007/bf02106081>
- Janka V (1882) Correspondenz. *Oesterreichische Botanische Zeitschrift* 32 (9): 309-310. <https://doi.org/10.1007/bf01653621>
- Janka V (1884) *Plantae novae*. *Természetrázi Füzetek kiadja a Magyar nemzeti Múzeum* 8: 28-29. URL: <https://www.biodiversitylibrary.org/item/96699>
- Jasiewicz A (Ed.) (1980) *Flora Polska – Rośliny naczyniowe Polski i ziem ościennych*. 14. PWN, Warszawa–Krakow.
- Jasiewicz A (Ed.) (1985) *Flora Polski – Rosliny Naczyniowe (1985-1992)*. 3-5. PWN, Warszawa–Krakow.
- Jávorka S (1924) *Magyar flóra (1924-1925)*. 1-3. Studium, Budapest.
- Jeanmonod D, Bocquet G (1983) Propositions pour un traitement taxonomique du *Silene nutans* L. (Caryophyllaceae). *Candollea* 38: 267-295.
- Jelenevsky A, Derviz-Sokolova T (1986) De speciebus duabus europaeis generis *Ranunculus* L. (Ranunculaceae) notae. *Novosti Sistematiki Vysshykh Rasteniy - Novitates Systematicae Plantarum Vascularium* 23: 55-60. [In Russian].
- Kagalo OO (2009) Drik malonasinniy. *Genista oligosperma* (Andrae) Simonk. In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 462 pp. [In Ukrainian].

- Kagalo OO, Sytschak NM (2009a) Dzvonyky karpatski. *Campanula carpatica* Jacq. (*C. reniformis* Schur). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 381 pp. [In Ukrainian].
- Kagalo OO, Sytschak NM (2009b) Armeria pokutska. *Armeria pocutica* Pawł. (*A. elongata* auct. non (Hoffm.) W.D.J. Koch., *A. maritima* (Mill.) Willd. subsp. *elongata* auct. non (Hoffm.) Bonnier, *A. vulgaris* auct. non Willd.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 517 pp. [In Ukrainian].
- Kiedrzyński M, Zielińska KM, Kiedrzyńska E, Jakubowska-Gabara J (2015) Regional climate and geology affecting habitat availability for a relict plant in a plain landscape: the case of *Festuca amethystina* L. in Poland. *Plant Ecology & Diversity* 8 (3): 331-341. <https://doi.org/10.1080/17550874.2014.904951>
- Killias E (1887) Die Flora des Unterengadins, mit besonderer Berücksichtigung der speciellen Standorte und der allgemeinen Vegetationsverhältnisse. Ein Beitrag zur Kenntniss des Unterengadins. Jahresbericht Der Naturforschenden Gesellschaft Graubündens 31: 1-266. <https://doi.org/10.5962/bhl.title.9630>
- Kliment J (1999) Komentovaný prehľad vyšších rastlín flóry Slovenska, uvádzaných v literatúre ako endemické taxóny. *Bulletin Slovenskej Botanickéj Spoločnosti* 21 (Suppl. 4): 1-434.
- Kliment J, Turis P, Janišová M (2016) Taxa of vascular plants endemic to the Carpathian Mts. *Preslia* 88 (1): 19-76.
- Klovov MV (1960) Rodyna Gubotsviti – Labiatae Juss. In: Kotov MI (Ed.) Flora of UkrSSR. IX. Academy of Sciences of UkrSSR, Kyiv, 5-364 pp. [In Ukrainian].
- Knotek A, Konečná V, Wos G, Požárová D, Šrámková G, Bohutínská M, Zeisek V, Marhold K, Kolář F (2020) Parallel alpine differentiation in *Arabidopsis arenosa*. *Frontiers in Plant Science* 11: Article 561526. <https://doi.org/10.3389/fpls.2020.561526>
- Kobiv V (2007) Distribution and individual and group parameters of *Symphytum cordatum* Waldst. et Kit. ex Willd. in lowland conditions in the Western Ukraine. *Proceedings of the State Natural History Museum* 23: 137-144. [In Ukrainian].
- Kobiv Y (2009) Molodylo girske. *Sempervivum montanum* L. (incl. *S. montanum* L. subsp. *carpathicum* Wettst. ex Hayek, *S. carpathicum* Wettst. ex Prodan non G. Reuss). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 418 pp. [In Ukrainian].
- Kobiv Y, Prokopiv A, Nachychko V, Borsukevych L, Helesh M (2017) Distribution and population status of rare plant species in the Marmarosh Mountains (Ukrainian Carpathians). *Ukrainian Botanical Journal* 74 (2): 163-176. [In Ukrainian]. <https://doi.org/10.15407/ukrbotj74.02.163>
- Koch K (1850) Beiträge zu einer Flora des Orientes. *Linnaea* 23 (7): 577-713. URL: <https://www.biodiversitylibrary.org/item/109824>
- Kolář F, Lučanová M, Záveská E, Fuxová G, Mandáková T, Španiel S, Senko D, Svitok M, Kolník M, Gudžinskas Z, Marhold K (2016) Ecological segregation does not drive the intricate parapatric distribution of diploid and tetraploid cytotypes of the *Arabidopsis arenosa* group (Brassicaceae). *Biological Journal of the Linnean Society* 119 (3): 673-688. <https://doi.org/10.1111/bj.12479>
- Kolesnyk AV (2001) The essence of the taxon and intraspecific systematics of *Scilla bifolia* agg. in the Ukrainian Carpathians. *Scientific Proceedings of Uzhgorod State University. Series Biology* 9: 236-243. [In Ukrainian].

- Kolesnyk AV (2003) Genus *Scilla* L. within the flora of the Ukrainian Carpathians (systematics, ecological-geographic, biological and population peculiarities). Doctoral dissertation. M.M. Gryshko National Botanical Garden, National Academy of Sciences of Ukraine, Kyiv. [In Ukrainian].
- Komarov VL (1934) Flora of USSR (1934-1960). 1-29. Academy of Sciences of USSR, Moscow-Leningrad. [In Russian].
- Kondracki J (1989) Karpaty. Wydawnictwo Szkolne i Pedagogiczne, Warszawa.
- Kosiński P, Adreas Hilpold AB (2017) Taxonomic differentiation of *Salix retusa* agg. (Salicaceae) based on leaf characteristics. Dendrobiology 78: 40-50. <https://doi.org/10.12657/denbio.078.005>
- Kosiński P, Sliwiska E, Hilpold A, Boratyński A (2019) DNA ploidy in *Salix retusa* agg. only partly in line with its morphology and taxonomy. Nordic Journal of Botany 37 (7): Article e02197. <https://doi.org/10.1111/njb.02197>
- Kotov MI (1961) Rodyna Chersakovi – Dipsacaceae Lindl. In: Kotov MI (Ed.) Flora of UkrSSR. X. Publishing house of the Academy of Sciences of UkrSSR, Kyiv, 339-379 pp. [In Ukrainian].
- Koutecký P, Štěpánek J, Bad'urova T (2012) Differentiation between diploid and tetraploid *Centaurea phrygia*: mating barriers, morphology and geographic distribution. Preslia 84 (1): 1-32.
- Kovanda M (1975) *Campanula tatrae*, the correct name for *Campanula polymorpha*. Preslia 47: 26-30.
- Krajina V (1930) Monografická studie druhů *Festuca varia* (Haenke) a *Festuca versicolor* (Tausch) Krajina. Spisy Vydávané Přírodovědeckou Fakultou Karlovy University 106: 1-46.
- Krajina V (1933) Bemerkungen zur Verbreitung und Systematik einiger Arten der Gattung *Festuca* in den rumänischen Karpathen. Veröffentlichungen des Geobotanischen Institutes der Eidgenössische Technische Hochschule, Stiftung Rübel, in Zürich 10: 26-53. URL: <https://www.e-periodica.ch/digbib/view?pid=gbi-001%3A1933%3A10#5>
- Kricsfalusy V, Vajnagi A (1994) Biologie und Oekologie von *Scilla kladnii* Schur in Ostkarpaten. Linzer Biologische Beiträge 26 (1): 1081-1111.
- Kricsfalusy V, Budnikov G (2002) Endemic vascular plants in the Ukrainian Carpathians. In: Hamor FD (Ed.) Proceedings of the International Scientific Conference "People and mountains". Proceedings of the International Scientific Conference "People and mountains", Rakhiv, 2002, October 14–18. 356-360 pp. [In Ukrainian].
- Kricsfalusy V, Budnikov G (2007) Threatened vascular plants in the Ukrainian Carpathians: current status, distribution and conservation. Thaiszia 17: 11-32.
- Kucowa I (1954) Krytyczny przegląd gatunków wierzb (*Salix* L.) z osadów glacialnych Polski. Acta Societatis Botanicorum Poloniae 23 (4): 807-836. <https://doi.org/10.5586/asbp.1954.043>
- Kuzmanović N, Barina Z, Šída O, Lakušić D (2015) Typification of names in the group *Coerulans* of the genus *Sesleria* (Poaceae). Phytotaxa 202: 103-120. <https://doi.org/10.11646/phytotaxa.202.2.3>
- Kuzmanović N, Lakušić D, Frajman B, Alegro A, Schönswetter P (2017) Phylogenetic relationships in *Sesleriaceae* (Poaceae) including resurrection of *Psilathera* and *Sesleriella*, two monotypic genera endemic to the Alps. Taxon 66 (6): 1349-1370. <https://doi.org/10.12705/666.5>

- Lazarević M, Kuzmanović N, Lakušić D, Alegro AL, Schönswetter P, Frajman B (2015) Patterns of cytotype distribution and genome size variation in the genus *Sesleria* Scop. (Poaceae). *Botanical Journal of the Linnean Society* 179 (1): 126-143. <https://doi.org/10.1111/boj.12306>
- Łazarski G (2016) *Festuca amethystina* (Poaceae) - a species new for the Płaskowyż Jędrzejowski plateau. *Fragmenta Floristica et Geobotanica Polonica* 23 (2): 370-374. URL: <http://bomax.botany.pl/pubs-new/#article-4182>
- Letz R, Marhold K (1998) Multivariate morphometric study of the *Sempervivum montanum* group (Crassulaceae) in the West Carpathians. *Phyton* 38: 323-336.
- Letz R (2002) The nomenclature of the *Sempervivum montanum* group (Crassulaceae) in the Carpathians. *Phyton* 42 (1): 109-115.
- Lindley J (1839) *Crocus speciosus*. Showy autumn crocus. *Edwards's Botanical Register* 25: t. 40.
- Macalik K, Tamás R, Kolcsár LP, Keresztes L (2013) Present status of the *Syringa josikaea* Jacq. ex Rchb., an endemic species which contributes to the diversity of the Flora of the Carpathians. *Studia Universitatis Babeş-Bolyai. Series Biologia* 58 (2): 31-40.
- Malynovskiy K, Tsaryk Y, Kyyak V, Nesteruk Y (2002) Rare, endemic, relict and marginally-ranged plant species of the Ukrainian Carpathians. *Liga-Press, Lviv*. [In Ukrainian].
- Marhold K (2022) Caryophyllaceae. Euro+Med Plantbase – the information resource for Euro-Mediterranean plant diversity. https://europlusmed.org/cdm_dataportal/taxon/49f3f935-a218-49f0-9acd-5bbd9c2b8739
- Martin H, Touzet P, Van Rossum F, Delalande D, Arnaud J- (2016) Phylogeographic pattern of range expansion provides evidence for cryptic species lineages in *Silene nutans* in Western Europe. *Heredity* 116: 286-294. <https://doi.org/10.1038/hdy.2015.100>
- Mártonfi P (1996) *Thymus alternans* Klokov - a new species of Slovak flora. *Biologia, Bratislava* 51 (1): 27-29.
- Mártonfi P (1997) Nomenclatural survey of the genus *Thymus* sect. *Serpyllum* from Carpathians and Pannonia. *Thaiszia* 7: 111-181.
- Mártonfi P, Marhold K (1998) To the legitimacy of the name *Thymus pulcherrimus* subsp. *sudeticus* (Lyka) P.A. Schmidt. *Thaiszia* 8: 17-18.
- Martyniuk VO, Karpenko NI, Kostikov IY (2018) Molecular phylogenetic analysis of rare sileneae species of the Ukrainian flora. *Scientific Reports of NULES of Ukraine* 3 (73): Article 2. [In Ukrainian]. <https://doi.org/10.31548/dopovidi2018.03.002>
- Maximowicz CJ (1877) Diagnoses plantarum novarum Asiaticarum. *Bulletin de l'Académie Impériale des Sciences de St.-Pétersbourg* 23: 305-391. <https://doi.org/10.5962/bhl.title.46308>
- Melnyk VI, Batochenko VM (2009) Akonit opushenoplodiy. *Aconitum lasiocarpum* (Rchb.) Gáyer (A. *degenii* auct. non Gáyer). In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 550 pp. [In Ukrainian].
- Meyer FK (1973) *Conspectus der Thlaspi-Arten Europas, Afrikas und Vorderasiens*. *Feddes Repertorium* 84: 449-469. <https://doi.org/10.1002/fedr.19730840503>
- Michalko J (Ed.) (1984) *Flóra Slovenska* (1984-1988). IV/1–IV/4. Veda, Bratislava.
- Mihály AV, Komendar VI (1993) State of population of *Crocus banaticus* J. Gay in the Transcarpathian region of the Tisza valley. *Tiscia* 27: 61-63.

- Ministry of Environmental Protection and Natural Resources of Ukraine (2021) Decree Nr 111. On approval of lists of plant and fungi species included in the Red Book of Ukraine (plant world) and plant and fungi species excluded from the Red Book of Ukraine (plant world). URL: <https://zakon.rada.gov.ua/laws/show/z0370-21?lang=en#Text>
- Mirek Z, Piękoś-Mirkowa H, Zając A, Zając M (2020) Vascular plants of Poland: an annotated checklist. W. Szafer Institute of Botany, Polish Academy of Sciences, Cracow.
- Miłka J (2003) The genus *Aconitum* in Poland and adjacent countries - a phenetic-geographic study. Institute of Botany, Jagiellonian University, Cracow.
- Miłka J (2008) *Aconitum moldavicum* Hacq. (Ranunculaceae) and its hybrids in the Carpathians and adjacent regions. *Roczniki Bieszczadzkie* 16: 233-252.
- Miłka J, Kozioł M (2009) *Aconitum moldavicum* (Ranunculaceae) na Wyżynie Małopolskiej. *Fragmenta Floristica et Geobotanica Polonica* 16 (1): 7-25.
- Miłka J, Boroń P, Sutkowska A (2013) Holocene history of *Aconitum* in the Polish Western Carpathians and adjacent regions: long-distance migrations or cryptic refugia? *Modern Phytomorphology* 3: 9-18. <https://doi.org/10.5281/zenodo.161587>
- Miłka J, Bąba W, Szczepanek K (2014) Putative forest glacial refugia in the Western and Eastern Carpathians. *Modern Phytomorphology* 5: 85-92. <https://doi.org/10.5281/zenodo.161009>
- Miłka J, Boroń P, Novikoff A, Wróblewska A, Binkiewicz B (2016) Two major groups of chloroplast DNA haplotypes in diploid and tetraploid *Aconitum* subgen: *Aconitum* (Ranunculaceae) in the Carpathians. *Modern Phytomorphology* 9 (Suppl.): 5-15. <https://doi.org/10.5281/zenodo.159700>
- Miłka J, Novikov A, Rottensteiner W (2021) The taxonomic circumscription of *Aconitum* subgenus *Aconitum* (Ranunculaceae) in Europe. *Webbia* 76 (1): 11-45. <https://doi.org/10.36253/jopt-10006>
- Mosyakin SL, Fedoronchuk MM (1999) Vascular plants of Ukraine: A nomenclatural checklist. M.G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, Kyiv.
- Mosyakin SL, Fedoronchuk MM (2015) New combinations for East European species of *Sabulina* (Caryophyllaceae). *Phytotaxa* 231 (1): 95-98. <https://doi.org/10.11646/phytotaxa.231.1.10>
- Mráz P, Barabas D, Lengyelová L, Turis P, Schmotzer A, Janišová M, Ronikier M (2016) Vascular plant endemism in the Western Carpathians: spatial patterns, environmental correlates and taxon traits. *Biological Journal of the Linnean Society* 119 (3): 630-648. <https://doi.org/10.1111/bij.12792>
- Mygal AV (2009) Shafran banatskiy. *Crocus banaticus* J. Gay (*C. iridiflorus* Heuff. ex Rchb.). In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 118 pp. [In Ukrainian].
- Mygal AV, Kagalo OO, Felbaba-Klushyna LM (2009) Buzok uhorskiy. *Syringa josikaea* J. Jacq. ex Rchb. In: Didukh YP (Ed.) Red book of Ukraine. The plant world. Globalconsulting, Kyiv, 527 pp. [In Ukrainian].
- Myklestad A, Birks HJ (1993) A numerical analysis of the distribution patterns of *Salix* L. species in Europe. *Journal of Biogeography* 20 (1): 1-32. <https://doi.org/10.2307/2845736>

- Nachychko V (2014) The genus *Thymus* L. (Labiatae Juss.) in the Ukrainian Carpathians' flora: systematics and taxonomic problems. Visnyk of Lviv University. Biological Series 64: 159-169. [In Ukrainian].
- Nachychko VO, Honcharenko VI (2017) Botanical-geographical characterization of *Thymus* L.(Lamiaceae) species in the flora of western regions of Ukraine. Visnyk of Lviv University. Biological Series 75: 35-47. <https://doi.org/10.30970/vlubs.2017.75.04>
- Negrean G, Karácsonyi K, Szatmari PM (2015) Kárpáti, erdélyi, dáckus és pannon endemikus fajok a Szilágyság flórájában. *Kitaibelia* 20 (2): 259-267. <https://doi.org/10.17542/kit.20.259>
- Neilreich A (1861) *Nachträge zu Maly's Enumeratio plantarum phanerogamicarum imperii austriaci universi*. Zoologisch-Botanische Gesellschaft in Wien, Wien. URL: <https://books.google.com/books?id=Zk0-AAAACAAJ&hl>
- Novikoff AV (2010) Some features of anatomical structure of the stem of *Aconitum moldavicum* Hacq. and *Aconitum lycoctonum* L. em. Koelle (Ranunculaceae). *Studia Biologica* 4 (1): 109-114. <https://doi.org/10.30970/sbi.0401.068>
- Novikoff AV, Hurdu BI (2015) A critical list of endemic vascular plants in the Ukrainian Carpathians. *Contributii Botanice* 50: 43-91.
- Novikov A, Mitka J (2020) Spatial analysis and distribution modeling of *Aconitum moldavicum* in Ukrainian Carpathians and adjacent territories with special reference to the algorithm used. *Plant Introduction 85-86*: 50-64. <https://doi.org/10.46341/PI2020001>
- Novikov A (2021) Developing the GIS-based maps of the geomorphological and phytogeographical division of the Ukrainian Carpathians for routine use in biogeography. *Biogeographia - The Journal of Integrative Biogeography* 36: Article a009. <https://doi.org/10.21426/B636052326>
- Novikov A, Sup-Novikova M (2022) Endemic vascular plants in the Ukrainian Carpathians. *Biodiversity Data Journal* 10: Article e95910. <https://doi.org/10.3897/BDJ.10.e95910>
- Novikov A (2023) Working synonymic checklist of endemic vascular plants occurring in the Ukrainian Carpathians. 64. Zenodo. Release date: 2023-3-16. URL: <https://doi.org/10.5281/zenodo.7742316>
- Nunvářová Kabátová K, Kolář F, Jarolímová V, Krak K, Chrtek J (2019) Does geography, evolutionary history or ecology drive ploidy and genome size variation in the *Minuartia verna* group (Caryophyllaceae) across Europe? *Plant Systematics and Evolution* 305: 1019-1040. <https://doi.org/10.1007/s00606-019-01621-2>
- Omelczuk-Mjakushko TJ, Chopik VV (1975) Genus *Jovibarba* Opiz (Crassulaceae) in the flora of Ukraine. *Botanicheski Zhurnal* 60 (8): 1183-1187. [In Russian].
- Onyshchenko VA, Mosyakin SL, Korotchenko IA, Danylyk IM, Burlaka MD, Olshanskyi IH, Shiyani NM, Zhygalova SL, Tymchenko IA, Kolomiychuk VP, Novikov AV, Chorney II, Kish RY, Shevera MV, Fedoronchuk MM, Protopopova VV (2022) IUCN Red List categories of vascular plant species of Ukrainian flora. M.G. Kholodny Institute of Botany of the NAS of Ukraine, Kyiv.
- Opiz FM (1852) *Seznam rostlin květeny české*. Nákladem Českého museum URL: <https://books.google.com.ua/books?id=F1M-AAAACAAJ&hl>
- Oprea A (2005) *Lista critică a plantelor vasculare din România*. Editura Universităţii Alexandru Ioan Cuza, Iaşi.

- Pachschwöll C, Pachschwöll T (2019) A new find of *Arabidopsis neglecta* (Brassicaceae) in the Svydovets Massif (Ukrainian Carpathians). *Ukrainian Botanical Journal* 76 (1): 60-66. <https://doi.org/10.15407/ukrbotj76.01.060>
- Parnikoza IY, Gilchuk PV (2002) Itinerary study of coenopopulations of rare and endangered plants in Rakhiv district of Zakarpattia region. *Protection Affairs in Ukraine* 8 (1): 35-39. [In Ukrainian].
- Pawłowski B (1946) O niektórych naszych wierzbach. Materiały do Fizjografii Kraju. T. 1. Nakładem Polskiej Akademii Umiejętności
- Pawłowski B (1956) Flora Tatr. Rośliny naczyniowe. PWN, Polska Akademia Nauk
- Pawłowski B (1961) Observationes ad genus *Symphytum* L. pertinentes. *Fragmenta Floristica et Geobotanica Polonica* 4 (1-2): 133-152.
- Pawłowski B (Ed.) (1963) Flora Polska. Rośliny naczyniowe Polski i ziem ościennych. 10-11. PWN, Warszawa-Krakow.
- Pawłowski B, Jasiewicz A (Eds) (1971) Flora Polska. Rośliny naczyniowe Polski i ziem ościennych. 12-13. PWN, Warszawa-Krakow.
- Peregrym OM (2010) A taxonomic overview of the genus *Euphrasia* L. in Ukraine. *Ukrainian Botanical Journal* 67: 248-260. [In Ukrainian].
- Petri A, Oxelman B (2019) Phylogenetic relationships within *Silene* (Caryophyllaceae) section *Physolychnis*. *TAXON* 60 (4): 953-968. <https://doi.org/10.1002/tax.604002>
- Piękoś-Mirkowa H, Mirek Z (2011) Endemic taxa of vascular plants in the Polish Carpathians. *Acta Societatis Botanicorum Poloniae* 72 (3): 235-242. <https://doi.org/10.5586/asbp.2003.031>
- Pilger R (1926) Beiträge zur Kenntnis der Gattung *Plantago*. VII. Sektion *Oreades* Decne. *Repertorium Specierum Novarum Regni Vegetabilis* 23: 241-270. URL: <https://bibdigital.rjb.csic.es/records/item/14708-redirectio>
- Pilger R (1937) Plantaginaceae. In: Diels L (Ed.) *Das Pflanzenreich. Regni vegetabilis conspectus* (Engler). H. 102. Verlag von Wilhelm Engelmann, Leipzig, 1-466 pp. URL: <https://www.biodiversitylibrary.org/item/71753>
- Piscová V, Ševčík M, Hreško J, Petrovič F (2021) Effects of a short-term trampling experiment on alpine vegetation in the Tatras, Slovakia. *Sustainability* 13 (5). <https://doi.org/10.3390/su13052750>
- Podlech D (1965) Revision der europäischen und nordafrikanischen Vertreter der Subsect. *Heterophylla* (Witas.) Fed. der Gattung *Campanula*. *Feddes Repertorium* 71 (1-3): 50-187. <https://doi.org/10.1002/fedr.19650710103>
- Porcius F (1878) *Enumeratio plantarum phanerogamicarum districtus quondam naszódienensis*. Papp, Claudiopoli. URL: <https://books.google.com/books?id=bWtuuQAACAAJ&hl>
- Prodan I, Nyárády EI (1964) Genus 582 *Centaurea* L. In: Nyárády EI (Ed.) *Flora republicii populare Romîne*. 9. Editio Academiae reipublicae popularis Romanicae, 785-951 pp.
- Prots BG, Kish RY (2009) Chyna transylvanska. *Lathyrus transsilvanicus* (Spreng.) Rchb. (*Orobis transsilvanicus* Spreng.). In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 472 pp. [In Ukrainian].
- Răvărui M (1956) Fam. 46. Saxifragaceae DC. In: Săvulescu T (Ed.) *Flora Reipublicae Populare România*. 4. Editio Academiae Reipublicae Popularis Romanicae, 87-148 pp.
- Rewicz A, Tomczyk PP, Kiedrzyński M, Zielińska KM, Jędrzejczyk I, Rewers M, Kiedrzyńska E, Rewicz T (2018) Morphometric traits in the fine-leaved fescues depend

- on ploidy level: the case of *Festuca amethystina* L. PeerJ 6: Article e5576. <https://doi.org/10.7717/peerj.5576>
- Richter K (1889) *Plantae Europaeae. Enumeratio systematica et synonymica plantarum phaenogamicarum in Europa sponte crescentium vel mere inquilinarum. I. W.* Engelmann Verlag, Leipzig. URL: <https://doi.org/10.5962/bhl.title.10116>
 - Rochel A (1828) *Plantae banatus rariores iconibus et descriptionibus illustratae.* Landerer de Fűskút URL: <https://books.google.com/books?id=Iw9JAAAAcAAJ&hl>
 - Roleček J, Dřevojan P, Šmarda P (2019) First record of *Festuca amethystina* L. from the Transylvanian Basin (Romania). *Contribuții Botanice* 54: 91-97. <https://doi.org/10.24193/contrib.bot.54.6>
 - Rybczyński J, Davey MR, Miłkula A (2014) *The Gentianaceae. Volume 1: Characterization and Ecology.* Springer, Berlin–Heidelberg. <https://doi.org/10.1007/978-3-642-54010-3>
 - Săvulescu T (Ed.) (1952) *Flora Reipublicae Populare România / Flora Reipublicae Socialistica România (1952-1976).* 1-13. Editio Academiae Reipublicae Popularis România (Editio Academiae Reipublicae Socialistica România)
 - Schmickl R, Paule J, Klein J, Marhold K, Koch M (2012) The evolutionary history of the *Arabidopsis arenosa* complex: Diverse tetraploids mask the Western Carpathian center of species and genetic diversity. *PLoS ONE* 7 (8): Article e42691. <https://doi.org/10.1371/journal.pone.0042691>
 - Schur F (1859) *Beobachtungen in der Flora von Siebenbürgen, nebst Beschreibung neuer Pflanzenarten und Varietäten.* Österreichische botanische Zeitschrift 9: 9-16. <https://doi.org/10.1007/BF01962324>
 - Schur F (1866) *Enumeratio plantarum Transsilvaniae. Vindobonae* URL: <https://doi.org/10.5962/bhl.title.312>
 - Sheliag-Sosonko YR, Didukh YP, Kukovytsa HS (1980) Distribution of *Viola jooi* Janka in Ukraine. *Ukrainian Botanical Journal* 37 (3): 221-224. [In Ukrainian].
 - Simonkai L (1886) *Enumeratio florum transsilvanicae vesiculosae critica.* Magyar Természettudományi Társulat, Budapest. <https://doi.org/10.5962/bhl.title.9882>
 - Šmarda P, Šmerda J, Knoll A, Bureš P, Danihelka J (2007) Revision of Central European taxa of *Festuca* ser. *Psammophilae* Pawlus: morphometrical, karyological and AFLP analysis. *Plant Systematics and Evolution* 266 (3): 197-232. <https://doi.org/10.1007/s00606-007-0532-3>
 - Šmarda P (2008) DNA ploidy level variability of some fescues (*Festuca* subg. *Festuca*, Poaceae) from Central and Southern Europe measured in fresh plants and herbarium specimens. *Biologia* 63 (3): 349-367. <https://doi.org/10.2478/s11756-008-0052-9>
 - Soldano A (1991) Le sottospecie di Cesati: altre novità e precisazioni nomenclaturali e tassonomiche su fanerogame d'Italia e dell'area Mediterranea. *Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale in Milano* 131: 245-256.
 - Soldano A (2001) *Silene nutans* subsp. *insubrica* (Gaudin) Soldano, *comb. nova.* *Candollea* 56 (1): 137. <https://doi.org/10.5169/seals-879363>
 - Soó R (1972) Systematisch-nomenklatorische Bemerkungen zur Flora Mitteleuropas mit Beziehungen zur südosteuropäischen Flora. *Feddes Repertorium* 83 (3): 129-212. <https://doi.org/10.1002/fedr.19720830302>
 - Starmühller W (2000) Fortschritte in der Systematik der Gattung *Aconitum* in Siebenbürgen. *Siebenbürgisches Archiv* 36: 9-24.

- Staszkiwicz J (2015) Zmienność i systematyka taksonów z rodzaju *Euphrasia* (Scrophulariaceae; Orobanchaceae) w Polsce: 2. Analiza biometryczna taksonów i populacji z podsekcji *Ciliatae*. *Fragmenta Floristica et Geobotanica Polonica* 22 (2): 141-302. URL: <http://bomax.botany.pl/pubs-new/#article-3980>
- Štech M, Drábková L (2005) Morphometric and RAPD study of the *Melampyrum sylvaticum* group in the Sudeten, the Alps and Carpathians. *Folia Geobotanica* 40: 177-193. <https://doi.org/10.1007/BF02803233>
- Štěpánek J, Holub J (1997) *Scabiosa* L. – hlaváč. In: Slavík B, Chrtek J, Tomšovic P (Eds) *Květena České republiky*. 5. Academia, Praha, 536-542 pp.
- Štěpánek J, Tomšovic P (2000) *Thymus* L. – mateřídouška. In: Slavík B, Chrtek J, Tomšovic P (Eds) *Květena České republiky*. 6. Academia, Praha, 656-669 pp.
- Stojko SM, Tassenkevich L (1979) *Galium transcarpaticum* Stojko et Tassenkevitsch - new species from the Ugolsky massif of the Carpathian State Reservation. *Ukrainian Botanical Journal* 36 (6): 594-597. [In Ukrainian].
- Stojko SM, Tassenkevich L (1993) Some aspects of endemism in the Ukrainian Carpathians. *Fragmenta Floristica et Geobotanica Polonica* 2 (1): 343-353.
- Szafer W, Raciborski M (Eds) (1919) *Flora Polska. Rośliny naczyniowe Polski i ziem ościennych*. 1. PAU, Kraków.
- Szafer W (Ed.) (1921) *Flora Polska. Rośliny naczyniowe Polski i ziem ościennych (1921-1947)*. 2-6. PAU, Kraków.
- Szafer W, Pawłowski B (Eds) (1955) *Flora Polska. Rośliny naczyniowe Polski i ziem ościennych (1955-1960)*. 7-9. PWN, Warszawa–Kraków.
- Tan K, Vladimirov V (2001) *Swertia punctata* (Gentianaceae) in Bulgaria. *Bocconea* 13: 461-466.
- Tassenkevich L (1998) *Flora of the Carpathians: Checklist of the native vascular plant species*. State Museum of Natural History of the NAS of Ukraine, Lviv. [In Ukrainian].
- Tassenkevich L (2003) Diversity of the flora of vascular plants In Ukrainian Carpathians. *Proceedings of Shevchenko Scientific Society* 12: 145-157. [In Ukrainian].
- Tassenkevich L (2004) Regional phytogeographical division of Carpathians. *Scientific Proceedings of the State Natural History Museum of the NAS of Ukraine* 19: 29-39. [In Ukrainian].
- Tassenkevich L (2006) *Native flora of vascular plants of the Carpathians, its peculiarities and genesis*. Doctoral dissertation. State Museum of Natural History of the NAS of Ukraine, Lviv. [In Ukrainian].
- Těšitel J, Štech M (2007) Morphological variation in the *Melampyrum sylvaticum* group within the transitional zone between *M. sylvaticum* s. str. and *M. herbichii*. *Preslia* 79: 83-99.
- Těšitel J, Malinová T, Štech M, Herbstová M (2009) Variation in the *Melampyrum sylvaticum* group in the Carpathian and Hercynian region: two lineages with different evolutionary histories. *Preslia* 81: 1-22.
- Thiers B (2022) The world's herbaria 2021: a summary report based on data from Index Herbariorum. Issue 6.0. http://sweetgum.nybg.org/science/wp-content/uploads/2022/02/The_Worlds_Herbaria_Jan_2022.pdf
- Tutin TG (1972) *Gentiana* L. In: Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM, Webb DA (Eds) *Flora Europaea*. Vol. 3. Diapensiaceae to Myoporaceae. Cambridge University Press, Cambridge, 59-63 pp.

- Tzvelev NN (1971) The genus *Alopecurus* L. in USSR. *Novosti Sistematiki Vysshykh Rasteniy* 8: 12-22. [In Russian].
- Tzvelev NN (1974) Fam. 180. Poaceae Barnh (Gramineae Juss. nom. altern.) – Zlaki. In: Fedorov AA (Ed.) *Flora of European part of USSR*. 1. Nauka, Moscow, 117-368 pp. [In Russian].
- Tzvelev NN (1976) *Cereals of USSR*. Nauka, Moscow. [In Russian].
- Tzvelev NN (1978) Fam. 133. Gentianaceae. – Horechavkoviye. In: Fedorov AA (Ed.) *Flora of USSR*. 3. Nauka, Moscow, 57-85 pp. [In Russian].
- Tzvelev NN (1981) Rod 20. Ochanka – *Euphrasia* L. In: Fedorov A (Ed.) *Flora of the European part of USSR*. 5. Nauka, Moscow, 268-281 pp. [In Russian].
- Tzvelev NN (Ed.) (1989) *Flora of the European part of USSR / Flora of the Eastern Europe (1989-2004)*. 7-11. Various Publishers – Nauka, Mir i Semia, KMK [In Russian].
- Tzvelev NN (1995) *Plantae vasculares Rossicae et civitatum collimitanearum (in limicis URSS olim)*. Mir i Semia, Saint-Petersburg. [In Russian].
- Tzvelev NN (2001) Rod 20. Lutik – *Ranunculus* L. In: Tzvelev NN (Ed.) *Flora of the European part of USSR*. 10. Mir i Semia, Saint-Petersburg, 100-158 pp. [In Russian].
- Ujhelyi J (1965) Data to the sectio *Bulbosae* and section *Caespitosae* of the genus *Koeleria*. *V. Annales Historico-Natürales Musei Nationalis Hungarici. Pars Botanica* 57: 179-202.
- Utelli AB, Roy BA, Baltisberger M (2000) Molecular and morphological analyses of European *Aconitum* species (Ranunculaceae). *Plant Systematics and Evolution* 224: 195-212. <https://doi.org/10.1007/BF00986343>
- Vasiliev VN (1952) Fam. CXXIX. Oleaceae Lindl. In: Shyshkin BK, Bobrov EG (Eds) *Flora of USSR*. 18. Academy of Sciences of USSR, Moscow–Leningrad, 488-525 pp. [In Russian].
- Velev NI, Apostolova II (2009) A review of *Potentillo ternatae-Nardion strictae* alliance. *Hacquetia* 8: 49-66.
- Visjulina OD (1953) Rodyna Zhovtytsevi – Ranunculaceae Juss. In: Klovok MV, Visjulina OD (Eds) *Flora of UkrSSR*. 5. Publishing house of the Academy of Sciences of UkrSSR, Kyiv, 14-152 pp. [In Ukrainian].
- Wettstein R (1891) *Litteratur-Uebersicht. Österreichische Botanische Zeitschrift* 41 (4): 147-178.
- Wettstein R (1894) *Untersuchungen über Pflanzen der österreichischungarischen Monarchie. Österreichische Botanische Zeitschrift* 44 (7): 244-249. <https://doi.org/10.1007/bf01795066>
- Wettstein R (1896) *Monographie der Gattung Euphrasia*. Engelmann URL: <https://bibdigital.rjb.csic.es/idurl/1/14706>
- Williams FN (1890) *The pinks of Central Europe*. West Newman URL: <https://books.google.com/books?id=MDglAQAAMAAJ&hl>
- Williams FN (1893) A monograph of the genus *Dianthus*, Linn. *Journal of the Linnean Society of London, Botany* 29 (203): 346-478. <https://doi.org/10.1111/j.1095-8339.1893.tb02037.x>
- Zahradníková K (1985) *Sempervivum* L. In: Bertová L (Ed.) *Flóra Slovenska*. IV/2. Veda, Bratislava, 193-201 pp.
- Zapałowicz H (1906a) Niektóre nowe, krytyczne i rzadkie gatunki (odmiany) flory Pokucko-Marmaroskiej. *Sprawozdanie Komisji Fizyograficznej* 29: 32-38.

- Zapałowicz H (1906b) *Conspectus florum Galiciae criticus* (1906-1911). 1-3. Nakładem Akademii Umiejętności w Krakowie, Kraków.
- Zawadski A (1835) *Enumeratio plantarum Galiciae & Bucowinae, oder die in Galizien und der Bukowina wildwachsenden Pflanzen mit genauer Angabe ihrer Standorte*. W.G. Korn URL: <https://books.google.com/books?id=WHA-AAAACAAJ&hl>
- Zerov DK (1950) *Flora of UkrSSR* (1950-1965). 3-12. Academy of Sciences of UkrSSR, Kyiv. [In Ukrainian].
- Zhang L, Kadereit J (2004) Nomenclature of *Soldanella* L. (Primulaceae). *TAXON* 53 (3): 741-752. <https://doi.org/10.2307/4135448>
- Zuev VV (2019) System of the Russian species of the genus *Ciminalis* Adans. (Gentianaceae Juss.). *Turczaninowia* 22 (3): 144-149. <https://doi.org/10.14258/turczaninowia.22.3.10>
- Zyman SM, Bulakh OV (2009) Kotiachi lapki. *Antennaria carpatica* (Wahlenb.) Bluff et Fingerh. In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 290 pp. [In Ukrainian].
- Zyman SM, Chorney II (2009) Chykhavka tonkolysta (dereviy Shura). *Ptarmica tenuifolia* (Schur) Schur (*Achillea oxyloba* (DC.) Sch. Bip. subsp. *schurii* (Sch. Bip.) Heimerl, A. *schurii* Sch. Bip.). In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 332 pp. [In Ukrainian].
- Zyman SM, Shiyani NM (2009) Tyrlych rozdilniy. *Gentiana laciniata* Kit. ex Kanitz. In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 488 pp. [In Ukrainian].
- Zyman SM, Gamor AF, Dremluga NG, Tuh YY (2009) Dzvonyky Kladny. *Campanula kladniana* (Schur) Witasek. In: Didukh YP (Ed.) *Red book of Ukraine. The plant world*. Globalconsulting, Kyiv, 382 pp. [In Ukrainian].

Supplementary material

Suppl. material 1: Alphabetic checklist of endemic vascular plants distributed in the Ukrainian Carpathians

Authors: Andriy Novikov

Data type: Checklist

Brief description: This is an alphabetically ordered checklist of endemic vascular plants distributed in the Ukrainian Carpathians

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