

DISTRIBUTION OF A LITTLE KNOWN PLANT SPECIES, *VALERIANELLA PUMILA* IN HUNGARY

L. SOMLYAY and N. BAUER

*Department of Botany, Hungarian Natural History Museum
H-1476 Budapest, Pf. 222, Hungary; somlyay@bot.nhmus.hu, bauer@bot.nhmus.hu*

All relevant Hungarian literature and herbarium records of *Valerianella pumila* have been gathered and evaluated in order to clarify its distribution in Hungary. Some erroneous or misleading literature records are elucidated and corrected. This sub-Mediterranean species is extremely rare in Hungary with only a few old and present occurrences.

Key words: distribution, phytogeography, sub-Mediterranean elements, *Valerianella pumila*

INTRODUCTION

Six species of *Valerianella* Mill. have been registered in Hungary so far (SIMON 2000). Four of them, *V. locusta* (L.) Laterr., *V. carinata* Lois., *V. dentata* (L.) Poll. and *V. rimosa* Bast. are more or less widespread (though with insufficient information about their occurrences in some regions), however, *V. coronata* (L.) DC. in Lam. and DC. and *V. pumila* (L.) DC. in Lam. and DC. are much more rare in Hungary. The latter two species are sporadic sub-Mediterranean elements of the dry, warm and stony slopes of the Transdanubian Mountain Range and the southern mountains in Transdanubia (Mecsek and Villány Mts) (HORVÁT 1942, JÁVORKA and SOÓ 1951, SIMON 2000), and only a few localities are known in the hilly region of Hungary east of the Danube. While *V. coronata* is a well-known species for Hungarian botanists (though PERLAKY (1894) was arguing that the Pannonian taxon is *V. hamata* Bast. ex DC. and not *V. coronata*), *V. pumila* is little known with very few old and present records in Hungary.

According to SOÓ (1966) *V. pumila* is a southern Eurasian species (extending eastward to Iran and Turkestan). In Europe its distribution is restricted to southern Europe from Portugal and Spain to Turkey; extending northwards to Hungary (ERNET and RICHARDSON 1976).

However, the northernmost European locality of *V. pumila* belongs to Slovakia today (Burda Mts (Kováčovské kopce) = Kovácspataki-hegyek). Since this is the only Slovakian occurrence of the taxon (missing in the Czech Republic), *V. pumila* is included in the Red Book of Slovakia and the Czech Republic (MAGLOCKÝ 1999). In Hungary *V. pumila* is not protected, however, considered by NÉMETH (1989) to be a potentially threatened taxon. The aim of our study is to clarify the distribution of *V. pumila* in Hungary.

MATERIALS AND METHOD

Although the species-scale separation of *V. pumila* from *V. coronata* has been challenged by DEVESE *et al.* (2005) (*V. coronata* f. *pumila* (L.) Devese, J. López et R. Gonzalo), we consider *V. pumila* as a separate species until their treatment is widely accepted.

To collect Hungarian records of *V. pumila*, data from all relevant literature and specimens of the following herbaria were checked: Hungarian Natural History Museum, Budapest (BP); Eötvös Loránd University, Budapest (BPU); Bakony Natural History Museum, Zirc; Pécs University, Pécs (JPU); Debrecen University, Debrecen (DE).

All relevant literature and verified herbarium records of *V. pumila* are presented. In case of herbarium material the records are separated by semicolons in the enumeration. The relevant part of the label's text, collector, date of collecting and annotations (incl. revision(s), identifications) are included. Revisional data are indicated only in case of true revisions, *i.e.* when the collector had used a taxon name referring to another species. Revisions restricted to simple name corrections (*i.e.* replacing synonyms of *V. pumila*, such as *V. membranacea* Loisel., *V. mutica* (L.) A. Kern., *Fedia pumila* auct. etc.) are not indicated.

Abbreviations of revisers: BÁ = Ádám Boros, JS = Sándor Jávorka, SL = Lajos Somlyay. Records of *V. pumila* are grouped geographically, enumerated from the north-eastern to southwestern and southern regions of Hungary (Fig. 1). Literature and herbarium records of each region are evaluated and commented.

RESULTS AND DISCUSSION

Börzsöny Mts

"prope pag. Nagymaros, Ördöghegy, in decliv. m. meridion.", leg.: Péntzes, 17.V.1928 [BP].

This record (not confirmed recently) has been completely ignored in Hungarian literature (SIMON 2000). However, the "Visegrád" locality mentioned by JÁVORKA and SOÓ (1951), SOÓ (1966) and SOÓ and KÁRPÁTI (1968) possibly refers to Ördög-hegy near the town of Nagymaros (northern part of the Visegrád Mts), but located on the opposite side of the Danube (southern part of the Börzsöny Mts). Ördög-hegy is also close to the Slovakian locality of *V. pumila* (Burda).

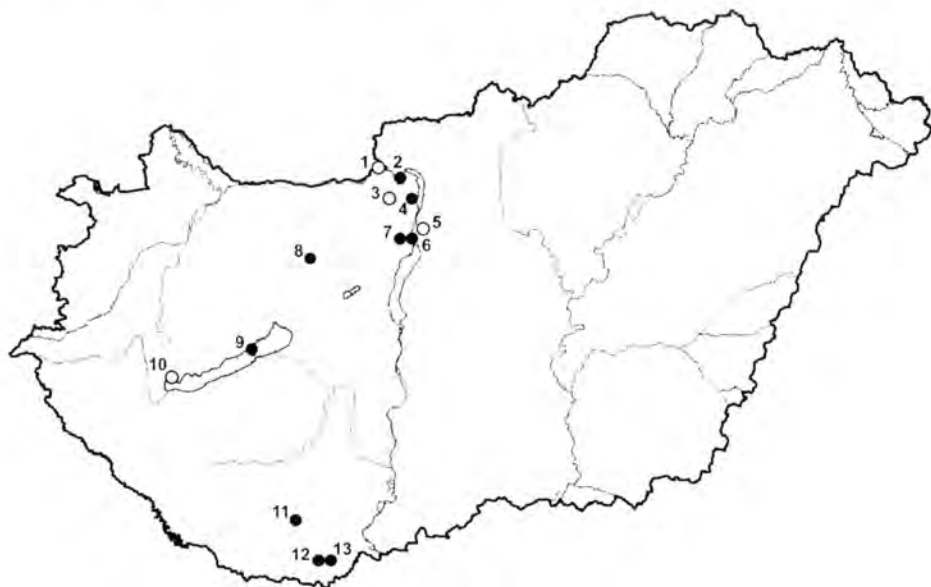


Fig. 1. Distribution of *Valerianella pumila* in Hungary. Filled circles indicate records supported by herbarium specimen(s), empty circles indicate records not supported by herbarium specimen(s). In case of overlapping only filled circles are indicated. Localities: 1 = Esztergom: Szamár-hegy, 2 = Nagymaros: Ördög-hegy and Visegrád, 3 = Pilis Mts, 4 = Pósmáz: Messelia, 5 = Budapest: Rákóc, 6 = Budapest: Szent Gellért-hegy, Sas-hegy, Kelenföld, 7 = Budapest: Rupp-hegy and Budaörs: Csíki-hegyek, 8 = Mór: Csóka-hegy, 9 = Tihany Peninsula and surroundings, 10 = Keszthely Mts, 11 = Mecsek Mts, 12 = Nagyvarsány: Szársomlyó and Villány: Fekete-hegy, 13 = Villány: Somsich-hegy.

Visegrád Mts

"*Pomáz, a Messelje alatt*", leg.: Jávorka, 12.V.1904 [BP].

This record (not confirmed recently) refers to a locality (the foot of Mt Messelia) in the southernmost part of the Visegrád Mts. As this site is found at the foothill border of the Pilis Mts (*s. str.*), this might be the record that appeared in Hungarian literature (JÁVORKA and SOÓ 1951, SOÓ 1966, SOÓ and KÁRPÁTI 1968) as being located in the Pilis Mts. Nevertheless, no voucher specimen of *V. pumila* is known from the Pilis Mts so far. Recently DOBOLYI (1995, 1998) has published some relevés containing *V. pumila* (with high constancy value) from Szamár-hegy (northern part of the Visegrád Mts). Since this record has no voucher, furthermore, the relevés contain no other *Valerianella* species, this record is doubtful.

Buda Mts

Only the first three (and probably the fifth) localities belong to the hilly region of Budapest and Budaörs (*i.e.* to the Buda Mts). The fourth locality is confined to the lowland (Kelenföld) south of Szent Gellért-hegy and Sas-hegy in Budapest.

1. Budapest, Szent Gellért-hegy

"*in prato montis Bloksberg meridionali*", leg.: Sadler, s.d. [BP]; leg.: Kováts Gy., s.d. [BP]; leg.: Tauscher, s.d. [BP]; leg.: Heuffel, IV.1825 [BP]; leg.: Borbás, IV.1872, (sub *V. dentata* Poll., rev.: SL, 2004) [BP]; leg.: Simonkai, 22.V.1872 et 17.V.1873 [BP]; "*am Blocksberge bei Ofen. Dolomit*", leg.: Freyn, 13.IV.1873 et 4.V.1873 [BP]; "*a Sz. Gellérthegy déli oldalán*", leg.: Borbás, 6.V.1873 [BP]; "*in latere meridionali m. Sancti Gerardi ad Budam*", leg.: Borbás, 6.V.1873 [BP]; "*Ofen: Blocksberg Kalk*", leg.: Bohatsch, 8.V.1876 [BP]; "*Blocksberg Dolomit*", leg.: Richter, VI.1876 [BP]; leg.: Hermann, 20.V.1883 [BP, DE]; leg.: Czákó, 11.V.1887 [DE]; leg.: Perlaky, 15.V.1888 (sub *V. auricula* DC., rev.: SL, 2004) [BP]; "*locis herbidis apertis*", leg.: Borbás, 18.V.1889 (det.: SL, 2004) [BP]; leg.: Thaisz, 18.V.1889 [BP]; "*in locis saxosis graminosis*", leg.: Perlaky, 13.V.1891 (sub *V. auricula* DC., rev.: SL, 2004) [BP]; "*in herbidis montis Scti Gerardi*", leg.: Perlaky, 28.V.1891 (sub *V. dentata* Poll., rev.: SL, 2004) [BP]; leg.: Grósz, 22.IV.1899 (sub *V. coronata* DC., rev.: SL, 2004) [BP]; leg.: Grósz, 28.IV.1899 (sub *V. coronata* DC., rev.: SL, 2004) [BP]; leg.: Grósz, 7.V.1899 (sub *V. coronata* DC., rev.: SL, 2004) [BP]; leg.: Grósz, 11.V.1899

(sub *V. coronata* DC. et *V. hamata* Kit., rev.: SL, 2004) [BP]; leg.: Borbás, 14.V.1899 [BP]; leg.: Torday, 4.V.1904 [BP]; leg.: Jávorka, 9.V.1904 [BP]; leg.: Lengyel, 9.V.1904 [BP]; “in decl. *graminosis montis Sti Gerardi*”, leg.: Zsák, 10.V.1918 [BP]; “in *declivibus siccis meridionalibus montis Gellérthege*”, leg.: Boros, 11.V.1919 (sub *V. rimosa* Bast., rev.: BĀ, 1932 sub *V. coronata* (L.) DC., SL, 2004) [BP]; leg.: Zsák, 13.V.1920 [BP]; “in *declivibus merid. montis S. Gerardi*”, leg.: Degen, 14.V.1920 (det.: SL, 2004) [BP]; leg.: Degen, 20.V.1923 [BP]; leg.: Lengyel, 20.V.1923 [BP].

Szent Gellért-hegy was the first location of *V. pumila* reported from the current territory of Hungary. The recognition of the species took place relatively late, since Kitaibel had not found it during his large-scale trips in the Carpathian Basin (see JÁVORKA 1929, 1936, GOMBOCZ 1945, LÖKÖS 2001), and it was unknown even for Sadler and Heuffel for some time (SADLER 1818, 1825, HEUFFEL 1827). The species is first mentioned, without exact locality, by FEUREGGER (1837) (“*In herbidis siccis Litoralis hungarici et circa Budam in montium parte meridionali*”), who made his dissertation under the direction and with the powerful help of his professor, József Sadler (KANITZ 1861, GOMBOCZ 1936). As a definite record, the locality Szent Gellért-hegy first appears in SADLER (1840) (see NEILREICH 1866). Based on the large number of herbarium sheets deposited at BP, this species must have for a long time been common on the mountain. The last specimens from this location were collected in 1923. Unfortunately, the presence of *V. pumila* on Szent Gellért-hegy has not been confirmed since then (HEGEDÜS 1994).

2. Budapest, Sas-hegy

“in *graminosis montis Adlerberg (Dolomit)*”, leg.: Kováts Gy., s.d. [BP]; leg.: Kováts Gy., s.d. [BP]; leg.: Haynald, s.d. [BP]; leg.: Steinitz, s.d. [BP]; leg.: Steinitz, 7.V.1879 [BP]; leg.: Vajda, 3.V.1927 (sub *V. coronata* (L.) DC., rev.: JS, s.d. sub *V. membranacea*) [BP]; leg.: Degen, 12.V.1929 (det.: SL, 2004) [BP]; “in *dolomitibus apricis montis Sashegy*”, leg.: Boros, 18.V.1929 [BP]; leg.: Boros, 1.VI.1929 [BP]; “in *declivibus siccis loessaceis pedis montis Sas-hegy*”, leg.: Boros, 6.V.1945 (det.: SL, 2004) [BP]; “in *dolomitibus montis Sas-hegy*”, leg.: Boros, 6.V.1945 (det.: SL, 2004) [BP]; leg.: Bánó, 17.IV.1948 (sub *V. dentata* Poll., rev.: SL, 2004) [BP]; leg.: Siroki, 15.V.1951 [DE]; “in *declivibus graminosis siccis montis Sashegy*”, leg.: Kárpáti, 20.V.1951 [BP].

It is unclear whether Gyula Kováts or Anton Kerner collected *V. pumila* on Sas-hegy first, nevertheless, this record appears in KERNER (1870) and later in BORBÁS (1879). About 100 years later PAPP (1977) confirmed the

occurrence of the species here, referring also to his own manuscript (check-list). However, his reference to BOROS (1949) is false since no record of *Valerianella* is mentioned in Boros's paper. Actually, the last herbarium specimen of *V. pumila* collected on Sas-hegy is that of Zoltán Kárpáti from 1951.

3. Budapest – Budaörs, Csíki-hegyek

"in colle aprico Rupphegy ad Farkasrét", leg.: Boros, 28.IV.1919 (sub *V. rimosa* Bast., rev.: BÁ, 1932 sub *V. coronata* DC., SL, 2004) [BP]; "in declivibus siccis montium Csíki-hegyek", leg.: Boros, 11.VI.1944 (sub *V. coronata* (L.) Lam. et DC., rev.: SL, 2004) [BP]; "in declivibus montis Csíki-hegyek supra pag. Budaörs in graminosis", leg.: Vajda, 18.VI.1944 [BP]; "in declivibus siccis montium Csíki-hegyek", leg.: Hegedüs, 11.IV.1977 (sub *V. dentata* Poll., rev.: SL, 2004) [BP];

The thorough floristical research of the hills at Budaörs (called "Csíki-hegyek") in the vicinity of Budapest began relatively late. *V. pumila* was collected here on four occasions, though the only correct identification was made by Vajda in 1944. Unfortunately, the exact localities of *V. pumila* within the hill-range are partly unknown (see also ANONYMUS 1944). Apart from the specimen collected by Hegedüs in 1977, which is not ripe enough to determine it unequivocally (it could be *V. coronata* as well), the existence of *V. pumila* here has not been confirmed in the last decades.

4. Budapest, Kelenföld

"in pratis paludosus prope Kelenföld ad Budam", leg.: Hermann, 20.V.1883 [BP].

This record represents the only typical lowland locality of *V. pumila* in Hungary known so far (obviously a secondary and ephemeral occurrence). "Rákos" enumerated by SOÓ (1966) and SOÓ and KÁRPÁTI (1968) as a locality of *V. pumila* probably refers to Kelenföld, since they are neighbouring lowland areas within Budapest. However, Rákos is located on the left side, while Kelenföld on the right side of the Danube.

5. Budapest, without exact (though probably hilly) locality

s.coll. (Sándor?), s.d. [BP]; leg.: Sadler, s.d. (sub *V. coronata* DC., rev.: SL, 2004) [BP]; leg.: Kováts Gy., s.d. [BP]; leg.: Hazslinszky, s.d. [BP]; leg.: Richter, s.d. [BP]; leg.: Freyn, 4.V.1873 [BP].

Vértes Mts

"*in calcareis merid. montis Csóka-hegy prope Mór*", leg.: Boros, 26.IV.1953 (det.: SL, 2004) [BP]; "*Csóka hegy, Mór felett*", leg.: Vajda, 26.IV.1953 [BP]; "*Csóka-hegy*", leg.: Bauer and Somlyay, 8.V.2007 [BP].

The herbarium specimens collected on Csóka-hegy (near the town of Mór, Fejér county) represent the only record of *V. pumila* known from the Vértes Mts so far. Consequently, "Vértes Mts" cited in some works (SOÓ 1966, SOÓ and KÁRPÁTI 1968, SIMON 2000) as a part of the Hungarian local area of *V. pumila* is somewhat misleading, though there are many suitable habitats for the species in the region.

Balaton Upland

"*Peninsula Tihany Balatonis: in siccis m. Csúcshegy*", leg.: Jávorka, 21.V.1924 [BP]; "*in declivibus apricis montis Csúcshegy prope Tihany*", leg.: Boros, 21.VI.1928 [BP]; "*peninsula Tihany, in graminosis mt. Csúcshegy*", leg.: Soó, 8.VIII(?) 1928 [BPU]; "*In Festucetis summae montis Kiserdő-tető pr. pag. Tihany*", leg.: Felföldy, 30.V.1956 [BPU]; "*ad aggerem viae ferreae inter pag. Aszófő et Örvényes*", leg.: Felföldy, 12.V.1959 [BPU]; "*Tihany: Nyereg-hegy, in pratis siccis, in rupibus geiziritis*", leg.: Bauer, 28.V.2005 [BP].

It was Sándor Jávorka who discovered (1924) *V. pumila* in the region of Lake Balaton (JÁVORKA 1924–1925, see also BORBÁS 1900). However, except a small territory (Tihany Peninsula), no further localities of the species have been found since then (JÁVORKA and SOÓ 1951, SOÓ 1966, SOÓ and KÁRPÁTI 1968, SIMON 2000).

Keszthely Mts

Only one literature record of *V. pumila* has been published from the Keszthely Mts (SZABÓ 1990). Since not even a single herbarium specimen is known from the region, and the location from where the species was reported has recently been destroyed (Szabó *ex verb.*, 2007), this record is doubtful.

Mecsek and Villány Mts

“*ad Quinqueecclesias in monte Mecsek*”, leg.: Simonkai, 5.VI.1873 [BP]; “*ad Harsány*”, leg.: Simonkai, 7.VI.1873 [BP]; “*mont. Nagyharsány supra pag. Nagyharsány*”, leg.: Soó, 24.V.1956 (sub *V. locusta* (L.) Betcke, rev.: SL, 2007) [BPU]; “*Nagyharsány, Szársomlyó pusztafüves-lejtő*”, leg.: Vöröss, 8.V.1962 [JPU]; “*Nagyharsány, Szársomlyó D-i pusztafüves lejtő*”, leg.: Vöröss, 15.VI.1962 [JPU]; “*Szársomlyó*”, leg.: Bauer, 12.V.2007 [BP].

As the majority of floristical works of southern Transdanubia refers to both mountains we discuss them together. It was Lajos Simonkai, who first collected the species in both the Mecsek and Villány Mts (SIMONKAI 1876). Nevertheless, HORVÁT (1942) refers to a *V. pumila* specimen collected by Tamás Nendtvich (1782–1858) in the Mecsek Mts. However, Horvát’s reference seems to be erroneous, because the specimen collected by Nendtvich in the region (“Quinqueecl.” = Pécs) labelled as “*Fedia pumila*” is actually *V. coronata* (deposited at BP). This misidentification was corrected in JANKA (1872), and much later (2004) by the revision of Somlyay. It is worth mentioning that no record of *V. pumila* (*Fedia pumila* or any other synonyms) can be found in the papers of Károly and Tamás Nendtvich (NENDTVICH 1836 – see also KERNER 1863, NENDTVICH 1846).

Apart from synoptical works using old data (HORVÁT 1942, JÁVORKA and SOÓ 1951, SOÓ 1966, LEHMANN 1975, SIMON 2000) the only 20th century literature records of *V. pumila* from the region are those of NAGY and VÖRÖSS (1967) and VÖRÖSS (1966). However, the record from Somsich-hegy published by NAGY and VÖRÖSS (1967) is very uncertain, since the only known specimen collected there (Vöröss, April 1966) identified as *V. pumila* is probably *V. coronata*, although the specimen is unripe (JPU). This is the case with other specimens at JPU identified as *V. pumila*, such as those collected by Vöröss (March 1961 and April 1965) in the Villány Mts as well as by Pásztor (March 1951) and Tihanyi (April 1951) in the Mecsek Mts. At present we can only confirm the presence of *V. pumila* on Mt Szársomlyó (Villány Mts).

* * *

Acknowledgements – Our thanks are expressed to János Csiky, István Galambos, István Isépy, Balázs Kevey and Gábor Sramkó for the access to the collections under their supervision and help while working in the herbaria of BPU, DE, JPU and the Bakony Natural History Museum.

REFERENCES

- ANONYMUS (1944): Szakosztályi kirándulás. [A field trip of the Hungarian Botanical Society.] – *Bot. Közlem.* **41**(3–5): 168.
- BORBÁS, V. (1879): *Budapest- és környékének növényzete*. [The flora of Budapest and its surroundings.] – Magy. Kir. Egy. Könyvny., Budapest, 172 pp.
- BORBÁS, V. (1900): *A Balaton tavának és partmellékének növényföldrajza és edényes növényzete*. [The vascular flora and phytogeography of Lake Balaton and its surroundings.] – A Balaton tudományos tanulmányozásának eredményei 1, Budapest, 432 pp.
- BOROS, Á. (1949): Florisztikai közlemények III. [Floristical notes III.] – *Borbásia* **9**(3–5): 28–34.
- DEVESA, J. A., LÓPEZ, J. and GONZALO, R. (2005): Notas taxonómicas sobre el género *Valerianella* Mill. (Valerianaceae) para la Flora Ibérica. – *Acta Bot. Malacit.* **30**: 41–48.
- DOBOLYI, Z. K. (1995): Phytosociological studies of the habitat of *Achillea ochroleuca* Ehrh. on Szamár-hegy (Visegrád Mts, Hungary). – *Studia bot. hung.* **26**: 15–24.
- DOBOLYI, Z. K. (1998): Phytosociological studies on the andesite rocky grasslands in Visegrád Mountains (Hungary). – *Annls hist.-nat. Mus. natn. Hung.* **90**: 91–113.
- ERNET, D. and RICHARDSON, I. B. K. (1976): *Valerianella* Miller. – In: TUTIN, T. G., HEYWOOD, V. H., BURGES, N. A., MOORE, D. M., VALENTINE, D. H., WALTERS, S. M. and WEBB, D. A. (eds): *Flora Europaea* 4, Cambridge University Press, Cambridge, pp. 48–52.
- FEUREGGER, K. (1837): *Dissertatio inauguralis medico-botanica de Valerianeis Hungariae, Croatiae, Transylvaniae, Dalmatiae, et Litoralis Hungarici*. – Pestini, 30 pp.
- GOMBOCZ, E. (1936): *A magyar botanika története*. [The history of botany in Hungary.] – Magy. Tud. Akad., Budapest, 636 pp.
- GOMBOCZ, E. (1945): *Diaria itinerum Pauli Kitaibelii 1–2*. – Verl. Ung. Naturwiss. Museums, Budapest, 1082 pp.
- HEGEDÜS, Á. (1994): *Budapest jelenlegi virágos flórája*. [The present state of flowering flora of Budapest.] – Animula Kiadó, Budapest, 68 pp.
- HEUFFEL, J. (1827): *Dissertatio inauguralis medico-botanica de distributione plantarum geographica per comitatum Hungariae Pestensem*. – Pestini, 39 pp.
- HORVÁT, A. (1942): *A Mecsekhegység és déli síkjának növényzete*. [The flora and vegetation of the Mecsek Mts and its southern foreground.] – Ciszt. Rend kiad., Pécs, 103 + 159 pp.
- JANKA, V. (1872): Zur Flora Ungarns. – *Oest. Bot. Zeitschrift* **22**(5): 152–157.
- JÁVORKA, S. (1924–1925): *Magyar Flóra (Flora Hungarica) 1–2*. – Studium, Budapest, 1307 pp.

- JÁVORKA, S. (1929): *Kitaibel herbariuma. Herbarium Kitaibelianum. II.* – *Ann. Mus. Nat. Hung.* **26**: 97–210.
- JÁVORKA, S. (1936): *Kitaibel herbariuma. Herbarium Kitaibelianum. V.* – *Ann. Mus. Nat. Hung.* **30**: 7–118.
- JÁVORKA, S. and SOÓ, R. (1951): *A magyar növényvilág kézikönyve I.* [The handbook of Hungarian flora I.] – Akadémiai Kiadó, Budapest, 582 pp.
- KANITZ, A. (1861): Beiträge zur Botanik Ungarns. – *Oest. Bot. Zeitschrift* **11**(12): 404–407.
- KERNER, A. (1863): Nachtrag zu C. M. Nendtvich's Enumeratio plantarum territorii Quinque-Ecclesiensis. – *Verh. zool.-bot. Ges. in Wien* **13**: 561–574.
- KERNER, A. (1870): Die Vegetations-Verhältnisse des mittleren und östlichen Ungarns und angrenzenden Siebenbürgens XXXVIII. – *Oest. Bot. Zeitschrift* **20**(12): 356–363.
- LEHMANN, A. (1975): A nagyharsányi Szársomlyó-hegy és növényzete. [The flora and vegetation of Mt Szársomlyó at Nagyharsány.] – *MTA Dunánt. Tud. Int. Közlem.* **20**: 1–185.
- LÖKÖS, L. (2001) (ed.): *Diaria itinerum Pauli Kitaibelii III. 1805–1817.* – Hung. Nat. Hist. Mus., Budapest, 460 pp.
- MAGLOCKÝ, Š. (1999): *Valerianella pumila* (L.) DC. – In: ČEŘOVSKÝ, J., FERÁKOVÁ, V., HOLUB, J., MAGLOCKÝ, Š. and PROCHÁZKA, F. (eds): Červená kniha ohrozených a vzácných druhov rastlín a živočíchov SR a ČR 5, Vyššie rastliny, Príroda a. s., Bratislava, p. 394.
- NAGY, I. and VÖRÖSS, L. Zs. (1967): A villányi Somsich-hegy növényzete. [The flora and vegetation of Somsich-hegy at Villány.] – *Pécsi Tanárképző Főisk. Tud. Közlem.* **1967**: 3–15.
- NEILREICH, A. (1866): *Aufzählung der in Ungarn und Slavonien bisher beobachteten Gefäßpflanzen nebst einer pflanzengeographischen Uebersicht.* – Wien, 390 pp.
- NENDTVICH, K. (1836): *Dissertatio inauguralis historico-naturalis exhibens enumerationem plantarum in territorio Quinque-Ecclesiensi sponte crescentium praemisso tractatu generali de natura geognostica montium deque situ climate et vegetatione ejusdem regionis.* – Budae, 38 pp.
- NENDTVICH, T. (1846): *Pécs és környékének viránya.* [The flora of Pécs and its surroundings.] – A m. orvosok és természetvizsgálók Pécsen tartott hatodik nagygyűlésének történeti vázlata és munkálatai, Pécs, pp. 288–291.
- NÉMETH, F. (1989): *A potenciálisan veszélyeztetett száraz növényfajok.* [Potentially threatened vascular plants of Hungary.] – In: RAKONCZAY, Z. (ed.): Vörös Könyv, A Magyarországon kipusztult és veszélyeztetett növény- és állatfajok, Akadémiai Kiadó, Budapest, pp. 272–281.
- PAPP, J. (1977): *A budai Sashegy élővilága.* [The flora and fauna of Sas-hegy in Budapest.] – Akadémiai Kiadó, Budapest, 99 pp.
- PERLAKY, G. (1894): Florisztikai közlemények főképp Pestmegye flórájáról. [Floristical notes mostly on the flora of Pest county.] – *Természettud. Füzetek* **17**(3–4): 100–111.
- SADLER, J. (1818): *Verzeichniss der um Pesth und Ofen wildwachsenden phanerogamischen Gewächse mit Angabe ihrer Standorte und Blüthezeit.* – Pesth, 79 pp.

- SADLER, J. (1825): *Flora comitatus Pestiensis*. – Pestini, 335 pp.
- SADLER, J. (1840): *Flora comitatus Pesthinensis*. Ed. 2. – Pesthini, 499 pp.
- SIMON, T. (2000): *A magyarországi edényes flóra határozója*. [Key to the vascular flora of Hungary.] – Tankönyvkiadó, Budapest, 976 pp.
- SIMONKAI, L. (1876): Adatok Magyarhon edényes növényeihez. [Contributions to the vascular flora of Hungary.] – *Math. Term.tud. Közlem.* **11**(6): 157–211.
- SOÓ, R. (1966): *A magyar flóra és vegetáció rendszertani-növényföldrajzi kézikönyve II.* (Synopsis systematico-geobotanica florum vegetationisque Hungariae II). – Akadémiai Kiadó, Budapest, 655 pp.
- SOÓ, R. and KÁRPÁTI, Z. (1968): *Növényhatározó II. Harasztok – virágos növények*. [Key to the flora of Hungary II. Pteridophytes – flowering plants.] – Tankönyvkiadó, Budapest, 846 pp.
- SZABÓ, I. (1990): *Investigations on the flora and vegetation of Keszthely Hills (Hungary) with special regard to their southern elements*. – In: SZABÓ, I. (ed.): *Illyrische Einstrahlungen im ostalpin-dinarischen Raum*, Keszthely, pp. 79–88.
- VÖRÖSS, L. Zs. (1966): *A Ranunculus psilostachys* Griseb. társulási viszonyai. (Die zöologischen Verhältnisse von *Ranunculus psilostachys* Griseb. in Ungarn). – *Bot. Közlem.* **53**(3): 165–170.

(Received 1 February, 2007)