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Iris spuria L. (Iridaceae) in Slovakia

JANKA ZLINSKÁ

Department of Ecozoology, Faculty of Natural Sciences, Comenius University, Mlynská dolina B2, SK-842 15 Bratislava, Slovakia.

The geophyte *Iris spuria* L. occurs in the alluvial meadows along large rivers: the Nitra River and Danube north of Komárno, the Hron River and the Ipeľ River, Slovakia. Due to the intensive agriculture in lowlands it vanished in most localities and it is a critically endangered taxon. The species appears in unmanaged subhalophilous communities of *Caricion gracilis*, *Cnidion venosi* and *Mesobromion* alliances on the soil subtypes of fluvic gleysols, stagnic fluvisols, salic mollic fluvisols, haplic Solonchaks. *Iris spuria* tolerates high anthropogenic influence (synanthropisation) and partial drainage. It is sensitive to regular mowing.

Key words: *Iris spuria*, halophyte, distribution, communities, Slovakia

Introduction

Iris spuria L. is the aggregate taxon, distributed in Northern, Western, Central and South-Eastern Europe. According to Flora Europaea it occurs in Slovakia, the Czech Republic, Hungary, Austria, Northern Romania, Northern Greece, Germany, France, Denmark, Eastern England and Southern Sweden (TUTIN et al. 1980). According to MEUSEL et al. (1965) its main area is Pannonia.

In Slovakia *I. spuria* L. is a critically endangered species, recorded at six recent localities (Fig.1), being situated in the alluvium downstream of the Nitra river and the Danube river north from Komárno, downstream of the Hron and Ipel rivers. SVOBODOVÁ and ŘEHOŘEK (1985) recorded the species at Kamenín saline site, DOROTOVIČOVÁ (unpubl.) found it in the Komočín Nature Reserve near Lándor in 1988. ELIÁŠ and ELIÁŠOVÁ (2001) noticed a new locality near Komjatice and hinted at the older herbarium item from the area of Slovakia (the village of Chľaba, 1852), collected by GRUNDL (BRA). SÁDOVSKÝ (2002) found a new recent population near Malé Kosihy in the Ipeľ river basin.

Some of the older data have not been proved, for instance DOSTÁL (1950) in the *Flora of Czechoslovakia* presents the occurrence from Stupava near Bratislava and from the surroundings of Komárno (Lándor pusta). The localities from the surroundings of Malacky, challenged by PTAČOVSKÝ (1959), have not been proved yet. ELIÁŠ and ELIÁŠOVÁ (2001) found a herbarium item from the village of Veľký Biel near Senec (leg. ROTHE 1904 Hb BRNU).

* Corresponding author, e-mail: zlinska@fns.uniba.sk

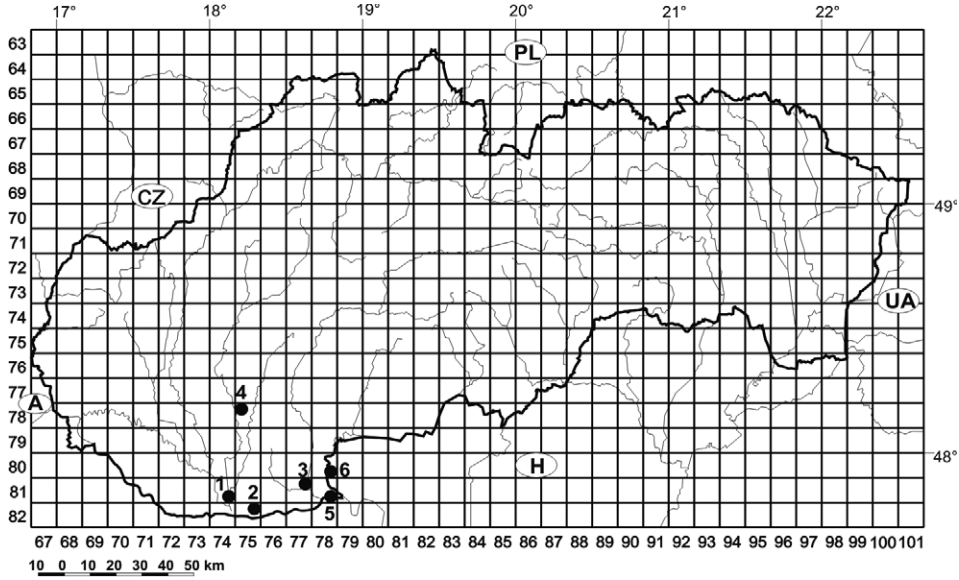

Fig. 1. A sketch of known distribution of the *Iris spuria* L. in Slovakia. 1 Komočín NR, 2 Pohrebište NR, 3 Kamenínske slanisko NNR, 4 Komjatice, 5 Chľaba, 6 Malé Kosihy.

Material and Methods

Phytocoenological research and soil analyses were realized in 2003 at five recent sites – Komočín NR, Pohrebište NR, Kamenínske slanisko NNR, meadows in the surroundings of Chľaba and Malé Kosihy, while phytocoenological relevé No. 4 (Tab. 1, locality Komjatice) was taken over from ELIÁŠ and ELIÁŠOVÁ (2001).

The nomenclature of vascular plants is presented according to MARHOLD and HINDÁK (1998), and the names of bryophytes correspond to KUBINSKÁ and JANOVICOVÁ (1996). The phytocoenoses were analysed according to the Central European Zürich – Montpellier school (BRAUN-BLANQUET 1964). The indicating qualities of the species were compared with OBERDORFER (1994). The names of soil types and subtypes are presented according to ŠÁLY et al. (2000). The abbreviations of herbariums correspond with the index of herbariums (HOLMGREN et al. 1990).

Results and discussion

The Red Data Book of Lower and Higher Plants of Slovakia and the Czech Republic (VÁGENKNECHT et al. 1999) declares that *I. spuria* grows on damp meadows and pastures of subhalophytic character, most probably in the communities of *Molinion*, considerably influenced by anthropogenic impact, with more significant portion of cultivated grass species.

During an analysis of grassy-herbal stands in Podunajská rovina lowland in 2003 we studied phytocoenoses at the 5 recent localities with *I. spuria*. The results of our research in this species are presented in the table (Tab. 1).

Tab. 1. Stands with *Iris spuria* L. in Slovakia. Localities of relevés: 1 – Podunajská rovina plain, Komárno town (8174d), NR Komočín, 8.7.2003. 2 – Podunajská rovina plain, Marcelová village (8275b), SE part of NR Pohrebište, 24.7.2003. 3 – Podunajská pahorkatina hills, Kamenín village (8177b), NNR Kamenínske slanisko, 29.8.2003. 4 – Podunajská rovina plain, Komjatice village (7875a), grounded canal. 5 – Podunajská pahorkatina hills, Chľaba village (8178d), alluvium of Ipeľ river, 7.7.2003. 6–8 – Podunajská pahorkatina hills, Malé Kosihy village (8078d), alluvium of Ipeľ river, 7.7.2003. NNR – National Nature Reserve, NR – Nature Reserve.

Analyzed area in m^2	30	30	30	25	30	30	30	30
Cover E_1 in %	90	85	95	70	90	90	100	80
Cover E_0 in %	1	30	0	0	0	5	10	20
Number of species	64	48	31	43	40	27	47	45
Relevé No.	1	2	3	4	5	6	7	8
Iris spuria	2	1	1	1	1	+	2	1
Cnidion venosi								
Carex praecox	2	2	1	2	1	.	2	2
Viola elatior	+	.	.	.	.	.	.	.
Lythrum virgatum	+	.	.	+	.	.	+	.
Plantago altissima	+	.	.	.	.	.	.	.
Carex melanostachya	+	.	.	r	1	.	1	+
Clematis integrifolia	+	.	.	+	.	.	+	+
Gratiola officinalis	.	.	.	r	.	+	+	.
Scutellaria hastifolia	.	.	.	.	.	+	+	.
Molinion								
Galium boreale	2	.	.	.	+	.	1	2
Molinietalia								
Carex tomentosa	1	1	+	.	.	.	1	1
Serratula tinctoria	1	.	2	2–3	.	.	2	1
Symphytum officinale	+	.	+	+	1	1	1	+
Colchicum autumnale	+	.	+	1	.	.	+	.
Sanguisorba officinalis	+	.	.	1	.	.	1	1
Vicia cracca	+	.	.	+	.	.	+	.
Cirsium canum	+	.	.	.	+	.	1	1
Alopecurus pratensis	.	.	.	3	1	1	1	.
Deschampsia cespitosa	.	.	.	1	.	.	.	.
Lychnis flos-cuculi	.	.	.	.	.	+	+	.
Lythrum salicaria	.	.	.	.	.	+	1	.
Arrhenatheretalia								
Poa pratensis and *P.p.* var. *angustifolia*	3	1	2	1	3	.	2	2
Dactylis glomerata	+	+	2	+	.	.	+	1
Arrhenatherum elatius	+	+	.	+	.	.	.	1
Galium album	+	.	.	.	.	.	.	+
Pastinaca sativa	+	.	.	.	.	.	+	.
Polygala vulgaris	+	.	.	.	.	.	.	.
Lotus corniculatus	+	.	.	.	.	.	.	+

Tab. 1. – continued

Relevé No.	1	2	3	4	5	6	7	8
Daucus carota	+	.	.	.	.	.	+	.
Knautia arvensis	.	+	.	.	.	.	.	.
Odontites vulgaris	.	+	.	.	.	.	.	+
Leucanthemum vulgare	.	+	.	.	.	.	.	+
Achillea millefolium	.	.	+	1	.	.	+	1
Taraxacum officinale agg.	.	.	.	.	+	.	.	+
Veronica chamaedrys	.	.	.	.	.	.	.	+
Molinio-Arrhenatheretea								
Lathyrus pratensis	+	.	.	r	+	+	+	+
Acetosa pratensis	.	+	.	+	+	.	+	1
Plantago lanceolata	.	.	+	.	+	.	+	1
Ranunculus acris	.	.	.	r	r	.	.	+
Poa trivialis	.	.	.	.	.	1	.	.
Stellaria graminea	.	.	.	.	.	.	.	+
Trifolium pratense	.	.	.	.	.	.	+	+
Festuca pratensis	.	.	.	.	.	.	+	1
Epilobium tetragonum	.	.	.	.	.	.	+	.
Festuco-Puccinelietea								
Galatella punctata	1	2	3	.	.	.	.	.
Silene multiflora	+	+	.	.	.	.	.	.
Atriplex littoralis	.	.	+	.	.	.	.	.
Limonium gmelinii	.	.	1	.	.	.	.	.
Carex distans	.	.	.	.	.	1	+	.
Phragmito-Magnocaricetea								
Phragmites australis	+	.	.	.	.	.	.	.
Phalaroides arundinacea	+	.	.	+	1	1	+	.
Carex disticha	+	.	.	.	.	.	.	.
Iris pseudacorus	.	.	.	+	+	.	.	.
Lycopus exaltatus	.	.	.	.	r	.	.	.
Carex vulpina	.	.	.	.	.	4	+	.
Carex riparia	.	.	.	.	.	2	.	.
Carex gracilis	.	.	.	.	.	1	.	.
Lycopus europaeus	.	.	.	.	.	+	.	.
Galium palustre	.	.	.	.	.	1	.	.
Poa palustris	.	.	.	.	.	1	+	.
Polygonum amphibium	.	.	.	.	.	+	+	.
Agropyro-Rumicion crispi								
Inula britannica	1	1	+	.	+	.	1	1
Agrostis stolonifera	1	+	1	.	1	1	1	+
Elytrigia repens	1	1	2	.	2	1	1	2
Carex hirta	1	.	+	1	.	.	1	.
Potentilla reptans	+	.	.	.	2	1	+	+

Tab. 1. – continued

Relevé No.	1	2	3	4	5	6	7	8
Lysimachia nummularia	+	.	.	.	+	1	+	.
Senecio erraticus ssp. *barbareifolius*	.	+	.	.	.	.	+	1
Festuca arundinacea	.	.	+	.	.	.	.	.
Ranunculus repens	.	.	.	+	+	1	.	.
Trifolium hybridum	.	.	.	.	+	.	.	.
Potentilla anserina	.	.	.	.	+	2	.	.
Juncus inflexus	.	.	.	.	.	+	+	.
Geranion sanguinei								
Peucedanum alsaticum	1	1	.	.	.	.	.	.
Peucedanum cervaria	2	+	.	.	.	.	.	.
Agrimonia eupatoria	.	+	.	.	.	.	.	.
Viola hirta	.	+	.	.	.	.	.	.
Mesobromion								
Tithymalus tommasinianus	+	+	+	.	.	.	.	.
Fragaria viridis	1	2	.	.	.	.	.	2
Filipendula vulgaris	+	1	.	.	.	.	.	1
Jacea pannonica	2	1	.	.	r	.	1	1
Inula salicina	+	+	.	.	.	.	.	.
Erigeron acris	+	.	.	.	.	.	.	.
Securigera varia	1	.	.	.	.	.	.	.
Dorycnium germanicum	.	2	.	.	.	.	.	.
Vicia tenuifolia	.	+	.	.	.	.	.	.
Tetragonolobus maritimus	.	2	.	.	.	.	.	.
Ononis spinosa	.	+	.	.	.	.	.	.
Brometalia								
Plantago media	.	+	.	.	.	.	.	.
Potentilla recta	.	+	.	.	.	.	.	.
Festucetalia valesiaceae								
Achillea collina	1	1	.	.	.	.	.	.
Festuco-Brometea								
Galium verum	2	2	1	3	1	.	2	2
Artemisia pontica	1	+	+	.	.	.	.	.
Carlina vulgaris	+	1	.	.	.	.	.	.
Festuca rupicola	+	2	2	.	.	.	.	2
Pseudolysimachion spicatum	.	1	.	.	.	.	.	.
Hypericum perforatum	.	+	.	.	.	.	.	
Medicago falcata	.	+	.	.	.	.	.	
Pimpinella saxifraga	.	.	.	+	.	.	.	+
Potentilla argentea	.	.	.	r	.	.	.	.
Galium glaucum	.	.	.	.	.	.	.	1
Sedo-Scleranthetea								
Trifolium arvense	.	.	.	.	.	.	.	+

Tab. 1. – continued

Relevé No.	1	2	3	4	5	6	7	8
Other								
Allium vineale	+	+	+	.	.	.	.	.
Picris hieracioides	1	+	.	.	+	.	.	+
Carduus acanthoides	+	.	+	.	.	.	.	.
Cirsium arvense	+	.	+	.	1	1	+	.
Tithymalus esula	2	.	.	.	+	.	.	+
Cynoglossum officinale	+	.	.	.	.	.	.	.
Asparagus officinalis	+	.	.	.	.	.	.	.
Rubus caesius	2	.	.	.	1	.	.	.
Silene latifolia	+	.	.	.	1	.	.	.
Equisetum arvense	+	.	.	1	.	.	.	.
Lathyrus tuberosus	+	.	.	.	+	.	.	.
Melampyrum barbatum ssp. *barbatum*	+	.	.	.	.	.	.	.
Vincetoxicum hirundinaria	.	+	.	.	+	.	.	.
Genista tinctoria	.	r	.	.	.	.	.	.
Calamagrostis epigejos	.	+	.	.	+	.	.	.
Ulmus minor	.	+	.	.	.	.	.	.
Lavatera thuringiaca	.	r	.	.	.	.	.	.
Dipsacus fullonum	.	.	+	+	.	.	.	+
Cynodon dactylon	.	.	1	.	.	.	.	.
Atriplex patula	.	.	+	.	.	.	.	.
Conyza canadensis	.	.	+	.	.	.	.	.
Lactuca serriola	.	.	+	.	.	.	.	.
Convolvulus arvensis	.	.	+	.	+	.	.	.
Aristolochia clematitis	.	.	.	3	1	.	.	.
Cirsium vulgare	.	.	.	2	.	.	.	.
Carex spicata	.	.	.	+	.	.	.	.
Conium maculatum	.	.	.	+	.	.	.	.
Thlaspi arvense	.	.	.	+	.	.	.	.
Ballota nigra	.	.	.	+	.	.	.	.
Cardaria draba	.	.	.	+	.	.	.	.
Lamium purpureum	.	.	.	+	.	.	.	.
Galium aparine	.	.	.	+	.	.	.	.
Tanacetum vulgare	.	.	.	+	+	.	.	.
Bromus sterilis	.	.	.	r	.	.	.	.
Artemisia vulgaris	.	.	.	r	.	.	.	.
Capsella bursa-pastoris	.	.	.	r	.	.	.	.
Tripleurospermum perforatum	.	.	.	r	.	.	.	.
Aster lanceolatus	.	.	.	.	3	.	.	.
Cichorium intybus	.	.	.	.	+	.	.	.
Urtica dioica	.	.	.	.	+	.	.	.

Tab. 1. – continued

Relevé No.	1	2	3	4	5	6	7	8
Bryophyta								
Brachythecium salebrosum	+	.	.	.	.	.	.	2
Brachythecium populeum	+	.	.	.	.	1	.	.
Amblystegium serpens	+	.	.	.	.	.	1	.
Homalothecium lutescens	.	3	.	.	.	.	.	2
Eurhynchium speciosum	.	1	.	.	.	.	.	.
Brachythecium velutinum	.	.	.	.	.	.	1	.

The first record refers to the Komočín Nature Reserve, in the cadastral area of Komárno (Tab. 1, relevé No. 1). We found the species of *Carex praecox*, *Viola elatior, Lythrum virgatum, Plantago altissima, Carex melanostachya* and *Clematis integrifolia* of *Cnidion venosi* Bal.-Tul. 1965. *Galium boreale* of *Molinion* W. Koch 1926 and well-represented *Carex tomentosa, Sanguisorba officinalis, Colchicum autumnale, Vicia cracca, Serratula tinctoria, Cirsium canum* and *Symphytum officinale* of *Molinietalia* W. Koch 1926. The same abundance refers to the species of *Arrhenatheretalia* Pawł. in Pawł. et al. 1928 (*Poa pratensis* var. *angustifolia, Dactylis glomerata, Arrhenatherum elatius, Galium album, Pastinaca sativa, Polygala vulgaris, Lotus corniculatus, Daucus carota*). The species of *Agropyro-Rumicion crispi* Nordh. 1940 (*Inula britannica, Agrostis stolonifera, Elytrigia repens, Carex hirta, Potentilla reptans, Lysimachia nummularia*) were represented with a low value of abundance. A significant portion belongs to the 7 species of *Mesobromion* Br.-Bl. et Moor 1938 em. Oberd. 1949, e.g. *Fragaria viridis, Filipendula vulgaris, Jacea pannonica, Inula salicina, Tithymalus tommasinianus, Erigeron acris* and *Securigera varia*, as well as the halophytic species of *Galatella punctata* and *Silene multiflora* of *Festuco-Puccinelietea* Soó 1968. Recently the stand has not been mowed. It is located between the dam of the old Nitra river bed and the field. According to the above-mentioned floristic composition we suppose that it developed from an unmown drier type or a boundary type towards drier stands of *Serratulo-Plantaginetum altissimae* Ilijanić 1967 (*Cnidion venosi*). The site of the analysed stand has been covered by salic Mollic fluvisols together with stagnic Fluvisols on peripheries. Stands of *Serratulo-Plantaginetum altissimae* rarely occur in the nearby locality of Gamota on stagnic Fluvisols. However, at this site the vegetation is regularly mowed. The species is sensitive to mowing therefore it does not occur here. In localities regularly mowed it survives only vegetatively and when the bulbs get older the plant gradually retreats. This is conjectured because 5 specimens were recorded in the mowed line of the meadow between the Komočín Nature Reserve and the dam. These specimens did not reach their generative phase during the 3-year study period and have weaker vitality than specimens from the unmown part of the reserve. In the unmown nature reserve, this stage is suitable just for a critically endangered *I. spuria* and shrubs such as *Crataegus monogyna, Prunus spinosa, Rosa canina* agg.*, Populus nigra, Swida sanguinea*, overgrowing the reserve. Until the shrub vegetation is eliminated, the next progressive succession will continue towards *Fraxino pannonicae-Ulmetum* Soó in Aszód 1936 corr. Soó 1963, where *I. spuria* will lose its present vitality.

The second analysis was performed in the Pohrebište Nature Reserve (Tab. 1, relevé No. 2). Of *Cnidion venosi* the stand includes only *Carex praecox* and of *Molinietalia* just *Carex tomentosa*. Mesophilous species of *Arrhenatheretalia*, e.g. *Poa pratensis* var. *angustifolia, Dactylis glomerata, Arrhenatherum elatius, Knautia arvensis, Odontites vulgaris* and *Leucanthemum vulgare,* occur more significantly. *Festuco-Puccinelietea* is represented by the same halophytic species as in Komočín Nature Reserve – *Galatella punctata* and *Silene multiflora*. Of *Agropyro-Rumicion crispi* we recorded *Inula britannica, Elytrigia repens, Senecio erraticus* ssp. *barbareifolius* and *Agrostis stolonifera*. The most significant are the species of xerothermous peripheries of *Geranion sanguinei* R.Tx. in Th. Müller 1961 – *Peucedanum alsaticum, P. cervaria, Agrimonia eupatoria* and *Viola hirta*. The most abundant group is formed by species of *Mesobromion* (9), such as *Fragaria viridis, Filipendula vulgaris, Jacea pannonica, Inula salicina, Tithymalus tommasinianus, Dorycnium germanicum, Vicia tenuifolia, Tetragonolobus maritimus* and *Ononis spinosa.* Of the order species we recorded *Plantago media* and *Potentilla recta*. A significant portion refers to species of *Festuco-Brometea* Br.-Bl. et R.Th. 1943, for instance *Galium verum, Artemisia pontica, Carlina vulgaris, Festuca rupicola, Pseudolysimachion spicatum, Hypericum perforatum* and *Medicago falcata*. According to the represented species the stand belongs to the alliance of *Mesobromion* with its characteristic halophilous (*Galatella punctata* and *Silene multiflora*) and xerothermous periphery species (*Peucedanum alsaticum* and *P. cervaria*). Preliminarily, the relevé may be considered as *Galatello punctatae-Festucetum rupicolae* (characteristic species of association: *Galatella punctata, Silene multiflora*, *Iris spuria*). The soil subtype has been determined as stagnic Fluvisols. Also this stand is not mown and is strongly overgrown by shrubs with the same species composition as in Komočín.

The third analysis was done in the saline environment of Kamenínske slanisko National Nature Reserve (Tab. 1, relevé No. 3) in its periphery contacting the field. This part has not been mowed, in the past it was grazed and recently it has been influenced by farm machines. The stand includes fewer hygrophilous species of *Cnidion venosi* (*Carex praecox*) and of *Molinietalia* (*Serratula tinctoria, Symphytum officinale, Carex tomentosa* and *Colchicum autumnale*) than in the first locality but more than in the second one. Three obligate halophytes of *Festuco-Puccinelietea* have been recorded – *Galatella punctata, Atriplex littoralis* and *Limonium gmelinii*. Of *Agropyro-Rumicion crispi* we observed the species of *Elytrigia repens, Carex hirta, Agrostis stolonifera* and *Festuca arundinacea*. The subxerothermophilous species are represented in a smaller portion – only *Tithymalus tommasinianus* of *Mesobromion* and *Galium verum, Artemisia pontica* and *Festuca rupicola* of *Festuco-Brometea*. The stand contains a lower number of species due to a higher concentration of salt and therefore higher selection of tolerant species. The stand with *I. spuria* at the Kamenínske slanisko saline site is rather of a mesophilous character, for it contains more obligate halophytes. However from the coenological point of view it is not clearly established. SVOBODOVÁ and ŘEHOŘEK (1985) state that the original localities with *I. spuria* and *Galatella punctata* were situated out of the protected area and have been ploughed. The employees of the Nature Conservation authority removed several plants onto suitable sites in the reserve. Therefore we were not able to analyse the former seminatural stands. The soil of the analysed stand belongs to haplic Solonchaks.

The phytocoenological relevé No. 4 (Tab. 1), published by ELIÁŠ and ELIÁŠOVÁ (2001) from the grounded canal in the surroundings of Komjatice, represents in our opinion a synanthropised stage of *Gratiolo-Caricetum praecosis* Bal.-Tul. 1966 of the alliance *Cnidion venosi*. The small stand is completely surrounded by field, which is why it includes plenty of synanthropic species. It has not been mowed, however it keeps they character of seminatural phytocoenosis.

A changed situation was noticed in the oldest known locality in Chľaba (Tab. 1, relevé No. 5), where the original stands have been lost due to the regulations of the Ipeľ river. *Iris spuria* grows here in markedly synanthropised stands. The occurrence of *Carex praecox, C. melanostachya, Galium boreale, Cirsium canum, Symphytum officinale, Acetosa pratensis* and the species of *Agropyro-Rumicion crispi*, such as *Agrostis stolonifera, Potentilla anserina, P. reptans, Trifolium hybridum* and *Inula britannica* hint at the fact that in past the locality was inhabited by a meadow community of *Cnidion venosi*. The soil surface has been disturbed by artificial excavations.

The species composition of the phytocoenoses in the Ipeľ river alluvium in Malé Kosihy (Tab. 1, relevé No. 6–8) indicates a wider ecological potency of the studied taxon *I. spuria*. In the 5 ha meadow complex several specimens were even recorded in hygrophilous stands of *Caricetum vulpinae* Nowiński 1927 (the alliance of *Caricion gracilis* Neuhäusl 1959) (relevé No. 6). They are declared by the significantly represented species of *Caricion gracilis – Carex gracilis, C. riparia, C. vulpina, Poa palustris* and *Phalaroides arundinacea*. The soil has been classified as Fluvic Gleysols. *I. spuria* is more abundant in the successively changed stands of *Caricion gracilis* towards hygrophilous subhalophilous communities of *Cnidion venosi*. However a massive occurrence refers to the stands of *Gratiolo-Caricetum praecocis* (the alliance of *Cnidion venosi*) (relevé No. 7) on stagnic Fluvisols. The species of *Cnidion venosi* and *Molinietalia*, as in the relevé No. 1, are significantly represented in the stands. The highest parts of the alluvium, as well stagnic Fluvisols, are suitable for stands of more mesophilous character (relevé No. 8). Even in these stands *I. spuria* occurs abundantly. They include the well-represented species of *Arrhenatheretalia* (*Arrhenatherum elatius, Galium album, Lotus corniculatus, Odontites vulgaris, Leucanthemum vulgare, Taraxacum officinale* agg., *Veronica chamaedrys, Achillea millefolium, Dactylis glomerata* and *Poa pratensis* var. *angustifolia*), *Mesobromion* (*Fragaria viridis, Filipendula vulgaris*) and *Festuco-Brometea* (*Festuca rupicola, Pimpinella saxifraga, Galium glaucum*). However some hygrophilous species of *Phragmito-Magnocaricetea* Klika in Klika et Novák 1941 (*Carex vulpina, Poa palustris, Phalaroides arundinacea* and *Polygonum amphibium*) are absent. This is a drier subassociation of *Gratiolo-Caricetum praecocis filipenduletosum vulgaris* Bal.-Tul. 1974. The meadow complex is mowed once annually and grazed occasionally. The water regime is under the influence of drainage by an artificial canal.

The analyses of stands in the 6 recent localities show that *I. spuria*, a critically endangered species, oscillates coenologically amongst the communities of (*Caricion gracilis*), *Cnidion venosi* and *Mesobromion*. Theoretically it could occur in communities of all the mentioned alliances, however only if the soil contains salt dissolved in water and localities are not mowed regularly or several times annually. The species tolerates synanthropisation and drainage. It can be considered as a subhalophytic to halophytic species.

The investigations in Komočín Nature reserve, Pohrebište Nature Reserve and Kamenínske slanisko National Nature Reserve saline site show that the studied species *I. spuria* always occurs together with the obligate halophyte *Galatella punctata*. The other mutual species are nitratophilous plants of *Agropyro-Rumicion crispi – Inula britannica, Agrostis stolonifera, Elytrigia repens* and the species *Carex praecox* (*Cnidion venosi*) and *Carex tomentosa* (*Molinietalia*). The phytocoenoses in Komočín and Pohrebište with a maintained seminatural character are interesting because of the mutual occurrence of other subxerothermous species, e.g. *Peucedanum alsaticum, P. cervaria, Fragaria viridis, Filipendula vulgaris, Jacea pannonica, Inula salicina* and *Silene multiflora*.

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