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The plant communities of *Phragmitetalia* in the catchment area of the Ipeľ river (Slovakia and Hungary) 1. Reed wetlands (*Phragmition communis*)

Richard Hrivnák

Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 14, SK–84523 Bratislava, Slovakia; tel.: ++421-45-5320313, e-mail: richard.hrivnak@savba.sk

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In the catchment area of the Ipeľ river, the plant communities of reed wetlands were studied in 1997–2000. Ten vegetation units were documented by 213 unpublished and published phytosociological relevés. Floristical and ecological variants, synecological and chorological characteristics are presented for each detected vegetation unit, as well as a brief chorological information of studied vegetation units in Central Europe (mainly Slovakia and Hungary).

Key words: *Phragmitetalia*, reed wetlands, plant communities, phytosociology, Ipeľ river, Slovakia, Hungary.

Introduction

In the catchment area of the Ipeľ river, wetlands belong to endangered types of biotopes, having been changed by human activities since the second half of the last century. A lot of wetlands were destroyed; some of them were drained and used as agricultural land. Nowadays, there are only fragments of wetlands in the catchment area of the Ipeľ river. The largest complex of marshes and wet meadows between Ipeľské Predmostie and Tešmak villages called "Poiplie" in Slovakia was arranged to Ramsar convention areas in 1998. In Hungary, a part of the study area was declared the National Park Duna-Ipoly, and another part (Nógrádi region) is planned to be declared the Protected Landscape Area Ipoly.

In the study area, the reed and tall-sedge vegetation are the most frequent vegetation types within wetlands.

The aims of this study are:

1) to document the floristical and ecological variation, as well as to characterize detected plant communities of reed wetlands,

2) to complete and compare all the phytosociological, ecological and chorological information on reed wetlands in this area.

In the catchment area of the Ipeľ river, the vegetation of reed or tall-sedge wetlands was studied by just a few authors. The phytosociological relevés were published by Kovács & Máthé (1967), Neuhäuslová-Novotná (1968), Svobodová & Řehořek (1972), Miadok (1973), Szénasiová (1975, 1977), Hrivnák (1998a,b; 1999a), Hrivnák et al. (2001) from the territory of Slovakia, and Máthé (1956), Kovács (1957), Kovács & Máthé (l.c.), Hrivnák et al. (l.c.) from Hungary. David (1987, 1997), David et al. (1995), Hrivnák (1999b) Hrivnák et al. (1997) and Oťaheľová et al. (1998) mentioned the occurrence of the vegetation of the order *Phragmitetalia*, but without any phytosociological relevés. Some ecological characteristics of this vegetation were given by Cigánková & Krajči (1967);

Kovács (1968); Minár & Michlián (1968) and Svobodová & Řehořek (l.c.).

Material and methods

Characteristics of the studied site
The catchment area of the Ipeľ river is located in the southern part of Slovakia and northern part of Central Hungary (from 18°42′02″ to 19°56′15″ E and 47°49′12″ to 48°35′50″ N; see Fig. 1). The maximum altitude is 1058 m a.s.l. (spring area near the Látky village) and minimum 102 m a.s.l. (confluence of the Ipeľ and Danube rivers). The total catchment area of the Ipeľ river is 5151.044 km^2, with a larger part on the territory of Slovakia (cf. Fekete, 1972).

The climate is mostly warm to moderately warm, but cold in the spring area (Konček, 1980). The average annual precipitation attains 550–700 mm, but in the mountains no less than 700–1 000 mm (Šamaj, 1980).

The larger part (lowlands and basins) of the studied area is characterized by the Pannonian xerothermic flora (district *Matricum*), the mountains by the Carpathian flora (district *Praecarpaticum* within *Carpaticum occidentale*; cf. Futák, 1966; Molnár, 1999).

Phytosociological studies (methods of data recording, processing and evaluation)
The phytosociological relevés were made according to the Zürich-Montpellier approach using the adapted Braun-Blanquet's scale (Barkman et al., 1964). The data were collected in 1995–2002 by the author and colleagues, P. Balázs, A. Cvachová, H. Oťaheľová and M. Valachovič. All the phytosociological relevés were stored using the TURBOVEG database software (Hennekens, 1996a), the phytosociological tables were processed by MEGATAB (Hennekens, 1996b) and EXCEL software. The divisive polythetic methods (program TWINSPAN) were used for the classification of phytosociological data (Hill, 1979).

The unpublished phytosociological relevés from the catchment area of the Ipeľ river are presented in the tables, marked as type A. The synoptic tables (marked as type B), where the floristical and ecological variants are presented, comprise all the published and unpublished data from the studied area. For comparison, abbreviated synoptic tables from the review of Vegetation of Slovakia (Oťaheľová, 2001) are presented as well.

In the text and the tables, the following abbreviations are used: BI – *Bidentetea tripartiti* R. Tx. et al. in R. Tx. ex von Rochow 1951, Ca – constancy, Cb – constancy according to Oťaheľová (2001), cf. – confer, rel.(s) – relevé (s), Co – *Convolvuletalia sepium* R. Tx. 1950, E_0 – moss layer, GU – *Galio-Urticetea* Passarge ex Kopecký 1969, LE – *Lemnetea* de Bolós et Masclans 1955, MA – *Molinio-Arrhenatheretea* R. Tx. 1937 em. R. Tx. 1970, O – others, PM – *Phragmito-Magnocaricetea*, PO – *Potametea* R. Tx. et Preising 1942, the rates of cover [A – 2a (5–15%), B – 2b (15.1–25%) and M – 2m (low abundance and cover 5%)], * – included in syntaxonomical unit.

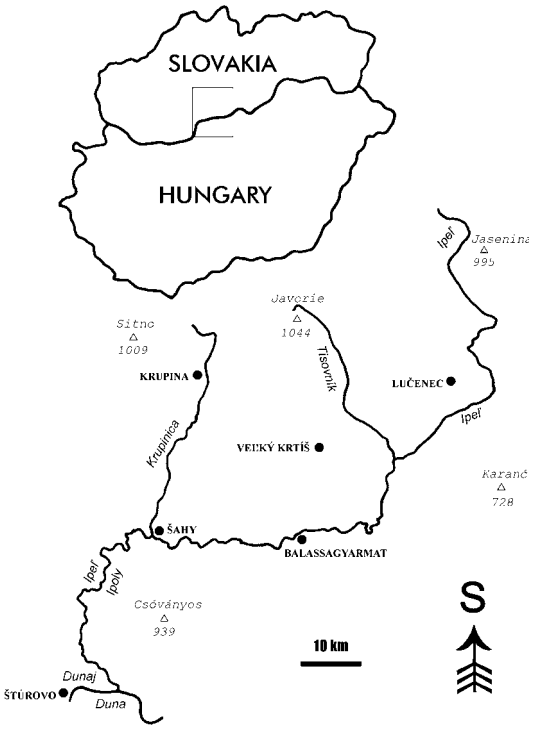

Fig. 1. Map of the studied area.

Nomenclature
The names of the vascular and non-vascular plants follow Marhold & Hindák (1998) and the names of the marsh plant communities (class *Phragmito-Magnocaricetea*) follow Oťaheľová et al. (2001). The other names of syntaxa with the name of author and the year of the first valid description are mentioned at least once. The threatened and rare marsh plant communities of Slovakia and Hungary are presented according to Borhidi & Sánta (1999) and Oťaheľová (2001).

Results and discussion

Survey and description of vegetation units

Phragmito-Magnocaricetea Klika in Klika et Novák 1941
Phragmitetalia Koch 1926
Phragmition communis Koch 1926

1. *Phragmitetum vulgaris* von Soó 1927 (Tabs 1A, B)

The stands of *Phragmitetum vulgaris* grow in stagnating or slowly flowing water of the littoral of river oxbows, gravel ditches or artificial water reservoirs, in terrain depressions or canals, which

Table 1A. *Phragmitetum vulgaris*

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Number of species	2	4	6	9	4	9	10	4	5	5	6	19	5	7	8	3	2
Dominant species																	
Phragmites australis	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Phragmito-Magnocaricetea																	
Carex acuta	1	1	.	A	.	.	.	.	.	.	.	.	.	.	.	.	.
Scutellaria galericulata	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.
Lythrum salicaria	.	.	+	.	r	+	+	.	.	.	.	.	.	.	.	.	.
Glyceria maxima	.	.	A	.	.	.	.	.	.	.	+	+	.	.	.	.	.
Typha latifolia	.	.	.	.	.	.	.	.	.	.	+	.	+	+	+	.	.
Phellandrium aquaticum	.	.	.	.	.	.	.	.	.	.	.	1	.	r	.	.	.
Lycopus europaeus	.	.	.	.	.	.	.	.	.	.	.	+	.	.	r	.	.
Phalaroides arundinacea	.	.	.	.	.	.	.	.	.	.	.	+	r	.	r	.	.
Galio-Urticetea																	
Galium rivale	.	.	B	.	.	.	.	.	.	+	.	.	.	.	.	.	.
Calystegia sepium	.	.	.	+	.	3	A	1	3	1	B	A	.	.	.	.	.
Urtica dioica	.	.	.	+	r	A	B	A	A	A	1	A	+	1	.	.	.
Rubus caesius	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.
Echinocystis lobata	.	.	.	.	.	+	+	.	.	.	.	.	.	+	.	.	.
Solanum dulcamara	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.
Humulus lupulus	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	+	.
Molinio-Arrhenatheretea																	
Caltha palustris	.	.	.	r	.	.	.	.	.	.	.	+	.	.	.	.	.
Symphytum officinale	.	.	.	+	.	+	.	.	.	+	.	+	.	.	.	.	.
Poa trivialis	.	.	.	.	.	.	+	.	.	.	.	+	.	.	A	.	.
Agrostis stolonifera	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.
Bidentetea tripartiti																	
Bidens frondosa	.	.	.	.	.	.	+	.	.	.	.	.	.	.	A	.	.

are periodically drying. The bottom is formed by silt, somewhere by gravel with a thick layer of silt or organic materials. Biotopes are eutrophic.

Phragmites australis forms homogenous stands, poor in species, on average 200–250 cm tall. In addition to the dominating one, only two species are present at a higher frequency (*Calystegia sepium* and *Urtica dioica*). These species have the highest expansion in the second half of summer, when the water level sinks below the soil surface and the nitrification starts. Among the marsh plants occurring in this community, *Carex acuta*, *Lycopus europaeus*, *Lythrum salicaria* and *Phalaroides arundinacea* occur at a higher frequency. The variation of floristic composition and ecological conditions is presented in the Table 1B. Nine floristical and ecological variants are recognised:

– the variant with the combinations of marsh and wet-meadow plants, weeds and herbaceous lianas (Tab. 1B, column A),

– the variant with a higher frequency and cover of *Calystegia sepium* and *Urtica dioica*, which was detected on strongly eutrophic biotopes (Tab. 1B, column B),

– the variant of strongly eutrophic biotopes with a fluctuating water level, which is characterized by *Agrostis stolonifera*, *Atriplex prostrata*, *Calystegia sepium*, *Humulus lupulus*, *Phalaroides arundinacea* and *Urtica dioica* (Tab. 1B, column C),

– the variant with the presence of typical marsh plants (Tab. 1B, column D),

– the variant with stands growing on a deeper terrain depression, drying for a short time in the late summer, moderately salted (different species are *Tithymalus palustris* and *Potentilla anserina*; Tab. 1B, column E),

– the variant with the presence of species of wet meadows and the typical marsh plants and tall-sedges (Tab. 1B, column F),

– the variants of long overflowed biotopes, with the presence of aquatic macrophytes and marsh plants (Tab. 1B, variants G–H); the variant marked as H is differentiated by *Carex pseudocyperus*, *Hottonia palustris* and *Sparganium erectum*.

In the column I, a monodominant stand documented by one phytosociological relevé is presented.

Table 1B *Phragmitetum vulgaris* – Synoptic table

*	Variant	A	B	C	D	E	F	G	H	I	Ca	Cb
	Number of relevés	2	8	6	3	2	2	3	2	1	29	119
	Dominant species											
	Phragmites australis	**1**	**100**	**100**	**3**	**2**	**2**	**3**	**2**	**1**	**100**	**100**
	Diagnostic species of floristical and ecological variants											
BI	*Bidens frondosa*	1	13	.	.	.	.	.	.	.	10	6
MA	*Poa trivialis*	1	13	33	.	.	1	.	.	.	17	7
GU	*Calystegia sepium*	1	88	50	1	1	2	.	.	.	52	42
GU	*Urtica dioica*	.	88	67	1	.	.	.	.	.	41	48
MA	*Agrostis stolonifera*	.	.	67	.	.	1	.	.	.	17	8
GU	*Atriplex prostrata*	.	.	33	.	.	.	.	.	.	7	2
GU	*Humulus lupulus*	.	.	67	.	.	.	.	.	.	14	5
PM	*Scutellaria galericulata*	.	.	17	2	.	.	.	.	.	10	14
PM	*Carex acuta*	.	.	.	2	2	1	2	.	.	24	24
PM	*Tithymalus palustris*	.	13	.	.	2	.	.	.	.	10	–
MA	*Potentilla anserina*	.	.	.	.	2	.	.	.	.	7	4
PM	*Sium latifolium*	.	.	.	.	2	1	1	1	.	17	6
PM	*Carex elata*	.	.	.	.	1	1	.	2	.	14	+
O	*Equisetum palustre*	.	.	.	.	.	2	.	.	.	7	24
PM	*Carex appropinquata*	.	.	.	.	.	1	.	.	.	3	+
O	*Thelypteris palustris*	.	.	.	.	.	1	.	.	.	3	3
PM	*Lathyrus palustris*	.	.	.	.	.	1	.	.	.	3	+
PM	*Carex vesicaria*	.	.	.	.	.	1	2	2	.	17	8
PM	*Rumex hydrolapathum*	.	.	.	.	.	.	2	1	.	10	3
LE	*Hydrocharis morsus-ranae*	.	.	.	.	.	.	2	1	.	10	6
PM	*Sparganium erectum*	.	.	.	.	.	.	.	1	.	3	2
PM	*Carex pseudocyperus*	.	.	.	.	.	.	.	1	.	3	–
PO	*Hottonia palustris*	.	.	.	.	.	.	.	2	.	7	–
	Other species											
O	*Cirsium arvense*	1	.	17	.	.	.	.	.	.	7	13
BI	*Persicaria hydropiper*	1	.	17	.	.	.	.	.	.	7	9
PM	*Typha latifolia*	1	13	33	.	.	.	.	.	.	14	11
PM	*Alisma plantago-aquatica*	1	.	.	.	1	.	.	.	.	7	7
PM	*Eleocharis palustris*	1	.	.	.	1	.	.	.	.	7	+
PM	*Phalaroides arundinacea*	1	.	50	.	1	1	.	.	.	21	27
PM	*Lycopus europaeus*	2	.	33	.	.	1	.	1	.	21	31
GU	*Solanum dulcamara*	.	13	17	.	.	.	.	.	.	7	23
GU	*Echinocystis lobata*	.	25	17	.	.	.	.	.	.	10	2
O	*Rubus caesius*	.	13	.	1	.	.	.	.	.	7	4
O	*Galium rivale*	.	13	.	1	.	.	.	.	.	7	+
O	*Persicaria amphibia*	.	13	.	.	.	1	.	.	.	7	18
PM, MA	*Symphytum officinale*	.	25	33	1	1	1	.	.	.	24	34
PM	*Lysimachia vulgaris*	.	13	.	.	2	1	1	.	.	17	30
PM	*Carex riparia*	.	13	.	1	1	.	.	1	.	14	13
PM	*Galium palustre*	.	13	.	.	1	1	.	1	.	14	17
PM	*Glyceria maxima*	.	13	17	1	1	.	.	1	.	17	14
PM	*Lythrum salicaria*	.	38	.	1	2	1	.	2	.	31	29
MA	*Ranunculus repens*	.	.	17	.	1	1	.	.	.	10	7
PM	*Carex vulpina*	.	.	17	.	1	1	.	.	.	10	5
PM	*Iris pseudacorus*	.	.	17	.	1	2	.	.	.	14	13
MA	*Caltha palustris*	.	.	17	1	1	2	.	.	.	17	18
PM	*Phellandrium aquaticum*	.	.	33	.	.	.	.	1	.	10	8
PM	*Rorippa amphibia*	.	.	17	.	.	.	.	1	.	7	14
PM	*Carex acutiformis*	.	.	.	1	.	1	.	.	.	7	5
PM, MA	*Poa palustris*	.	.	.	1	1	1	.	.	.	10	6
PM	*Mentha aquatica*	.	.	.	.	1	1	.	.	.	7	12
PM	*Stachys palustris*	.	.	.	.	1	1	.	.	.	7	13
PM	*Calamagrostis canescens*	.	.	.	.	1	1	.	.	.	7	3
MA	*Lysimachia nummularia*	.	.	.	.	1	.	1	.	.	7	4
LE	*Lemna minor*	.	.	.	.	.	1	.	.	1	7	14

Table 2A. *Scirpetum lacustris*

Relevé number	1	2	3	4	5	6
Number of species	9	6	11	7	6	7
Dominant species						
Schoenoplectus lacustris	**4**	**4**	**4**	**3**	**5**	**5**
Phragmito-Magnocaricetea						
Phellandrium aquaticum	+	+	M	.	.	.
Rorippa amphibia	B	1	+	5	.	.
Glyceria maxima	.	3	+	+	1	.
Lysimachia vulgaris	.	.	+	+	.	.
Lythrum salicaria	.	.	+	+	.	.
Phalaroides arundinacea	.	.	.	.	+	1
Lemnetea						
Lemna minor	1	+	+	.	+	.
Other species						
Persicaria amphibia	1	.	B	1	.	.

The floristic composition of this community in the studied area resembles that one on the territory of whole Slovakia. In the abbreviated synoptic table (1B), only few species have moderately different values (more than 10 %; *Carex elata*, *Humulus lupulus*, *Poa trivialis*, *Sium latifolium* and *Tithymalus palustris*; *Equisetum palustre*, *Lysimachia vulgaris*, *Persicaria amphibia*, *Solanum dulcamara* and *Symphytum officinale*).

Phragmitetum vulgaris is omnipresent in European countries (cf. Hejný & Husák, 1978) and belongs to frequent communities in Slovakia and Hungary as well (Oťaheľová, 2001; Borhidi & Sánta, 1999).

2. *Scirpetum lacustris* Chouard 1924 (Tabs 2A, B)

The stands of this community were detected on natural biotopes – river oxbows or deeper terrain depressions in the complex of marshes, whereas on artificial biotopes they occurred very rarely. A long-term littoral ecophase is a typical characteristic of these biotopes. In the summer, the water level sinks below the soil surface and stands of *Scirpetum lacustris* exist in the limosal ecophase. Silt or organic materials were detected on the bottom.

Schoenoplectus lacustris is a dominating species, forming small patches, 170–250 cm tall. Stands are poor in species, only *Glyceria maxima* is present with a higher constancy. Typical marsh species (mostly those of *Oenanthion aquaticae* Hejný ex Neuhäusl 1959) are frequent. The floristical composition of *Scirpetum lacustris* in the catchment of the Ipeľ river is analogical to the whole territory of Slovakia (cf. Oťaheľová 2001). Eight floristical and ecological variants were defined:

– the variant with the presence of *Ceratophyllum sumbersum* (Tab. 2B, column A),

– the variant with the species of marsh biotopes (Tab. 2A, column B),

– the variant of shallow and drying marshes under anthropic influence, with the presence of a lot of weeds and herbaceous lianas (Tab. 2B, column C),

– the variant of shallow water with the species of the alliance *Oenanthion aquaticae* (Tab. 2B, column D),

– the variant with a higher presence of *Rumex hydrolapathum* and other marsh species (Tab. 2B, column E),

– the variant with the tall-sedge species and the species of the alliance *Oenanthion aquaticae* (Tab. 2B, column F),

– the variant of slightly saline marshes (Tab. 2B, column G),

– the variant of drying marshes with the fluctuating water level, where the species of wet meadows occur as well (Tab. 2B, column H).

In addition to the phytosociological relevés from the catchment area of the Ipeľ river (see Table 2B), *Scirpetum lacustris* occurs in Slovakia in the Borská, Podunajská and Východoslovenská nížina lowlands (Oťaheľová, 2001). Besides that, this community is frequent in Hungary (Borhidi & Sánta, 1999).

3. *Typhetum angustifoliae* Pignatti 1953 (Tabs 3A, B)

Typhetum angustifoliae belongs to the relatively widespread plant communities. It was found in a deeper terrain depression, but more frequently in artificial water reservoirs or fishponds. The stands grow in the littoral of the stagnating water with a relatively little fluctuating level during the vegeta-

Table 2B. *Scirpetum lacustris* – Synoptic table

*	Variant	A	B	C	D	E	F	G	H	Ca	Cb
	Number of relevés	1	1	1	5	2	2	2	2	16	34
	Dominant species										
PM	*Schoenoplectus lacustris*	**1**	**1**	**1**	**100**	**2**	**2**	**2**	**2**	**100**	**100**
	Diagnostic species of the floristical and ecological variants										
LE	*Ceratophyllum submersum*	1	.	.	.	.	.	.	.	6	–
PM	*Stachys palustris*	.	1	.	.	.	.	.	.	6	15
PM	*Phalaroides arundinacea*	.	1	.	.	1	.	.	.	13	6
PM	*Lycopus europaeus*	.	1	1	.	.	.	.	.	13	15
O	*Cirsium arvense*	.	1	1	.	.	.	.	.	13	9
BI	*Persicaria dubia*	.	.	1	.	.	.	.	.	6	3
MA	*Calystegia sepium*	.	.	1	.	.	.	.	.	6	3
O	*Solanum dulcamara*	.	.	1	.	.	.	.	.	6	12
BI	*Bidens frondosa*	.	.	1	.	.	.	.	.	6	6
BI	*Atriplex prostrata*	.	.	1	.	.	.	.	.	6	6
O	*Tripleurospermum perforatum*	.	.	1	.	.	.	.	.	6	3
PM	*Rorippa amphibia*	.	.	1	80	.	2	.	.	44	56
PM	*Phellandrium aquaticum*	.	.	1	80	.	.	.	.	31	29
O	*Persicaria amphibia*	.	.	.	80	1	.	1	1	44	41
PM	*Rumex hydrolapathum*	.	.	.	.	2	.	.	.	13	–
PM	*Carex acuta*	.	.	.	20	1	2	.	1	31	27
PM	*Carex vesicaria*	.	.	.	.	1	2	.	.	19	18
PM	*Sagittaria sagittifolia*	.	.	.	.	.	2	.	.	13	12
PM	*Alisma plantago-aquatica*	.	.	1	.	.	2	1	.	25	9
PM	*Eleocharis palustris* agg.	.	1	.	.	.	2	2	2	44	18
MA	*Potentilla anserina*	.	.	1	.	.	.	2	.	19	6
PM	*Alisma lanceolatum*	.	.	.	.	.	.	.	2	13	9
MA	*Gratiola officinalis*	.	.	.	.	.	.	.	2	13	6
MA	*Oenanthe fistulosa*	.	.	.	.	.	.	.	2	13	6
PM, MA	*Poa palustris*	.	.	.	.	.	.	.	2	13	6
PO	*Batrachium trichophyllum*	.	.	.	.	.	.	.	2	13	6
	Other species										
LE	*Lemna minor*	1	.	.	60	1	.	.	.	31	27
PM	*Carex riparia*	1	.	.	40	.	.	1	.	25	15
PM	*Sparganium erectum*	1	.	.	20	.	1	1	.	19	21
PM	*Typha angustifolia*	.	1	.	.	.	.	1	.	13	6
PM	*Lythrum salicaria*	.	.	1	40	1	1	2	.	44	24
MA	*Symphytum officinale*	.	.	1	.	.	.	.	1	13	27
PM	*Galium palustre*	.	.	1	20	.	1	2	2	44	44
PM	*Glyceria maxima*	.	.	1	40	2	2	2	2	81	68
MA	*Ranunculus repens*	.	.	1	.	.	.	.	1	13	12
LE	*Spirodela polyrhiza*	.	.	.	20	.	1	.	.	13	12
PM	*Lysimachia vulgaris*	.	.	.	40	.	2	.	1	31	27
LE	*Lemna trisulca*	.	.	.	20	1	.	.	.	13	6
LE	*Utricularia vulgaris* agg.	.	.	.	20	.	.	1	.	13	6
PM	*Equisetum fluviatile*	.	.	.	.	1	1	.	.	13	3
PM	*Iris pseudacorus*	.	.	.	.	1	1	1	2	31	32
PM	*Sium latifolium*	.	.	.	.	.	1	1	.	13	24
MA	*Agrostis stolonifera*	.	.	.	.	.	1	1	.	13	12
PM	*Carex vulpina*	.	.	.	.	.	1	1	1	19	9
PM	*Carex elata*	.	.	.	.	.	.	1	1	13	3

tion period. The stands need a continual overflowing. The bottom is formed by organic material or silt. The water is eutrophic. In the fishpond "Veľký Šiaš" near Cerovo village, a moderately acid reaction of water (the pH 6.32) was detected.

Typhetum angustifoliae forms the homogenous stands, poor in species (see Table 3A, 3B). Six floristical and ecological variants (Tab. 3B, A–F) were defined using the phytosociological material from the catchment area of the Ipeľ river:

– the variant with the diagnostic species of the class *Lemnetea*, which grows in the littoral of river oxbows, in a deeper, stagnating and weakly fluctuating water (Tab. 3B, column A),

Table 3A. *Typhetum angustifoliae*

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Number of species	1	8	6	3	3	3	7	5	6	6	9	7	4	7
Dominant species														
Typha angustifolia	**5**	**5**	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**5**	**5**	**4**	**5**	**5**
Phragmito-Magnocaricetea														
Eleocharis palustris	.	+	+	.	.	.	.	.	.	.	.	.	.	.
Alisma plantago-aquatica	.	+	+	.	.	.	.	.	.	.	.	.	.	.
Lycopus europaeus	.	.	+	.	.	.	.	.	.	.	.	.	+	.
Typha latifolia	.	.	.	.	.	.	+	.	+	1	.	.	.	.
Lythrum salicaria	.	.	.	.	.	.	.	+	+	.	1	+	+	.
Carex riparia	.	.	.	.	.	.	.	+	.	.	+	.	.	.
Glyceria maxima	.	.	.	.	.	.	.	.	+	1	.	.	.	.
Rorippa amphibia	.	.	.	.	.	.	.	.	.	.	+	1	.	.
Phellandrium aquaticum	.	.	.	.	.	.	.	.	.	.	+	+	.	.
Lemnetea,Potametea														
Lemna minor	.	1	1	+	+	A	1	.	.	.	.	.	.	.
Potamogeton natans	.	.	.	.	B	3	.	.	.	.	.	.	.	.
Other species														
Bidens frondosus	.	+	.	.	.	.	.	+	+	+	1	.	.	+
Persicaria amphibia	.	.	.	+	.	.	.	.	.	+	.	A	.	1
Calystegia sepium	.	.	.	.	.	.	+	.	.	+	1	.	.	.

Table 3B. *Typhetum angustifoliae* – Synoptic table

	Variant	A	B	C	D	E	F	Ca	Cb
*	Number of relevés	1	2	4	1	5	5	18	36
	Dominant species								
PM	*Typha angustifolia*	**1**	**2**	**4**	**1**	**100**	**100**	**100**	**100**
	Diagnostic species of the floristical and ecological variants								
LE	*Spirodela polyrhiza*	1	.	.	1	.	.	6	17
PM	*Alisma plantago-aquatica*	.	2	.	.	.	.	11	14
PM	*Eleocharis palustris*	.	2	.	.	.	.	11	11
PO	*Potamogeton natans*	.	.	3	.	.	.	17	3
PO	*Potamogeton acutifolius*	.	.	1	.	.	.	6	3
LE	*Lemna minor*	1	2	4	.	20	.	44	47
LE	*Riccia fluitans*	.	.	.	1	.	.	6	3
PO	*Callitriche cophocarpa*	.	.	.	1	.	.	6	3
PM	*Typha latifolia*	.	.	.	.	60	.	17	19
PM	*Glyceria maxima*	.	.	.	.	40	.	11	19
PM	*Lythrum salicaria*	.	.	.	.	40	100	39	31
PM	*Carex riparia*	.	.	.	.	20	40	17	11
PM	*Galium palustre*	.	.	.	.	.	60	17	11
PM	*Rorippa amphibia*	.	.	.	.	.	60	1	14
PM	*Phellandrium aquaticum*	.	.	.	.	.	60	17	14
	Other species								
	Persicaria amphibia	.	.	1	1	20	40	28	25
PM	*Sparganium erectum*	.	.	1	.	.	20	11	14
BI	*Bidens frondosa*	.	1	.	1	60	20	33	19
PM	*Lycopus europaeus*	.	1	.	.	.	40	17	11
Co	*Calystegia sepium*	.	.	.	.	40	20	17	14
MA	*Ranunculus repens*	.	1	.	.	.	20	11	6
PM	*Phragmites australis*	1	.	.	.	20	.	11	22
LE	*Ceratophyllum demersum*	1	.	.	.	20	.	11	3

– the variant of the biotopes with a shallow and fluctuating water, characterized by the presence of helophytes (Tab. 3B, column B),

– the variant with the presence of *Potamogeton* species, which occur in the fishponds with a relatively fixed water regime (Tab. 3B, column C),

– the variant with the occurrence of submerged and natant aquatic macrophytes, typical

for the mesotrophic or slowly eutrophic biotopes (Tab. 3B, column D),

– the variant with a higher presence of typical marsh plants (Tab. 3B, column E),

– the variant with the diagnostic species of the alliance *Oenanthion aquaticae*, fixed on eutrophic biotopes with a fluctuating water level (Tab. 3B, column F).

This community is mentioned from the planare and colline belts of the southern part of Slovakia (OŤAHEĽOVÁ, 2001). On the territory of Hungary, *Typhetum angustifoliae* grows in the whole country in the suitable biotopes (BORHIDI & SÁNTA, 1999).

4. *Typhetum latifoliae* LANG 1973 (Tabs 4A, B)

The stands of this community grow mainly in the eutrophic biotopes, in the littoral of the river oxbows, sand or gravel ditches, pools, artificial water reservoirs, as well as in the deeper terrain depressions, canals, on the margins of watercourses of brooks and rivers. The water is moderately fluctuating, stagnating or slowly flowing (cf. HRIVNÁK, 1999a). The community seems to be tolerant to a wide range of water level (cf. HEJNÝ & HUSÁK, 1978). The bottom is formed of the organic material or silt, rarely of gravely or sandy sediments.

Typhetum latifoliae is poor in species with 7 species per relevé in average. *Typha latifolia* is dominant, only few species are frequent (*Lythrum salicaria*, *Lemna minor* and *Lycopus europaeus*, see Table 4B). The stands of this community are 2–2,5 (3) m tall, the cover of herb layer is 80–100%. In the table 4B, fourteen different floristical and ecological variants of the community are presented:

– the variant with the presence of eutrophic marsh species (Tab. 4B, column A),

– the variant with the presence of wet meadow species (Tab. 4B, column B),

– the variant with the presence of the diagnostic species of wet meadows (alliance *Calthion* R. TX. 1937 em. BALÁTOVÁ-TULÁČKOVÁ 1978; Tab. 4A, column C),

– the variant of eutrophic marsh biotopes with a higher content of nitrogen and nitrophilous species (Tab. 4B, column D),

– the variant with the presence of *Solanum dulcamara* (Tab. 4B, column E),

– the typical variant of marsh biotopes, where the typical marsh plant species are more frequent (Tab. 4B, column F),

– the variant with the presence of species characterized for periodically overflowed biotopes (Tab. 4B, column G).

The next group of variants are characterized by the occurrence of aquatic macrophytes, above all, *Lemna minor*.

– the variant of eutrophic biotopes, with the occurrence of *Ceratophyllum demersum* or *Phragmites australis* (Tab. 4B, column H),

– the variant with the presence of lemnids, which grow in eutrophic and hypertrophic biotopes (Tab. 4B, column I),

– the variant of mesotrophic biotopes (Tab. 4B, column J),

– the variant with the presence of *Glyceria fluitans*, which was detected in the periodically overflowed and silted biotopes (Tab. 4B, column K),

– the variant with the presence of synanthropic weeds (Tab. 4B, column L),

– the variant of the shallow water with a fluctuating water level, fixed on eutrophic biotopes (Tab. 4B, column M),

– the variant of the shallow and moderately eutrophic water, with a fluctuating level, characterized by the presence of *Bidens cernua*, *Phellandrium aquaticum* and *Spirodella polyrhiza* (Tab. 4B, column N).

In the catchment area of the Ipeľ river, *Typhetum latifoliae* is a frequent marsh plant community. The rich phytosociological material comprises 51 relevés. NEUHÄUSLOVÁ-NOVOTNÁ (1968), HRIVNÁK (1998a, 1999a) and HRIVNÁK et al. (2001) published only 9 relevés. The larger part of them (42 relevés, Tab. 4A) are unpublished up to now.

On the territories of Slovakia and Hungary, this community occurs in the lowlands, basins and low mountains, from planare to submontane belts (OŤAHEĽOVÁ, 2001; BORHIDI & SÁNTA, 1999).

5. *Sparganietum erecti* ROLL 1938 (Tabs 5A, B)

The stands of this community were found in river oxbows, deeper terrain depressions, canals or littoral of water reservoirs, in stagnating or slowly flowing water. Biotopes are flooded from spring to summer, and sometimes dried at the end of the summer. A long-term littoral ecophase is typical for this community. It forms small patches, rarely larger stands. The soils are silted, often with a medium-thick (rarely thin) layer of organic material.

The floristic composition and structure of *Sparganietum erecti* is similar to the other plant communities of reed wetlands. *Sparganium erec-*

Table 4A. *Typhetum latifoliae*

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	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Number of species	3	6	2	8	7	7	6	7	4	4	5	5	5	4	5	5	8	9	8	5	9	10	6	18	9	15	10	9	12	8	5	7	7	3	7	4	4	6	7	7	5	9
Dominant species																																										
Typha latifolia	**5**	**5**	**5**	**4**	**5**	**4**	**5**	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**4**	**5**	**4**	**4**	**5**	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**4**	**5**	**4**	**4**	**5**	**5**
Phragmito-Magnocaricetea																																										
Lysimachia vulgaris	.	.	.	.	+	+	.	+	.	.	.	.	r	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rorippa amphibia	.	.	.	.	.	A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.
Glyceria maxima	.	.	.	.	.	+	1	A	.	.	B	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	+	+	A	.	.	.	A	.	.	3	.	.	.	.	.
Carex riparia	.	.	.	.	.	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	+	.	.	.	.	.	.	1	.	.	.	.	.
Lythrum salicaria	.	.	.	.	.	+	.	.	+	+	+	+	.	+	.	+	A	+	+	+	1	.	r	.	A	A	+	+	+	+	.	.	.	+	.	.	.	.	+	B	+
Lycopus europaeus	.	.	.	.	.	.	+	.	.	+	.	1	+	.	.	.	+	.	1	.	.	A	.	1	+	B	A	.	+	.	.	.	+	.	+	.	.	.	+	.	.	.
Stachys palustris	.	.	.	.	.	.	.	+	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phalaroides arundinacea	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.	1	.	+	.	.	.	.	.	+	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	+
Epilobium hirsutum	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	r	.	.	+	.	1	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Galium palustre	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	.	.	.	.	.	.
Eleocharis palustris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
Rumex maritimus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Symphytum officinale	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Alisma plantago-aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	+	A	.	.	+	+	.	.	.	.	.	.	+	.	.	.
Sparganium erectum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carex acuta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.
Glyceria fluitans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.
Phellandrium aquaticum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	M	.	.	+	.	.	.	.	.	.	.	.	.	.
Phragmites australis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	+	.	+	.	.
Lemnetea, Potametea																																										
Lemna minor	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	A	1	+	5	B	+	+	+	1	A	+	3	B	+
Ceratophyllum demersum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	B	.	4	.	B
Utricularia vulgaris agg.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.
Lemna trisulca	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.

Table 4A. (continued)

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	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Number of species	3	6	2	8	7	7	6	7	4	4	5	5	5	4	5	5	8	9	8	5	9	10	6	18	9	15	10	9	12	8	5	7	3	7	4	4	6	7	7	5	9
Molinio-Arrhenatheretea																																									
Ranunculus repens	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.
Mentha longifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Alopecurus aequalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	1	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Agrostis stolonifera	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	+	.	.	+	.	1	A	+	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Poa trivialis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	A	.	+	+	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lythrum virgatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	.	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bidentetea tripartiti																																									
Persicaria hydropiper	.	.	r	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bidens tripartitus	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bidens frondosa	.	.	.	1	.	.	+	+	.	.	.	.	.	.	.	.	.	.	r	.	.	3	+	+	+	A	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+
Persicaria dubia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Galio-Urticetea																																									
Solanum dulcamara	+	B	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.
Calystegia sepium	r	+	.	.	A	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	+	A	.	.	.	+	+	.	.	.	.	.	.	+	.	.	.	.
Urtica dioica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.
Echinochloa crus-galli	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.
Elymus repens	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.
Other species																																									
Equisetum palustre	.	.	.	.	+	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Persicaria amphibia	.	.	.	.	.	1	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	1	.	.	.	.	.	.	.
Juncus effusus	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	+	.	.	.	.	.	1	.	.	.
Salix fragilis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	r	.	.	.	.	+	.	.	.	.	.	+

Table 4B. *Typhetum latifoliae* – Synoptic table

*	Variant Number of relevés	A 4	B 5	C 1	D 8	E 3	F 13	G 4	H 4	I 3	J 1	K 2	L 1	M 1	N 1	Ca 51	Cb 72
	Dominant species																
PM	*Typha latifolia*	4	100	1	100	3	100	4	4	3	1	2	1	1	1	100	100
	Diagnostic species of the floristical and ecological variants																
PM	*Carex acutiformis*	2	.	.	12	.	.	.	.	.	.	.	.	.	.	6	3
MA	*Ranunculus repens*	4	20	.	12	.	62	.	.	.	.	.	.	.	.	13	11
BI	*Bidens tripartitus*	4	.	1	.	.	.	.	.	.	.	.	.	.	.	10	16
MA, PM	*Symphytum officinale*	2	80	.	.	.	.	.	.	1	.	.	.	.	.	13	11
MA	*Lythrum virgatum*	1	60	.	.	.	.	.	.	.	.	.	.	.	.	8	
MA	*Poa trivialis*	.	80	1	.	.	.	.	.	.	.	.	.	.	.	10	7
MA	*Carex hirta*	.	.	1	12	.	.	.	.	.	.	.	.	.	.	4	1
MA	*Mentha longifolia*	.	.	1	.	.	.	1	.	.	.	.	.	.	.	4	–
PM	*Epilobium hirsutum*	.	20	1	63	.	.	.	.	.	.	.	.	.	.	13	11
GU	*Urtica dioica*	.	.	.	25	.	.	.	.	1	.	.	.	.	.	6	10
BI	*Persicaria hydropiper*	1	.	.	25	.	.	.	.	.	.	.	.	.	.	6	10
O	*Solanum dulcamara*	.	.	.	37	3	.	.	.	1	.	.	.	.	.	13	11
PM	*Glyceria maxima*	3	.	.	12	1	69	.	.	.	.	1	.	.	.	29	22
O	*Persicaria amphibia*	.	.	.	12	.	38	.	.	.	.	1	.	.	.	13	15
PM	*Galium palustre*	.	.	.	.	.	23	2	.	.	.	.	.	.	.	10	4
PM	*Sparganium erectum*	1	20	.	.	.	15	.	.	.	.	.	.	.	.	8	15
PM	*Carex riparia*	.	20	.	.	.	23	.	.	.	.	.	.	.	.	8	8
PM	*Lysimachia vulgaris*	.	20	.	.	.	15	3	.	.	.	.	.	.	.	12	6
O	*Equisetum palustre*	.	.	.	.	.	.	2	.	.	.	.	.	.	.	4	4
PM	*Equisetum fluviatile*	.	.	.	.	1	.	1	.	.	.	.	.	.	.	4	3
PM	*Veronica beccabunga*	.	.	.	.	.	.	1	.	.	.	.	.	.	.	2	1
LE	*Lemna minor*	.	.	.	25	.	31	.	4	3	1	2	1	1	1	35	49
PM	*Phragmites australis*	.	.	.	.	.	62	.	3	.	.	.	.	.	.	8	8
LE	*Ceratophyllum demersum*	.	.	.	.	.	.	.	3	.	.	.	.	.	.	6	4
LE	*Lemna trisulca*	.	.	.	.	.	.	.	1	.	.	.	.	.	.	2	6
LE	*Riccia fluitans*	.	.	.	.	.	.	.	1	1	.	.	.	.	.	4	3
LE	*Lemna gibba*	.	.	.	12	.	.	.	.	1	.	.	.	.	.	4	4
LE	*Utricularia vulgaris* agg.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	2	–
O, E_0	*Calliergon cordifolium*	.	.	.	.	.	.	.	.	.	1	.	.	.	.	2	–
O	*Juncus effusus*	.	20	.	.	.	62	1	.	.	1	1	1	1	.	13	7
PM	*Glyceria fluitans*	.	.	.	.	.	.	.	.	.	.	2	.	.	.	4	3
O	*Elymus repens*	.	20	.	.	.	.	.	.	.	.	.	1	.	.	4	3
O	*Echinochloa crus-galli*	.	.	1	.	.	.	.	.	.	.	.	1	.	.	4	4
LE	*Ceratophyllum submersum*	.	.	.	.	.	.	.	.	.	.	.	.	1	.	2	4
PM	*Rumex maritimus*	1	20	.	.	.	.	.	.	.	.	.	.	1	.	6	14
PM	*Ranunculus sceleratus*	1	.	.	.	.	.	.	.	1	.	.	.	1	.	6	8
PM	*Phellandrium aquaticum*	.	.	.	.	.	15	.	.	.	.	.	.	1	1	8	16
LE	*Spirodela polyrhiza*	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	3
BI	*Bidens cernua*	.	.	.	.	.	.	.	.	.	.	.	.	.	1	2	3
	Other species																
MA	*Alopecurus aequalis*	1	20	.	12	.	.	.	.	.	.	.	.	.	.	6	6
GU	*Calystegia sepium*	2	40	.	.	2	38	1	1	.	.	.	.	.	.	23	25
PM	*Phalaroides arundinacea*	2	20	.	25	.	15	.	1	.	.	.	.	.	.	17	16
BI	*Bidens frondosa*	1	80	.	12	.	46	.	1	.	.	1	.	.	.	27	18
PM	*Alisma plantago-aquatica*	2	60	.	.	.	62	.	.	.	1	1	+	.	.	19	22
PM	*Lythrum salicaria*	3	60	1	87	1	46	2	2	2	.	1	.	1	.	56	45
PM	*Iris pseudacorus*	2	.	.	.	.	.	.	1	1	.	.	.	.	.	8	6
BI	*Persicaria dubia*	.	40	.	.	.	.	.	.	.	.	.	.	.	.	4	8
PM	*Stachys palustris*	.	20	.	.	.	15	.	.	.	.	.	.	.	.	6	7
PM	*Carex acuta*	.	40	.	.	.	15	.	.	.	.	.	.	.	.	8	10
PM	*Sium latifolium*	.	20	.	.	.	62	.	.	.	.	.	.	.	.	4	3
MA	*Agrostis stolonifera*	.	60	1	25	.	62	.	1	.	.	1	.	.	.	17	18
PM	*Lycopus europaeus*	.	100	.	50	1	15	3	.	.	1	.	.	1	1	35	33
PM	*Leersia oryzoides*	.	.	.	12	.	.	.	.	.	.	.	.	.	.	2	–
PM	*Rorippa amphibia*	.	.	.	.	.	15	.	.	.	.	.	.	.	.	4	4
O	*Salix fragilis*	.	.	.	.	.	23	.	2	.	.	.	.	.	.	10	3
PM	*Butomus umbellatus*	.	.	.	.	.	62	.	1	.	.	.	.	.	.	4	7
PM	*Eleocharis palustris*	.	.	.	.	.	62	.	.	.	.	.	1	.	.	4	3

Table 5A. *Sparganietum erecti*

Relevé number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Number of species	6	7	5	8	8	15	19	8	10	7	8	4	5	4	7	3	8	6	3	5	4
Dominant species																					
Sparganium erectum	**5**	**5**	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**	**4**	**5**	**5**	**4**	**5**	**5**	**4**	**5**	**5**	**5**	**5**
Phragmito-Magnocaricetea																					
Phellandrum aquaticum	+	+	+	M	A	+	M	A	.	.	.	.	.	.	.	.	.	.	.	.	.
Lythrum salicaria	.	r	.	.	.	1	+	.	.	.	+	.	.	+	.	r	.	.	.	.	.
Butomus umbellatus	.	.	+	B	+	+	1	.	+	A	1	+	+	.	.	.	.	.	.	.	.
Sium latifolium	.	.	.	+	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rorippa amphibia	.	.	.	1	+	+	+	1	A	.	.	.	.	r	.	.	.	.	.	.	.
Alisma lanceolatum	.	.	.	3	.	.	+	.	.	.	.	.	.	.	+	.	.	+	.	.	.
Sagittaria sagittifolia	.	.	.	.	B	1	r	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Glyceria maxima	.	.	.	.	r	.	.	+	.	+	.	+	.	.	1	.	A	.	.	.	.
Rumex maritimus	.	.	.	.	.	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.
Phalaroides arundinacea	.	.	.	.	.	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.
Lysimachia vulgaris	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.
Alisma plantago-aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+
Lemnetea																					
Lemna minor	+	+	.	.	.	+	1	1	+	+	.	.	.	.	A	.	B	.	.	.	+
Ceratophyllum demersum	.	B	.	.	.	.	.	.	.	1	1	1	.	.	.	.	.	.	.	.	.
Spirodela polyrhiza	.	.	A	.	A	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.
Lemna trisulca	.	.	.	.	.	.	.	1	.	.	.	.	.	.	+	.	.	.	.	.	.
Utricularia vulgaris agg.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.
Potametea																					
Batrachium aquatilile agg.	.	.	.	+	.	+	.	.	.	.	.	.	A	.	.	.	.	.	r	.	.
Potamogeton nodosus	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	+	.	.	.
Molinio-Arrhenatheretea																					
Agrostis stolonifera	.	.	.	.	.	3	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gratiola officinalis	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Poa trivialis	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.
Echinocystis lobata	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	+	.	.	.
Bidentetea tripartiti																					
Bidens frondosa	.	+	.	.	.	M	+	.	+	.	.	.	.	.	.	.	r	.	.	+	.
Other species																					
Persicaria amphibia	.	.	1	.	+	+	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.

tum is a dominating species, only three species, *Butomus umbellatus*, *Lemna minor* and *Phellandrium aquaticum* are present at a higher frequency (more than 40%). *Sparganietum erecti* borders usually on the floating aquatic vegetation or swamp communities. In the catchment area of the Ipeľ river, eight floristical and ecological variants were detected:

– the variant with the combination of the wet meadow and marsh species, which grow in shallow water biotopes with a fluctuating water level (Tab. 5B, column B),

– the variant with a higher frequency of *Bidens frondosa*, *Phalaroides arundinacea* and *Poa trivialis*, which grow in eutrophic biotopes with a good feed of nutrients (Tab. 5B, column C),

– the variant with the presence of herbaceous lianas (Tab. 5B, column D),

– the variant of the eutrophic marshes with the fluctuating water level, dried during the summer, which is characterized by *Butomus umbellatus*, *Glyceria maxima*, *Persicaria amphibia*, *Rorippa amphibia* and aquatic macrophytes (Tab. 5B, column E–F); the variant in column E differ in the presence of *Phellandrium aquaticum*,

– the variants with a higher frequency of aquatic macrophytes (Tab. 5B, columns G–H), which occur in the littoral of the stagnating water or in slowly flowing canals.

Phytosociological relevés presented in the column A (Tab. 5B) are very poor in species (approximately 4 species per relevé), without any differential species.

Sparganietum erecti was mentioned from the planare or colline belts of lowlands and basins in the southern part of Slovakia. On the other hand, the stands in the submontane belt are rare (OŤA-

Table 5B. *Sparganietum erecti* – Synoptic table

	Variant	A	B	C	D	E	F	G	H	Ca	Cb
*	Number of relevés	5	3	3	2	5	4	2	1	25	65
	Dominant species										
PM	*Sparganium erectum*	**100**	**3**	**3**	**2**	**100**	**4**	**2**	**1**	**100**	**100**
	Diagnostic species of the floristical and ecological variants										
PM	*Sium latifolium*	.	2	.	.	.	.	.	.	8	11
MA	*Gratiola officinalis*	.	2	.	.	.	.	.	.	8	3
MA	*Agrostis stolonifera*	.	2	.	.	20	.	.	.	12	14
PM	*Phalaroides arundinacea*	.	1	2	.	.	.	.	.	12	12
MA	*Poa trivialis*	.	.	2	.	.	.	.	.	8	3
PM, MA	*Symphytum officinale*	.	.	1	.	.	.	.	.	4	8
Co	*Calystegia sepium*	.	.	.	1	.	.	.	.	4	9
Co	*Echinocystis lobata*	.	.	.	2	.	.	.	.	8	5
O	*Persicaria amphibia*	.	1	.	.	80	1	.	.	20	22
PM	*Glyceria maxima*	.	.	.	.	80	4	.	.	32	29
LE	*Ceratophyllum demersum*	.	.	.	1	.	2	2	.	20	9
PO	*Potamogeton crispus*	.	.	.	.	.	.	1	.	4	3
PO	*Potamogeton natans*	.	.	.	.	.	.	.	1	4	6
	Other species										
O	*Solanum dulcamara*	20	1	.	.	.	.	.	.	8	3
PO	*Batrachium aquatile* agg.	20	2	1	.	.	.	.	.	16	5
PM	*Alisma plantago-aquatica*	40	.	.	.	20	.	.	.	12	25
PM	*Rorippa amphibia*	20	3	1	.	60	.	.	.	32	34
LE	*Lemna minor*	20	2	1	.	20	3	1	1	40	48
PM	*Lythrum salicaria*	60	2	.	1	.	.	1	.	28	20
PM	*Lysimachia vulgaris*	.	1	.	1	.	.	.	.	8	5
PM	*Rumex maritimus*	.	2	.	1	20	.	.	.	16	8
BI	*Persicaria lapathifolia*	.	1	.	.	20	.	.	.	8	6
PM	*Alisma lanceolatum*	.	2	.	1	.	1	.	.	16	5
PM	*Butomus umbellatus*	.	3	2	1	80	2	.	.	48	43
PM	*Sagittaria sagittifolia*	.	2	.	.	20	.	1	.	16	14
PM	*Phellandrium aquaticum*	.	3	.	.	100	.	1	1	40	31
BI	*Bidens frondosa*	.	2	2	.	.	1	1	.	24	15
PO	*Potamogeton nodosus*	.	.	1	1	.	.	.	.	8	3
LE	*Utricularia vulgaris* agg.	.	.	.	.	20	1	.	.	8	6
LE	*Spirodela polyrhiza*	.	.	.	.	40	1	.	.	12	19
LE	*Lemna trisulca*	.	.	.	.	20	1	1	.	12	9

HEĽOVÁ, 2001). In Hungary, this community belongs to relatively frequent ones, but it forms small patches (BORHIDI & SÁNTA, 1999).

6. *Glycerietum aquaticae* HUECK 1931 (Tabs 6A, B)

Glycerietum aquaticae belongs to the typical littoral marsh plant communities. The stands of this community grow in natural as well as artificial biotopes, in a stagnating or slow flowing water. The habitats are characterized by a long-term littoral ecophase and a moderately fluctuating water regime (cf. KOVÁCS, 1968; BANÁSOVÁ et al., 1994; OŤAHEĽOVÁ, 1996). The biotopes are eutrophic, the bottom is formed of organic material, silt or gravel with a thin layer of fine inorganic or organic materials. In the river oxbow near Kubáňovo, a neutral water reaction (pH 7.01) was detected. KOVÁCS (l. c.) described a clayey soil with a neutral reaction in the stands of *Glycerietum aquaticae* near Szécsény.

The stands are poor in species. In addition to the dominating species *Glyceria maxima*, only two species *Persicaria amphibia* and *Lythrum salicaria* have the constancy higher than 30% (see Tab. 6B). Typical marsh plants and aquatic macrophytes occur in the littoral ecophase. On the other hand, the species of the alliance *Oenanthion aquaticae* occur in the stands with a shallow water or in the limosal ecophase. In the Table 6B, eight floristical and ecological variants are presented:

– the variants of a deeper water, with the presence of aquatic macrophytes (Tab. 6B, column A).

The species of *Oenanthion aquaticae* (*Alisma lanceolatum*, *A. plantago-aquatica* and *Rorippa amphibia*), are typical of the variants marked B–G (Tab. 6B), whereas the variants marked as

Table 6A. *Glycerietum aquaticae*

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	7	4	3	6	7	9	6	9	18	10	17	17	7	6	11	11	4	6	12	5	7	3	4	6	5	5	2
Dominant species																											
Glyceria maxima	**5**	**5**	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**4**	**5**
Phragmito-Magnocaricetea																											
Rumex maritimus	1	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lycopus europaeus	+	.	.	.	.	.	.	.	+	+	.	.	r	+	+	.	.	.	.	.	.	.	.	.	.	.	.
Typha latifolia	.	+	.	.	r	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Iris pseudacorus	.	.	+	.	+	+	.	.	.	+	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.
Phellandrium aquaticum	.	.	.	+	r	.	+	.	+	.	A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carex riparia	.	.	.	+	+	+	+	.	.	.	1	.	1	+	.	.	1	.	.	.	.	.	.	.	.	.	.
Galium palustre	.	.	.	.	+	.	.	.	+	+	.	.	.	.	.	1	.	+	.	.	.	.	.	.	.	.	.
Rorippa amphibia	.	.	.	.	.	3	1	A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lysimachia vulgaris	.	.	.	.	.	+	+	+	.	+	+	+	+	.	+	1	.	.	+	.	.	.	.	.	.	.	.
Lythrum salicaria	.	.	.	.	.	.	.	+	+	+	+	A	+	+	.	+	.	+	+	.	r	+	.	.	.	.	.
Butomus umbellatus	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.
Sium latifolium	.	.	.	.	.	.	.	.	+	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.
Stachys palustris	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.
Sparganium erectum	.	.	.	.	.	.	.	.	+	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	1	.
Carex vesicaria	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.
Scutellaria galericulata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.
Carex acuta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.
Alisma plantago-aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.	.	.	.	.	.	.
Phalaroides arundinacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	+	.	.	.	.
Alisma lanceolatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.
Lemnetea																											
Lemna minor	.	1	B	3	+	.	.	1	+	1	.	+	A	1	.	.	.	.	4	.	1	.	+	.	.	+	.
Riccia fluitans	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	A	.	.	.	.	.	.
Bidentetea tripartiti																											
Bidens frondosa	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	r	.	.	r	.	.	.	.	.
Persicaria lapathifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.
Persicaria hydropiper	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	r	.
Convolvuletalia sepium																											
Solanum dulcamara	.	r	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Calystegia sepium	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.
Molinio-Arrhenatheretea																											
Ranunculus repens	+	.	.	.	.	.	.	.	+	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	.	.	.
Agrostis stolonifera	.	.	.	.	.	.	.	.	1	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.
Other species																											
Persicaria amphibia	.	.	.	.	.	+	+	+	+	.	B	.	.	.	.	1	.	B	+	.	.	.	.	.	.	.	.
Juncus effusus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	+	+	.	.
Juncus inflexus	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.

C–G are also characterized by the occurrence of *Agrostis stolonifera*, *Carex acuta*, *Eleocharis palustris*, *Galium palustre*, *Phellandrium aquaticum*, *Sium latifolium*, *Stachys palustris* (absent in B variant). The variants D–G are characterized by the presence of *Carex vesicaria* (absent in C variant), whereas *Equisetum fluviatile* and *Carex vulpina* are typical for E–G variants (they are absent in D variant). The combination of the alliance *Oenanthion aquaticae* species with the species of marshes and wet meadows is typical for the variants marked as F and G (Tab. 6B). *Trifolium hybridum* is the differential species for F variant, *Gratiola officinalis* and *Oenanthe fistulosa* for G variant. The variant H, which grows in the moderately salted biotopes, is characterized by the wet meadows species *Potentilla anserina* and *Rorippa sylvestris* (see Tab. 6B).

This community is very frequent in planare and colline belts of Slovakia and Hungary (Borhidi & Sánta, 1999; Oťaheľová, 2001).

7. *Equisetum limosi* Steffen 1931

Equisetum limosi was detected in the fishpond near the Ábelová village (Hrivnák, 1999b; Zaliberová et al., 2000). This is the single locality in the catchment area of the Ipeľ river.

Table 6B. *Glycerietum aquaticae* – Synoptic table

*	Variant	A	B	C	D	E	F	G	H	Ca	Cb
	Number of relevés	2	4	26	10	7	7	6	1	63	100
	Dominant species										
PM	*Glyceria maxima*	**2**	**4**	**100**	**100**	**100**	**100**	**100**	**1**	**100**	**100**
	Diagnostic species of floristical and ecological variants										
LE	*Hydrocharis morsus-ranae*	2	.	.	.	14	.	.	.	6	6
PM	*Alisma lanceolatum*	.	3	.	10	.	.	83	.	14	8
PM	*Rorippa amphibia*	.	1	.	40	29	57	67	.	24	34
PM	*Alisma plantago-aquatica*	.	2	8	10	71	43	17	1	24	26
PM	*Phellandrium aquaticum*	.	.	15	60	.	43	50	.	25	24
PM	*Eleocharis palustris*	.	.	4	.	57	**71**	**100**	.	24	22
PM	*Sium latifolium*	.	.	4	20	43	**86**	**100**	1	30	28
PM	*Carex vesicaria*	.	.	.	20	57	14	67	.	17	19
PM	*Equisetum fluviatile*	1	.	.	.	57	.	17	.	10	5
PM	*Carex vulpina*	.	.	.	.	14	14	67	1	11	15
PM	*Mentha aquatica*	.	.	.	.	.	43	33	1	10	14
MA	*Veronica scutellata*	.	.	.	.	.	29	***67***	.	10	8
PM	*Glyceria fluitans*	.	.	4	.	.	57	***67***	.	14	9
MA	*Trifolium hybridum*	.	.	.	.	.	29	.	1	5	2
MA	*Gratiola officinalis*	.	.	.	.	.	.	50	.	5	6
MA	*Lysimachia nummularia*	.	.	.	.	.	.	33	1	5	10
MA	*Oenanthe fistulosa*	.	.	.	.	14	.	**83**	1	11	5
MA	*Potentilla anserina*	.	.	.	10	.	.	.	1	3	9
MA	*Rorippa sylvestris*	.	.	4	.	.	.	.	1	3	2
	Other species										
LE	*Utricularia vulgaris* agg.	1	.	4	.	.	.	.	.	3	3
PM	*Rumex hydrolapathum*	1	.	4	10	14	.	.	.	6	9
PM	*Carex melanostachya*	1	.	.	.	14	.	.	.	3	-
LE	*Lemna trisulca*	2	1	4	.	29	.	.	.	10	5
PM	*Iris pseudacorus*	2	.	23	30	29	57	33	.	30	26
PM	*Butomus umbellatus*	2	4	.	.	.	14	17	1	14	12
O	*Persicaria amphibia*	1	2	4	60	86	57	50	1	38	37
PM	*Veronica anagallis-aquatica*	.	2	.	.	.	.	.	.	3	+
Co	*Calystegia sepium*	.	2	12	.	.	.	.	.	8	6
PM	*Sagittaria sagittifolia*	.	1	4	10	.	.	.	.	5	2
BI	*Bidens frondosa*	.	1	8	10	.	.	.	.	6	5
O	*Juncus effusus*	.	1	8	10	.	.	.	.	6	9
LE	*Spirodela polyrhiza*	.	1	8	.	.	29	.	.	8	4
LE	*Lemna minor*	.	3	54	10	14	.	.	.	30	30
PM	*Bolboschoenus maritimus*	.	1	.	.	.	.	17	.	3	2
PM	*Lysimachia vulgaris*	.	2	15	50	43	.	17	.	24	29
PM	*Lythrum salicaria*	.	2	42	50	14	29	33	.	37	34
PM	*Typha latifolia*	.	.	19	.	.	.	.	.	8	6
Co	*Solanum dulcamara*	.	.	15	.	.	.	.	.	6	8
PM	*Berula erecta*	.	.	8	.	.	.	.	.	3	5
MA	*Poa trivialis*	.	.	8	.	.	.	.	.	3	4
BI	*Persicaria lapathifolia*	.	.	8	.	.	.	.	.	3	3
PM	*Rumex maritimus*	.	.	4	10	.	.	.	.	3	5
BI	*Bidens tripartita*	.	.	12	10	.	.	.	.	6	7
MA	*Caltha palustris*	.	.	4	10	.	.	.	.	3	7
MA	*Ranunculus repens*	.	.	8	30	.	.	.	.	8	21
BI	*Persicaria hydropiper*	.	.	8	10	.	.	.	.	5	6
O	*Juncus inflexus*	.	.	8	10	.	.	.	.	5	3
PM	*Lycopus europaeus*	.	.	19	30	14	.	.	.	14	28
PM, MA	*Symphytum officinale*	.	.	12	.	14	.	.	.	6	13
PM	*Sparganium erectum*	.	.	8	10	.	43	.	.	11	17
PM, MA	*Poa palustris*	.	.	4	.	14	43	.	.	8	12
MA	*Ranunculus flammula*	.	.	4	.	.	14	33	.	6	10
PM	*Carex riparia*	.	.	23	30	.	14	50	.	21	19
PM	*Phalaroides arundinacea*	.	.	12	.	14	.	33	.	10	13

Table 6B. (continued)

*	Variant Number of relevés	A 2	B 4	C 26	D 10	E 7	F 7	G 6	H 1	Ca 63	Cb 100
PM	*Stachys palustris*	.	.	4	10	43	43	17	.	14	12
MA	*Agrostis stolonifera*	.	.	4	30	29	14	83	.	19	22
PM	*Galium palustre*	.	.	15	10	43	57	100	.	29	48
PM	*Carex acuta*	.	.	8	40	43	.	67	1	22	24
PM	*Scutellaria galericulata*	.	.	.	10	.	.	.	.	3	9
O	*Plantago major*	.	.	.	30	.	.	.	.	5	3
PM	*Schoenoplectus lacustris*	.	.	.	30	.	57	33	.	14	11
PM	*Carex acutiformis*	.	.	.	10	29	.	.	1	8	8
MA	*Lythrum virgatum*	.	.	.	.	.	14	17	.	3	9
PM	*Teucrium scordium*	.	.	.	.	.	14	17	.	3	3

Table 7B. *Acoretum calami* – Synoptic table

*	Variant Number of relevés	A 1	B 4	C 1	D 1	E 1	Ca 8	Cb 10
	Dominant species							
PM	*Acorus calamus*	**1**	**4**	**1**	**1**	**1**	100	100
	Diagnostic species of the floristical and ecological variants							
LE	*Lemna minor*	.	4	.	.	.	50	67
PO	*Batrachium trichophyllum*	.	4	.	.	.	50	11
PM	*Eleocharis palustris*	.	3	.	.	.	37	–
LE	*Lemna trisulca*	.	3	.	.	.	37	11
PM	*Rorippa amphibia*	.	3	.	.	.	37	22
BI	*Persicaria maculosa*		.	1	.	.	12	–
BI	*Bidens frondosa*	.	.	1	1	.	25	22
PM	*Typha latifolia*	.	.	.	1	.		11
PM	*Carex vesicaria*	.	.	.	.	1	12	11
	Other species							
PM	*Iris pseudacorus*	1	2	.	.	.	37	22
PM	*Carex vulpina*	1	3	1	.	1	75	11
PM	*Phallandrium aquaticum*	1	2	1	.	1	63	11
MA	*Ranunculus repens*	.	2	.	.	.	25	–
O	*Persicaria amphibia*	.	1	1	.	.	25	22
PM	*Galium palustre*	.	1	1	.	.	25	11
MA	*Lysimachia nummularia*	.	1	1	.	.	25	–
O	*Mentha arvensis*	.	1	1	.	.	25	–
O	*Salix fragilis*	.	1	1	.	.	25	–
PM	*Sium latifolium*	.	3	1	.	.	50	11
PM	*Lycopus europaeus*	.	1	1	1	.	37	44
PM	*Lythrum salicaria*	.	1	1	1	.	37	22
MA	*Agrostis stolonifera*	.	4	1	1	1	88	33
PM	*Carex acuta*	.	2	.	.	1	37	44
PM	*Lysimachia vulgaris*	.	.	1	1	.	25	44

The stand of this community grows on a water-soaking gravel or sandy organic substrate, which is covered by a thin layer of organic materials and silt. In addition to the dominant species *Equisetum fluviatile*, typical marsh species – *Alisma plantago-aquatica*, *Carex acuta*, *Galium palustre*, *Leersia oryzoides*, *Lysimachia vulgaris* and *Lythrum salicaria* occur with a higher frequency (cf. ZALIBEROVÁ et al. l.c.: Tab. 1, rel. 20).

8. *Acoretum calami* SCHULTZ 1941 (Tab. 7B)

In the catchment area of the Ipeľ river, the occurrence of *Acoretum calami* is rare. Nowadays, the stands of this community occur in the littoral of artificial water reservoirs, e.g. a fishpond or an abandoned pool in a park.

The dominating species, *Acorus calamus* is a neophyte, introduced from South Asia. In the

catchment area of the Ipeľ river, five floristical and ecological variants were defined:

– the typical variant with the presence of marsh plants, poor in species (Tab. 7B, column A),

– the variant with a higher frequency of aquatic macrophytes and species of shallow water (Tab. 7B, column B),

– the variant of eutrophic biotopes with the presence of *Bidens frondosa* and *Persicaria maculosa* (Tab. 7B, column C),

– the variant with the presence of *Typha latifolia* (Tab. 8B, column D),

– the variant with the presence of tall-sedges (Tab. 8B, column E).

Kovács & Máthé (1967) published six phytosociological relevés from the surroundings of Ludányhalászi and Malá Čalomia villages, Hrivnák et al. (2001) presented another one from a marsh near Kováčovce village. Oťaheľová et al. (1998) and Hrivnák (1999b) mentioned the occurrence of this community from the catchment area of the Ipeľ river. A non-published relevé from the littoral of a fishpond near Drienovo village is presented in this paper (rel. 1). On the territory of Slovakia, *Acoretum calami* is a vulnerable community (Oťaheľová, 2001). In Hungary, this community is known from the Dráva and Ipoly valleys (Borhidi & Sánta, 1999).

Relevé Nr. 1; SK; Krupinská planina Mts; Drienovo village, fishpond on the N margin of village; stagnant water, 1–15 cm deep; altitude 375 m a.s.l.; relevé area 7 m^2; total cover 85%; E_1 70%; E_0 20%; mean height of stand 80–120 cm; A. Cvachová, R. Hrivnák; 2.7.1998.

E_1: *Acorus calamus* 4, *Typha latifolia* 2a, *Lysimachia vulgaris* 1, *Agrostis stolonifera* +, *Alopecurus geniculatus* +, *Bidens frondosa* +, *Calystegia sepium* +, *Lycopus europaeus* +, *Lythrum salicaria* +, *Rubus caesius* +, *Galium aparine* r. E_0: *Campylium polygamum* 2b.

9. *Typhetum laxmannii* Nedelcu 1968

Typhetum laxmannii is a rare marsh community, which occurs in the secondary wetland localities, e.g. artificial water reservoirs, gravel or sand ditches. This community grows in the littoral ecophase, its occurrence in the limosal ecophase is only temporary. Generally, *Typha laxmannii* is successively suppressed by species with a higher competitive power, above all, *Typha angustifolia* and *T. latifolia* (Oťaheľová, 2001). The soils are characterized by a higher content of sand or gravel. In the locality near Poltár village, a neutral pH value was detected (7.05).

In addition to the dominating neophyte species *Typha laxmannii*, only two marsh plants, *T. latifolia* and *Lythrum salicaria* are present in this community with a higher frequency. The occurrence of other species depends on the prevailing ecophases. The species of the limosal ecophase typical of the eutrophic and shallow water are present in the first phytosociological relevé (rel. 2), the aquatic macrophytes, typical of the littoral ecophase, in the next one (rel. 3).

In the catchment area of the Ipeľ river, the stands of this community were found only on three localities. In addition to two localities near Sklabiná village and Poltár town, which are documented by phytosociological relevés, a fragment was detected within the stands of *Typhetum latifoliae*, on a field margin near Kalinovo village. Unfortunately, it was destroyed at the end of 1997 (Hrivnák, 1998b).

Relevé Nr. 2; SK; Ipeľská kotlina basin; Sklabiná village, water reservoir, littoral; stagnant water, 7–10 cm deep; altitude 179 m a.s.l.; relevé area 10 m^2; cover E_1 90%; mean height of stand 120–130 cm; R. Hrivnák, H. Oťaheľová, M. Valachovič; 29.7.1998.

Typha laxmannii 5, *Bidens frondosus* 1, *Epilobium hirsutum* 1, *Agrostis stolonifera* +, *Calystegia sepium* +, *Juncus articulatus* +, *Lycopus europaeus* +, *Lythrum salicaria* +, *Persicaria hydropiper* +, *Rumex conglomeratus* +, *Typha latifolia* +, *Alisma plantago-aquatica* r, *Cirsium arvense* r, *Ranunculus sceleratus* r.

Relevé Nr. 3; SK; Lučenská kotlina basin; Poltár town, S margin of town, terrain depression near railway; stagnant water, 15–25 cm deep; altitude 233 m a.s.l.; relevé area 25 m^2; cover E_1 100 %; mean height of stand 150–180 cm; R. Hrivnák; 22.7.1999.

Typha laxmannii 5, *Utricularia vulgaris* agg. 5, *Juncus articulatus* +, *Typha latifolia* +, *Lythrum salicaria* r.

10. *Iris pseudacorus* community (Tab. 8A)

This community grows on moist long overflowed biotopes, in deeper terrain depressions, the littoral of river oxbows or shallow canals. The stands were found mostly inside the complex of the marsh vegetation. They form relatively homogenous patches or strips, poor in species. The mean number of species per one relevé is 10. In addition to the dominant species, *Iris pseudacorus*, aquatic macrophytes (*Lemna minor* and *Utricularia vulgaris* agg.) are very often as well.

This community is very rare in the catchment area of Ipeľ river, as well as on the entire terri-

Tab. 8A. *Iris pseudacorus* community

Relevé number	1	2	3	4	Ca	Cb
Number of species	9	13	10	10	4	9
Dominant species						
Iris pseudacorus	**4**	**4**	**5**	**4**	**4**	**100**
Phragmito-Magnocaricetea						
Lysimachia vulgaris	A	+	.	.	2	44
Galium palustre	.	+	+	1	3	44
Lycopus europaeus	.	.	+	+	2	22
Carex vulpina	.	.	+	1	2	22
Lemnetea						
Lemna minor	+	3	A	B	4	56
Utricularia vulgaris agg.	.	A	B	B	3	22
Molinio-Arrhenatheretea						
Agrostis stolonifera	.	+	.	+	2	11
Symphytum officinale	.	.	+	+	2	33

tory of Slovakia. By now, it is documented by 9 phytosociological relevés from central and western Slovakia (Oťaheľová, 2001).

Conclusion

Summarizing the results of studied catchment area of the Ipeľ river, 10 plant communities of reed wetlands were documented by 213 phytosociological relevés (80 published and 133 previously unpublished ones). Four of them are regarded as relatively frequent (*Phragmitetum vulgaris*, *Typhetum latifoliae*, *Sparganietum erecti* and *Glycerietum aquaticae*), two are considered frequent (*Scirpetum lacustris* and *Typhetum angustifoliae*) and four belong to rare plant communities (*Equisetum limosi*, *Acoretum calami*, *Typhetum laxmannii* and *Iris pseudacorus* community).

These communities are threatened primarily by human activity. The threat of particular communities depends on their ability to response to the changes of water regime and to colonize new biotopes created by man. Most frequently, rapid qualitative changes accompany relatively long-lasting changes of the water regime. Nevertheless, the sensibility of individual plant communities is different. The relatively long-lasting terrestrial ecophase is accompanied by rapid qualitative changes, e.g. *Scirpetum lacustris*, *Glycerietum aquaticae* or *Typhetum angustifoliae*. The most frequent communities of them, *Phragmitetum vulgaris*, *Typhetum latifoliae* and *Glycerietum aquaticae*, are able to colonize very rapidly artificial anthropogenic biotopes – water reservoirs, gravel or sand ditches and canals. The other ones, e.g. the communities of neophytes – *Acorus calamus* a *Typha laxmannii*, form only short-term, transitional, temporary stands, being gradually suppressed by competitively stronger indigenous species (above all, *Typha latifolia*).

In this paper, the floristical and ecological variants are presented for each detected plant community. The particular ecophases (littoral, limosal or terrestrial) reflect the floristical composition of stands. In reed wetlands, one marsh species is always dominant (the cover 60–100 %), other marsh species are present at a lower frequency and cover. The presence of aquatic macrophytes, diagnostic species of the alliance *Oenanthion aquaticae*, *Bidentetea tripartiti* and *Molinio-Arrhenatheretea* classes, weeds or herbaceous lianas, corresponds mainly to particular ecological conditions of individual biotopes.

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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 mentioned. The adapted Braun-Blanquet scale was used for the tables marked as A, and only the marks of varaints were used for the synoptic tables marked as B.

Table 1A.

E_1: *Alisma plantago-aquatica* 15: +, *Aristolochia clematitis* 7: +, *Atriplex prostrata* 12: +, *Bidens tripartita* 12: +, *Calamagrostis epigejos* 6: +, *Carex acutiformis* 3: +, *C. riparia* 1: +, *C. vesicaria* 2: +, *C. vulpina* 14: +, *Cirsium canum* 6: +, *Eleocharis palustris* 15: +, *Elytrigia repens* 9: +, *Eupatorium cannabinum* 6: +, *Galium palustre* 7: +, *Glechoma hederacea* 12: +, *Iris pseudacorus* 12: +, *Lemna minor* 17: +, *Lysimachia vulgaris* 2: A, *Persicaria amphibia* 5: +, *P. lapathifolia* 12: +, *Poa palustris* 4: +, *Ranunculus sceleratus* 12: +, *Rorippa amphibia* 12: +, *Rumex maritimus* 7: +, *Tithymalus palustris* 8: +.

Table 1B.

E_1: *Alopecurus aequalis* A, *Aristolochia clematitis* B, *Artemisia vulgaris* C, *Bidens tripartita* C, *Calamagrostis epigeios* B, *Cirsium canum* B, *Epilobium hirsutum* A, *Equisetum fluviatile* E, *Eupatorium cannabinum* B, *Filipendula ulmaria* F, *Glechoma hederacea* C, *Glyceria fluitans* E, *Leersia oryzoides* A, *Mentha arvensis* F, *Persicaria lapathifolia* C, *Plantago major* C, *Ranunculus sceleratus* C, *R. lingua* H, *Rumex conglomeratus* A, *R. maritimus* B, *Salix cinerea* H, *Schoenoplcetus lacustris* E, *Scirpus sylvaticus* F, *Vicia cracca* C.

Table 2A.

E_1: *Butomus umbellatus* 3: 1, *Carex acuta* 2: +, *C. riparia* 4: +, *Cirsium arvense* 6: r, *Eleocharis palustris* 6: +, *Galium palustre* 3: +, *Lemna trisulca* 1: 1, *Lycopus europaeus* 6: 1, *Persicaria hydropiper* 5: +, *Rumex hydrolapathum* 5: +, *Sparganium erectum* 1: 1, *Spirodela polyrhiza* 3: +, *Stachys palustris* 6: +, *Typha angustifolia* 6: +, *Utricularia vulgaris* agg. 1: 1.

E_0: *Riccia fluitans* 1: A.

Table 2B.

E_1: *Butomus umbellatus* D, *Carex acutiformis* H, *C. distans* H, *Cirsium palustre* H, *Hydrocharis morsus-ranae* E, *Mentha arvensis* F, *Persicaria hydropiper* E, *Phragmites australis* G, *Rumex maritimus* C, *Salix fragilis* D, *Tithymalus palustris* H, *Typha latifolia* C, *Veronica anagalloides* H.

E_0: *Riccia fluitans* D.

Table 3A.

E_1: *Alopecurus aequalis* 14: +, *Atriplex prostrata* 12: +, *Callitriche cophocarpa* 14: +, *Ceratophyllum demersum* 7: 3, *Equisetum palustre* 13: +, *Galium palustre* 11: A, *Humulus lupulus* 7: +, *Chenopodium polyspermum* 12: +, *Lysimachia vulgaris* 11: A, *Mentha aquatica* 3: r, *Phalaroides arundinacea* 2: 1, *Phragmites australis* 7: +, *Ranunculus repens* 2: +, *Rumex maritimus* 9: +, *Solanum dulcamara* 8: 1, *Spirodella polyrhiza* 14: +, *Stachys palustris* 2: +.

E_0: *Riccia fluitans* 14: 5.

Table 3B.

E_1: *Agrostis stolonifera* F, *Alopecurus aequalis* D, *Atriplex prostrata* F, *Calamagrostis epigeios* F, *Carex vesicaria* F, *C. vulpina* F, *Equisetum palustre* F, *Humulus lupulus* E, *Chenopodium polyspermum* F, *Iris pseudacorus* F, *Lysimachia nummularia* F, *L. vulgaris* F, *Mentha aquatica* B, *Persicaria hydropiper* F, *Phalaroides arundinacea* B, *Poa trivialis* F, *Ranunculus flammula* F:, *R. sceleratus* F, *Rumex crispus* F, *R. maritimus* E, *Schoenoplectus lacustris* F, *Solanum dulcamara* E, *Sonchus palustris* F, *Stachys palustris* B, *Symphytum officinale* F, *Teucrium scordium* F, *Urtica dioica* F.

Table 4A.

E_1: *Alisma lanceolatum* 4: A, *Alopecurus geniculatus* 4: B, *Atriplex prostrata* 6: +, *Bidens cernua* 33: 1, *Bolboschoenus maritimus* 15: r, *Butomus umbellatus* 40: 1, *Carex acutiformis* 16: 3, *C. buekii* 5: 1, *C. hirta* 21: +, *Cirsium arvense* 19: +, *C. canum* 24: r, *Epilobium* sp. 26: 1, *Equisetum fluviatile* 17: 3, *Eupatorium cannabinum* 16: r, *Filipendula ulmaria* 5: 1, *Geum rivale* 5: +, *Iris pseudacorus* 38: +, *Juncus articularis* 27: +, *Lathyrus pratensis* 26: +, *Leersia oryzoides* 20: +, *Lemna gibba* 41: B, *Mentha arvensis* 24: +, *Myosoton aquaticum* 2: r, *Myriophyllum spicatum* 2: +, *Persicaria lapathifolia* 26: 1, *Ranunculus sceleratus* 4: 1, *Rorippa sylvestris* 22: +, *Salix alba* 8: r, *S. cinerea* 33: r, *S. purpurea* 27: +, *Scrophularia nodosa* 24: +, *S. umbrosa* 2: +, *Scutelaria galericulata* 8: +, *Sium latifolium* 27: r, *Sonchus arvensis* 18: r, *Spirodella polyrhiza* 33: 1, *Tanacetum vulgare* 18: +, *Tripleurospermum perforatum* 22: +, *Veronica beccabunga* 17: +.

E_0: *Calliergon cordifolium* 39: 1, *Riccia fluitans* 42: 1.

Table 4B.

E1: *Alisma lanceolatum* A, *Alopecurus geniculatus* A, *Atriplex prostrata* F, *Bolbochoenus maritimum* F, *Carex buekii* G, *Cirsium arvense* D, *C. canum* B, *Eleocharis acicularis* A, *Epilobium* sp. B, *Eupatorium cannabinum* D, *Filipendula ulmaria* G, *Galium uliginosum* A, *Geum rivale* G, *Gratiola officinalis* A, *Juncus articulatus* B, *Lathyrus pratensis* B, *Leersia oryzoides* D, *Lysimachia nummularia* A, *Mentha arvensis* B, *Myosoton aquaticum* E, *Myriophyllum spicatum* E, *Persicaria lapathifolia* B, *Poa palustris* A, *Ranunculus flamulla* A, *Rorippa sylvestris* B, *Salix alba* F, *S. cinerea* N, *S. purpurea* B, *Scrophularia nodosa* B, *S. umbrosa* E, *Scutelaria galericulata* F, *Sonchus arvensis* A, *Tanacetum vulgare* A, *Veronica scutellata* A.

Table 5A.

E_1: *Bidens tripartita* 7: +, *Calystegia sepium* 11: +, *Carex riparia* 14: +, *C. vesicaria* 1: +, *Echinochloa crus-galli* 20: r, *Eleocharis palustris* 1: 1, *Elodea canadensis* 9: 1, *Galium palustre* 7: +, *Leersia oryzoides* 10: +, *Lemna gibba* 15: +, *Lycopus europaeus* 2: +, *Myriophyllum spicatum* 17: +, *M. verticillatum* 6: +, *Nuphar lutea* 18: +, *Persicaria dubia* 20: r, *P. hydropiper* 15: +, *P. lapathifolia* 4: +, *Plantago major* 7: r, *Potamogeton natans* 1: B, *Ranunculus sceleratus* 19: r, *Schoenoplectus lacustris* 18: +, *Solanum dulcamara* 7: +, *Stachys palustris* 7: +, *Symphytum officinale* 20: r, *Trapa natans* 21: A, *Urtica dioica* 9: r..
E_0: *Chara foetida* 10: +.
Table 5B.
E_1: *Bidens tripartita* B, *Carex riparia* A, *C. vesicaria* H, *Echinochloa crus-galli* C, *Eleocharis palustris* H, *Elodea canadensis* C, *Epilobium hirsutum* A, *Galium palustre* B, *Leersia oryzoides* F, *Lemna gibba* F, *Lycopus europaeus* G, *Myriophyllum spicatum* F, *M. verticillatum* B, *Nuphar lutea* D, *Persicaria dubia* C, *P. hydropiper* F, *Plantago major* B, *Rubus caesius* A, *Schoenoplectus lacustris* D, *Stachys palustris* B, *Trapa natans* A, *Urtica dioica* C.
E_0: *Chara foetida* F.
Table 6A.
E_1: *Batrachium aquatile* agg. 9: +, *Bolboschoenus maritimus* 19: 1, *Caltha palustris* 15: +, *Callitriche palustris* agg. 23: +, *Carex hirta* 24: +, *C. vulpina* 16: +, *Chenopodium polyspermum* 6: +, *Eleocharis palustris* 25: +, *Epilobium hirsutum* 27: r, *E. tetragonum* 1: 1, *Hydrocharis morsus-ranae* 26: +, *Lemna trisulca* 8: 1, *Myosoton aquaticum* 1: +, *Phragmites australis* 21: +, *Plantago major* 9: +, *Poa trivialis* 24: +, *Potentilla anserina* 9: +, *Rorippa sylvestris* 1: +, *Rumex crispus* 10: +, *R. hydrolapathum* 18: +, *Sagittaria sagittifolia* 9: +, *Schoenoplectus lacustris* 6: +, *Spirodella polyrhiza* 21: +, *Tripleurospermum perforatum* 6: +, *Utricularia australis* 21: 1, *Veronica anagallis-aquatica* 20: +.
Table 6B.
E_1: *Acorus calamus* D, *Alopecurus geniculatus* G, *Batrachium aquatille* agg. D, *Callitriche palustris* agg. C, *Cardamine pratensis* D, *Carex hirta* C, *Chenopodium polyspermum* D, *Epilobium hirsutum* C, *E. tetragonum* C, *Galium uliginosum* H, *Glyceria notata* E, *Myosotis scorpioides* agg. C, *Myosoton aquaticum* C, *Myriophyllum spicatum* C, *Phragmites australis* C, *Potamogeton natans* C, *P. pectinatus* C, *Prunella vulgaris* D, *Ranunculus lingua* E, *Rumex crispus* C, *Scirpus sylvaticus* C, *Stellaria palustris* E, *Tripleurospermum perforatum* D, *Veronica anagalloides* H.
Table 7B.
E_1: *Alisma lanceolatum* B, *A. plantago-aquatica* E, *Alopecurus geniculatus* D, *Calystegia sepium* D, *Galium aparine* D, *Gleditschia triacanthos* C, *Glyceria maxima* B, *Gratiola officinalis* B, *Lycopus europaeus* C, *Mentha aquatica* B, *Phragmites australis* B, *Populus* H*canadenis* C, *Rubus caesius* D, *Salix alba* A, *Schoenoplectus lacustris* A, *Sparganium erectum* B, *Symphytum officinale* B, *Veronica anagalis-aquatica* C.
E_0: *Campylium polygamum* D.
Table 8A.
E_1: *Acorus calamus* 1: +, *Bidens frondosa* 1: M, *Calystegia sepium* 1: +, *Carex acuta* 3: +, *C. riparia* 1: +, *Eleocharis palustris* 4: +, *Glyceria maxima* 1: +, *Juncus effusus* 4: +, *Lythrum salicaria* 2: +, *L. virgatum* 2: +, *Mentha arvensis* 2: +, *Persicaria lapathifolia* 1: +, *Phalaroides arundinacea* 2: +, *Potentilla reptans* 2: +, *Rumex crispus* 2: +, *Sium latifolium* 3: +, *Spirodella polyrhiza* 2: A, *Typha latifolia* 3: +.

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); 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^2); total cover (%); E_1 cover (%); E_0 cover (%); mean height of stand (cm); proportion of dead biomass (%); author(s) of relevé (AC – A. Cvachová, RH – R. Hrivnák, HO – H. Oťaheľová, MV – M. Valachovič); date.
Table 1A.
1. SK; IK; Dolná Strehová village, Hámor settlement, alluvium of Ipeľ river; -; 0; 160; 0; 0; 25; 90; 90; 0; 230–260; 40; RH; 1.6.1999.
2. SK; IK; Ipeľské Predmostie village, Nature reserve (NR) Ipeľské hony, NE margin; -; 0; 130; 0; 0; 25; 100; 100; 0; 230–240; 20; RH; 23.6.1997.
3. SK; LK; Zelené village, fishpond, W margin; S; 0–5; 222; 0; 0; 21; 100; 100; 0; 270–290; 0; RH; 17.9.1999.
4. SK; LK; Kalinovo village, NR Hrabovo, SE margin; S; 0–2; 198; 0; 0; 25; 100; 100; 0; 240–280; 10; RH; 14.9.1998.
5. SK; RV; Divín village, littoral of a water reservoir, NW margin; -; 0; 252; NE; 1; 25; 100; 100; 0; 310–360; 40–50; RH; 11.9.1998.
6. SK; CV; Šíd village, WSW, alluvium of Čamovský potok brook; -; 0; 201; 0; 0; 25; 100; 100; 0; 230–250; 0; RH; 13.8.1999.
7. SK; CV; Šávoľ village, Nový sad settlement, bank of Suchá brook; -; 0; 183; NW; 20; 20; 100; 100; 0; 230–250; 0; RH; 15.8.1997.
8. SK; IK; Tešmak village, "Surdocké lúky", alluvium of Ipeľ river; -; 0; 126; 0; 0; 25; 100; 100; 0; 250–270; 40; RH; 26.6.1997.
9. SK; LK; Veľká nad Ipľom village, gravel ditch; -; 0; 165; 0; 0; 25; 90; 90; 0; 240–300; 0; RH; 30.8.1998.
10. SK; LK; Kalinovo village, NE, alluvium of Ipeľ river; -; 0; 203; SE; 4; 25; 100; 100; 0; 190–210; 0; RH; 27.8.1999.
11. SK; CV; Šíd village, S, terrain depression; S; 0–5; 205; 0; 0; 25; 100; 100; 0; 230–250; 0; RH; 13.8.1999.

12. SK; IK; Ipeľské Predmostie village, W, alluvium of Ipeľ river, terrain depression; -; 0; 129; WNW; 2–3; 25; 100; 100; 0; 250; 5; AC, RH; 26.6.1997.
13. SK; LK; Halič village, pool in the park near the castle, ENE margin; S; 1–45; 240; NE; 1; 25; 95; 95; 0; 230–270; 40; RH; 6.9.1997.
14. SK; LK; Kalinovo village, S, river oxbow; S; 2–15; 196; 0; 0; 25; 100; 100; 0; 240–280; 0; RH; 14.9.1998.
15. SK; LK; Lučenec town, "Havaška", alluvium of Slatinka brook; -; 0; 177; 0; 0; 25; 100; 100; 0; 270–310; 0; RH; 7.7.1998.
16. SK; LK; Podrečany village, abandoned sludge pit of water from magnesite mines; S; 0–6; 212; 0; 0; 25; 100; 100; 0; RH; 3.8.1999.
17. SK; IP; Kubáňovo village, S, river oxbow in the alluvium of Ipeľ river; S; 20–45; 115; 25; 100; 100; 0; 220–250; 0; RH; 3.9.1999.

Table 2A.

1. SK; IK; Ipeľské Predmostie village, "Cúdenica", river oxbow; -; 0; 128; 0; 0; 18; 90; 90; 0; 220–230; 20; RH, HO; 24.6.1997.
2. SK; IK; ibid., Ryžoviská marsh, near a floodplain forest; -; 0; 129; 0; 0; 12; 100; 100; 0; 210–215; 60; AC, RH; 25.6.1997.
3. SK; IK; ibid., Ipeľské hony marsh; -; 0; 130; 0; 0; 25; 75; 75; 0; 230–240; 25; RH; 23.6.1997.
4. SK; IK; Tešmak village, NE, below a road, terrain depression; -; 0; 128; 0; 0; 14; 100; 100; 0; 170; 20; AC, RH; 26.6.1997.
5. SK; IP; Šahy town, part Homok, near a bridge, river oxbow; F; 1–10; 123; 0; 0; 12; 100; 100; 0; 230–250; 0; RH; 3.9.1999.
6. SK; IK; Ľuboreč village, litoral of a water reservoir, W margin; S; 0–25; 232; 0; 0; 14; 95; 95; 0; 170–180; 0; RH; 27.7.1998.

Table 3A.

1. SK; KP; Drienovo village, fishpond on the N margin of village; S; 50–80; 375; 0; 0; 12; 90; 90; 0; 230–260; 0; AC, RH; 2.7.1998.
2. SK; IK; Ľuboreč village, water reservoir, W margin; S; 0–15; 232; ESE; 1; 25; 95; 95; 0; 270–300; 0; RH; 27.7.1998.
3. SK; IK; ibid., N margin; S; 0–5; 232; 0; 0; 25; 100; 100; 0; 200–220; 0; RH; 27.7.1998.
4. SK; KP; Kozí Vrbovok village, water reservoir; S; 70–120; 332; 0; 0; 25; 90; 90; 0; 300–350; 0; RH; 12.8.1998.
5. SK; KP; Cerovo village, fishpond "Pri badluckej ceste"; S; 80–150; 414; 0; 0; 25; 95; 95; 0; 320–38; 0; RH; 12.8.1999.
6. SK; KP; ibid., fishpond "Veľký Šiaš"; S; 80–130; 420; 0; 0; 25; 95; 95; 0; 250–270; 0; RH; 12.8.1999.
7. SK; LK; Halič village, pool int the park near the castle; S; 45–90; 240; 0; 0; 25; 90; 90; 0; 300–350; 0; RH; 6.9.1997.
8. SK; LK; Mikušovce village, NE, terrain depression near the railway; -; 0; 181; 0; 0; 20; 90; 0; 240–260; 0; RH; 5.8.1998.
9. SK; LK; Veľké Dravce, water reservoir, N margin; S; 0–2; 197; 0; 0; 25; 90; 90; 0; 220–240; 20; RH, HO, MV.
10. SK; LK; ibid., E margin; S; 20–60; 197; 0; 0; 20; 100; 100; 0; 180–200; 0; RH; 14.8.1997.
11. SK; IK; Ipeľské Predmostie village, NR Ipeľské hony; -; 0; 130; 0; 0; 25; 100; 100; 0; 215–225; 0; RH; 23.6.1997.
12. SK; IP; Tešmak, NE margin of village, terrain depression; -; 0; 128; 0; 0; 25; 80; 80; 0; 210–215; 50; AC, RH; 26.6.1997.
13. SK; IK; Sklabiná, water reservoir, tributary part of Zajský potok brook; S; 10–25; 179; 0; 0; 25; 90; 90; 0; 210–230; 15–20; RH, HO, MV; 29.7.1998.
14. SK; LK; Zelené village, fishpond, W margin; S; 20–40; 224; 0; 0; 25; 90; 90; 0; 210–220; 0; AC, RH; 11.7.1997.

Table 4A.

1. SK; LK; Tomášovce village, fishpond, N margin; S; 5–50; 200; 0; 0; 24; 78; 78; 0; 205–230; 15–20; RH; 10.7.1998.
2. SK; LK; Rátka village, water reservoir, tributary area; S; 0–25; 232; 0; 0; 21; 90; 90; 0; 220–240; 0; RH; 13.8.1999.
3. SK; LK; Podrečany village, abandoned sludge pit of water from magnesite mines; -; 0; 212; 0; 0; 25; 85; 85; 0; 210–240; 20; RH; 3.8.1999.
4. SK; LK; Tomášovce village, NE, terrain depression near the railway; S; 10–15; 199; 0; 0; 25; 80; 80; 0; 210–230; 10–15; RH; 21.6.1999.
5. SK; LK; Kalinovo village, Kamenec settlement, alluvium; -; 0; 222; 0; 0; 25; 98; 98; 0; 290–320; 0; RH; 27.8.1999.
6. SK; IK; Tešmak village, NE, terrain depression; -; 0; 128; 0; 0; 25; 90; 90; 0; 215–225; 25; AC, RH; 26.6.1997.
7. SK; LK; Veľké Dravce village, water reservoir, E margin; S; 5–60; 197; 0; 0; 15; 100; 100; 0; 140–160; 0; RH; 14.8.1997.
8. SK; RK; Ožďany village, water resrvoir, W margin; S; 5–60; 202; 0; 0; 25; 100; 100; 0; 260–300; 0; RH; 21.8.1997.
9. SK; LK; Lučenec town, alluvium of Krivánsky potok brook; S; 10–20; 181; 0; 0; 25; 90; 90; 0; 210–220; 20; RH; 15.7.1998.
10. SK; IK; Sklabiná village, water reservoir, tributary area of Zajský potok brook; S; 10–25; 179; 0; 0; 25; 90; 90; 0; 210–220; 15–20; RH, HO, MV; 29.7.1998.
11. SK; LK; Rapovce village, N, canal; S; 5–10; 169; 0; 0; 20; 100; 100; 0; 245–275; 0; RH; 11.8.1999.
12. SK; RK; Ožďany village, water reservoir, NE margin; S; 10–20; 202; 0; 0; 25; 85; 85; 0; 200–220; 30; RH; 8.7.1999.
13. SK; RV; Slaná Lehota village, NW, terrain depression near railway; S; 15–20; 240; 0; 0; 24; 95; 95; 0; 230–250; 20; RH; 29.7.1999.
14. SK; LK; Lučenec town, E, near a brick-kiln, alluvium of Krivánsky potok brook; S; 5–20; 177; 0; 0; 25; 95; 95; 0; 250–270; 40; RH; 15.7.1998.
15. SK; IK; Ľuboreč village, water reservoir, NW margin; S; 0–25; 232; 0; 0; 20; 60; 60; 0; 190–200; 0; RH; 27.7.1998.
16. SK; CV; Šíd village, WSW, alluvium of Čamovský potok brook, near the railway; S; 1–15; 204; 0; 0; 25; 100; 100; 0; 260–280; 0; RH; 13.8.1999.

17. SK; O; Ábelová village, N, alluvium of Ľuboreč brook; F; 5–15; 620; S; 1; 21; 80; 80; 0; 200–205; 10–15; RH; 30.6.1999.
18. SK; LK; Holiša village, gravel ditches on the left side of Ipeľ river; -; 0; 174; 0; 0; 25; 90; 90; 0; 180–195; 0; RH; 17.7.1997.
19. SK; IK; Nenince village, water reservoir, tributary area; -; 0; 170; 0; 0; 18; 100; 100; 0; 200–230; 0; RH; 12.8.1999.
20. SK; LK; Kalinovo village, NE, alluvium of Ipeľ river; S; 5–10; 208; 0; 0; 24; 100; 100; 0; 200–220; 10; RH; 27.8.1999.
21. SK; IK; Slovenské Kľačany village, W, near a mineral-water spring; F; 1–4; 213; 0; 0; 25; 90; 90; 0; 200–215; 0; RH; 19.7.1999.
22. SK; LK; Lučenec town, Havaška settlement, alluvium of Slatinka brook; -; 0; 177; 0; 0; 25; 100; 100; 0; 215–230; 0; RH; 7.7.1998.
23. SK; KP; Drienovo village, N, fishpond; S; 10–60; 375; 0; 0; 21; 65; 65; 0; 180–200; 0; AC, RH; 2.7.1998.
24. SK; LK; Lučenec town, Malá Ves setllement, canal; -; 0; 180; 0; 0; 25; 100; 100; 0; -; 0; RH; 7.7.1998.
25. SK; LK; Holiša village, ESE, terrain depression; -; 0; 177; 0; 0; 25; 100; 100; 0; 210–215; 0; RH; 17.7.1997.
26. SK; LK; Mikušovce village, near an irrigation station; -; 0; 180; 0; 0; 25; 100; 100; 0; 190–210; 0; RH; 5.8.1998.
27. SK; LK; Veľké Dálovce village, SE, canal in the alluvium of Ipeľ river; F; 2–30; 163; 0; 0; 28; 95; 95; 0; 180–200; 0; RH; 10.9.1999.
28. SK; LK; Lučenec town, Ľadovo settlement, water reservoir; -; 0; 203; 0; 0; 25; 90; 90; 0; 200–220; 0; RH; 20.8.1997.
29. SK; IK; Ipeľské Predmostie village, W, terrain depression near a road; -; 0; 129; 0; 0; 25; 90; 90; 0; 250; 0; AC, RH, HO; 24.6.1997.
30. SK; LK; Trenč village, SW, canal; S; 15–30; 164; 0; 0; 30; 75; 75; 0; 200–230; 0; RH; 25.5.1999.
31. SK; KP; Kozí Vrbovok village, litoral of a water reservoir; S; 40–60; 332; 0; 0; 25; 95; 95; 0; 200–230; 0; RH; 12.8.1999.
32. SK; LK; Nitra nad Ipľom, gravel ditch; S; 10–20; 182; 0; 0; 18; 100; 100; 0; 200–215; 0; RH; 7.9.1999.
33. SK; LK; Hrabovo village, S, river oxbow near Ipeľ river; S; 5–40; 195; 0; 0; 30; 100; 100; 0; 180–200; 0; RH; 14.9.1998.
34. SK; CV; Šíd village, N, terrain depression in the alluvium of Čamovský potok brook; S; 30–50; 201; 0; 0; 25; 100; 100; 0; 280–320; 0; RH; 13.8.1999.
35. SK; RV; Divín village, litoral of Ružiná water reservoir, N margin; -; 0; 252; 0; 0; 25; 95; 95; 0; 220–240; 0; RH; 11.9.1998.
36. SK; IP; Kubáňovo village, S, sand ditch; S; 35–65; 115; 0; 0; 25; 95; 95; 0; 260–300; 0; RH; 3.9.1999.
37. SK; IK; Slovenské Kľačany village, Jazero settlement, pool; S; 30–45; 242; 0; 0; 25; 100; 100; 0; 250–270; 5–7; RH; 19.7.1999.
38. SK; LK; Halič village, pool in the park of the castle; S; 1–45; 240; 0; 0; 20; 100; 100; 0; 200–250; 0; RH; 6.9.1997.
39. SK; LK; Poltár town, S, terrain depression near the railway; S; 20–40; 233; 0; 0; 25; 100; 100; 3; 200–215; 20–40; RH; 22.7.1999.
40. SK; LK; Kalonda village, NW, gravel ditch; S; 10–30; 169; SE; 2; 30; 100; 100; 0; 230–260; 0; RH, HO, MV; 30.7.1998.
41. SK; LK; Lučenec town, SW, terrain depression near the crossing of the road to Mikušovce village and the railway; S; 1–10; 182; 0; 0; 25; 95; 95; 0; 240–260; 30; RH; 5.8.1998.
42. SK; LK; Zelené village, N, gravel ditch; S; 25–45; 225; 0; 0; 24; 95; 95; 0; 220–230; 15; RH; 29.7.1999.

Table 5A.

1. SK; KP; Hrušov village, N, fishpond, NE margin; S; 20–40; 405; 0; 0; 24; 95; 95; 0; 70–90; 0; RH; 20.6.1998 (see Hrivnák 1999b, Fig. 3).
2. SK; LK; Holiša village, canal near gravel ditch; F; 10–40; 177; 0; 0; 24; 90; 90; 0; 95–110; 0; RH; 10.8.1998.
3. SK; IK; Ipeľské Predmostie village, NR Ipeľské hony; -; 0; 130; 0; 0; 25; 75; 75; 0; 110–120; 0; AC, RH; 24.7.1998.
4. SK; IK; ibid., "Cúdenica", terrain depression; -; 0; 128; 0; 0; 12; 75; 75; 0; 45–50; 0; RH, HO; 24.6.1997.
5. SK; IK; ibid., NR Ipeľské hony; -; 0; 130; 0; 0; 18; 85; 85; 0; 120–130; 0; AC, RH; 24.7.1998.
6. SK; IK; Tešmak village, "Veľké jazierko", S margin of a pool; -; 0; 126; 0; 0; 25; 75; 75; 0; 60–65; 0; AC, RH, HO; 25.6.1997 (see Oťaheľová et al. 1998, Fig. 3d).
7. SK; IK; Tešmak village, "Veľké jazierko", SW margin of a pool; -; 0; 126; 0; 0; 15; 90; 90; 0; 90–100; 0; AC, RH; 25.6.1997.
8. SK; IK; Ipeľské Predmostie village, "Cúdenica", river oxbow; -; 0; 126; 0; 0; 12; 75; 75; 0; -; 0; RH, HO; 24.6.1997.
9. SK; LK; Lučenec town, Červenej armády street, water-course of Tuhársky potok brook; F; 3–30; 181; 0; 0; 14; 95; 95; 0; 100–110; 0; RH; 7.7.1998.
10. SK; LK; Veľké Dravce village, water-course of Suchá brook near a water reservoir; F; 1–2; 192; 0; 0; 11; 100; 100; 0; 160–170; 0; RH; 14.8.1997.
11. SK; LK; Rapovce village, terrain depression between the railway and the road; S; 5–40; 171; 0; 0; 14; 80; 80; 0; 100–130; 0; RH; 24.8.1997.
12. SK; LK; ibid., "Piesok", gravel ditch; S; 0–5; 169; N; 1; 25; 100; 100; 0; 140–160; 0; RH; 24.8.1997.
13. SK; LK; Kalinovo village, water-course of Ipeľ river, near a foot-bridge; F; 20–50; 201; 0; 0; 25; 90; 90; 0; 70–100; 0; RH; 8.6.1998.
14. SK; LK; Trenč village, Rároš settlement, alluvium of Ipeľ river, terrain depression; S; 30–40; 161; 0; 0; 25; 70; 70; 0; 100; 0; RH; 25.5.1999.
15. SK; LK; Veľká nad Ipľom village, SW, river oxbow; S; 10–20; 165; 0; 0; 20; 100; 100; 0; 160–170; 0; RH; 10.9.1999.
16. SK; LK; Trenč village, Osušie settlement, fishpond near a cottage; S; 20–160; 194; 0; 0; 25; 80; 80; 0; 160–180; 0; RH; 30.7.1999.
17. SK; LK; Holiša village, water reservoir; S & F; 10–60; 178; 0; 0; 25; 80; 80; 0; 70–90; 0; RH; 17.7.1997.
18. SK; CV; Šávoľ village, Nový Sad settlement, water-course of Suchá brook; F; 10–40; 183; 0; 0; 24; 100; 100;

0; 100–120; 0; RH; 15.8.1997.
19. SK; LK; Kalinovo village, water course of Ipeľ river; F; 15–45; 200; 0; 0; 13; 80; 80; 0; 100–170; 0; RH; 8.6.1998.
20. SK; LK; ibid., cooperative farm, terrain depression; S; 0–5; 202; 0; 0; 25; 100; 100; 0; 80–110; 0; RH; 14.9.1998.
21. SK; LK; Poltár town, SE, alluvium of Poltárica brook, terrain depression; S; 35–45; 230; 0; 0; 25; 100; 100; 0; -; 0; RH; 22.7.1999.
Table 6A.
1. SK; LK; Veľké Dravce village, water reservoir, SE margin; -; 0; 197; 0; 0; 25; 100; 100; 0; 100–110; 0; RH, HO, MV; 30.7.1998.
2. SK; CV; Šíd village, N, terrain depression in the alluvium of Čamovský potok brook; S; 20–50; 201; 0; 0; 25; 100; 100; 0; 220–230; 0; RH; 13.8.1999.
3. SK; LK; Hrabovo village, river oxbow, alluvium of Ipeľ river near a spring with mineral water; S; 0–5; 203; 0; 0; 25; 95; 95; 0; 100–140; 0; RH; 8.6.1998.
4. SK; IK; Ipeľské Predmostie village, W, terrain depression in the alluvium of Ipeľ river, near road; S; 0–1; 129; 0; 0; 25; 100; 100; 0; 180; 0; AC, RH, HO; 24.6.1997.
5. SK; LK; Trenč village, S margin of village, canal; S; 2–10; 164; 0; 0; 25; 80; 80; 0; 140–160; 0; RH; 25.5.1999.
6. SK; IK; Tešmak village, NE margin of village, terrain deression on alluvium of Ipeľ river; -; 0; 128; 0; 0; 15; 100; 100; 0; 180; 20; AC, RH; 26.6.1997.
7. SK; IK; Ipeľské Predmostie village, "Ryžovisko", W from a floodplain forest; -; 0; 129; 0; 0; 25; 100; 100; 0; 120–125; 0; AC, RH; 25.6.1997.
8. SK; IK; ibid., "Cúdenica" river oxbow; -; 0; 128; WNW; 5; 25; 95 95; 0; 185–195; 0; RH, HO; 24.6.1997.
9. SK; IK; Tešmak, "Veľké jazierko" pool, S margin; -; 0; 126; 0; 0; 25; 100; 100; 0; 160; 0; AC, RH, HO; 25.6.1997.
10. SK; IP; Vyškovce nad Ipľom, "Ipeľské piesky"; river oxbow; S; 25–40; 127; 0; 0; 25; 90; 90; 0; 200–220; 0; RH; 3.9.1999.
11. SK; IK; Ipeľské Predmostie village, NR Ipeľské hony marsh, NE margin; -; 0; 130; 0; 0; 25; 100; 100; 0; 160–165; 0; RH; 23.6.1997.
12. SK; LK; Lučenec town, water reservoir Ľadovo; -; 0; 203; 0; 0; 25; 100; 100; 0; 190–200; 30–40; RH; 20.8.1997.
13. SK; LK; Veľké nad Ipľom village, SW, river oxbow; S; 0–5; 165; 0; 0; 25; 95; 95; 0; 200–215; 0; RH; 10.9.1999.
14. SK; IK; Slovenské Kľačany village, jazero settlement, pool; S; 15–40; 242; 0; 0; 25; 100; 100; 0; 200–230; 0; RH; 19.7.1999.
15. SK; LK; Kalinovo village, NR Hrabovo; S; 0–3; 198; 0; 0; 25; 100; 100; 0; 230; 0; RH; 14.9.1998.
16. HU; -; Litke village, opposite the railway station, alluvium of Ipeľ river; -; 0; 161; 0; 0; 25; 90; 90; 0; 140–160; 20; RH; 14.6.2000.
17. SK; LK; Hrabovo village, river oxbow, alluvium of Ipeľ river near a spring with mineral water; -; 0; 203; 0; 0; 25; 100; 100; 0; 160–180; 0; RH; 16.8.1997.
18. SK; IK; Ipeľské Predmostie village, E margin of village, alluvium of Ipeľ river between the raod and the river; -; 0; 130; 0; 0; 25; 100; 100; 0; 170; 0; AC, RH, HO; 24.6.1997.
19. SK; LK; Holiša village, river oxbow on the left side of Ipeľ river; S; 10–20; 177; 0; 0; 25; 100; 100; 0; 200–210; 0; RH; 17.7.1997.
20. SK; IK; Peťov village, near a bridge, river oxbow; -; 0; 149; 0; 0; 25; 100; 100; 0; 250; 0; RH, HO, MV; 29.7.1998.
21. SK; LK; Zelené village, fishpond, W margin; S; 25–35; 224; 0; 0; 25; 98; 98; 0; 160–170; 0; RH; 17.9.1999.
22. SK; LK; Holiša village, water resrvoir; -; 0; 178; 0; 0; 25; 100; 100; 0; 210; 40; RH; 10.8.1998.
23. SK; LK; Rapovce village, N, canal; S; 10–20; 169; 0; 0; 25; 90; 90; 0; 200; 0; RH; 11.8.1999.
24. SK; LK; Zelené village, fishpond, NE margin; -; 0; 224; NW; 2; 18; 90; 90; 0; 140; 0; AC, RH; 11.7.1997.
25. SK; LK; Lučenec town, E, near a brick-kiln, alluvium of Krivánsky potok brook; S; 2–10; 177; 0; 0; 25; 90; 90; 0; 100–120; 0; RH; 2.6.1998.
26. SK; IP; Kubáňovo village, S, river oxbow in the alluvium of Ipeľ river; S; 40–70; 115; 0; 0; 25; 80; 80; 0; 150; 0; RH; 3.9.1999.
27. SK; RK; Ožďany village, water reservoir, N margin; S; 5–10; 201; 0; 0; 25; 100; 100; 0; 190–210; 10; RH; 8.7.1999.
Table 8A.
1. SK; IK; Kováčovce village, marsh on the SW margin of village; -; 0; 145; 0; 0; 16; 95; 95; 0; 100; 15; AC, RH; 28.5.1997.
2. SK; IP; Vyškovce nad Ipľom village, Ipeľské Piesky, river oxbow near a road; S; 0–20; 127; 0; 0; 16; 90; 90; 0; 100–110; 0; RH; 3.9.1999.
3. SK; LK; Veľké Dálovce village, NR Dálovský močiar marsh; Hrivnák (1999a: 1, rel. 2).
4. SK; LK; ibid.; Hrivnák (l.c.: 1, rel. 1).

Appendix 3: Resources of relevés in synoptic table

Table 1B.
A – [Tab. 1A, rel. 15; Zaliberová et al. (2000: Tab. 1, rel. 17)]; B – [Tab. 1A, rels 5–11; Hrivnák etl al. (2001: Tab. 2, rel. 17)]; C – [Tab. 1A, rels 12–14, 16; Hrivnák (1999a: Tab. 1, rel. 3); Hrivnák et al. (l.c.: Tab. 2, rel. 16)]; D – [Tab. 1A, rels 1, 3–4]; E – [Svobodová & Řehořek (1972: Tab. 1, rels 2–3)]; F – [Kovács & Máthé (1967: Tab. 3, rel. 5); Svobodová & Řehořek (l.c.: Tab. 1, rel. 1)]; G – [Tab. 1A, rel. 2; Kovács & Máthé (l.c.: Tab. 3, rels 1–2)]; H – [Kovács & Máthé (l.c.: Tab. 3, rels 3–4)]; I – [Tab. 1A, rel. 17].
Table 2B.
A – [Hrivnák et al. (2001: Tab. 2, rel. 19)]; B – [Tab. 2A, rel. 6]; C – [Hrivnák (1999a: Tab. 1, rel. 11]; D – [Tab. 2A, rels 1–4; Hrivnák et al. (l.c.: Tab. 2, rel. 18]; E – [Tab. 2A, rel. 5; Kovács & Máthé (1968: Tab. 3, rel. 6)]; F – [Svobodová & Řehořek (1972: Tab. 1, rels 5–6]; G – [Svobodová & Řehořek (l.c.:

Tab. 1, rels 4, 7)]; H – [Kovács & Máthé (l.c.: Tab. 3, rels 7–8].
Table 3B.
A – [Hrivnák et al. (2001: Tab. 2, rel. 20)]; B – [Tab. 3A, rels 2–3]; C – [Tab. 3A, rels 4–6; Hrivnák (1999b: Fig. 2]; D – [Tab. 3A, rel. 14]; E – [Tab. 3A, rels 1, 7–10]; F – [Tab. 3A, rels 11–13; Svobodová & Řehořek (1972: Tab. 1, rel. 8); Hrivnák (1999a: Tab. 1, rel. 5].
Table 4B.
A – [Tab. 4A, rels 4, 18; Neuhäuslová-Novotná (1968: Tab. 3, rels 14–15)]; B – [Tab. 4A, rels 22, 24–27]; C – [Tab. 4A, rel. 21]; D – [Tab. 4A, rels 3, 12, 14, 16, 19–20, 35; Hrivnák (1998a: Tab. 2, rel. 1)]; E – [Tab. 4A, rels 1–2; Hrivnák et al. (2001: Tab. 2, rel. 22]; F – [Tab. 4A, rels 6–9, 11, 15, 23, 29–30, 34, 37; Hrivnák et al. (l. c.: Tab. 2, rels 21, 23]; G – [Tab. 4A, rels 5, 10, 13, 17]; H – [Tab. 4A, rels 36, 38, 40, 42]; I – [Tab. 4A, rel. 41; Hrivnák (1998a: Tab. 2, rel. 3); Hrivnák (1999a: Tab. 1, rel. 6)]; J – [Tab. 4A, rel. 39]; K – [Tab. 4A, rels 28, 31]; L – [Tab. 4A, rel. 32]; M – [Hrivnák (1998a: Tab. 2, rel. 2]; N – [Tab. 4A, rel. 33].
Table 5B.
A – [Tab. 5A, rels 14, 16, 19, 21; Hrivnák (1998a: Tab. 2, rel. 6)]; B – [Tab. 5A, rels 4, 6–7]; C – [Tab. 5A, rels 9, 13, 20]; D – [Tab. 5A, rels 11, 18]; E – [Tab. 5A, rels 3, 5, 8; Hrivnák et al. (2001: Tab. 2., rels 24–25]; F – [Tab. 5A, rels 10, 12, 15, 17]; G – [Tab. 5A, rel. 2; Hrivnák et al. (2001: Tab. 2, rel. 26)]; H – [Tab. 5A, rel. 1].
Table 6B.
A – [Kovács & Máthé (1967: Tab. 4, rels 7, 10)]; B – [Tab. 6A, rels 8, 19–20; Hrivnák et al. (2001: Tab. 2, rel. 30)]; C – [Tab. 6A, rels 1–5, 10, 12–14, 17–18, 21–27; Kovács & Máthé (l.c.: Tab. 4, rel. 6); Neuhauslová-Novotná (1968: Tab. 3, rels 7–9); Svobodová & Řehořek (1972: Tab. 2, rel. 2); Hrivnák 1998a (Tab. 2, rel. 5); Hrivnák 1999a (Tab. 1, rel. 4); Hrivnák et al. (l.c.: Tab. 2, rel. 29)]; D – [Tab. 6A, rels 6–7, 9, 11, 15; Kovács & Máthé (l.c.: Tab. 4, rels 2, 5); Svobodová & Řehořek (l.c.: Tab. 2, rel. 8); Hrivnák et al. (l.c.: Tab. 2, rels 27–28)]; E – [Kovács & Máthé (l.c.: Tab. 4, rels 1, 3–4, 8, 11); Svobodová & Řehořek (l.c.: Tab. 2, rel. 9)]; F – [Tab. 6A, rel. 16; Svobodová & Řehořek (l.c.: Tab. 2, rels 1, 4–7, 11, 16)]; G – [Svobodová & Řehořek (l.c.: Tab. 2, rels 3, 10, 12–15)]; H – [Kovács & Máthé (l.c.: Tab. 4, rel. 9)].
Table 7B.
A – [Kovács & Máthé (1967: Tab. 6, rel. 5)]; B – [Kovács & Máthé (l.c.: Tab. 6, rels 1–4)]; C – [Hrivnák et al. (2001: Tab. 2, rel. 32)]; D – [rel. 1]; E – [Kovács & Máthé (l.c.: Tab. 6, rel. 6)].