

## DOES *CHAMAECYTISUS AGGREGATUS* (SCHUR) CZEREP. (*FABACEAE* LINDL.) OCCUR IN UKRAINE?

D. Pifkó<sup>1</sup>, M. Shevera<sup>2</sup>

<sup>1</sup>Hungarian Natural History Museum, H-1476 Budapest, Pf. 222, Hungary, e-mail: [pifko@bot.nhmus.hu](mailto:pifko@bot.nhmus.hu).

<sup>2</sup>M.G. Kholodny Institute of Botany, NAS of Ukraine, Tereshchenkivska Str., 2, Kyiv, 01601, Ukraine, e-mail: [shevera@mail.ru](mailto:shevera@mail.ru)

*On the basis of critical study of Chamaecytisus aggregatus (Schur) Czerep. (= Cytisus aggregatus Schur), including materials from CHER and LW Herbarium and the type specimens as well, we are considered that the species should be excluded from the Ukrainian flora. It was defined what two known specimens from Bukovyna which noted in "Flora of Uk. RSR" and Identification manuals of vascular plants of Ukraine are treated to Ch. austriacus (L.) Rothm.*

*Key words: Chamaecytisus aggregatus, CHER, LW Herbarium, Ukraine*

**Introduction.** *Chamaecytisus aggregatus* (Schur) Czerep. or *Cytisus aggregatus* Schur (*Fabaceae* Lindl.) was reported for the territory of Ukraine in many Floras and Identification manuals of vascular plants of Ukraine for a long time (cf. Krechetovich, 1945; Visyulina, 1954, 1965, 1974; Shelyag-Sosonko, 1987; Mosyakin, Fedoronchuk, 1999, etc.). During the taxonomic revision on the genus *Chamaecytisus* Link in Ukraine M. Shevera (1989, 1990) found no of specimens *Ch. aggregatus* in the Ukrainian collections.

Revising the *Cytisus* material of personal collection of Ferdinand Schur deposited in Ivan Franko Lviv National herbarium (*LW*) the lectotype of *C. aggregatus* was selected and designated (Pifkó, 2009), and in the Herbarium of Yuryi Fed'kovych Chernivtsi National University (*CHER*) collected mostly by M. Guşuleac where deposited some specimens of the *C. aggregatus* was carried out in 2009 (cf. Pifkó, Shevera 2011).

Based on the studied material of several European herbaria (*BEO*, *BEOU*, *BP*, *KRA*, *KRAM*, *SO*, *SOM*) it was pointed out that the species is absent in natural habitats in Ukraine (Pifkó 2005, 2005a).

**Results. Nomenclature and taxonomy.** *Cytisus aggregatus* was described by F. Schur (1866) from Transylvania (Romania) in his well-known work «Enumeration ...». According to the protologue, the locus classicus of the species is "Auf dem Götzenberg, der Mumma, oberhalb" (Sadu, Romania). The type material deposited in the Herbarium of Ivan Franco Lviv National University (*LW*) was lectotypified by D. Pifkó (2009) (Fig. 1). The text of the collecting locality on the lectotype specimen has some additional details: «Auf dem Götzenberg bei Heltau 4000' Glimmerschiefer. Dr. Schur» [Sadu: Măgura Cislădiei].

The species was placed in subgen. *Aulonix* Raf. ser. *Capitatae* V. Krecz. (Krechetovich, 1945; Visyulina, 1954) or to sect. *Chamaecytisus* (Tzvelev, 1987). The status of the species is under discussion. It is treated at the species rank by some botanists as *C. aggregatus* in the genus *Cytisus* Desf. (Krechetovich, 1945; Ви-

syulina, 1954, etc.) or as *Ch. aggregatus* in the genus *Chamaecytisus* Link (Czerepanov 1981, 1995; Skalicka, 1983; Shelyag-Sosonko, 1987, etc.); or at the subspecies rank as *C. capitatus* Scop. subsp. *aggregatus* (Schur) Jáv., *C. supinus* L. subsp. *aggregatus* (Schur) Soó or *Ch. supinus* (L.) Link subsp. *aggregatus* (Schur) Löve et Löve (cf. Pifkó 2005a, 2007, 2009). Other botanists regard the species to be synonymous with *C. capitatus*, *Ch. supinus* (cf. Heywood, Frodin 1968; Tzvelev, 1987), or with *C. hirsutus* L. s.l. (Cristofolini 1991), but *C. hirsutus* was used as a synonym of *C. supinus* by Cristofolini (1991).

According to our opinion, this taxon belongs to the *Ch. supinus* agg. as a separate subspecies *Ch. supinus* subsp. *aggregatus* (cf. Pifkó 2007, 2009).

**Morphology.** *Chamaecytisus supinus* subsp. *aggregatus* has two forms, one blooming in spring, with flowers in leafy racemes, and another blooming in summer and having flowers in terminal heads. Plant erect, 20–60(–100) cm; corolla yellow, with a dark spot on vexillum; vexillum generally glabrous, rarely slightly hairy. Calyx 1–1.3 cm long, mainly more or less densely patent hairy; legume lanate. Branches with densely patent hairs. Leaflets ovate or elliptical, 1–3 cm long, 0.7–2.5 cm wide, leaf upper surface slightly hairy with short hairs, rarely glabrous.

Some similar taxa have branches with patent hairs.

The main morphological differences are:

*Ch. supinus* (L.) Link subsp. *supinus* is similar, but subsp. *aggregatus* has larger leaves and its twigs are densely pubescent.

*Ch. triflorus* (Lam.) Skalická (= *C. hirsutus* auct. non L.). No forms blooming in terminal heads in summer were observed in taxa of the *Ch. triflorus* group, and its calyx has dense, erect or appressed hairs.

*Ch. podolicus*. Calyx longer, 1.3–1.7 cm, with dense erect or appressed hairs, leaf upper surface hairless.

The vexillum of *Ch. rochelii* is densely hairy and the corolla is pale or bright yellow.

**Natural habitats of the species.** *Chamaecytisus supinus* subsp. *aggregatus* is an endemic subspecies in the Carpathian Region. The subspecies is distributed in Hungary, Slovakia, and Romania. The occurrence of this taxon in Transylvania (Romania) is very surprising, since the centre of its distribution is in the western part of Hungary (Transdanubia) (cf. Pifkó 2009). It prefers dry oak forests and forest margins in the middle range region. Its Ukrainian, Bulgarian and Polish records are possibly incorrect (cf. Heywood, Frodin 1968).



Fig. 1. Lectotype of *Cytisus aggregatus* Schur (LW)

The first record of the species in the present-day territory of Ukraine was published by K. Hormuzaki (1911): “Elemente der Steppenflora vorherrschen, wovon manche von Südosten aus nur bis in die Bukowina dringen *Cytisus aggregatus* Schur”.

Two *C. aggregatus* specimens are deposited in the Herbarium of Yuriy Fed'kovych Chernivtsi National University (CHER).

1. «*Cytisus aggregatus* Schur – *capitatus* Bmgt. Flora Bucovinensis Herbarium, Zurin auf dem Hügel Rugino, 9. August 1910, M. Guşuleac».

2. «*C. aggregatus* Schur: Flora Bucovinensis, Zurin», without date and without collector, but with “Herbarium M. Guşuleac» (Fig. 2).

A detailed and critical study of the herbarium specimens was carried out by M. Shevera in 2008. He

revealed that the studied specimens are identical with *C. austriacus* L. and did not belong to *C. aggregatus*, as it is indicated on the labels: “non *Ch. aggregatus* (Schur) Czerep. 06.10. 2008. M. Shevera”. Later D. Pifkó wrote the following revision label: “*Ch. austriacus* agg. 2009. 07.06. Pifkó D.”.

No further herbarium materials from the following herbaria (BEO, BEOU, BP, CHER, KRA, KRAM, KW, LW, LWS, SO, SOM, UU) were found.



Fig. 2. Herbarium specimen of *C. aggregatus* Schur from Zurin (Herbarium M. Guşuleac, CHER)

The «Czernowitz» record by K. Hormuzaki (1911) might be the basis for including the species in the «Flora of the USSR» (Krechetovich, 1945), «Flora of the Ucr. RSS» (Visyulina, 1954), and later cited in Identification manual of vascular plants of Ukraine» (Visyulina, 1965; Shelyag-Sosonko, 1987), «Identification manual of vascular plants of the Ukrainian Carpathians» (Visyulina, 1974). According to these publications, *C. aggregatus* or *Ch. aggregatus* was reported for Bukovyna (Chernivtsi Region, Ukraine) only. Most probably the same record was referred by A. Skalicka (1983) from Ukraine, and by Cristofolini (1991) as *C. hirsutus* subsp. *hirsutus* from the Upper Dnister area. It was published by S. Fodor (1974) with references by K. Domin (1937) also from the Transcarpathia Region as *Ch. supinus* subsp. *aggregatus* (Schur) Fodor, comb. inval.

This taxon is not reported for Ukraine in the latest botanical publications (Tzvelev 1987; 2002; Yakovlev et al., 1996; Kagalo 1999; Mosyakin, Fedoronchuk, 1999).

**Conclusion.** *Ch. supinus* subsp. *aggregatus*, an endemic subspecies in the Carpathian Region, does not occur in Ukraine. Its former Ukrainian records are based on two misidentified *Ch. austriacus* (L.) Link specimens. Consequently, it should be excluded from the Ukrainian flora, including all *Ch. aggregatus* and *Ch. supinus* records, as well as G. Cristofolini's *Cytisus hirsutus* subsp. *hirsutus* record (Cristofolini 1991).

Moreover, Ukrainian records of *Ch. hirsutus* (cf. Kagalo, 1999) should be further studied. Transcarpathian records of *Ch. hirsutus* turned to be *Ch. triflorus* Lam. (= *Cytisus hirsutus* auct. non L.). Other Ukrainian records of *Ch. hirsutus* (cf. Kagalo, 1999) might refer to *Ch. triflorus*, *Ch. supinus*, or (mistakenly) *Ch. podolicus* (Błocki) Kláskova or *Ch. paczoskii* (V. Krecz.) Kláskova.

**Acknowledgements.** Authors are grateful to Prof. Dr. Illya I. Chorney, Head of Department of Botany and Curator of *CHER* Herbarium of Yuriy Fedkovych Chernivtsi National University, for his help during our work in the Herbarium; to Dr. Alla I. Tokaryuk for preparing photos, and to Prof. Dr. Sergei L. Mosyakin (M.G. Kholodny Institute of Botany, NAS of Ukraine) for critical comments on the manuscript.

#### References

- Cristofolini G. Taxonomic revision of *Cytisus* Desf. Sect. *Tubocytisus* DC. (*Fabaceae*) // *Webbia*. –1991. – Vol. 45. – P. 187–219.
- Czerepanov S.K. *Plantae Vasculares URSS* / Ed. Fedorov An.A. – Leningrad: Nauka, 1981. – P. 229.
- Czerepanov S.K. *Plantae Vasculares Rossicae et civitatum collimitaneorum* (in limicis URSS olim). – S. Petersburg: „Mir i semya-95”, 1995. – P. 461.
- Fodor S.S. *Flora of Transcarpathia*. – Lviv: Vyscha shkola Press, 1974. – P. 78. [In Ukr.].
- Heywood, V.H., Frodin D.G. *Chamaecytisus* Link // *Flora Europaea* / Ed. Tutin T.G. et al. – 1968. – Vol. 2. – Cambridge: Univ. Cambridge Press. – P. 90–93.
- Hormuzaki C.F. *Nachtrag zur Flora der Bukowina* // *Öster. Bot. Zeitsch.* – 1911. – Vol. 61. – P. 59–74.
- Kagalo A.A. Checklist of *Fabaceae* of the western Ukraine // *Acta Botan. Fennica*. – 1999. – Vol. 162. – P. 137–140.
- Krechetovich V.I. *Cytisus* L. // *Flora of USSR* / Ed. Shishkin B.K. – Moskva, Leningrad: Acad. Sc. USSR Press, 1945. – Vol. 11. – P. 75–93. [In Russ.].
- Mosyakin S. L., Fedoronchuk M.M. Vascular plants of Ukraine A nomenclatural checklist. – Kiev: M.G. Kholodny Institute of Botany. – 1999. – xxiii + 345 p.
- Pifkó D. Taxonomic revision and typification of *Cytisus* (Leguminosae) in the Herbarium Carpato-Pannonicum in Budapest (BP) // *Ann. Hist.-Nat. Musei Nat. Hung.* – 2005. – Vol. 97. – P. 21–32.
- Pifkó D. Adatok a hazai *Chamaecytisus*-fajok ismeretéhez II. (Data to the knowledge of the Hungarian *Chamaecytisus* species II.) // *Flora Pannonica* – 2005a. – Vol. 3. – P. 163–174.
- Pifkó D. Kitaibel's *Cytisus* taxa // *Studia Bot. Hung.* – 2007. – Vol. 38. – P. 11–32.
- Pifkó D. Schur's *Cytisus* taxa // *Studia Bot. Hungarica* – 2009 – Vol. 40. – P. 143–163.
- Pifkó D., Shevera M. Type specimens of taxa of *Cytisus* s.l. in the Herbarium of Y. Fed'kovych Chernivtsi National University (*CHER*) // *Biologichni systemy. Nauk. Visnyk Chernivets'kogo universytetu*. – 2011 – Vol. 2 (4). – P. 54–57.
- Schur F. *Enumeratio plantarum Transsilvaniae*. – 1866 – Vindobonae: Guilielmum Braumüller, 1866. – P. 984.
- Shelyag-Sosonko Yu.R. *Chamaecytisus* Link // *Identification manuals of vascular plants of Ukraine* / Ed. Yu. Prokudin. – Kyiv: Nauk. dumka Press, 1987. – P. 182–184. [In Russ.].
- Shevera M.V. The system of the genus *Chamaecytisus* Link of Ukrainian flora // *Ukr. Bot. Zhurn.* – 1989. – Vol. 46, № 6. – P. 35–38 [In Ukr.].
- Shevera M.V. The genus *Chamaecytisus* Link (family *Fabaceae* Lindl.) of Ukrainian flora (critical and systematic, biomorphological, ecological and chorological studies and perspective of its use). – PhD degree thesis ... – Kiev, 1990. – 16 p. [In Russ.].
- Skalická, A. East European species of the genus *Chamaecytisus* Link. // *Rad. Akad. Nauka Um. Bosne Hercegovine*. – 1983. – Vol. 72 (sect. natur.-math. 21). – P. 239–245.
- Yakovlev G.P., Sytin A.K., Roskov Yu. *Legumes of Northern Eurasia*. – Kew: Royal Bot. Gardens, 1996. – 724 p.
- Tzvelev N.N. *Chamaecytisus* Link // *Flora of European part of the USSR*. – Ed. Fedorov A.A. – Leningrad: Nauka, 1987. – Vol. 6. – P. 216–225 [In Russ.].
- Tzvelev N.N. *Chamaecytisus* Link // *Flora of Russia VI*. – Ed. Tzvelev N.N. – 2002. – Rotterdam: A.A. Balkeman, 2002. – P. 326–340.
- Visyulina O.D. *Cytisus* L. // *Flora of Ucr. RSS* / Ed. Zerov D.K. – Kyiv: Acad. Sc. Ucr.SSR Press, 1954. – Vol. 6. – P. 330–348 [In Ukr.].
- Visyulina O.D. *Cytisus* L. // *Identification manuals of vascular plants of Ukraine* / Ed. Zerov D.K. – Kyiv: Urozhay Press, 1965. – P. 395–397 [In Ukr.].
- Visyulina O.D. *Cytisus* L. // *Identification manuals of vascular plants of the Ukrainian Carpathians* / Ed. Chopyk V.I. – Kyiv: Nauk. dumka Press, 1977. – P. 172–173 [In Ukr.].

#### ЧИ ЗРОСТАЄ *CHAMAECYTISUS AGGREGATUS* (SCHUR) CZEREP. (*FABACEAE* LINDL.) В УКРАЇНІ? Д.ПІФКО, М.ШЕВЕРА

На підставі критичного вивчення *Chamaecytisus aggregatus* (Schur) Czerep. (= *Cytisus aggregatus* Schur), зокрема матеріалів з гербаріїв *CHER* та *LW*, у т.ч. типових, вважаємо, що вид слід вилучити зі списку флори України, оскільки два відомі зразки, за якими він вказується з Буковини у «Флорах» та «Визначниках», насправді належать до *Ch. austriacus* (L.) Rothm.

Ключові слова: *Chamaecytisus aggregatus*, Гербарії *LW*, *CHER*, Ukraine

Одержано редколегією 20.09.2011