

## The plant communities of *Phragmitetalia* in the catchment area of the Ipeľ river (Slovakia and Hungary) 2. Tall-sedge dominated wetlands (*Magnocaricion elatae*)

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During the research of marsh vegetation in 1995–2002 in the catchment area of the Ipeľ river, 10 vegetation units of tall-sedge dominated wetlands were detected. The occurrence of *Caricetum elatae*, which had been published by several authors in the previous decades, was not confirmed. On the contrary, the occurrence of the *Caricetum melanostachyae* association, the *Galio palustris-Caricetum ripariae* association, the *Carex pseudocyperus* community and the *Carex cespitosa* community have not been mentioned in the literature so far. The symmorphological, synecological and synchorological characteristics are presented for each vegetation unit.

Key words: *Phragmitetalia*, tall-sedge dominated wetlands, plant communities, phytosociology, Ipeľ river, Slovakia, Hungary.

### Introduction

This paper is a continuation of an article, which was published in the previous issue of *Biologia* (HRIVNÁK, 2004). The general description of the studied area and methodology used are identical in both papers.

### Results and discussion

#### Survey and description of vegetation units

*Phragmito-Magnocaricetea* KLIKA in KLIKA et NOVÁK 1941

*Phragmitetalia* KOCH 1926

*Magnocaricion elatae* KOCH 1926

#### 11. *Carex pseudocyperus* community

The stand with the dominance of *Carex pseudocyperus* was found in an artificial biotope – a flooded gravel ditch, between stands of *Typhetum latifoliae* and *T. laxmannii*. The water regime is fluctuating during the vegetation period. The bottom is formed by gravel or sand. The neutral pH value (7.05) of water was detected. The floristic composition, ecology and type of biotope are very different from the characteristics of *Cicuto-Caricetum pseudocyperis* in Slovakia (cf. HRIVNÁK, 2001). As a result, the stand was classified as the *Carex pseudocyperus* community within the *Magnocaricion elatae* alliance. Similar stands are known, e.g., from England (cf. RODWELL, 1995). This stand is characterised by the following relevé.

Table 9A. *Caricetum acutiformis*.

Number of relevé	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Number of species	2	1	1	1	7	5	6	9	8	8	7	1	1	9	4	1	1	1
		3	0	3								4	1			2	0	4
Dominant species																		
<i>Carex acutiformis</i>	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<i>Phragmito-Magnocaricetea</i>																		
<i>Phalaroides arundinacea</i>	.	+	.	.	.	1	.	.	+	+	.	+	.	B	.	.	+	.
<i>Lycopus europaeus</i>	.	+	.	.	.	+	+	r	.	+	.	+	.	.	.	.	.	+
<i>Scutellaria galericulata</i>	.	r	.	+	A	.	.	+	.	.	.	1	1	.	.	.	r	.
<i>Lysimachia vulgaris</i>	.	+	r	+	+	.	+	+	.	.	.	A	+	+	.	.	.	.
<i>Carex riparia</i>	.	.	+	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.
<i>Lythrum salicaria</i>	.	.	+	1	.	.	+	r	+	+	1	+	A	r	1	.	.	+
<i>Galium palustre</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+
<i>Iris pseudacorus</i>	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	+	.
<i>Glyceria maxima</i>	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.
<i>Typha latifolia</i>	.	.	.	.	.	.	.	.	.	.	.	+	+	.	r	.	.	.
<i>Carex vulpina</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.
<i>Lycopus exaltatus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	.	.
<i>Carex acuta</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
<i>Molinio-Arrhenatheretea</i>																		
<i>Ranunculus repens</i>	r	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+
<i>Mentha longifolia</i>	.	r	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Scirpus sylvaticus</i>	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Sanguisorba officinalis</i>	.	.	+	+	.	.	.	.	.	.	+	+	.	.	.	.	.	.
<i>Cirsium canum</i>	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+
<i>Poa trivialis</i>	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.
<i>Caltha palustris</i>	.	.	.	+	.	+	.	.	.	.	.	+	.	.	.	B	.	r
<i>Alopecurus pratensis</i>	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+
<i>Lathyrus pratensis</i>	.	.	.	.	.	.	.	.	+	.	+	+	.	.	.	.	.	.
<i>Thalictrum lucidum</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	r	.
<i>Filipendula ulmaria</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+
<i>Angelica sylvestris</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1
<i>Ranunculus acris</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	r
Other species																		
<i>Calystegia sepium</i>	.	1	.	.	.	+	.	.	.	.	+	+	1	+	+	+	B	.
<i>Galium rivale</i>	.	1	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	1
<i>Symphytum officinale</i>	.	.	1	.	+	.	+	r	+	.	+	+	+	+	.	.	.	
<i>Atriplex prostrata</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Equisetum palustre</i>	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+
<i>Urtica dioica</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Humulus lupulus</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Cirsium arvense</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Nr. 4; Slovakia; Lučenská kotlina basin; Poltár, south-eastern part of the town, gravel ditch; stagnant water; depth of water – 15–25 cm; altitude 233 m; area 10 m<sup>2</sup>; total cover 98%; E<sub>1</sub> 98%; E<sub>0</sub> 15%; mean height of stand 90–100 (200–215) cm; proportion of dead biomass 15%; R. HRIVNÁK; 22.7.1999.

E<sub>1</sub>: *Carex pseudocyperus* 4, *Typha latifolia* 2a, *Juncus effusus* 1, *Lemna minor* 1, *Utricularia vulgaris* agg. 1, *Calamagrostis epigejos* +, *Lycopus europaeus* +, *Lythrum salicaria* +, *Epilobium hirsutum* r.

E<sub>0</sub>: *Calliergonella cuspidata* 2b.

*Caricenion rostratae* (BALÁTOVÁ-TULÁČKOVÁ 1963) OBERD. et al. 1967

## 12. *Caricetum elatae* KOCH 1926

Despite rather numerous relevés from this area, published between the late 50s and early 70s (MÁTHÉ, 1956; KOVÁCS, 1957; KOVÁCS & MÁTHÉ, 1967; SVOBODOVÁ & ŘEHOŘEK, 1972), no stands were found during the recent research of wetlands in the catchment area of the Ipeľ river. Many wetlands were destroyed or drained in 70s and 80s. Therefore, appropriate biotopes for this community almost disappeared nowadays.

Table 9B. *Caricetum acutiformis* – Synoptic table.

* Variant	A	B	C	D	E	Ca	Cb	
Number of relevés	2	13	3	5	2	25	76	
PM	Dominant species							
	<i>Carex acutiformis</i>							
	2	100	3	100	2	100	100	
	Diagnostic species of floristical and ecological variant							
PM	1	46	.	.	.	28	17	
GU	1	46	2	.	.	36	11	
PM	.	23	.	.	.	12	11	
MA	.	23	.	.	.	12	25	
MA, PM	.	54	2	.	.	36	34	
MA	.	8	3	.	.	16	12	
MA	.	23	2	80	.	36	32	
MA	.	.	2	.	.	8	3	
O	.	.	.	100	2	28	21	
MA	.	.	.	100	2	28	25	
MA	.	.	.	100	1	24	9	
MA	.	.	.	.	2	8	13	
MA	.	.	.	.	2	8	3	
O	.	.	.	.	2	8	8	
	<i>Phragmito-Magnocaricetea</i>							
	1	8	.	80	.	24	42	
	1	.	2	20	2	24	12	
	1	.	.	40	1	16	12	
	1	.	.	40	1	16	7	
	.	8	1	.	.	8	–	
	.	15	1	.	.	12	5	
	.	38	2	.	.	28	30	
	.	77	2	20	1	56	57	
	.	46	1	100	1	52	36	
	.	15	1	40	.	20	17	
	.	62	1	40	.	44	54	
	<i>Molinio-Arrhenatheretea</i>							
	1	8	.	.	.	8	3	
	2	8	.	100	2	40	30	
	.	8	1	.	.	8	8	
	.	8	1	.	.	8	18	
	.	15	.	.	1	12	25	
	.	31	.	80	.	32	22	
	.	.	2	60	1	24	18	
	.	.	1	40	2	20	25	
	.	.	.	20	1	8	3	
	.	.	.	20	1	8	17	
	Other species							
	.	23	1	80	.	32	12	
	.	.	2	20	2	20	34	

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* GU – *Galio-Urticetea*, MA – *Molinio-Arrhenatheretea*, O – Other species, PM – *Phragmito-Magnocaricetea*

### 13. *Caricetum acutiformis* EGGLER 1933 (Tabs 9A–B)

*Caricetum acutiformis* is a typical community of the littoral of stagnating waters, and deeper terrain depressions within large marshes. Besides that, it grows occasionally in bays bordered by fen alder woods (the *Alnetalia glutinosae* R. TX. 1937 order). It forms small patches or relatively large stands in colline, rarely planare belts. The soils are clayey or peaty. The water regime is slightly fluctuating. In the Nature Reserve Ružinské jelšiny, a

neutral reaction of water (pH 6.5) was detected.

*Carex acutiformis* is a dominant species, marsh and wet meadow plants (e.g. *Lythrum salicaria*, *Lycopus europaeus*, *Lysimachia vulgaris* or *Ranunculus repens*) are frequent. Five floristical and ecological variants (Tab. 9B) were defined using the phytosociological material from the studied area:

- the marsh variant, poor in species (column A),
- the variant with a frequent occurrence

Table 10A. *Caricetum intermediae*

Relevé number	1	2	3	4
Number of species	7	18	24	21
Dominant species				
<i>Carex disticha</i>	5	5	4	5
<i>Phragmito-Magnocaricetea</i>				
<i>Phalaroides arundinacea</i>	+	+	+	+
<i>Iris pseudacorus</i>	1	+	+	1
<i>Carex acuta</i>	1	+	.	.
<i>Lysimachia vulgaris</i>	+	.	+	1
<i>Carex melanostachya</i>	.	1	+	+
<i>Carex vulpina</i>	.	+	+	.
<i>Lythrum salicaria</i>	.	.	+	+
<i>Stachys palustris</i>	.	.	+	+
<i>Carex riparia</i>	.	.	1	+
<i>Molinio-Arrhenatheretea</i>				
<i>Gratiola officinalis</i>	.	+	1	.
<i>Poa trivialis</i>	.	+	+	.
<i>Alopecurus pratensis</i>	.	+	+	.
<i>Potentilla reptans</i>	.	1	1	+
<i>Thalictrum lucidum</i>	.	+	+	+
<i>Potentilla anserina</i>	.	.	1	1
<i>Ranunculus repens</i>	.	.	+	1
Other species				
<i>Calystegia sepium</i>	+	.	+	.
<i>Vicia cracca</i> agg.	.	+	+	.
<i>Symphytum officinale</i>	.	A	1	A

of marsh species in combination with some wet meadow species (column B),

– the variants with a frequent occurrence of wet meadow species (columns C–D),

– the variant with the presence of mesophilous and wet meadow species (column E).

*Caricetum acutiformis* belongs to relatively frequent communities in Slovakia (HRIVNÁK, 2001) as well as in the studied area. Although the *Caricetum acutiformis* association was mentioned from the Novohrad region in Hungary, there is no previous information from the catchment area of the Ipel river (cf. MÁTHÉ, 1956; KOVÁCS, 1957; KOVÁCS & MÁTHÉ, 1967).

***Caricetum gracilis* (NEUHÄUSL 1959)  
OBERD. et al. 1967**

**14. *Caricetum intermediae* STEFFEN 1931  
(Tabs 10A–B)**

In the catchment area of the Ipel river, *Caricetum intermediae* belongs to very rare plant communities. Nowadays, the stands of *Caricetum intermediae* grow only in the complex of marshes in the alluvium of Ipel river near the Kiarov village and Šahy town. In the previous decades, this community was more frequent (SVOBODOVÁ & ŘEHOŘEK, 1972).

It forms stands relatively richer in species than the other tall-sedge dominated ones. Besides the diagnostic species of the *Phragmito-Magnocaricetea* class, wet meadow species (the *Molinietalia* KOCH 1926 and *Potentillo-Polygonetalia* R.TX. 1947 orders) are present. In the Table 10B, four floristical and ecological variants are present:

– the marsh variant (column A),

– the variant with the presence of diagnostic species of the *Molinietalia* order, which grows on the border of marshes and wet meadows (column B),

– the variants with a higher frequency of diagnostic species of the *Potentillion anserinae* R. Tx. 1947 and *Cnidion* BALÁTOVÁ-TULÁČKOVÁ 1966 alliances (columns C–D).

*Caricetum intermediae* is characteristic of well-developed soils with a higher content of alkaline cations, good quality of humus and neutral to moderately alkaline soil reaction (VICHÉREK, 1973; BALÁTOVÁ-TULÁČKOVÁ, 1976; BALÁTOVÁ-TULÁČKOVÁ et al., 1993). These facts are also supported by the results from the catchment area of the Ipel river (MINÁR & MICHLIÁN, 1968).

On the territory of Slovakia and Hungary, *Caricetum intermediae* is considered endangered plant community (BORHIDI & SÁNTA, 1999; HRIVNÁK, 2001).

**15. *Caricetum gracilis* ALMQUIST 1929  
(Tabs 11A–B)**

The stands of *Caricetum gracilis* grow in shallow terrain depressions of alluvia of brooks and rivers, eulittoral and supralittoral of water reservoirs, ditches or ponds. Soil characteristics and water regime are highly variable in the catchment area of the Ipel river, as well as on the territory of Slovakia. The soils are loamy to clayey, rarely also sandy, the soil reaction ranges from acidic to slightly alkaline, the limose and terrestrial ecophases dominate during the vegetation period (CIGÁNKOVÁ & KRAJCI, 1967; KOVÁCS, 1968; MINÁR & MICHLIÁN, 1968; SVOBODOVÁ & ŘEHOŘEK, 1972; MIADOK, 1973; HRIVNÁK, 2001).

*Caricetum gracilis* forms closed and large stands, which are relatively rich in species. The floristic composition of this community is quite variable. Besides the presence of typical marsh species, wet and mesophilous meadow species are frequent. The variability of *Caricetum gracilis* in the studied area is presented in the Table 11B:

– variants with the combination of marsh and wet meadow species (columns A–C; variants B

Table 10B. *Caricetum intermediae* – Synoptic table.

*	Variant	A	B	C	D	E	Ca	Cb
	Number of relevés	2	3	7	4	16	50	
	Dominant species							
PM	<i>Carex disticha</i>	<b>2</b>	<b>3</b>	<b>100</b>	<b>4</b>	<b>100</b>	<b>100</b>	
	Diagnostic species of the floristical and ecological variants							
PM	<i>Galium palustre</i>	2	3	100	.	75	76	
PM	<i>Alisma plantago-aquatica</i>	1	3	71	.	56	26	
MA	<i>Lysimachia nummularia</i>	2	2	57	.	50	48	
PM	<i>Equisetum fluviatile</i>	1	3	14	.	31	24	
O	<i>Equisetum palustre</i>	.	3	.	.	19	28	
MA	<i>Lychnis flos-cuculi</i>	.	2	.	.	13	28	
MA	<i>Myosotis scorpioides</i> agg.	.	3	.	.	19	12	
PM	<i>Scutellaria galericulata</i>	.	2	.	.	13	8	
MA	<i>Juncus atratus</i>	.	2	.	.	13	8	
MA	<i>Ranunculus flammula</i>	.	2	.	.	13	12	
MA	<i>Cardamine pratensis</i>	.	3	29	.	31	26	
PM	<i>Glyceria maxima</i>	.	3	86	1	63	30	
PM	<i>Sium latifolium</i>	.	3	71	1	56	40	
MA, SCf	<i>Veronica scutellata</i>	.	2	71	1	50	32	
O	<i>Persicaria amphibia</i>	.	1	71	1	44	24	
PM	<i>Phalaroides arundinacea</i>	.	.	.	4	25	32	
MA	<i>Thalictrum lucidum</i>	.	.	.	3	19	4	
MA	<i>Potentilla reptans</i>	.	.	.	3	19	18	
PM	<i>Carex melanostachya</i>	.	.	.	3	19	6	
	<i>Phragmito-Magnocaricetea</i>							
	<i>Eleocharis palustris</i>	1	2	71	1	56	54	
	<i>Carex vesicaria</i>	1	2	43	1	44	34	
	<i>Carex acuta</i>	2	3	86	2	81	72	
	<i>Mentha aquatica</i>	1	3	43	.	44	20	
	<i>Carex vulpina</i>	2	.	.	2	25	22	
	<i>Stellaria palustris</i>	.	2	14	1	25	26	
	<i>Carex riparia</i>	.	2	57	2	50	44	
	<i>Lysimachia vulgaris</i>	.	3	57	3	63	64	
	<i>Iris pseudacorus</i>	.	3	43	4	63	72	
	<i>Teucrium scordium</i>	.	3	29	.	31	24	
	<i>Rorippa amphibia</i>	.	1	29	.	19	8	
	<i>Schoenoplectus lacustris</i>	.	.	29	.	13	14	
	<i>Phragmites australis</i>	.	.	14	1	13	30	
	<i>Lythrum salicaria</i>	.	.	.	2	13	58	
	<i>Stachys palustris</i>	.	.	.	2	13	6	
	<i>Molinio-Arrhenatheretea</i>							
	<i>Agrostis stolonifera</i>	1	3	100	1	75	36	
	<i>Ranunculus repens</i>	2	2	57	2	63	74	
	<i>Caltha palustris</i>	2	3	43	1	56	60	
	<i>Gratiola officinalis</i>	1	1	57	2	50	28	
	<i>Potentilla anserina</i>	1	1	57	2	50	36	
	<i>Poa palustris</i>	2	3	14	.	38	22	
	<i>Poa trivialis</i>	1	2	.	2	31	24	
	<i>Pseudolysimachion longifolium</i>	1	.	.	1	13	2	
	<i>Alopecurus pratensis</i>	2	.	.	2	25	24	
	<i>Trifolium hybridum</i>	.	.	43	.	19	16	
	<i>Vicia cracca</i> agg.	.	.	.	2	13	4	
	Other species							
	<i>Oenanthe fistulosa</i>	1	.	57	.	31	14	
	<i>Symphytum officinale</i>	.	.	29	3	31	40	
	<i>Calystegia sepium</i>	.	.	.	2	13	10	

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* MA – *Molinio-Arrhenatheretea*, PM – *Phragmito-Magnocaricetea*, SCf – *Scheuchzerio-Caricetea fuscae*and C are characterised by a higher frequency of species from the *Molinietalia* order),– variant with the presence of diagnostic species of the *Calthion* R. TX. 1937 em.

Table 11A. *Caricetum gracilis*.

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Number of species	1	1	1	7	1	9	8	6	1	1	9	1	1	5	1	6	1	1	1	1	1	7	5	1	6	9	7	1
	3	5	2		3				1	5	4	2		5	4	1	5	4					1				1	
Dominant species																												
<i>Carex acuta</i>	5	5	5	5	5	5	5	5	5	4	5	5	5	5	4	5	5	5	4	4	4	4	5	5	5	5	5	
<i>Phragmito-Magnocaricetea</i>																												
<i>Equisetum fluviatile</i>	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	
<i>Lythrum salicaria</i>	+	.	.	+	+	+	+	+	+	+	B	+	.	.	.	r	.	+	+	r	.	.	.	.	.	.		
<i>Lysimachia vulgaris</i>	1	.	r	.	.	1	.	.	.	B	+	.	+	.	.	+	B	1	+	+	.	.	1	+	.	.		
<i>Lycopus europaeus</i>	.	1	.	+	.	.	+	.	.	.	+	+	.	+	1	.	.	.	.	.	.	.	.	.	.	.		
<i>Mentha aquatica</i>	.	+	.	.	.	.	.	.	.	.	.	r	.	A	.	.	.	+	.	.	.	.	.	.	.	.		
<i>Galium palustre</i>	.	1	.	.	.	.	.	.	+	+	.	.	.	.	.	1	+	1	.	.	+	.	.	.	.	.		
<i>Scutellaria galericulata</i>	.	.	r	.	.	.	.	.	1	A	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Carex vulpina</i>	.	.	r	.	+	.	+	.	+	.	+	.	+	+	A	+	.	.	.	.	.	.	1	.	1	.		
<i>Glyceria maxima</i>	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	+	+	r	r	.	1	.	.	.	.		
<i>Iris pseudacorus</i>	.	.	.	.	+	+	+	.	B	.	+	.	.	+	+	+	.	1	.	.	.	1	.	.	.	.		
<i>Carex riparia</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	+	A	.	1	.	.	.	.	.	.		
<i>Carex vesicaria</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	r	.	+	.	+	.	.		
<i>Phalaroides arundinacea</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	.	+	+	+	+	.	+	+		
<i>Sium latifolium</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	A	.	.	.	.	.	.		
<i>Rorippa amphibia</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.		
<i>Molinio-Arrhenatheretea</i>																												
<i>Myosotis scorpioides</i> agg.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Filipendula ulmaria</i>	+	r	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Caltha palustris</i>	+	+	.	.	+	+	.	.	+	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Ranunculus repens</i>	+	.	.	.	+	.	.	+	A	.	.	+	+	.	.	r	.	+	.	.	.	.	1	.	+	.		
<i>Alopecurus pratensis</i>	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Poa trivialis</i>	+	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A		
<i>Cirsium arvense</i>	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Sanguisorba officinalis</i>	.	.	r	.	.	A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Deschampsia cespitosa</i>	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Ranunculus acris</i>	.	.	.	.	+	r	.	.	+	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Lysimachia nummularia</i>	.	.	.	.	+	.	.	.	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.		
<i>Cirsium canum</i>	.	.	.	.	.	.	.	.	+	r	.	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.		
<i>Agrostis stolonifera</i>	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+		
<i>Ranunculus flammula</i>	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.		
<i>Thalictrum lucidum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	r	.	.	.	.	r	.	.	.		
Other species																												
<i>Galium uliginosum</i>	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Equisetum palustre</i>	.	+	.	.	.	.	.	.	+	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.		
<i>Poa palustris</i>	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.		
<i>Galium rivale</i>	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+		
<i>Galium aparine</i>	.	.	+	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Urtica dioica</i>	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1		
<i>Calystegia sepium</i>	.	.	.	1	.	.	+	.	1	.	+	.	.	.	.	r	+	1	+	.	.	.	.	.	.	.		
<i>Symphytum officinale</i>	.	.	.	+	.	1	+	+	.	.	.	.	.	+	+	.	.	+	.	.	.	.	+	.	.	.		
<i>Bidens frondosa</i>	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	1	.	.	.	.	.	+		
<i>Juncus effusus</i>	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
<i>Persicaria hydropiper</i>	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r		
<i>Solanum dulcamara</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		

BALÁTOVÁ-TULÁČKOVÁ 1978 and *Molinion* KOCH 1926 alliances (column D),

– variants with a lower frequency of marsh species and a higher frequency of mesophilous and wet meadow species, which grow on the bound-

aries and dryer parts of marshes (column E and F),

– variant with the combination of wet meadow, mesophilous and marsh species, and the presence of nitrophilous plants (column G).

Table 11B. *Caricetum gracilis* – Synoptic table.

* Variant	A	B	C	D	E	F	G	Ca	Cb
Number of relevés	25	13	11	15	5	11	7	87	260
Dominant species									
<i>Carex acuta</i>	100	100	100	100	100	100	100	100	100
Diagnostic species of floristical and ecological variants									
PM <i>Phalaroides arundinacea</i>	32	31	18	.	.	.	.	16	26
PM <i>Rorippa amphibia</i>	12	31	9	.	.	.	.	9	15
MA <i>Lythrum virgatum</i>	4	15	55	.	.	.	.	10	4
MA <i>Potentilla reptans</i>	4	8	55	.	.	.	.	9	7
MA <i>Rorippa sylvestris</i>	4	8	27	.	.	.	.	6	+
PM <i>Alisma lanceolatum</i>	4	15	36	.	.	.	.	8	2
MA <i>Agrostis stolonifera</i>	20	77	55	.	.	.	.	24	34
O <i>Pericaria amphibia</i>	8	62	18	.	.	.	.	14	22
PM <i>Sium latifolium</i>	16	62	36	.	.	.	.	18	28
MA <i>Gratiola officinalis</i>	8	46	82	.	.	.	14	21	12
MA <i>Potentilla anserina</i>	4	38	73	.	.	.	.	16	11
O <i>Poa palustris</i>	8	46	73	7	.	.	.	20	34
O <i>Plantago major</i>	.	15	27	.	.	.	.	6	3
O <i>Trifolium hybridum</i>	.	31	55	.	.	.	.	13	5
O <i>Veronica scutellata</i>	.	54	45	.	.	.	.	14	15
MA <i>Alopecurus geniculatus</i>	.	23	27	.	.	.	.	7	3
MA <i>Stellaria palustris</i>	.	31	18	.	.	.	.	7	12
MA <i>Vicia cracca</i>	.	.	36	.	.	.	.	5	4
O <i>Juncus conglomeratus</i>	.	.	.	33	.	.	.	6	3
O <i>Galium uliginosum</i>	.	.	.	33	.	.	.	6	8
MA <i>Galium boreale</i>	.	.	.	60	20	.	.	11	4
MA <i>Carex hirta</i>	.	.	.	13	80	.	.	7	9
MA <i>Anthoxanthum odoratum</i>	.	.	.	.	60	9	.	5	2
MA <i>Trifolium pratense</i>	.	.	.	.	.	82	43	14	8
MA <i>Poa pratensis</i>	.	.	.	.	.	64	29	10	11
MA <i>Ranunculus polyanthemus</i>	.	.	.	13	.	64	43	14	5
PM <i>Carex rostrata</i>	.	.	.	.	.	9	43	5	2
O <i>Galium aparine</i>	.	.	.	.	.	.	43	3	5
<i>Phragmito-Magnocaricetea</i>									
<i>Carex riparia</i>	16	31	.	.	.	.	.	9	18
<i>Phragmites australis</i>	4	8	.	.	.	.	.	2	12
<i>Teucrium scordium</i>	4	8	9	.	.	.	.	3	9
<i>Carex elata</i>	4	.	9	.	.	.	.	2	6
<i>Phellandrium aquaticum</i>	4	.	18	.	.	.	.	3	4
<i>Equisetum fluviatile</i>	4	31	.	7	.	.	.	7	22
<i>Iris pseudacorus</i>	52	92	27	53	.	18	.	44	49
<i>Carex vesicaria</i>	32	69	.	53	40	36	.	36	39
<i>Galium palustre</i>	32	92	100	67	100	45	57	63	70
<i>Carex vulpina</i>	52	92	55	27	.	73	86	56	38
<i>Lysimachia vulgaris</i>	52	31	18	60	.	73	29	44	45
<i>Lythrum salicaria</i>	60	62	18	33	.	.	14	36	49
<i>Glyceria fluitans</i>	4	38	.	7	.	18	29	13	13
<i>Mentha aquatica</i>	8	46	36	7	.	.	57	20	26
<i>Alisma plantago-aquatica</i>	8	77	36	27	.	.	14	24	24
<i>Stachys palustris</i>	4	8	27	.	.	.	14	7	5
<i>Glyceria maxima</i>	44	77	9	.	.	.	14	26	20
<i>Scutellaria galericulata</i>	12	8	9	.	.	.	29	8	17
<i>Lycopus europaeus</i>	24	.	.	40	.	.	29	16	20
<i>Eleocharis palustris</i> agg.	.	85	45	27	.	9	.	24	27
<i>Molinio-Arrhenatheretea</i>									
<i>Thalictrum lucidum</i>	12	.	27	.	.	.	.	7	2
<i>Taraxacum</i> sp.	4	.	9	13	.	27	.	8	–
<i>Ranunculus repens</i>	36	77	64	60	80	100	86	64	51
<i>Lysimachia nummularia</i>	8	62	27	40	100	91	29	41	40

Table 11B. (continued)

* Variant	A	B	C	D	E	F	G	Ca	Cb
<i>Poa trivialis</i>	16	38	.	13	100	91	86	37	19
<i>Alopecurus pratensis</i>	20	23	36	40	.	64	86	36	23
<i>Caltha palustris</i>	16	46	55	73	.	82	29	44	55
<i>Cardamine pratensis</i> agg.	4	46	9	13	.	36	29	18	22
<i>Ranunculus acris</i>	12	.	9	13	.	73	43	20	17
<i>Sanguisorba officinalis</i>	4	.	.	20	.	27	14	9	10
<i>Deschampsia cespitosa</i>	8	.	.	.	.	18	29	7	8
<i>Cirsium canum</i>	8	.	.	13	.	.	14	6	8
<i>Oenanthe fistulosa</i>	.	8	55	.	.	.	.	8	6
<i>Myosotis scorpioides</i> agg.	.	8	27	53	80	55	14	26	33
<i>Lychnis flos-cuculi</i>	.	.	9	20	.	64	14	14	20
<i>Scirpus sylvaticus</i>	.	.	9	40	.	45	29	16	17
<i>Acetosa pratensis</i>	.	.	9	13	.	.	.	3	5
<i>Senecio erraticus</i>	.	.	9	.	.	.	14	2	+
E <sub>0</sub> <i>Climacium dendroides</i>	.	.	.	20	.	9	.	5	4
<i>Filipendula ulmaria</i>	.	.	.	47	.	.	14	9	18
Other species									
BI <i>Bidens tripartita</i>	8	8	9	.	.	.	.	5	5
<i>Symphytum officinale</i>	44	31	64	13	.	.	.	28	25
Co <i>Calystegia sepium</i>	32	.	.	7	.	.	.	10	9
<i>Equisetum palustre</i>	8	8	9	47	.	9	.	14	20
<i>Ficaria verna</i> agg.	4	.	.	7	.	9	.	3	1
<i>Ranunculus flammula</i>	8	46	.	47	100	91	29	37	23
<i>Rumex crispus</i>	4	.	9	.	.	9	29	6	9
GU <i>Urtica dioica</i>	4	.	.	.	.	.	29	3	3
GU <i>Galium rivale</i>	8	.	.	.	.	.	14	3	+
GU <i>Cirsium arvense</i>	4	.	.	.	.	.	14	2	4
<i>Trifolium bonannii</i>	.	8	9	.	.	.	.	2	-
<i>Mentha arvensis</i>	.	38	36	7	.	.	.	11	4
E <sub>0</sub> <i>Calliergonella cuspidata</i>	.	.	.	20	40	45	.	11	20
<i>Myosoton aquaticum</i>	.	.	.	7	.	18	.	3	2
BI <i>Alopecurus aequalis</i>	.	.	.	13	.	36	43	10	4

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* BI – *Bidentetea tripartiti*, Co – *Convolvuletalia sepium*, E<sub>0</sub> – moss layer, GU – *Galio-Urticetea*, MA – *Molinio-Arrhenatheretea*, O – Other species, PM – *Phragmito-Magnocaricetea*

*Caricetum gracilis* is the most frequent tall-sedge dominated wetland plant community in the catchment area of the Ipel river in Slovakia, as well as in Hungary (cf. Tab. 11B, MÁTHÉ 1956). It is relatively frequent in both countries (BORHIDI & SANTA, 1999; HRIVNÁK, 2001).

#### 16. *Caricetum vesicariae* CHOUARD 1924 (Tabs 12A–B)

*Caricetum vesicariae* forms small patches in the littoral of oxbows, as well as in deeper terrain depressions in the alluvia of brooks and rivers. The stands grow in a stagnating or slowly flowing water. As in the case in *Galio palustris-Caricetum ripariae*, the stands are adapted to flooding for a longer time. The soils are clayey, mesotrophic and eutrophic, moderately acid (SZÉNASIOVÁ, 1977).

This community forms mainly closed stands, rarely open stands poor in species. The variability of *Caricetum vesicariae* in the catchment area of the Ipel river is presented in the Table 12B.

Besides typical marsh species, the wet meadow species of the *Molinietalia* order are present. Four floristical and ecological variants are defined:

- variant with the presence of wet meadow species (Tab. 12B, column A),
- marsh variants with different diagnostic species (Tab. 12B, columns B–D).

*Caricetum vesicariae* has scattered occurrence from the planare to colline belts in the southern part of Slovakia and in the Duna-Tisza territory in Hungary (HRIVNÁK, 2001; BORHIDI & SANTA, 1999).

#### 17. *Galio palustris-Caricetum ripariae* BALÁTOVA-TULÁČKOVÁ in BALÁTOVA-TULÁČKOVÁ et al. 1993 (Tabs 13A–B)

In the catchment area of the Ipel river, *Galio palustris-Caricetum ripariae* belongs to the most frequent plant communities nowadays. The stands grow in the littoral of natural and artificial biotopes in a stagnating or slowly flowing water.



Table 12A. *Caricetum vesicariae*.

Relevé number	1	2	3	4	5	6	7	8	9	1	1	1	1	1
Number of species	6	5	4	4	1	1	1	8	1	1	5	1	1	8
					2	1	0		0	1		1	1	
Dominant species														
<i>Carex vesicaria</i>	5	5	5	4	4	4	4	4	5	5	5	5	5	5
<i>Phragmito-Magnocaricetea</i>														
<i>Phalaroides arundinacea</i>	+	.	r	.	+	+	.	.	.	.	.	.	.	+
<i>Carex riparia</i>	.	+	+	.	.	+	.	1	+	.	.	.	.	.
<i>Carex acuta</i>	+	+	1	+	A	B	+	+	+	A	.	A	+	+
<i>Iris pseudacorus</i>	.	+	.	.	+	.	+	+	+	+	.	+	+	.
<i>Glyceria maxima</i>	.	1	.	.	.	+	.	.	.	.	+	.	.	1
<i>Lysimachia vulgaris</i>	.	.	.	.	3	B	+	r	r	B	1	.	.	.
<i>Lythrum salicaria</i>	.	.	.	.	+	+	+	+	+	+	+	.	+	.
<i>Lycopus europaeus</i>	.	.	.	.	.	.	1	.	.	+	.	+	.	.
<i>Carex vulpina</i>	.	.	.	.	.	.	.	+	+	+	.	1	+	.
<i>Galium palustre</i>	.	.	.	.	.	.	.	.	.	+	+	+	+	.
<i>Molinio-Arrhenatheretea</i>														
<i>Ranunculus repens</i>	.	.	.	.	.	.	.	.	.	.	.	+	+	+
<i>Alopecurus pratensis</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	+
Other species														
<i>Echinocystis lobata</i>	r	.	.	.	+	.	.	.	.	.	.	.	.	.
<i>Persicaria amphibia</i>	.	.	.	.	+	.	1	.	+	.	.	.	.	.
<i>Bidens frondosa</i>	.	.	.	.	.	+	r	.	.	.	.	.	.	.
<i>Symphytum officinale</i>	.	.	.	.	.	.	+	+	.	r	.	.	.	.

This community forms large stands which have a good ability to occupy new artificial biotopes (e.g. littorals of gravel or sand ditches, artificial water reservoirs, margins of water-courses of brooks and rivers). The water regime is fluctuating, the water level sinks below the soil surface in the summer. A long-term duration of littoral ecophase and a relatively high level of flooding are typical for this community (cf. HEJNÝ & HUSÁK, 1978). The soils are loamy to clayey.

*Carex riparia* is the dominant species of this community. It forms closed stands poor in species. Besides *Carex riparia*, only four species occur with a higher frequency than 40% (see Tab. 13B). The variability of *Galio palustris-Caricetum ripariae* in the studied area is presented in the Table 13B.

There are seven floristical and ecological variants:

- variant of the moderately salted biotopes, with the presence of the diagnostic species of the *Potentillion anserinae* alliance (column A),

- variant with the presence of wet meadow and weed species (column B),

- marsh variants, with the presence of the diagnostic species of the *Phragmitetalia* order (columns C-E),

- variant of shallow waters and drying biotopes, with the presence of the diagnostic species of the *Oenanthion aquaticae* alliance (column F),

- variant with the presence of aquatic macrophytes (column G).

In littoral biotopes, *Galio palustris-Caricetum ripariae* is frequently in contact with reed wetland communities (e.g. *Glycerietum aquaticae* HUECK 1931 or *Typhetum latifoliae* LANG 1973).

It is interesting that data on the occurrence of this community are fully absent in older phytosociological records from the catchment area of the Ipeľ river (cf. MÁTHÉ, 1956; KOVÁCS, 1957; KOVÁCS & MÁTHÉ, 1967; SVOBODOVÁ & ŘEHOREK, 1972).

#### 18. *Caricetum vulpinae* VON SOÓ 1927 (Tabs 14A–B)

The stands of *Caricetum vulpinae* grow in shallow terrain depressions on alluvia of rivers and brooks. The water regime of this community is varies. The biotopes are characterised by short-term floods with a low water level, decreasing rapidly below the soil surface (cf. e.g. BALÁTOVÁ-TULÁČKOVÁ, 1968, 1976; SVOBODOVÁ & ŘEHOREK, 1972). *Caricetum vulpinae* forms open stands, in which marsh and wet meadow species occur. The variability of this community is presented in the Table 14B, where six floristical and ecological variants are defined:

- typical marsh variant (column A),

- variants with the presence of the diagnostic

Table 12B. *Caricetum vesicariae* – Synoptic table.

* Variant	A	B	C	D	Ca	Cb
Number of relevés	9	6	8	6	29	56
PM	Dominant species					
	<i>Carex vesicaria</i>					
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
	Diagnostic species of floristical and ecological variants					
O	<i>Galium rivale</i>	89	.	.	.	28 14
O	<i>Equisetum palustre</i>	56	.	.	.	17 16
O	<i>Juncus conglomeratus</i>	56	.	.	.	17 11
MA	<i>Myosotis scorpioides</i> agg.	33	.	.	.	10 16
MA	<i>Scirpus sylvaticus</i>	67	.	.	.	21 18
MA	<i>Caltha palustris</i>	89	.	.	.	28 29
MA	<i>Lysimachia nummularia</i>	<b>44</b>	17	.	.	17 20
O	<i>Symphytum officinale</i>	.	17	<b>38</b>	.	14 7
PM	<i>Lysimachia vulgaris</i>	33	.	75	17	34 38
O	<i>Persicaria amphibia</i>	.	.	38	.	10 18
PM	<i>Lycopus europaeus</i>	.	.	38	.	10 13
PM	<i>Glyceria maxima</i>	.	.	13	<b>50</b>	14 16
PM	<i>Phalaroides arundinacea</i>	.	.	13	<b>67</b>	17 11
	Phragmito-Magnocaricetea					
	<i>Galium palustre</i>	67	17	50	.	38 55
	<i>Lythrum salicaria</i>	89	.	75	17	52 57
	<i>Iris pseudacorus</i>	100	83	75	17	72 57
	<i>Alisma plantago-aquatica</i>	33	17	0	17	17 25
	<i>Carex acuta</i>	67	.	75	100	62 46
	<i>Carex vulpina</i>	33	100	63	.	48 36
	<i>Carex riparia</i>	.	.	25	50	17 11
	Molinio-Arrhenatheretea					
	<i>Ranunculus flammula</i>	33	33	.	.	17 30
	<i>Filipendula ulmaria</i>	33	.	13	.	14 9
	<i>Ranunculus repens</i>	78	50	13	17	41 41
	<i>Alopecurus pratensis</i>	11	.	13	17	10 13
	Other species					
	<i>Calystegia sepium</i>	22	.	13	.	10 9
	<i>Poa palustris</i>	22	.	.	17	10 14
	<i>Equisetum arvense</i>	33	17	13	.	17 –
	<i>Echinocystis lobata</i>	.	.	13	17	7 2
	<i>Bidens frondosa</i>	.	.	25	17	10 5

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* MA – *Molinio-Arrhenatheretea*, O – Other species, PM – *Phragmito-Magnocaricetea*

species of the *Potentillo-Polygonetalia* R. TX. 1947 order (columns B and C), – variants with the presence of wet meadow species (columns D and E), mainly the diagnostic species of the *Molinietales* KOCH 1926 order (column D),

– variant with the presence of mesophilous meadow species (column F). *Caricetum vulpinae* occurs frequently in the planare and colline belts on the territory of Slovakia (HRIVNÁK, 2001).

### 19. *Caricetum melanostachyae* BALAZS 1943

The stands were detected on the alluvia of lowland rivers and brooks, along the borderlines between marshes and wet meadows. This fact influences the floristical composition of this community, where the species of the *Phragmito-Magnocaricetea* class, and the *Molinietales* KOCH 1926 and *Potentillo-*

*Polygonetalia* R. TX. 1947 orders occur together. Along with the dominant species *Carex melanostachya*, only four taxa (*Alopecurus pratensis*, *C. vulpina* agg., *Phalaroides arundinacea*, and *Ranunculus repens*) have a high constancy (more than 70%). HRIVNÁK (1999, 2000) published seven phytosociological relevés from the planare belts of the Lučenská and Ipel'ská kotlina basins and presented a detailed information about the synmorphology, synecology and chorology of this community. Afterward, only one new locality of this community was found (see rel. 5).

In the study area, *Caricetum melanostachyae* belongs to very rare marsh plant communities. Besides the localities in the catchment area of the Ipel river, this community was reported from the Východoslovenská nížina lowland (HEJNÝ & HUSÁK, 1978) and the eastern part of the Poduna-

Table 13A. *Galio palustris-Caricetum ripariae*.

Relevé number	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2					
Number of species	9	7	1	1	8	1	1	1	1	1	8	9	3	6	5	6	9	5	7	6	3	6	1	1	7	8	4	8	4		
			2	2		0	8	3	1	2												3	0								
Dominant species																															
<i>Carex riparia</i>	5	5	4	4	5	5	4	5	4	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	
<i>Phragmito-Magnocaricetea</i>																															
<i>Carex vulpina</i>	+	+	.	1	.	+	+	.	+	.	+	.	.	.	.	1	.	+	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Phalaroides arundinacea</i>	.	+	.	.	.	.	+	.	.	.	.	+	+	.	+	.	.	.	.	r	.	+	.	.	.	.	.	.	.	.	
<i>Carex acuta</i>	.	+	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	
<i>Eleocharis palustris</i> agg.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Typha latifolia</i>	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	
<i>Lythrum salicaria</i>	.	.	1	+	+	+	1	+	.	.	.	.	.	.	.	.	+	+	1	.	+	.	.	+	.	.	.	+	r	.	
<i>Iris pseudacorus</i>	.	.	.	+	.	.	+	+	+	.	+	.	.	.	.	r	+	.	+	+	1	.	+	.	.	.	+	.	.	.	
<i>Galium palustre</i>	.	.	.	.	+	.	+	+	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.
<i>Lysimachia vulgaris</i>	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	A	B	.	.	.	.	.	
<i>Carex vesicaria</i>	.	.	.	.	.	+	+	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	
<i>Lycopus europaeus</i>	.	.	.	.	.	.	+	+	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Phellandrium aquaticum</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	
<i>Glyceria maxima</i>	.	.	.	.	.	.	.	+	+	.	.	A	.	+	.	+	.	.	1	.	.	.	1	+	+	+	1	1	+		
<i>Stachys palustris</i>	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	
<i>Rorippa amphibia</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	.	.	
<i>Schoenoplectus lacustris</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	
<i>Molinio-Arrhenatheretea</i>																															
<i>Carex hirta</i>	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Potentilla anserina</i>	+	.	A	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Agrostis stolonifera</i>	A	+	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Ranunculus repens</i>	.	r	.	+	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Poa trivialis</i>	.	.	+	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Potentilla reptans</i>	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Alopecurus pratensis</i>	.	.	1	r	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Cirsium canum</i>	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Rorippa austriaca</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Lysimachia nummularia</i>	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Lemnetea</i>																															
<i>Ricciocarpos natans</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.
<i>Lemna minor</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	A	4	.
Other species																															
<i>Symphytum officinale</i>	+	.	.	+	+	+	.	+	.	+	1	+	.	.	.	.	+	r	.	+	.	1	+	.	.	.	.	.	.		
<i>Solanum dulcamara</i>	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Bidens frondosa</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Calystegia sepium</i>	.	.	.	.	1	.	B	.	.	.	.	.	.	.	.	.	.	.	1	.	A	.	1	.	.	.	.	.	.		
<i>Persicaria amphibia</i>	.	.	.	.	.	.	+	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	+	r	.	r	
<i>Juncus effusus</i>	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<i>Cirsium arvense</i>	.	.	.	.	.	.	.	.	.	1	1	+	.	.	+	+	.	+	.	.	.	.	r	.	.	.	.	.	.		
<i>Urtica dioica</i>	.	.	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.		
<i>Atriplex prostrata</i>	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

jská nížina lowland (SÁDOVSKÝ pers. com.).

Nr. 5; Slovakia; Ipel'ská kotlina basin; Kiarov, Nature reserve (NR) Kiarovský močiar, "Malské mláky"; altitude 145 m; area 16 m<sup>2</sup>; total cover 100%; E<sub>1</sub> 100%; mean height of stand 60–70 cm; proportion of dead biomass 30%; R. HRIVNÁK; 12.6.2002.

E<sub>1</sub>: *Carex melanostachya* 5, *Potentilla anserina* 3, *Carex otrubae* 2a, *Alopecurus pratensis* 1, *Carex hirta* 1, *Stachys palustris* 1, *Calystegia*

*sepium* +, *Cirsium vulgare* +, *Dipsacus* sp. +, *Lycopus exaltatus* +, *Lythrum salicaria* +, *Persicaria amphibia* +, *Ranunculus acris* +, *R. repens* +, *Rumex crispus* +, *Atriplex prostrata* r.

## 20. *Phalaridetum arundinaceae* LIBBERT 1931

In the catchment area of the Ipeľ river, the stands of *Phalaridetum arundinaceae* belong to frequent plant communities. HRIVNÁK & UJHÁZY (2003)

Table 13B. *Galio palustris-Caricetum ripariae* – Synoptic table.

* Variant	A	B	C	D	E	F	G	Ca	Cb	
Number of relevés	4	6	9	4	5	4	2	34	86	
PM	Dominant species									
	<i>Carex riparia</i>	4	100	100	4	100	4	2	100	100
	Diagnostic species of the floristical and ecological variants									
MA	<i>Potentilla reptans</i>	2	.	.	1	.	.	.	9	4
MA	<i>Carex hirta</i>	2	.	.	.	.	.	.	6	2
MA	<i>Agrostis stolonifera</i>	4	.	11	.	.	.	.	15	8
MA	<i>Potentilla anserina</i>	3	.	.	.	.	.	.	9	15
O	<i>Symphytum officinale</i>	2	67	56	3	.	1	.	44	31
PM	<i>Carex vulpina</i>	3	33	22	2	.	.	.	26	16
O	<i>Cirsium arvense</i>	.	100	11	.	.	.	.	21	12
O	<i>Persicaria amphibia</i>	.	.	.	4	20	4	.	26	34
PM	<i>Schoenoplectus lacustris</i>	.	.	.	.	.	2	.	6	12
PM	<i>Rorippa amphibia</i>	.	.	.	.	.	4	.	12	17
PM	<i>Phellandrium aquaticum</i>	.	.	.	1	.	3	.	12	12
LE	<i>Lemna minor</i>	.	.	.	.	20	1	2	12	24
LE	<i>Ceratophyllum submersum</i>	.	.	.	.	.	.	1	3	–
	<i>Phragmito-Magnocaricetea</i>									
	<i>Iris pseudacorus</i>	1	67	33	3	80	1	.	47	51
	<i>Carex acuta</i>	2	.	11	3	.	2	.	24	34
	<i>Phalaroides arundinacea</i>	1	.	33	2	.	1	.	21	15
	<i>Lythrum salicaria</i>	2	33	44	4	80	1	2	56	40
	<i>Typha latifolia</i>	1	.	.	1	.	1	1	12	8
	<i>Eleocharis palustris</i> agg.	1	.	.	1	.	.	1	9	15
	<i>Lycopus europaeus</i>	.	50	.	2	.	.	.	15	19
	<i>Glyceria maxima</i>	.	33	22	2	100	4	1	47	36
	<i>Carex vesicaria</i>	.	17	11	2	.	1	1	18	22
	<i>Galium palustre</i>	.	17	22	2	.	.	1	18	44
	<i>Lysimachia vulgaris</i>	.	.	33	1	40	2	.	24	17
	<i>Alisma plantago-aquatica</i>	.	.	11	.	.	.	1	6	15
	<i>Stachys palustris</i>	.	.	.	1	.	1	.	6	8
	<i>Molinio-Arrhenatheretea</i>									
	<i>Alopecurus pratensis</i>	2	50	.	.	.	.	.	15	7
	<i>Ranunculus repens</i>	2	33	.	2	.	.	.	18	19
	<i>Poa trivialis</i>	1	.	.	2	.	.	.	9	5
	<i>Rorippa sylvestris</i>	1	.	.	.	.	.	.	3	1
	<i>Rorippa austriaca</i>	.	17	11	.	.	.	.	6	1
	Other species									
GU	<i>Solanum dulcamara</i>	1	.	22	.	20	.	.	12	6
	<i>Equisetum palustre</i>	.	17	11	.	.	.	.	6	6
BI	<i>Bidens tripartita</i>	.	.	.	.	20	.	.	3	4
GU	<i>Calystegia sepium</i>	.	17	44	1	20	1	.	24	17
	<i>Lysimachia nummularia</i>	.	17	.	.	.	.	1	6	8
	<i>Juncus effusus</i>	.	.	11	1	.	.	2	12	1
	<i>Atriplex prostrata</i>	.	.	.	1	.	1	.	6	–

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* BI – *Bidentetea tripartiti*, GU – *Galio-Urticetea*, LE – *Lemnetea*, MA – *Molinio-Arrhenatheretea*, O – Other species, PM – *Phragmito-Magnocaricetea*

published detailed characteristics of morphology, ecology and chorology of this community in the study area. From the territory of Hungary, *Carici gracilis-Phalaridetum* (KOVÁCS et MATHÉ 1967) SOÓ 1971 corr. BORHIDI 1996 was described (cf. BORHIDI 1996). Because there is a lack of relevant phytosociological data and there are various additional syntaxonomical problems, we con-

sider this association controversial (cf. HRIVNÁK & UJHÁZY l.c.).

### 21. *Carex cespitosa* community

Relatively small patches of the *Carex cespitosa* community grew in a complex of tall-sedge dominated wetlands (namely *Caricetum acutiformis*, *C. buekii* HEJNÝ et KOPECKÝ in KOPECKÝ et

Table 14A. *Caricetum vulpinae*.

Relevé number	1	2	3	4	5	6	7
Number of species	15	18	15	9	12	21	14
Dominant species							
<i>Carex vulpina</i>	4	4	5	5	3	4	5
<i>Phragmito-Magnocaricetea</i>							
<i>Lythrum salicaria</i>	+	+	+	+	.	.	.
<i>Carex riparia</i>	+	.	.	.	+	.	+
<i>Lycopus europaeus</i>	.	1	+	.	.	.	.
<i>Eleocharis palustris</i> agg.	.	+	+	.	.	.	.
<i>Iris pseudacorus</i>	.	+	.	.	+	+	.
<i>Lysimachia vulgaris</i>	.	.	+	.	+	.	.
<i>Carex acuta</i>	.	.	+	+	1	+	+
<i>Galium palustre</i>	.	.	.	+	+	+	.
<i>Phalaroides arundinacea</i>	.	.	.	.	+	+	.
<i>Sium latifolium</i>	.	.	.	.	+	+	.
<i>Carex melanostachya</i>	.	.	.	.	B	.	+
<i>Cirsium canum</i>	1	+	.	.	.	.	.
<i>Taraxacum</i> sp.	+	r	.	.	.	.	.
<i>Deschampsia cespitosa</i>	+	.	+	.	.	.	.
<i>Ranunculus acris</i>	+	r	+	.	.	.	.
<i>Carex hirta</i>	A	.	.	.	.	+	.
<i>Agrostis stolonifera</i>	1	.	.	1	.	B	.
<i>Ranunculus repens</i>	+	+	A	.	.	A	1
<i>Alopecurus pratensis</i>	.	.	+	+	.	+	+
<i>Rorippa sylvestris</i>	.	.	.	.	.	+	+
Other species							
<i>Symphytum officinale</i>	+	+	.	.	.	.	.
<i>Juncus effusus</i>	.	+	.	+	.	.	.
<i>Mentha arvensis</i>	.	+	.	.	.	r	.
<i>Calystegia sepium</i>	.	.	+	+	.	.	.
<i>Lythrum virgatum</i>	.	.	.	.	+	.	+

HEJNÝ 1965 and *Galio palustris-Caricetum ripariae*). In this community, the typical marsh species are present. On the other hand, the species of wet meadows (typical for *Caricetum cespitosae* STEFFEN 1931, the *Calthion* R. TX. 1937 em. BALÁTOVÁ-TULÁČKOVÁ 1978 alliance) are rare. Relevant phytosociological relevés from the territory of Central Europe are absent.

Nr. 6; Slovakia; Lučenská kotlina basin; Hrabovo, SSE, NR Pod Šťavicou; altitude 195 m; area 25 m<sup>2</sup>; total cover 100%; E<sub>1</sub> 100%; mean height of stand 70–80 cm; proportion of dead biomass 25%; R. HRIVNÁK; 8.6.1998.

E<sub>1</sub>: *Carex cespitosa* 5, *C. riparia* 1, *Alopecurus pratensis* +, *Calystegia sepium* +, *Galium palustre* +, *G. rivale* +, *Iris pseudacorus* +, *Lathyrus pratensis* +, *Lythrum salicaria* +, *Poa palustris* +, *Scutellaria galericulata* +, *Urtica dioica* +.

## Conclusions

In the catchment area of the Ipeľ river, tall-sedge dominated wetlands are documented by 10 plant communities. Mesotrophic plant communi-

ties of *Caricenion rostratae* are very rare nowadays. *Caricetum elatae* which was very frequent in the half of the last century has not been recorded during this research. On the other hand, eutrophic plant communities of *Caricenion gracilis* are frequent. There are 8 vegetation units, which are documented by almost 100 recent relevés. The *Carex pseudocyperus* community was included in the higher syntaxonomical unit, *Magnocaricion elatae*. Its floristic composition and structure are different from *Cicuto-Caricetum pseudocyperi*, which grows in the drifts of organic materials in stagnating, mesotrophic or eutrophic waters in Europe (cf. HEJNÝ & HUSÁK, 1978).

The duration and height of floods are the most important factors for the formation and development of tall-sedge wetlands, as well as all marsh plant communities. These factors (along with the nutrient status of soil, soil structure and pH, management of stands and others) have impact on floristical composition and structure of the stands. The detected floristical and ecological variants of plant communities from the studied area are presented in the tables marked with B. For this

Table 14B. *Caricetum vulpinae* – Synoptic table.

* Variant	A	B	C	D	E	F	G	Ca	Cb
Number of relevés	4	12	14	11	4	3	48	89	
PM	Dominant species								
	<i>Carex vulpina</i>	4	100	100	100	4	3	100	100
	Diagnostic species of the floristical and ecological variants								
PM	<i>Rumex maritimus</i>	2	.	.	.	.	.	4	2
MA, PM	<i>Oenanthe fistulosa</i>	.	83	.	.	.	.	21	3
PM	<i>Teucrium scordium</i>	.	58	.	.	.	.	15	16
MA	<i>Inula britannica</i>	.	50	7	.	.	.	15	18
MA	<i>Pulegium vulgare</i>	.	75	14	.	.	.	23	14
MA	<i>Potentilla anserina</i>	.	67	29	.	.	.	25	32
MA, PM	<i>Poa palustris</i>	.	50	57	.	.	.	29	35
MA, SCf	<i>Veronica scutellata</i>	.	67	50	.	.	.	31	37
MA	<i>Gratiola officinalis</i>	.	83	50	.	1	.	38	46
MA	<i>Agrostis stolonifera</i>	.	92	79	9	2	.	52	60
SCf	<i>Carex nigra</i>	.	.	.	27	.	.	6	7
SCf	<i>Galium uliginosum</i>	.	.	.	36	.	.	8	6
MA	<i>Sanguisorba officinalis</i>	.	.	.	45	.	.	10	8
MA	<i>Poa pratensis</i>	.	.	.	36	1	.	10	12
MA, SCf	<i>Carex panicea</i>	.	.	.	55	.	1	15	10
MA	<i>Myosotis scorpioides</i> agg.	.	.	.	45	.	1	13	14
BI	<i>Alopecurus aequalis</i>	.	.	.	9	3	.	8	3
MA	<i>Scirpus sylvaticus</i>	.	.	.	27	1	2	13	8
MA	<i>Festuca pratensis</i> agg.	.	.	.	9	2	3	13	12
MA	<i>Trifolium pratense</i>	.	.	.	.	3	1	8	6
MA	<i>Trifolium dubium</i>	.	.	.	.	.	3	6	3
MA	<i>Medicago lupulina</i>	.	.	.	.	.	3	6	3
MA	<i>Luzula campestris</i>	.	.	.	.	.	3	6	5
MA	<i>Lotus corniculatus</i>	.	.	.	9	.	3	8	6
MA	<i>Leucanthemum vulgare</i> agg.	.	.	.	.	.	3	6	6
MA	<i>Holcus lanatus</i>	.	.	.	9	.	2	6	9
	Phragmito-Magnocaricetea								
	<i>Phellandrium aquaticum</i>	1	.	7	.	.	.	4	3
	<i>Phalaroides arundinacea</i>	1	25	7	.	.	.	10	17
	<i>Carex melanostachya</i>	3	8	14	.	.	.	13	5
	<i>Sium latifolium</i>	2	8	21	.	.	.	13	21
	<i>Glyceria maxima</i>	2	8	7	.	.	.	8	26
	<i>Carex vesicaria</i>	1	25	7	27	.	.	17	28
	<i>Lycopus europaeus</i>	1	.	14	9	.	.	8	19
	<i>Galium palustre</i>	3	67	86	36	.	.	56	69
	<i>Carex riparia</i>	3	.	.	.	1	.	8	6
	<i>Carex acuta</i>	2	67	79	45	3	.	60	51
	<i>Iris pseudacorus</i>	3	75	64	36	1	1	56	54
	<i>Eleocharis palustris</i> agg.	1	92	86	55	1	1	67	67
	<i>Lythrum salicaria</i>	1	.	50	36	2	2	33	42
	<i>Lysimachia vulgaris</i>	1	.	.	36	.	1	13	25
	<i>Rorippa amphibia</i>	.	17	29	.	.	.	13	17
	<i>Mentha aquatica</i>	.	17	7	.	.	.	8	20
	<i>Glyceria fluitans</i>	.	33	7	.	.	.	10	20
	<i>Alisma plantago-aquatica</i>	.	42	43	18	.	.	27	43
	<i>Carex rostrata</i>	.	.	.	.	2	1	6	3
	Molinio-Arrhenatheretea								
	<i>Vicia cracca</i> agg.	1	8	.	.	.	.	4	3
	<i>Lythrum virgatum</i>	3	17	14	.	.	.	15	26
	<i>Rorippa sylvestris</i>	1	25	21	.	.	.	15	16
	<i>Alopecurus pratensis</i>	2	33	71	91	3	.	60	53
	<i>Cardamine pratensis</i>	1	.	71	36	2	1	38	40
	<i>Ranunculus repens</i>	2	100	50	91	4	1	75	80
	<i>Stellaria palustris</i>	.	50	21	.	.	.	19	26
	<i>Potentilla reptans</i>	.	33	14	.	.	.	13	12

Table 14B. (continued)

*	Variant	A	B	C	D	E	F	G	Ca	Cb
	<i>Lotus tenuis</i>	.	25	7	.	.	.	8	5	
	<i>Alopecurus geniculatus</i>	.	25	7	.	.	.	8	7	
	<i>Poa angustifolia</i>	.	8	7	.	.	.	4	–	
	<i>Trifolium hybridum</i>	.	58	36	27	.	.	31	20	
	<i>Caltha palustris</i>	.	33	43	18	3	.	31	35	
*	Variant	A	B	C	D	E	F	Ca	Cb	
	<i>Rumex crispus</i>	.	25	29	0	1	.	17	29	
	<i>Lysimachia nummularia</i>	.	100	57	82	2	1	67	71	
	<i>Poa trivialis</i>	.	8	50	73	4	1	44	33	
	<i>Lychnis flos-cuculi</i>	.	17	21	55	1	1	27	23	
	<i>Carex hirta</i>	.	17	36	9	3	2	27	24	
	<i>Acetosa pratensis</i>	.	8	0	9	1	1	8	7	
	<i>Deschampsia cespitosa</i>	.	.	14	36	2	.	17	23	
	<i>Ranunculus flammula</i>	.	.	64	82	3	1	46	54	
	<i>Ranunculus acris</i>	.	.	7	45	3	1	21	14	
	<i>Cirsium canum</i>	.	.	7	9	1	2	10	10	
	<i>Leontodon autumnalis</i>	.	.	.	9	1	.	4	3	
E <sub>0</sub>	<i>Plagiomnium elatum</i>	.	.	.	9	.	1	4	–	
	<i>Carex lachenalii</i>	.	.	.	27	.	1	8	7	
	Other species									
	<i>Symphytum officinale</i>	2	67	57	.	1	.	40	34	
	<i>Plantago major</i>	.	50	14	.	.	.	17	10	
	<i>Persicaria amphibia</i>	.	33	14	.	.	.	13	11	
	<i>Equisetum palustre</i>	.	17	29	.	.	.	13	8	
	<i>Juncus atratus</i>	.	17	36	.	.	.	15	10	
	<i>Mentha arvensis</i>	.	17	29	.	.	.	13	7	
	<i>Senecio erraticus</i>	.	25	21	.	.	.	13	7	
	<i>Juncus articulatus</i>	.	.	14	9	.	.	6	9	
	<i>Calystegia sepium</i>	.	.	7	9	.	.	4	3	
	<i>Taraxacum</i> sp.	.	.	7	.	1	.	4	–	
E <sub>0</sub>	<i>Drepanocladus aduncus</i>	.	.	.	9	1	.	4	–	
	<i>Ajuga reptans</i>	.	.	.	18	.	1	6	2	
	<i>Juncus conglomeratus</i>	.	.	.	27	.	1	8	9	
E <sub>0</sub>	<i>Calliergonella cuspidata</i>	.	.	.	82	.	3	25	14	
	<i>Galium boreale</i>	.	.	.	18	.	1	6	2	

Leg.: Ca – constancy, Cb – constancy according to HRIVNÁK (2001)

\* BI – *Bidentetea tripartiti*, E<sub>0</sub> – moss layer, MA – *Molinio-Arrhenatheretea*, PM – *Phragmito-Magnocaricetea*, ScF – *Scheuchzerio-Caricetea fuscae*

differentiation, 239 phytosociological relevés were used.

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#### Appendix 1: Species in one relevé only

Note: Only the taxa which were not classified as the diagnostic species of the floristical and ecological variants are given. The adapted Braun-Blanquet scale was used for the tables marked as A, and only the marks of variants were used for the synoptic tables marked as B.

Table 9A.

E<sub>1</sub>: *Bidens frondosa* rel. 2: +, *Carex vesicaria* 8: +, *Cirsium vulgare* 11: +, *Deschampsia cespitosa* 18: +, *Elytrigia repens* 14: +, *Epilobium hirsutum* 2: +, *Equisetum fluviatile* 5: 1, *Eupatorium cannabinum* 13: +, *Galeopsis bifida* 5: +, *Impatiens noli-tangere* 2: +, *Juncus effusus* 3: +, *Lysimachia nummularia* 18: r, *Lythrum virgatum* 11: +, *Persicaria amphibia* 10: +, *Phragmites australis* 14: 1, *Potentilla anserina* 16: r, *P. reptans* 4: +, *Rorippa austriaca* 17: r, *Salix caprea* 4: r, *Scrophularia nodosa* 2: +, *Stachys palustris* 17: +, *Vicia cracca* 18: +.

E<sub>0</sub>: *Eurhynchium speciosum* 4: +.

Table 9B.

E<sub>1</sub>: *Bidens frondosa* B, *Carex vesicaria* B, *Cirsium vulgare* B, *Deschampsia cespitosa* C, *Elytrigia repens* B, *Epilobium hirsutum* B, *Equisetum fluviatile* B, *Eupatorium cannabinum* C, *Galeopsis bifida* B, *Galium uliginosum* D, *Glyceria maxima* B, *Impatiens noli-tangere* B, *Juncus effusus* B, *Lythrum virgatum* B, *Mentha longifolia* B, *Persicaria amphibia* B, *Phragmites australis* B, *Potentilla anserina* C, *P. reptans* B, *Rorippa austriaca* A, *Salix caprea* B, *Scrophularia nodosa* B, *Vicia cracca* C.

E<sub>0</sub>: *Eurhynchium speciosum* B.

Table 10A.

E<sub>1</sub>: *Agrostis stolonifera* 4: +, *Aster novi-belgii* agg. 3: +, *Caltha palustris* 4: 1, *Carex vesicaria* 3: +, *Cirsium vulgare* 4: r, *Eleocharis palustris* 3: +, *Glyceria maxima* 1: 1, *Inula salicina* 2: +, *Jacea* sp. 3: r, *Lycopus europaeus* 4: +, *Persicaria amphibia* 2: 1, *Phragmites australis* 4: +, *Pseudolysimachion longifolium* 2: +, *Rumex crispus* 4: +, *Scutellaria hastifolia* 2: +, *Sium latifolium* 4: +, *Stellaria palustris* 2: +, *Tithymalus palustris* 4: +, *Veronica scutellata* 3: +.

Table 10B.

E<sub>1</sub>: *Aster novi-belgii* agg. D, *Carex acutiformis* A, *Cirsium vulgare* D, *Inula salicina* D, *Jacea* sp. D, *Lotus corniculatus* A, *Lycopus europaeus* D, *Orchis palustris* A, *Ranunculus acris* A, *Rumex crispus* D, *Scutellaria hastifolia* D, *Tithymalus palustris* D, *Veronica anagalloides* A.

Table 11A.

E<sub>1</sub>: *Alisma lanceolatum* 20: +, *A. plantago-aquatica* 26: +, *Atriplex prostrata* 8: r, *Calamagrostis epigeios*



13: 1, *Cardamine pratensis* 17: +, *Carex disticha* 18: +, *C. elata* 22: +, *C. hirta* 9: 1, *C. otrubae* 9: 1, *Cirsium palustre* 2: +, *Echinocystis lobata* 27: +, *Eleocharis palustris* 25: 1, *Ficaria bulbifera* 27: r, *Glyceria fluitans* 25: +, *Gratiola officinalis* 12: r, *Humulus lupulus* 2: r, *Lathyrus pratensis* 6: +, *Lychnis flos-cuculi* 9: +, *Mentha arvensis* 9: +, *M. longifolia* 1: 1, *Persicaria amphibia* 7: 1, *P. dubia* 13: r, *Phellandrium aquaticum* 20: +, *Phragmites australis* 17: r, *Poa pratensis* 13: +, *Potentilla anserina* 17: 1, *P. reptans* 17: +, *Pseudolysimachion longifolium* 23: r, *Ranunculus auricomus* s. lat. 1: +, *R. sceleratus* 26: +, *Rorippa sylvestris* 27: +, *Schoenoplectus lacustris* 24: +, *Scirpus sylvaticus* 2: +, *Stachys palustris* 20: +, *Stellaria graminea* 23: r, *Taraxacum palustre* 12: r, *Typha latifolia* 7: r, *Viola palustris* 2: 2b.

Table 11B.

E<sub>1</sub>: *Allium angulosum* C, *Althaea officinalis* A, *Angelica sylvestris* C, *Artemisia vulgaris* D, *Atriplex prostrata* A, *Bidens frondosa* A, *Bromus hordeaceus* F, *Calamagrostis epigejos* G, *Carex acutiformis* C, *C. canescens* D, *C. disticha* A, *C. elongata* D, *C. melanostachya* C, *C. otrubae* D, *C. ovalis* F, *C. panicea* F, *Cerastium holosteoides* F, *Cirsium palustre* D, *Cruciata glabra* F, *Echinocystis lobata* A, *Equisetum arvense* D, *E. pratense* G, *Festuca pratensis* C, *Filipendula vulgaris* D, *Glechoma hederacea* G, *Holcus lanatus* F, *Humulus lupulus* D, *Juncus atratus* C, *J. effusus* A, *J. inflexus* G, *Lathyrus pratensis* A, *Lotus tenuis* C, *Medicago lupulina* F, *Mentha longifolia* D, *Orchis palustris* C, *Pastinaca sativa* D, *Persicaria dubia* G, *P. hydropiper* A, *P. lapathifolia* D, *Prunella vulgaris* F, *Pseudolysimachion longifolium* A, *Ranunculus auricomus* s. lat. D, *R. sceleratus* A, *Rhinanthus minor* F, *Salix fragilis* A, *Schoenoplectus lacustris* A, *Setaria pumila* D, *Solanum dulcamara* A, *Sparganium erectum* C, *Stellaria graminea* A, *Tithymalus tommasinianus* D, *Trifolium repens* C, *Typha latifolia* A, *Valeriana dioica* F, *Veronica anagalloides* C, *V. chamaedrys* D, *Viola canina* D, *V. palustris* D.

E<sub>0</sub>: *Brachythecium salebrosum* E, *Calliargon stramineum* D, *Cladonia* sp. D, *Plagiomnium elatum* D.

Table 12A.

E<sub>1</sub>: *Alisma plantago-aquatica* 4: 1, *A. lanceolatum* 13: r, *Atriplex prostrata* 6: +, *Bidens tripartita* 5: +, *Butomus umbellatus* 1: r, *Caltha palustris* 13: +, *Calystegia sepium* 5: +, *Deschampsia cespitosa* 12: +, *Equisetum arvense* 10: +, *E. fluviatile* 6: +, *Festuca pratensis* 14: +, *Filipendula ulmaria* 12: +, *Glyceria fluitans* 9: +, *Juncus effusus* 12: +, *Lysimachia nummularia* 13: +, *Phellandrium aquaticum* 5: +, *Poa palustris* 14: +, *P. trivialis* 1: +, *Potentilla anserina* 5: +, *Rorippa austriaca* 9: r, *Rubus caesius* 10: +, *Scirpus sylvaticus* 13: +, *Solanum dulcamara* 4: +, *Typha angustifolia* 6: +, *T. latifolia* 7: 1.

Table 12B.

E<sub>1</sub>: *Acetosa pratensis* A, *Alisma lanceolatum* A, *Atriplex prostrata* D, *Bidens tripartita* C, *Butomus umbellatus* D, *Cardamine pratensis* A, *Carex acutiformis* C, *C. hirta* B, *C. melanostachya* B, *Cirsium arvense* B, *Deschampsia cespitosa* C, *Eleocharis palus-*

*tris* A, *Equisetum fluviatile* D, *Festuca pratensis* D, *Glyceria fluitans* C, *Juncus effusus* C, *Phellandrium aquaticum* C, *Poa trivialis* D, *Potentilla anserina* C, *Ranunculus acris* A, *R. auricomus* s. lat. A, *Rorippa amphibia* C, *R. austriaca* C, *Rubus caesius* C, *Scutellaria galericulata* A, *Sium latifolium* B, *Solanum dulcamara* D, *Stellaria graminea* C, *S. palustris* A, *Typha angustifolia* D, *T. latifolia* C, *Veronica scutellata* A, Table 13A.

E<sub>1</sub>: *Alisma lanceolatum* 10: +, *A. plantago-aquatica* 13: r, *Althaea officinalis* 7: +, *Batrachium* sp. 21: r, *Butomus umbellatus* 14: r, *Caltha palustris* 9: +, *Carex acutiformis* 9: 1, *Epilobium hirsutum* 1: +, *E. tetragonum* 8: +, *Equisetum arvense* 10: +, *E. fluviatile* 5: +, *E. palustre* 20: +, *Galium uliginosum* 9: +, *Juncus inflexus* 1: +, *Persicaria dubia* 3: +, *Pseudolysimachion longifolium* 15: r, *Rorippa sylvestris* 2: r, *Rumex crispus* 10: 1, *R. hydrolapathum* 1: +, *Salix purpurea* 26: +, *Scirpus sylvaticus* 7: +, *Sium latifolium* 7: +, *Thalictrum lucidum* 4: +, *Tithymalus palustris* 11: +.

E<sub>0</sub>: *Eurhynchium praelongum* 10: 1, *Riccia fluitans* 21: +.

Table 13B.

E<sub>1</sub>: *Alisma lanceolatum* B, *Althaea officinalis* D, *Batrachium* sp. F, *Bidens frondosa* C, *Butomus umbellatus* E, *Caltha palustris* B, *Carex acutiformis* B, *Cirsium canum* B, *Epilobium hirsutum* A, *E. tetragonum* D, *Equisetum arvense* B, *E. fluviatile* C, *Galium aparine* C, *G. uliginosum* B, *Juncus inflexus* A, *Mentha aquatica* C, *Persicaria dubia* A, *P. lapathifolia* E, *Pseudolysimachion longifolium* B, *Rumex crispus* B, *R. hydrolapathum* A, *R. maritimus* B, *Salix purpurea* G, *Scirpus sylvaticus* D, *Sium latifolium* D, *Thalictrum lucidum* A, *Tithymalus palustris* C, *Urtica dioica* B, *Vicia cracca* D.

E<sub>0</sub>: *Eurhynchium praelongum* B, *Riccia fluitans* F, *Ricciocarpos natans* F.

Table 14A.

E<sub>1</sub>: *Arctium* sp. 7: r, *Bidens frondosa* 5: +, *Cardamine pratensis* 6: +, *Cirsium arvense* 3: +, *C. vulgare* 7: +, *Dipsacus* sp. 7: +, *Eleocharis palustris* 6: +, *Elytrigia repens* 6: r, *Equisetum palustre* 6: r, *Festuca pratensis* 1: +, *Ficaria bulbifera* 2: +, *Glyceria maxima* 7: +, *Gratiola officinalis* 6: +, *Humulus lupulus* 3: r, *Juncus inflexus* 1: 1, *Lychnis flos-cuculi* 2: +, *Lysimachia nummularia* 2: +, *Myosoton aquaticum* 7: +, *Phellandrium aquaticum* 6: +, *Plantago major* 2: r, *Poa trivialis* 1: +, *Potentilla anserina* 6: 1, *P. reptans* 6: +, *Ranunculus auricomus* s. lat. 2: +, *Rumex crispus* 6: +, *Salix purpurea* 3: r, *Sanguisorba officinalis* 3: 1, *Scutellaria galericulata* 2: +, *Urtica dioica* 7: +, *Veronica scutellata* 4: +, *Vicia cracca* 5: r.

E<sub>0</sub>: *Drepanocladus aduncus* 1: 1.

Table 14B.

E<sub>1</sub>: *Anthoxanthum odoratum* F, *Arctium* sp. A, *Barbarea vulgaris* D, *Batrachium trichophyllum* B, *Bidens frondosa* A, *Bromus hordeaceus* F, *Carduus crispus* F, *Carex buekii* C, *C. canescens* D, *Cerastium holosteoides* D, *Cirsium arvense* D, *C. vulgare* A, *Convolvulus arvensis* E, *Cynosurus cristatus* F, *Dipsacus*

sp. A, *Elytrigia repens* C, *Ficaria verna* agg. C, *Glyceria notata* C, *Humulus lupulus* D, *Juncus effusus* C, *J. inflexus* E, *Myosoton aquaticum* A, *Orchis palustris* B, *Prunella vulgaris* D, *Ranunculus auricomus* agg. C, *R. sardous* B, *R. strigosus* D, *Salix purpurea* D, *Scutellaria galericulata* C, *Stellaria graminea* D, *Taraxacum palustre* E, *Thalictrum lucidum* B, *Trifolium repens* D, *Typha latifolia* A, *Urtica dioica* A,

## Appendix 2: Localities of relevés

Note: For the published data, only the country, orographical unit, locality and the cited paper where the relevé was published are presented. For other relevés, the header data are listed in the following order: country (SK – Slovakia, HU – Hungary); orographical unit (CV – Cerová vrchovina Mts, IK – Ipeľská kotlina basin, IP – Ipeľská pahorkatina Mts, KP – Krupinská planina Mts, LK – Lučenská kotlina basin, O – Ostrôžky Mts, RV – Revúcka vrchovina Mts, RK – Rimavská kotlina basin; VV – Veporské vrchy Mts.); locality and habitat; flow classes (S – stagnant, F – flow, – – without water); depth of water (cm); altitude (m); aspect (S – south, E – east, N – north; W – west); slope (°); relevé area (m<sup>2</sup>); total cover (%); E<sub>1</sub> cover (%); E<sub>0</sub> cover (%); mean height of stand (cm); proportion of dead biomass (%); author(s) of relevé (PB – P. BALÁZS, AC – A. CVACHOVÁ, RH – R. HRIVNÁK, HO – H. OŤAHELOVÁ, MV – M. VALACHOVIČ); date.

### Table 9A.

1. SK; LK; Veľká nad Ipľom village, W margin of village, alluvium of Ipeľ river; –; 0; 165; 0; 0; 25; 100; 100; 0; 100–120; 40–50; RH; 4.5.2000.
2. SK; LK; Lučenec town, NW bank of a water reservoir Ladovo; –; 0; 203; 0; 0; 25; 100; 100; 0; 80–100; 0; RH; 9.6.1998.
3. SK; IK; Slovenské Kľačany village, NE, alluvium of Tisovník brook near road Veľký Krtíš town – Lučenec town; S; 0–3; 194; 0; 0; 25; 100; 100; 0; 120–140; 20–30; RH; 19.7.1999.
4. SK; LK; Poltár town, SE margin of the town, terrain depression on the alluvium of Poltárika brook near railway; S; 1–7; 231; 0; 0; 25; 100; 100; 1; 100–110; 0; RH; 22.7.1999.
5. SK; RV; Ružiná village, S, NR Ružinské jelšiny; S; 1–3; 235; 0; 0; 25; 100; 100; 0; 140–160; 0; RH; 3.8.1999.
6. SK; IK; Ipeľské Predmostie village, W margin of village, near field-road; –; 0; 129; SW; 1; 25; 100; 100; 0; 105–115; 60; AC, RH, HO; 24.6.1997.
7. SK; LK; Lučenec town, under a road viaduct; S; 1–8; 192; 0; 0; 25; 80; 80; 0; 75–90; 20–30; RH; 2.6.1998.
8. SK; LK; Hrabovo village, NR Pod Štavicou, ESE margin; –; 0; 195; 0; 0; 25; 90; 90; 0; 90–105; 25–30; RH; 8.6.1998.
9. SK; LK; *ibid.*, Ipeľ river oxbow near road to spring of mineral water; –; 0; 203; WSW; 2; 24; 100; 100; 0; 100–115; 40; RH; 8.6.1998.
10. SK; LK; Veľké Dravce village, water reservoir, tributary area; –; 0; 197; 0; 0; 25; 100; 100; 0; 90–100; 0; RH, HO, MV; 30.7.1998.

11. SK; LK; Mikušovce village, near an irrigation station; –; 0; 180; 0; 0; 100; 100; 0; 95–110; 30–40; RH; 5.8.1998.
12. SK; LK/RK; Ožďany village, littoral of a water reservoir; S; 0–2; 201; 0; 0; 25; 100; 100; 0; 90–110; 50; RH; 8.7.1999.
13. SK; CV; Šíd village, WSW, alluvium of Čamovský potok brook; –; 0; 201; 0; 0; 25; 100; 100; 0; 70–90; 15; RH; 13.8.1999.
14. HU; –; rhalom village, NW, alluvium of Ipeľ river; –; 0; 142; 0; 0; 17,5; 100; 100; 0; 100–130; 60; PB, RH; 13.6.2000.
15. SK; CV; Šíd village, WSW, alluvium of Čamovský potok brook; –; 0; 201; 0; 0; 25; 100; 100; 0; 140–150; 30–40; RH; 13.8.1999.
16. SK; LK; Trenč village, W, near road Lučenec – Bušince; –; 0; 165; 0; 0; 25; 100; 100; 0; 85–100; 0; RH; 25.5.1999.
17. SK; IK; Ipeľské Predmostie village, E, alluvium of Ipeľ river; –; 0; 130; 0; 0; 25; 100; 100; 0; 85–90; 0; AC, RH, HO; 24.6.1997.
18. SK; RV; Ružiná village, S, near NR Ružinské jelšiny; S; 0–5; 235; 0; 0; 25; 100; 100; 0; 90–120; 0; RH; 3.8.1999.

### Table 10A.

1. SK; IK; Ipeľské Predmostie village, E margin of village, terrain depression; –; 0; 130; 0; 0; 14; 85; 85; 0; 75–85; 25; RH; 23.6.1997.
2. SK; IK; Tešmak village, “Surdocké lúky” meadows, alluvium of Ipeľ river; –; 0; 127; 0; 0; 25; 100; 100; 0; 40–50; 30; RH; 26.6.1997.
3. SK; IK; *ibid.*, E, alluvium of Ipeľ river; –; 0; 127; 0; 0; 17,5; 90; 90; 0; 55–60; 0; AC, RH; 26.6.1997.
4. SK; IK; Kiarov village, “Malská mláka” near NR Kiarovský močiar; –; 0; 145; 0; 0; 20; 95; 95; 20 (indeterminate); 90–100; 0; RH; 12.6.2002.

### Table 11A.

1. SK; O; Ábelová village, ESE, littoral of a fishpond; S; 0–2; 580; 0; 0; 24; 85; 85; 0; 100–110; 0; RH; 28.5.1999.
2. SK; VV; Horná Bzová settlement, NE, alluvium of Krivánsky potok brook; S; 1–3; 654; 0; 0; 25; 100; 100; 0; 80–100; 25; RH; 27.6.1999.
3. SK; LK; Hrabovo village, S, alluvium of Ipeľ river; –; 0; 196; 0; 0; 25; 95; 95; 0; –; 0; AC, RH; 30.6.1995.
4. SK; LK; Mikušovce village, terrain depression between Lučenec village and building of meat-packing; –; 0; 186; 0; 0; 14; 95; 95; 0; 100–105; 70; RH; 9.6.1997.
5. SK; LK; Kalinovo village, NR Hrabovo, SW margin; –; 0; 198; 0; 0; 25; 100; 100; 0; 85–95; 0; RH; 15.7.1997.
6. SK; LK; Lučenec town, NW from railway station, terrain depression; S; 1–7; 184; 0; 0; 25; 100; 100; 0; 85–95; 0; RH; 2.6.1998.
7. SK; LK; *ibid.*; S; 10–20; 184; 0; 0; 25; 90; 90; 0; 90–105; 25; RH; 2.6.1998.
8. SK; LK; Lučenec town, under a road viaduct; S; 2–15; 192; 0; 0; 25; 95; 95; 0; 110–120; 0; RH; 2.6.1998.
9. SK; LK; Trenč village, Sára settlement, alluvium of Mašková brook; S; 0–3; 176; 0; 0; 25; 100; 100; 0; 130–150; 0; RH; 30.7.1999.

10. SK; RV; Ružiná village, S, near NR Ružinské jeľsiny; S; 1–10; 235; 0; 0; 25; 100; 100; 0; 110–130; 0; RH; 3.8.1999.
11. SK; LK; Trenč village, W, near road Lučenec – Bušince; –; 0; 165; 0; 0; 25; 100; 100; 0; 130–150; 0; RH; 25.5.1999.
12. SK; LK; Vidiná village, W, terrain depression near railway; S; 1–2; 199; 0; 0; 25; 100; 100; 0; 95–110; 0; RH; 21.6.1999.
13. SK; O; Praha village, near agricultural co-operative; –; 0; 486; 0; 0; 10; 100; 100; 0; 100–120; 0; RH; 30.6.1999.
14. SK; IK; Muľa village, near outfall Tisovník brook to Stará rieka brook, terrain depression; –; 0; 160; 0; 0; 21; 100; 100; 0; 120–140; 0; RH; 7.7.1999.
15. SK; LK; Hrabovo village, Ipeľ river oxbow near road to spring of mineral water; –; 0; 203; 0; 0; 12; 100; 100; 0; 70–85; 30; RH; 8.6.1998.
16. SK; LK; Trenč village, Osušie settlement, SE, alluvium of Dálovský potok brook; –; 0; 190; 0; 0; 25; 90; 90; 0; 110; 0; RH; 4.5.2000.
17. SK; IK; Ipeľské Predmostie village, NR Ipeľské hony, SE margin of marsh; –; 0; 130; S; 1–2; 16; 80; 80; 0; 70–75; 25; AC, RH; 29.5.1997.
18. SK; IK; Ipeľské Predmostie village, E, alluvium of Ipeľ river; –; 0; 131; S; 1–2; 25; 95; 95; 0; 85–90; 0; AC, RH, HO; 24.6.1997.
19. SK; IK; *ibid.*, W, “Cúdenica”, terrain depression on the alluvium of Ipeľ river; –; 0; 128; 0; 0; 25; 100; 100; 0; 95–100; 0; RH, HO; 24.6.1997.
20. SK; IK; *ibid.*, E, “Ryžoviská”, canal; –; 0; 129; WSW; 4–5; 24; 80; 80; 0; 100–110; 5; AC, RH; 25.6.1997.
21. SK; LK; Trenč village, W, alluvium of Ipeľ river; S; 0–3; 163; 0; 0; 25; 70; 70; 0; 90–100; 30–40; RH; 25.5.1999.
22. SK; LK; Malé Dálovce settlement, left bank of Mašková brook; F; 0–3; 164; 0; 0; 25; 100; 100; 0; 110–115; 0; RH; 26.5.1999.
23. SK; IK; Dolná Strehová village, Hámor settlement, alluvium of Ipeľ river; –; 0; 160; 0; 0; 25; 100; 100; 0; 140–160; 0; RH; 1.6.1999.
24. HU; –; Litke village, alluvium of Ipeľ river near railway station; –; 0; 161; 0; 0; 25; 100; 100; 0; 115–130; 60; RH; 14.6.2000.
25. SK; LK; Kalinovo village, NE, alluvium of Ipeľ river, right bank; –; 0; 208; 0; 0; 25; 100; 100; 0; 80–90; 0; RH; 23.5.2001.
26. SK; LK; Lučenec village, NW bank of a water reservoir Ľadovo; S; 0–3; 203; 0; 0; 21; 100; 100; 0; 90–110; 0; RH; 9.6.1998.
27. SK; LK; Malé Dálovce settlement, bank of Mašková brook; –; 0; 164; 0; 0; 15; 100; 100; 0; 130–140; 0; RH; 26.5.1999.
- Table 12A.
1. SK; LK; Malé Dálovce settlement, Mašková brook; F; 0–2; 164; W; 3; 9; 100; 100; 0; 70–80; 0; RH; 26.5.1999.
2. SK; LK; Trenč village, Rároš settlement, alluvium of Ipeľ river; –; 0; 163; 0; 0; 8; 100; 100; 0; 100; 20; RH; 25.5.1999.
3. SK; LK; *ibid.*, W, alluvium of Ipeľ river; –; 0; 164; 0; 0; 9; 100; 100; 0; 100–110; 40; RH; 25.5.1999.
4. SK; LK; *ibid.*, Osušie settlement, littoral of a fishpond; S; 1–3; 194; 0; 0; 15; 70; 70; 0; 70–95; 0; RH; 4.5.2000.
5. SK; IK; Ipeľské Predmostie village, NR Ipeľské hony, WSW margin; –; 0; 130; 0; 0; 18; 85; 85; 0; 65–70; 30; AC, RH, HO; 24.6.1997.
6. SK; IK; *ibid.*, N margin; –; 0; 130; 0; 0; 16; 100; 100; 0; RH; 23.6.1997.
7. SK; LK; Lučenec town, alluvium of Krivánsky potok brook near railway station; S; 15–25; 183; 0; 0; 9; 85; 85; 0; 55–75; 0; RH; 2.6.1998.
8. SK; LK; Malá Dálovce settlement, alluvium between Ipeľ river and Mašková brook; S; 0–5; 163; 0; 0; 25; 75; 75; 0; 110–120; 0; RH; 26.5.1999.
9. SK; IK; Dolná Strehová village, Hámor settlement, alluvium of Ipeľ river; –; 0; 160; 0; 0; 25; 95; 95; 0; 80–95; 0; RH; 1.6.1999.
10. SK; LK; Vidiná village, W, terrain depression near railway; S; 2–7; 199; 0; 0; 16; 98; 98; 0; RH; 21.6.1999.
11. HU; –; Litke village, alluvium of Ipeľ river near railway station; –; 0; 161; 0; 0; 10; 100; 100; 0; 70–80; 40; RH; 14.6.2000.
12. SK; LK; Kalinovo village, NW, alluvium of Ipeľ river, terrain depression; –; 0; 206; 0; 0; 21; 100; 100; 0; 60–80; 0; RH; 17.5.2001.
13. SK; LK; Breznička village, S, alluvium of Ipeľ river, terrain depression; –; 0; 209; 0; 0; 21; 100; 100; 0; 70–75; 0; RH; 17.5.2001.
14. SK; LK; Hrabovo village, Ipeľ river oxbow; –; 0; 200; 0; 0; 10; 100; 100; 0; 60–70; 0; RH; 8.6.1998.
- Table 13A.
1. SK; LK; Lučenec town, E, near a brick-kiln, alluvium of Krivánsky potok brook; S; 0–2; 177; 0; 0; 25; 95; 95; 0; 95–110 30; RH; 2.6.1999.
2. SK; RV; Divín village, littoral of a water reservoir Ružiná; –; 0; 252; 0; 0; 25; 95; 95; 0; 230–240; 0; RH; 12.9.1998.
3. SK; LK; Lučenec town, E, alluvium of Krivánsky potok brook; –; 0; 179; 0; 0; 15; 80; 80; 0; 75–85; 0; RH; 2.6.1998.
4. SK; LK; *ibid.*; S; 0–1; 179; 0; 0; 25; 75; 75; 0; 45–60; 40; RH; 2.6.1998.
5. SK; IK; Ipeľské Predmostie village, “Ryžoviská”; –; 0; 129; NW; 1–2; 25; 85; 85; 0; 90–95; 75; AC, RH; 25.6.1997.
6. SK; LK; Lučenec town, alluvium of Krivánsky potok brook near railway station; S; 10–20; 183; 0; 0; 25; 80; 80; 0; 105–125; 35–45; RH; 2.6.1998.
7. SK; IK; Ipeľské Predmostie village, W, terrain depression near road; –; 0; 129; 0; 0; 25; 100; 100; 0; 90–95; 60; AC, RH, HO; 24.6.1997.
8. SK; LK; Veľké Dravce, water reservoir, tributary area; –; 0; 197; 0; 0; 25; 100; 100; 0; 100–110; 0; RH, HO, MV; 30.7.1998.
9. SK; LK; Hrabovo village, NR Pod Šťavicou; –; 0; 195; 0; 0; 21; 80; 80; 0; 75–85; 40; RH; 8.6.1998.
10. SK; LK; Boľkovská Osada village, W, near road Boľkovce – Lučenec; S; 0–3; 207; 0; 0; 12; 95; 95; 2; 70–100; 0; RH; 7.5.1998.

11. SK; IK; Tešmak village, "Surdocké lúky" meadows; -; 0; 128; ESE; 1-2; 25; 95; 95; 0; 80-90; 60; RH; 26.6.1997.

12. SK; LK; Malé Dálovce settlement, between settlement and Mašková brook; S; 10-20; 163; 0; 0; 25; 85; 85; 0; 90-100; 0; RH; 3.6.1998.

13. SK; LK; Luboreč village, littoral of a water reservoir, NW bank; S; 0-10; 232; E; 1; 24; 90; 90; 0; 80-100; 0; RH; 27.7.1998.

14. SK; LK; Malé Dálovce settlement, Mašková brook; F; 1-15; 164; 0; 0; 25; 90; 90; 0; 90-100; 0; RH; 26.5.1999.

15. SK; LK; *ibid.*, SES, between settlement and Mašková brook; -; 0; 165; 0; 0; 25; 100; 100; 0; 90-110; 40; RH; 26.5.1999.

16. SK; IK; Dolná Strehová village, Hámor settlement, near high-voltage transmission line; -; 0; 160; 0; 0; 25; 95; 95; 0; 100-130; 30-40; RH; 1.6.1999.

17. SK; IK; *ibid.*, E, near road to Trenč village, terrain depression; S; 0-8; 163; 0; 0; 14; 100; 100; 0; 130-140; 0; RH; 7.7.1999.

18. SK; IK/RK; Ožďany village, water reservoir; S; 2-5; 201; 0; 0; 25; 100; 100; 0; 140-150; 40-50; RH; 8.7.1999.

19. SK; LK; Tomášovce village, SE, near railway; S; 10-15; 199; 0; 0; 25; 90; 90; 0; 140-160; 0; RH; 21.6.1999.

20. SK; LK; Mikušovce village, terrain depression, between Lučenec village and building of meat-packing; -; 0; 186; 0; 0; 16; 85; 85; 0; 90; 80; RH; 9.6.1997.

21. SK; IK; Ipeľské Predmostie village, "Cúdenica"; -; 0; 128; SSE; 20; 15; 100; 100; 0; 115-120; 0; RH, HO; 24.6.1997.

22. SK; IK; *ibid.*, NR Ipeľské hony; -; 0; 130; 0; 0; 21; 100; 100; 0; 95-100; 5-10; RH; 23.6.1997.

23. SK; IK; Tešmak village, NE margin of village; -; 0; 128; 0; 0; 25; 100; 100; 0; 115-125; 70; AC, RH; 26.6.1997.

24. SK; LK; Rapovce village, terrain depression between railway and road; S; 0-16; 167; 0; 0; 12; 75; 75; 0; -; 0; RH; 20.5.1997.

25. SK; LK; Hrabovo village, Ipeľ river oxbow near road to spring of mineral water; S; 5-15; 203; 0; 0; 15; 90; 90; 0; 110-130; 0; RH; 8.6.1997.

26. SK; IK; Slovenské Kľačany village, "Jazero"; S; 10-20; 242; 0; 0; 17,5; 98; 98; 0; 130-150; 0; RH; 19.7.1999.

27. SK; LK; Trenč village, S margin of village; S; 0-2; 163; 0; 0; 25; 80; 80; 0; 140-160; 0; RH; 25.5.1999.

#### Table 14A.

1. SK; LK; Lučenec town, Lučenec town, E, near a brick-kiln, alluvium of Krivánsky potok brook; -; 0; 177; 0; 0; 21; 90; 90; 2; 50-60; 20-25; RH; 2.6.1998.

2. SK; LK; Trenč village, part Osušie, SE, alluvium of Dálovský potok brook; -; 0; 190; 0; 0; 25; 75; 75; 0; 60-80; 0; RH; 4.5.2000.

3. SK; LK; Lučenec town, under road viaduct; S; 2-5; 192; 0; 0; 9; 100; 100; 0; 50-70; 0; RH; 2.6.1998.

4. SK; IK; Muľa village, NE, alluvium of Ipeľ river; S; 0-5; 160; 0; 0; 24; 100; 100; 0; 90-110; 0; RH; 7.7.1999.

5. SK; IK; Ipeľské Predmostie, "Ryžovisko", alluvium of Ipeľ river; -; 0; 129; 0; 0; 14; 80; 80; 0; 50-55; 0; AC, RH; 25.6.1997.

6. SK; LK; Trenč village, WSW, alluvium of Ipeľ river, terrain depression; -; 0; 161; 0; 0; 25; 80; 80; 0; 70-90; 0; RH; 25.5.1999.

7. SK; LK; Malé Dálovce settlement, near confluence of Ipeľ river and Mašková brook, alluvium; -; 0; 164; 0; 0; 25; 95; 95; 0; 70-90; 35; RH; 26.5.1999.

### Appendix 3: Resources of relevés in synoptic table

#### Table 9B.

A - [Tab. 9A: rels 1, 17]; B - [Tab. 9A: rels 2-12, 14-15]; C - [Tab. 9A: rels 13, 16, 18]; D - [SZÉNASIOVÁ (1975: Tab. 15, rels 2-6)]; E - [SZÉNASIOVÁ (1975: Tab. 15, rels 1, 7)].

#### Table 10B.

A - [KOVÁCS & MÁTHÉ (1967: Tab. 9, rels 1-2)]; B - [SVOBODOVÁ & ŘEHOREK (1972: Tab. 4, rels 4-6)]; C - [SVOBODOVÁ & ŘEHOREK (1972: Tab. 4, rels 1-3, 7-10)]; D - [Tab. 10A, rels 1-4].

#### Table 11B.

A - [Tab. 11A: rels 4-8, 10-12, 14-15, 17-24, 26-27]; SVOBODOVÁ & ŘEHOREK (1972: Tab. 5, rel. 1); HRIVNÁK (1999: Tab. 2, rels 8-9); HRIVNÁK et al. (2001: Tab. 3, rels 33-34); B - [KOVÁCS & MÁTHÉ (1967: Tab. 8, rel. 4)]; SVOBODOVÁ & ŘEHOREK (l.c.: Tab. 5, rels 2-10, 12-13, 20)]; C - [KOVÁCS & MÁTHÉ (l.c.: Tab. 8, rels 1-3, 5)]; SVOBODOVÁ & ŘEHOREK (l.c.: Tab. 5, rels 11, 14-19)]; D - [Tab. 11A, rels 1-2, 9, 16, 25; SZÉNASIOVÁ (1975: Tab. 20, rels 1-5, 11-14, 21)]; E - [SZÉNASIOVÁ (l.c.: Tab. 20, rels 16-20)]; F - [MIADOK (1973: Tab. 2, rels 1-2, 7, 9-10)]; SZÉNASIOVÁ (l.c.: Tab. 20, rels 6-10, 15)]; G - [Tab. 11A, rels 3, 13; MIADOK (l.c.: Tab. 2, rels 3-6, 8)].

#### Table 12B.

A - [Tab. 12A: rel. 13; SZÉNASIOVÁ (1975: Tab. 10, rels 1-7, 11)]; B - [SZÉNASIOVÁ (1975: Tab. 10, rels 8-10, 12-13)]; HRIVNÁK (1999: Tab. 2, rel. 10)]; C - [Tab. 12A: rels 5, 7-12; HRIVNÁK et al. (2001: Tab. 3, rel. 43)]; D - [Tab. 12A: rels 1-4, 6, 14].

#### Table 13B.

A - [Tab. 13A: rels 1-4]; B - [Tab. 13A: rels 9-10, 12, 15; HRIVNÁK (1999: Tab. 2, rel. 12)]; C - [Tab. 13A: rels 5, 11, 13, 16-19; HRIVNÁK (1998: Tab. 2, rel. 7); HRIVNÁK (1999: Tab. 2, rel. 11)]; D - [Tab. 13A, rels 6-8; HRIVNÁK et al. (2001: Tab. 3, rel. 39)]; E - [Tab. 13A, rels 14, 25, 27; HRIVNÁK et al. (2001: Tab. 3, rels 40-41)]; F - [Tab. 13A, 21-24]; G - [Tab. 13A, rel. 26; HRIVNÁK et al. (2001: Tab. 3, rel. 41)].

#### Table 14B.

A - [Tab. 14A, rels 5, 7; HRIVNÁK (1999: Tab. 2, rels 13-14)]; B - [KOVÁCS & MÁTHÉ (1967: Tab. 10, rel. 1)]; SVOBODOVÁ & ŘEHOREK (1972: Tab. 6, rels 1-11)]; C - [Tab. 14A, rels 2, 4, 6; KOVÁCS & MÁTHÉ (1967: Tab. 10, rel. 2)]; SVOBODOVÁ & ŘEHOREK (1972: Tab. 6, rels 12-20)]; D - [Tab. 14A, rel. 3; MIADOK (1973: Tab. 4, rel. 5)]; SZÉNASIOVÁ (1975: Tab. 25, rels 1-7, 9-10)]; E - [Tab. 14A, rel. 1; MIADOK (1973: Tab. 4, rels 1-3)]; F - [MIADOK (1973: Tab. 4, rel. 4)]; SZÉNASIOVÁ (1975: Tab. 25, rels 8, 11)].