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ALIEN *GYPSOPHILA* TAXA IN THE FLORA OF HUNGARY

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The main Hungarian herbaria and relevant literature were revised and evaluated in order to clarify which alien *Gypsophila* taxa occur (or occurred) in Hungary. It is more than probable that all former Hungarian records of *G. acutifolia* and *G. altissima* are erroneous, and actually refer to *G. scorzonerifolia*, which might have been naturalised in Budapest at the end of the 19th century. Former casual occurrences of *G. perfoliata* and *G. elegans* in Hungary are supported by voucher specimens.

Key words: alien plant, casual, flora, *Gypsophila*, Hungary, naturalisation

INTRODUCTION

The alien plants of Hungary classified as archaeophytes and neophytes were recently reviewed by TERPÓ *et al.* (1999) and BALOGH *et al.* (2004), respectively. Of the neophytes, the genus *Gypsophila* is represented by four casual species (*G. acutifolia* Steven ("Fischer") ex Sprengel, *G. altissima* L., *G. perfoliata* L., *G. scorzonerifolia* Ser. ex DC.) (BALOGH *et al.* 2004). In SOÓ (1970) two additional cultivated species (*G. elegans* Bieb., *G. repens* L.) are enumerated.

It is noteworthy, however, that there is hardly any European record on casual occurrence of *G. acutifolia*, a native of south Ukraine and the Caucasus Mts (see ESSL and RABITSCH 2002). Furthermore, *G. altissima* – distributed from Galizia to Central Asia (STROH 1939) – seems to be completely missing in the western parts of Europe (JALAS and SUOMINEN 1986). The Irano-Turanian *G. perfoliata* is a rare casual alien in Central Europe (KUC 1958). *Gypsophila scorzonerifolia* is native to the region of the lower Volga River and the northern foreground of the Caucasus Mts (STROH 1939, JALAS and SUOMINEN 1986). In the 19th and 20th centuries it has been introduced into some countries of Europe (GRÜLL and SMEJKAL 1966, SCHNEDLER 1977, ESSL and RABITSCH 2002, PYŠEK *et al.* 2002). *Gypsophila*

elegans native to Anatolia and the Caucasus Mts seldom if ever escapes from cultivation (JALAS and SUOMINEN 1986, ESSL and RABITSCH 2002, PYŠEK *et al.* 2002). The montane-subalpine *G. repens*, distributed in the higher mountains of South and Central Europe, has no casual occurrence (JALAS and SUOMINEN 1986, BARKOUDAH *et al.* 1993).

It is remarkable that five of the six *Gypsophila* species registered by SOÓ (1970) and BALOGH *et al.* (2004) have more or less similar habit, while *G. repens* can be easily distinguished by its procumbent growth form. However, in lack of appropriate determination key the species in question are rather unknown in Europe that may lead to misidentifications. For these reasons the author has undertaken the revision of all former records of the alien *Gypsophila* taxa in Hungary.

MATERIAL AND METHODS

Based on observations on specimens stored in BP and relevant literature (GRAEBNER and GRAEBNER 1929, SCHNEDLER 1977, BARKOUDAH *et al.* 1993) the author created a determination key for the alien *Gypsophila* taxa reported in Hungary so far. Since *G. repens* L. can be found exclusively in cultivation, it was not included in the key.

To clarify which alien *Gypsophila* taxa occur (or occurred) in Hungary, the following herbaria were checked: Hungarian Natural History Museum, Budapest [BP], Eötvös Loránd University, Budapest [BPU], Savaria Museum, Szombathely [SAMU], Pécs University, Pécs [JPU], Debrecen University, Debrecen [DE], Corvinus University, Budapest [CORV] and Szent István University, Gödöllő [SZIE]. In case of the latter two institutions provisional herbarium acronyms were created, since they are missing in HOLMGREN and HOLMGREN (1998).

All specimens referring to casual occurrences are enumerated separated by semicolons. Relevant part of the label's text, collector (s.coll. = without collector), date of collecting (s.d. = without date) and species name indicated on the label are included. Each specimen was revised by the author, thus data of revisions are omitted.

All former relevant Hungarian literature records were checked and evaluated based on voucher specimens. Terminology of "invasion ecology" follows PYŠEK *et al.* (2004).

RESULTS AND DISCUSSION

Key for alien *Gypsophila* taxa reported in Hungarian literature

1a Annual, without woody stock. Plant completely glabrous. Leaves 3–5(–15) mm wide, obscurely 1– to 3-veined. Pedicels many times as long as calyx, inflorescence very lax. Calyx 3–5 mm long. Petals 2–5 times as long as calyx, white with purple veins ***G. elegans*** Bieb.

1b Perennial, with woody stock. Leaves usually wider, mostly 3– to 7-veined 2

2a Whole inflorescence, including calyx and pedicels, glabrous 3

2b Inflorescence glandular-hairy, at least in part. Stem below and leaves glabrous 4

3a Stem below and lower leaves usually glandular-pubescent. Bigger leaves 10–25(–35) mm wide, amplexicaul and shortly connate at base. Pedicels mostly (in full bloom!) more than twice as long as calyx, inflorescence lax. Calyx 2–2.5 mm long, teeth ovate, obtuse. Seeds with small tubercles. (*G. trichotoma* Wenderoth, *G. scorzonerifolia* sensu Graebner, non Ser. in DC.) ***G. perfoliata*** L.

3b Stem and leaves glabrous. Leaves 2–10 mm wide. Pedicels not more than twice as long as calyx, inflorescence ± dense. Calyx 3–5 mm long, teeth oblong, acuminate. Seeds with long, acute, conical tubercles ***G. acutifolia*** Steven ex Sprengel

4a Pedicels mostly (in full bloom!) more than twice as long as calyx, inflorescence lax. Leaves 10–25(–35) mm wide. Calyx 3–4.5 mm long, teeth ovate, ± obtuse. Petals (at least underside) usually darker purple. Seeds with small tubercles. (*G. acutifolia* sensu Graebner, non Steven ex Sprengel) ***G. scorzonerifolia*** Ser. in DC.

4b Pedicels not more than twice as long as calyx, hence inflorescence ± dense. Leaves narrower than 10(–15) mm. Petals white 5

5a Leaves 2–10 mm wide, lanceolate to linear-lanceolate, long acuminate. Calyx 3–5 mm long, teeth oblong, acuminate. Seeds with long, acute, conical tubercles ***G. acutifolia*** Steven ex Sprengel

5b Leaves 5–10(–15) mm wide, oblanceolate to linear-oblanceolate, acute to subobtuse. Calyx 2–2.5 mm long, teeth ovate, obtuse. Seeds with small tubercles ***G. altissima*** L.

Alien *Gypsophila* taxa in Hungary supported by vouchers

Gypsophila elegans Bieb.

Budapest – "*Comit. Pest. In ruderatis Pasarét ad Budapestinum; subspont.*", Kocsis, 30.VI.1911 [BP].

This species is a favourite member of the Hungarian garden flora (JÁVORKA and CSAPODY 1962, SOÓ 1970) with no former report on its escaping from cultivation in Hungary.

Gypsophila perfoliata L.

Győr – "*Győr. Meller-féle olajgyár udvarán*", Polgár, 21.IX.1918 [BP]; Polgár, 10.VII.1919 [BP]; Polgár, 21.VII.1919 [BP]; Polgár, 2.VIII.1919 [BP]; Polgár, 18.VII.1922 [BP], Polgár, 3.VIII.1922 [BP].

In Hungary *G. perfoliata* was reported from two cities (Győr and Debrecen), but only the first occurrence is supported by voucher specimens (see POLGÁR 1926, 1941). However, records of the species from Debrecen (SOÓ 1948, JÁVORKA and SOÓ 1951, SOÓ 1970) actually refer to *G. scorzonerifolia* (see later). The extinction of *G. perfoliata* from Hungary was emphasised by PRISZTER (1985).

Gypsophila scorzonerifolia Ser. in DC.

Budapest – "*um einer Garten... zu Ofen*", s.coll. (Sándor?), s.d. (sub *G. altissima*) [BP]; "*Colui 1834 Sabariae e semine horti botanici Pestiensis*", Szency, s.d. (1834?) (sub *G. acutifolia* Fisch.) [SAMU]; "*c. Pestini 1842.*", Szency, (possibly) 1842 (sub *G. altissima* L.) [SAMU]; "*Bpest hort. bot.*", Mágocsy, 1882 (sub *G. altissima* L.) [BP]; "*Az Ujversenytéren Pesten*", Hermann, 22.VIII.1885 (sub *G. acutifolia* Fisch.) [BP]; "*Rákos prope Budapest*", Degen, 10.IX.1885 (sub *G. acutifolia* Fischer) [BP]; "*Budapest, Uj-lófuttató mellett*", Czakó, 28.VI.1887 (sub *G. acutifolia* Fisch.) [BP, SZIE]; "*Plantae cultae horti botan... Budapestini Dr. Borb. 25.IV.1891 accepi.*", Perlaky, s.d. (possibly 1890) (sub *G. acutifolia* Fisch.) [BP]; "*Cult in hort bot. Bpest*", s.coll., 7.VIII.1900 (sub *G. acutifolia* Fisch.) [BP]; "*Budapest. Kerepesi temető, subsp.*", Degen, 19.IX.1903 (sub *G. acutifolia* Fisch.) [BP]; "*In arenosis coemeterii Kerepesi temető ad Budapestinum*", Degen, 2.VIII.1917 (sub *G. acutifolia* Fisch.) [BP]; "*Hungaria: Budapest* (*Budafok*) *subspont.*", Tóth, 28.IX.1985 (sub *G. elegans* M. B.) [SZIE]; "*Budapest, X. kerület, Kőbányai út a Horog és a Gép utca között,*

villamospálya melletti gyomos sávon", Dancza & Király, 12.X.2006 [BP]; "*Budapest: XI. ker., Albertfalva, Savoya-park, útrézsűn*", Somlyay, 25.VI.2007 [BP].

Debrecen – "*Debrecen. Tud. egy. botanikus kertje*", Siroki, 6.VII.1946 (sub *G. perfoliata* L., det.: Soó) [DE]; "*Debrecen, in Horto Botanico culta*", Soó, 3.VII.1947 (sub *G. latifolia* L.) [DE].

Drávasztára – "*Sztára C. Barany.*", Nendtvich T.(?), s.d. (sub *G. acutifolia* Fisch.) [BP]; "*Sztára an der Drav. C. Barany.*", Nendtvich T.(?), s.d. (sub *G. acutifolia* Fisch.) [BP].

Pécs – "*5Ecclesiis 8/844*", Nendtvich T.(?), VIII.1844 (sub *G. altissima* L.) [JPU].

The occurrence of *G. scorzonerifolia* in Hungary (as an ephemerophyte in Budapest) was first published by SOÓ (1961, 1970), followed by PRISZTER (1985) and BALOGH *et al.* (2004). The source of Soó's record is unknown. Recently, a new occurrence of the species in Budapest (Pest side) was reported by KIRÁLY and DANCZA (2008). In 2007 the present author also found a small population of *G. scorzonerifolia* on disturbed waste-land in Budapest (Buda side).

However, after revising specimens of alien *Gypsophila* taxa collected in Hungary it was concluded that all former records of *G. acutifolia* and *G. altissima* are erroneous, and actually refer to *G. scorzonerifolia*. This conclusion is based on the fact that contrary to general usage of the names *G. acutifolia* and *G. altissima* in Hungarian literature (NENDTVICH 1846, HERMANN 1885, BORBÁS 1891, JÁVORKA and SOÓ 1951, SOÓ 1970, BALOGH *et al.* 2004) no vouchers of these species could be found from the territory of Hungary. It is noteworthy that BORBÁS (1891, p. 5.) himself suspected that some taxa mentioned in his paper had been identified erroneously. Anyway, the key and figure of "*G. acutifolia* Fisch." presented by JÁVORKA (1924–1925) and JÁVORKA and CSAPODY (1975) also refer to *G. scorzonerifolia*. After all, the main Hungarian synoptic works in the 20th century (SOÓ 1970, BALOGH *et al.* 2004) preserved three species names (*G. acutifolia*, *G. altissima*, *G. scorzonerifolia*) for the same taxon.

Interestingly, *G. scorzonerifolia* was even mistaken for *G. perfoliata* (SOÓ 1948, JÁVORKA and SOÓ 1951, SOÓ 1970). Though the relevant specimens (DE) come from the Botanical Garden of Debrecen University, they are herewith enumerated because SOÓ (1948) emphasised that "*G. perfoliata*" escaped from cultivation inside the territory of the garden.

In fact, *G. scorzonerifolia* had already been cultivated in Hungary in the 19th century, though under erroneous names: there are vouchers (BP, SAMU) collected in gardens from (possibly) 1834, 1842, 1882, 1890 and

1900 (Botanical Garden of Budapest University), furthermore from 1858 (the garden of archbishop Lajos Haynald in "Alba Carolina": Gyulafehérvár in Transylvania – today: Alba Iulia in Romania) (BP). Even the first specimens of this species collected in Hungary (Drávasztára and Pécs, south Hungary) might have come from a garden. In these cases, unfortunately, the localities are not specified, neither on the labels of the vouchers (see above) nor in the corresponding publication (NENDTVICH 1846). All we know is that KERNER (1863), based on the authentic notes of Tamás Nendtvich, considered the record of "*G. altissima*" from Baranya County as referring to a cultivated plant (noted as "*G. acutifolia*" in HORVÁT 1942). It is noteworthy that SIMONKAI (1874, p. 173.) could not confirm Nendtvich's record: "*I was searching for G. acutifolia Fisch.*[!] *near Sztára, but I could not even find G. paniculata*".

Obviously, casual occurrences of *G. scorzonerifolia* are restricted to Budapest. Furthermore, it is remarkable that most occurrences (see the specimens collected by Hermann, Degen, Czakó, Perlaky and much later by Dancza and Király), are located in the vicinity of the Botanical Garden of Budapest (today: Eötvös Loránd) University. Although there is a considerable gap between 1917 and 1985, it seems to be the most probable that *C. scorzonerifolia* had escaped from cultivation and naturalised in Budapest at the end of the 19th century, although remained a very rare species. Of course, the possibility of unintentional introduction cannot be excluded, especially in cases when the localities are not or not certainly connected with gardens (Budafok, Albertfalva in Budapest, and perhaps Pécs).

* * *

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