Carpathian Wetland Handbook

2014

Authors
Ján Šeffer[1], Viera Šefferová Stanová[1], Rastislav Lasák[1], Bohdan Prots[2], Dan Gurean[3], Jiří Koptík[4], Wojciech Mróz[5], Katarzyna Staszyńska[5], Predrag Lazarevic[6], Csaba Szigetvári[7]

[1]Daphne – Institute of Applied Ecology, Bratislava, the Slovak Republic
[2]State Museum of Natural History, National Academy of Sciences of Ukraine
[3]Transylvanian University of Brasov, Faculty of Silviculture and Forest Engineering, Brasov, Romania
[4]Daphne CZ – Institute of Applied Ecology, České Budějovice, the Czech Republic
[5]Institute of Nature Conservation, Polish Academy of Sciences, Krakow, Poland
[6]Institute for Nature Conservation of Serbia, Beograd, Serbia
[7]E-misszio Environmental Association, Hungary

Photo credits: Jaroslav Košťál, Richard Hrivnák (p. 19), Viera Šefferová Stanová (p. 10, 34), Mário Duchoň (p. 26)

Printed within the project „Carpathian Wetland Iniciative“. Additional funding for publishing: BioREGIO Carpathians project, funded by the European Union within the framework of the South East Europe Transnational Cooperation Programme in partrnership with Duna-Ipoly National Park Directorate.

Foreword

Wetlands of different types (including springs, standing and flowing waters, non-forest habitats, peatlands, shrub-dominated wetlands, forested wetlands, subterranian hydrological systems and human-made wetlands) represent some of the most precious ecosystems of the Carpathians. Increased efforts has been made to make wetlands of the Carpathians more visible and to enforce their importance and ecosystem services during the last years. The Carpathian Wetlands Initiative (CWI) was established as a Regional Initiative of the Ramsar Convention on Wetlands to support improved implementation of the objectives of the Ramsar Convention and the Carpathian Convention in conservation and wise use of wetlands in this region through international cooperation and common activities on various levels. In the Carpathians, there are biogeographic similarities, common social and cultural links between the seven countries. However, there are seven different languages, differences in history, research and science and slightly different approaches in definition and names of wetland habitat types. Cooperation and joint efforts for wetland conservation, management and monitoring, especially in shared wetlands, require common understanding of wetland types and using of harmonized systems in order to improve regional consultations, discussions, planning and projects development. Common understanding of wetland terms and wetland types was identified as one of the priorities also at conferences and workshops of the CWI. Therefore the development of the Carpathian Wetland Handbook – an interpretation manual on wetlands in the Carpathian countries was included in the project "Integrated management of biological and landscape diversity for sustainable regional development and ecological connectivity in the Carpathians" (BioREGIO Carpathians, funded from the South-East Europe Transnational Cooperation Programme). Several documents were developed within this project, such as common integrated management measures for Carpathian wetlands and the Red Lists of Carpathian habitats and species, including wetlands. Thanks to productive cooperation with Daphne – Institute of Applied Ecology and the support from the Ramsar Convention core budget, we present the first edition of this interpretation manual. We hope that with this handbook we are starting the elaboration of a series of useful publications for our CWI members and partners.

Ján Kadlečík

Tereza Thompson

Carpathian Wetland Initiative

Content

Introduction

Carpathian Wetlands

Wetlands are important in terms of their biodiversity and need of protection, but are one of the most threatened habitats in all of Europe. Wetland habitats are important because of their site typical biodiversity, which depends on a functioning hydrological regime. While not generally species rich, these habitats support characteristic species and communities, adapted to the specific site conditions. Many of these species and habitats are officially classified as threatened. The conservation status of wetland Natura 2000 habitats in the Carpathians in the 2007 report (www.cdr.eionet.eu) is generally unfavourable (Galvánek & Kadlečík 2014). Wetlands in the Carpathians are usually small scale and threatened by human activities as cessation of traditional management practices, intensive grazing and anthropogenic changes to hydrology.

In order to raise awareness of the value of these ecosystems, we have prepared an overview of the most important wetlands of the Carpathians, their vegetation description and distribution in orographical units. Our findings relate to the data that were collected by experts from the Carpathian countries in 2009 and 2010. Recent findings have been supplemented from Ukraine, where, in recent years, it has been done a lot of work in the description of habitats and data collection to follow EU standards.

Carpathian Biodiversity Information System

Carpathian Biodiversity Information System (CBIS) is a tool for gathering published or unpublished but recorded on the occurrence of selected elements of Carpathian biodiversity, namely the plant and animal species and vegetation types. It is being built by country experts with practical experience with these natural elements in the field, benefiting also from the existing national and international databases. The CBIS is managed by Daphne – Institute of Applied Ecology on behalf of Carpathian EcoRegion Initiative (CERI).

Activities implemented under the project "Development of an Ecological Network for the Carpathians", which endured from April 2006 to April 2009 and was funded by BBI-Matra, meant a significant step forward in the building of CBIS. Data collection was realized on the territories of three South-Eastern Carpathian countries – Ukraine, Romania and Serbia. The base of the data was substantially enriched and comprised the facts on the occurrence of 148 habitats, 201 plants, 133 animals and 31 freshwater features. Their occurrences were recorded in orographical units, the delineation of which, undergone substantial refinement in GIS environment. For Annex I and II priority habitats and species of the EU Habitats Directive, precise information on the location was collected. Besides this, the affinity to CORINE Land Cover units and altitudinal range of distributions (based on the affinity of habitats and species to altitude) were gathered. As a result of this process, the CBIS acquired the information on distribution of 513 species and habitats in more than 13 thousand sites (Zingstra et al. 2009).

It was, however, desirable to start complementary process of the design of an ecological network in the Western Carpathian countries – in Slovakia, Poland, Hungary and the Czech Republic. This important step was supported by DBU (Deutsche Bundesstifftung Umwelt) in project "Building of Carpathian Biodiversity Information System and design of the ecological network for the Western Carpathians". Project was implemented in 2008 – 2010 (Šeffer et al. 2010). The working checklists for habitat types, plants and animal species were assembled and spread to country experts, who revised them. The revised checklists include:

- 169 endemic and Habitat Directive II plant species (240 species were revised)
- 137 semi-natural and natural habitats, represented by alliances, including plant species listed in Annex II of the EU Habitats Directive 92/43/EC (147 alliances were revised)
- 248 focal species (important for biodiversity of the Carpathians) and Habitat Directive Annex II animal species (256 species were revised)

The Carpathian Biodiversity Information System is available on the CERI website http://www.carpates.org/cbis.html.

Structure of the publication

Datasets collected for South-Eastern and Western Carpathian countries were joint together in order to prepare this publication. The first step was selection of water and wetland vegetation alliances, which was followed by their unification for the entire eco-region. Alliance (in several cases level of sub-alliance was used), an ecological unit within the classification of the vegetation through the Braun-Blanquet approach for vegetation research, is the vegetation unit, which was used for interpretation of the habitats of European conservation interest within the Natura 2000 network. For clear understanding of the alliance concept, a short description was added to each of the alliance. The description of alliances was mainly following the publication of Rodwell at al. (2002), but in several cases national vegetation literature was used. Vegetation classification system slightly differs in the countries and it was important to agree on the same ecological understanding and definition of alliances.

The data on vegetation units distribution has been obtained through scientific articles, books, dissertations, results of research projects, own studies, national or regional vegetation databases and the data of a number of experts from various research institutions. Therefore, if after searching all these sources there was no information on that alliance, it was not recorded in the orographic unit, even when the alliance was really common and most probably occurs there. Occurrence of vegetation units is based on their occurrence within the orographical (geomorphologcal) units that were delineated for this purpose by the countries themselves according to their geomorphological data. It turned out that the division into orographic units (based on Kondracki; 1988), used as a base for harmonisation of the data in the Carpathians was too general, especially concerning the borders of particular units. It was therefore replaced by a more adequate scheme of landscape regionalization. This was done manually by using the digital elevation model with some corrections in the GIS environment. The estimated geometric accuracy of the obtained geo-dataset of the orographic units corresponds with an approximate 1:100,000 map scale.

Carpathian countries that are members of the EU are obliged to have national adoption of habitats identification according to Annex I Habitats Directive (92/43/EEC) and Interpretation Manual of European Union Habitats (EC 2007), which is a scientific reference document. For each alliance there was filled information on relevance to NATURA 2000 according to the national catalogues of habitats as following: Czech Republic (Chytrý et al. 2001), Hungary (Fekete et al. 2007), Slovakia (Stanová & Valachovič 2002), Poland (Herbich et. al. 2004), Romania (Doniţa et al. 2005, Gafta & Mounford 2008), Serbia (Blaženčić et al. 2005) and Ukraine (Prots & Kagalo 2012). As some habitats are endemic for the particular parts of the Carpathian Mountains, such information was added too.

The next step was re-classification of alliances according to EUNIS habitat classification (Davies et al. 2004). The level 3 of EUNIS classification has been used since it is for terrestrial and freshwater habitats the most elaborated. The EUNIS Habitat classification (from **E**uropean **U**nion **N**ature **I**nformation **S**ystem) has been designed to give a common European reference set of habitat units with a common description of all units and a common hierarchical classification to allow the reporting of habitat data to be in a comparable manner for their use in nature conservation - inventories, monitoring andassessments (Evans 2012).

We have analysed 21 wetland habitat types (EUNIS 3 level) linked to 41 vegetation types (alliances). Their link to Natura 2000 habitat types and to CORINE Land Cover types are presented too.

C1.2 Permanent mesotrophic lakes, ponds and pools

Ecological description: Lakes and pools with waters fairly rich in nutrients (nitrogen and phosphorus) and dissolved bases (pH often 6-7). Many unpolluted lowland lakes and ponds are naturally mesotrophic, and support dense beds of macrophytes, which are absent in polluted waters. Beds of charophytes can occur in mesotrophic as well as in oligotrophic waters.

Hydrocharition Rübel 1933

Syn: *Ceratophyllion* Den Hartog et Segal 1964
Description: Vegetation of free-floating aquatic macrophytes.

Natura 2000 habitat: 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
	-		3150	-		3150

Affinity to CORINE Land Cover units and altitude:

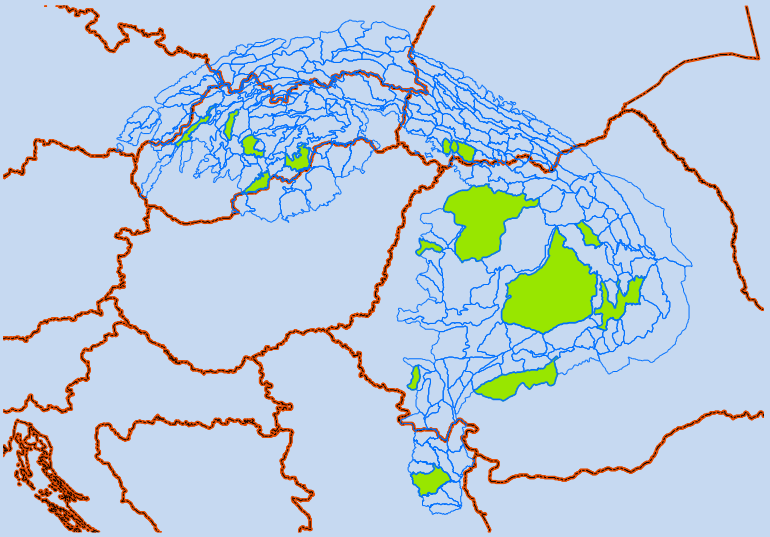
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural		0		0	1		0
succesion areas		0		1	0		0
wetlands		0		3	0		3
water bodies		3		3	3		2
urban areas		2		0	0		0
Affinity to altitude							
minimal		200		300	400		150
maximal		600		400	550		400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
HU	Mostly in artificial lakes, fish ponds (monodominant stands of *Ceratophyllum demersum* L.). We have only few concrete data concern to this alliance, but it accepted as a widespread vegetation type in the whole country. Stands of Ceratophyllum submersum L. is very rare in the North Hungarian Mts.

Ranunculion aquatilis Passarge 1964

Description of vegetation type: Crowfoot vegetation of shallow water and margins of streams, ditches and pools.



Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural				0	2	0	0
wetlands				3	0	3	3
water bodies				1	2	3	1
Affinity to altitude							
minimal				300	150	800	150
maximal				500	350	1000	300
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

C1.3 Permanent eutrophic lakes, ponds and pools

Ecological description: Lakes and pools with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in nutrients (nitrogen and phosphorus) and dissolved bases (pH usually > 7). Moderately eutrophic waters can support dense beds of macrophytes, but these disappear when pollution causes nutrient levels to rise further.

Lemnion minoris de Bolós et Masclans 1955

Syn: *Lemno-Salvinion natantis* Slavnic 1956, *Lemnion minoris* Tüxen 1955
Description: Duckweed communities of eutrophic and hypertrophic waters.

Natura 2000 habitat: 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
3150	3150		3150	3150	3150	3150

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0		1	0	0	0
wetlands	0	0		3	0	2	3
water bodies	3	3		3	3	3	3
urban areas	0	0		1	0	0	0
Affinity to altitude							
minimal	180	200		200	300	70	150
maximal	500	900		700	600	1000	500
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Nymphaeion albae Oberd. 1957

Ecological description: Communities of rooted aquatics with floating leaves in sheltered nutrient-rich fresh water.

Natura 2000 habitat: 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
	3150 (3160)	3150	3150	3160	3150	3150

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
wetlands		0	3	3	0	2	2
water bodies		3	0	3	3	3	3
Affinity to altitude							
minimal		100	250	200	200	70	150
maximal		200	290	500	1000	100	400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

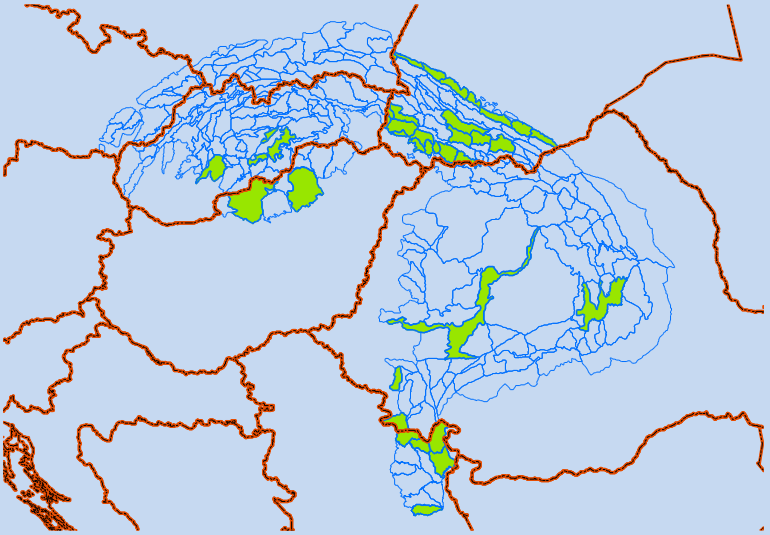
Notes on this alliance in countries:

country	note
HU	We have only a few concrete data from the North Hungarian Mts., but it is accepted as a distributed alliance in the whole country (Borhidi 2003).

Potamion lucentis Rivas-Martínez 1973

Syn: *Magnopotamion* (Vollmar 1947) Den Hartog et Segal 1964

Description: Vegetation dominated by floating rooted broad-leaved species



Natura 2000 habitat: 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
	3150		3150		3150	3150

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural		0		0	1		0
wetlands		0		3	0		3
water bodies		3		3	3		3
Affinity to altitude							
minimal		200		200	100		150
maximal		600		300	500		1400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

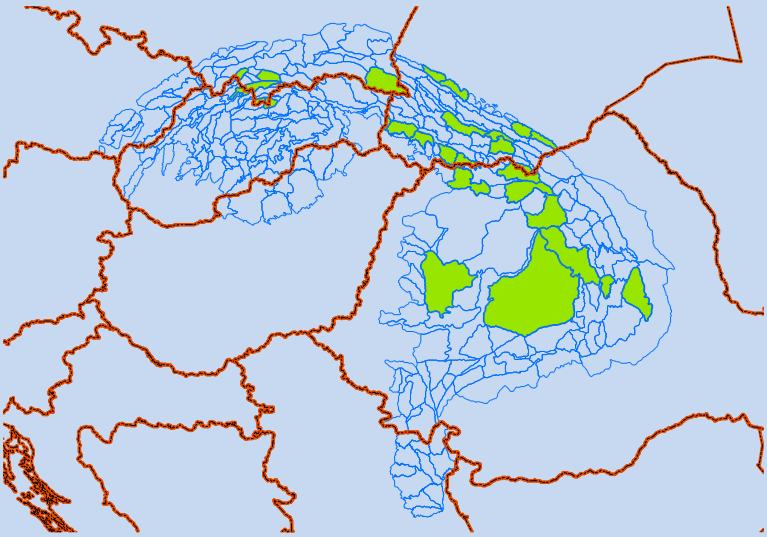
country	note
HU	These vegetation types are accepted as widely distributed syntaxa in the Country (Borhidi 2003), although we know only some concrete loci of *Potamion lucentis* in the North Hungarian Mts. Most of the localities are monodominant stands of *Myriophyllum spicatum*, which is a quite frequent species in fish ponds and artificial lakes.

C1.4 Permanent dystrophic lakes, ponds and pools

Ecological description: Lakes and pools with acidic waters of high humus content and often brown tinted (pH often 3-5).

Rhynchosporion albae Koch 1926

Description: Vegetation of stagnant, acid, dystrophic waters in pools of *Sphagnum* bogs on deep peats.



Natura 2000 habitat: 7110* Active raised bogs, 7140 Transition mires and quaking bogs, 7150 Depressions on peat substrates of the *Rhynchosporion*

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
		7110*, 7140	7110*	7140; 7150		7150

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
coniferous forests			0	0	3		0
wetlands			3	3	1		3
Affinity to altitude							
minimal			600	1000	550		500
maximal			1125	1600	1700		2000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
SK	The communities of alliance *Rhynchosporion* have an oceanic character and they are very rare in lowland Borska nižina (Valachovič, M. et al. 2001). Mesotrophic mires in mountains are classified within the *Sphagnion cuspidati* Krajina 1933 alliance. Because this alliance is not accepted in other Carpathian countries, occurrences for *Sphagnion* are under *Rhynchosporion alliance*, meaning vegetation of pools on oligotrophic raised bogs.

C1.6 Temporary lakes, ponds and pools

Ecological description: Freshwater lakes, ponds, pools, or parts of such freshwater bodies that become periodically dry, with their associated animal and algal pelagic and benthic communities.

Charion fragilis Krausch 1964

Syn: *Charion fragilis* (Sauer) Krausch 1964
Description: Submerged stonewort swards of lime-rich freshwaters.

Natura 2000 habitat: 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
3140			3140		3140	3140

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	1		0		0	0
deciduos forests	2	0		0		0	0
succesion areas	0	0		1		0	0
grasslands	2	0		0		0	0
wetlands	1	1		0		2	3
water bodies	1	3		3		3	2
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
urban areas	0	1		0		0	0
Affinity to altitude							
minimal	300	200		300		70	150
maximal	450	500		400		100	400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Littorellion uniflorae Koch ex R. Tx. 1937

Description: Suboceanic hairgrass swards in oligotrophic standing and slow-flowing waters

Natura 2000 habitat: 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the *Isoëto-Nanojuncetea*

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
			3130			3130

Affinity to CORINE Land Cover units and altitude:

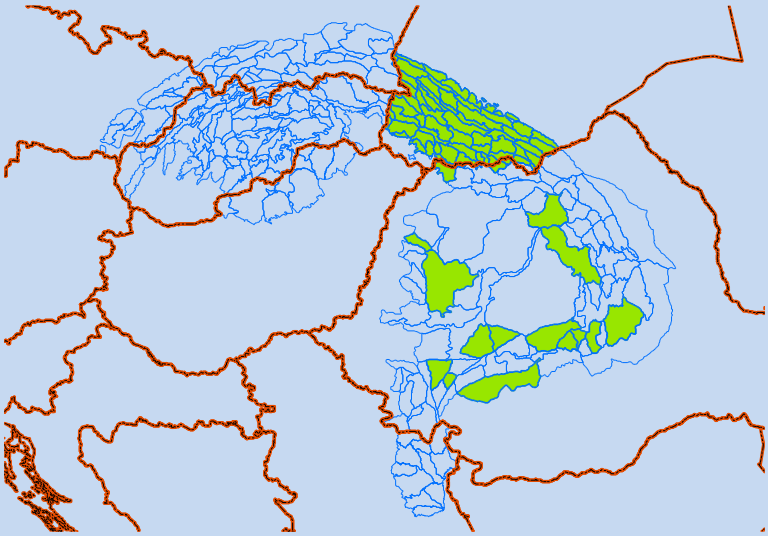
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
water bodies				3			3
Affinity to altitude							
minimal				1600			150
maximal				1700			600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

C2.1 Springs, spring brooks and geysers

Ecological description: Springs and resurgences, together with animal and plant communities dependent on the peculiar microclimatic and hydrological situation created by them. Excludes vegetated spring mires (D2.2, D4.1), where springs emerge through a (usually small) expanse of vegetation with little or no open water.

Cardaminion amarae Maas 1959

Syn: *Cardaminenion* Den Held et Westh. 1969
Description: Sciophilous communities of acid or sub-neutral forest springs.

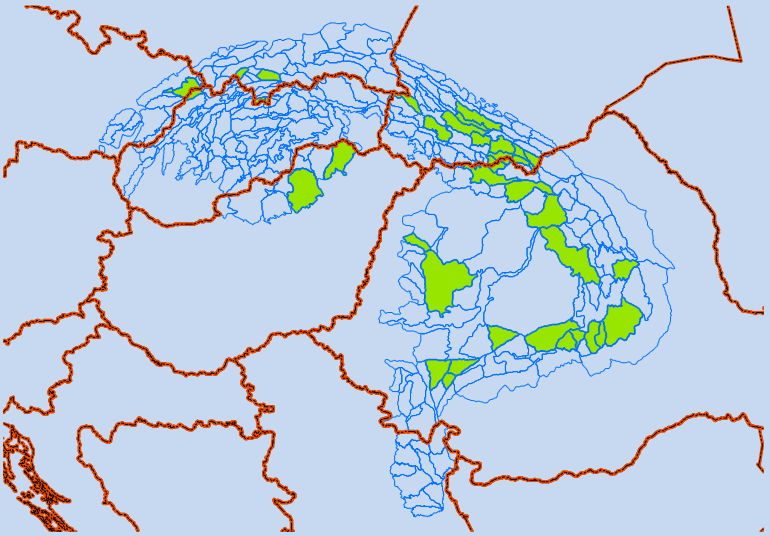


Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
coniferous forests					1		1
deciduos forests					3		1
mixed forests					2		1
grasslands					0		1
wetlands					0		3
water bodies					0		1
Affinity to altitude							
minimal					600		160
maximal					1000		1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Cardamino-Montion Br.-Bl. 1926

Syn: *Epilobio nutantis-Montion* Zechmeister 1993
Description: Spring vegetation of base-poor waters.



Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
				partialy endemic		partialy endemic

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
coniferous forests	0	0	0	0	3		0
deciduos forests	0	0	0	0	2		0
mixed forests	0	0	0	0	2		0
succesion areas	0	0	0	1	1		0
grasslands	3	0	0	0	1		0
wetlands	0	1	0	3	0		3
water bodies	0	3	0	0	0		0
Affinity to altitude							
minimal	600	300	800	650	600		800
maximal	800	500	1550	850	2000		1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Caricion remotae Kästner 1941

Description: Soft-water spring communities dominated by phanerogams.

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0		0			0
barren land	0	0		0			0
coniferous forests	1	1		0			1
deciduos forests	2	3		1			1
mixed forests	2	1		0			1
succesion areas	0	0		0			0
grasslands	0	0		0			0
wetlands	0	2		3			3
water bodies	0	2		1			1
urban areas	0	0		0			0
Affinity to altitude							
minimal	300	300		250			200
maximal	1000	900		1250			1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Cratoneuro filicini-Calthion laetae Hadač 1983

Description: Plant commnunities of high mountain and mountain oligotrophic springs

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
succesion areas				1			
grasslands				0			
wetlands				3			3
Affinity to altitude							
minimal				500			700
maximal				1960			1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Philonotidion seriatae Hinterlang 1992

Description: Communities of oligotrophic springs.

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
barren land				0			1
succesion areas				2			0
grasslands				0			1
wetlands				0			3
water bodies				3			0
Affinity to altitude							
minimal				1000			1600
maximal				1200			1900
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Cratoneurion commutati Koch 1928

Description: Calcareous spring communities, commonly dominated by mosses

Natura 2000 habitat: 7220*Petrifying springs with tufa formation (*Cratoneurion*)

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7220*	7220*	7220*	7220*	7220*	7220*	7220*

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0		0	0	0	0	0
barren land	0		3	1	0	0	2
coniferous forests	0		0	0	2	0	0
deciduos forests	0		0	0	2	1	0
mixed forests	0		0	0	2	0	0
succesion areas	0		0	1	1	0	0
grasslands	3		0	0	0	1	0
wetlands	0		0	3	0	3	3
water bodies	0		0	0	0	0	0
urban areas	0		0	0	0	0	0
Affinity to altitude							
minimal	300		800	400	800	400	1250
maximal	600		1400	1780	2200	1200	1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
SK	Crenal communities at lower altitudes are in SK classified within separate alliance *Lycopodio-Cratoneurion commutati* Hadač 1983, e.g. in the Biele Karpaty Mts.

C2.2 Permanent non-tidal, fast, turbulent watercourses

Ecological description: Permanent water courses with fast-flowing turbulent water and their associated animal and microscopic algal pelagic and benthic communities. Rivers, streams, brooks, rivulets, rills, torrents, waterfalls, cascades and rapids are included. The bed is typically composed of rocks, stones or gravel with only occasional sandy and silty patches. Features of the river bed, uncovered by low water or permanently emerging, such as gravel or rock islands and bars are treated as the littoral zone. Includes high, mid and low-altitude, usually small to medium-sized streams as defined by the Water Framework Directive.

Ranunculion fluitantis Neuhäusl 1959

Description: Crowfoot and milfoil vegetation of mowing waters.

Natura 2000 habitat: 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
			3260			3260

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
wetlands				1			2
water bodies				3			3
Affinity to altitude							
minimal				300			150
maximal				600			800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

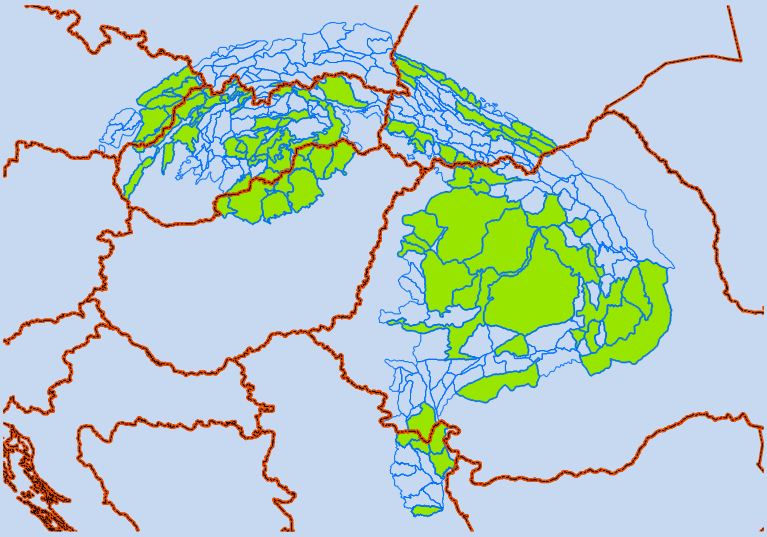
C3.1 Species-rich helophyte beds

Ecological description: Water-fringing stands of vegetation by lakes, rivers and streams, with mixed species composition.

Sparganio-Glycerion fluitantis Br.-Bl. et Sissingh in Boer 1942

Syn: *Glycerio-Sparganion* Br-Bl. Et Sissingh in Boer 1942

Description: Vegetation dominated by mixtures of grasses and herbs along fresh-water streams and ditch banks.



Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	1	0	1	1	0	0
succesion areas	0	0	0	2	0	0	0
grasslands	0	0	0	1	0	1	0
wetlands	0	3	0	2	1	3	3
water bodies	2	2	3	3	3	3	1
urban areas	0	1	0	0	0	0	0
Affinity to altitude							
minimal	300	100	450	300	400	100	150
maximal	600	600	450	800	1100	1000	700
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

C3.2 Water-fringing reedbeds and tall helophytes other than canes

Ecological description: Water-fringing stands of tall vegetation by lakes (including brackish lakes), rivers and brooks, usually species poor and often dominated by one species. Includes stands of *Carex* spp., *Equisetum fluviatile*,*Glyceria maxima*, *Phragmites australis*, *Sagittaria sagittifolia*, *Schoenoplectus* spp.,*Sparganium* spp. and *Typha* spp.

Magnocaricion elatae W. Koch 1926

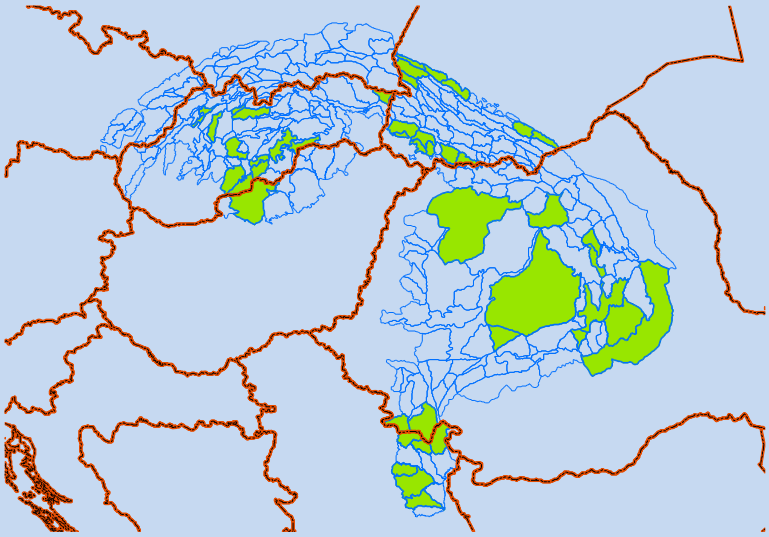
Syn: *Caricion rostratae* Balátová-Tuláčková 1963, *Caricion gracilis* Neuhäusl 1959
Description: Tall-sedge dominated wetlands.

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0	0	0	2	0	0
grasslands	0	0	0	0	1	1	1
wetlands	3	3	3	3	3	3	3
water bodies	2	1	0	1	1	2	2
urban areas	0	1	0	0	0	0	0
Affinity to altitude							
minimal	200	200	300	150	350	800	150
maximal	450	600	1150	970	1000	1000	1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Oenanthion aquaticae Hejný ex Neuhäusl 1959

Description: Vegetation of small emergent herbs on mud in and by the shallows of streams and ponds.

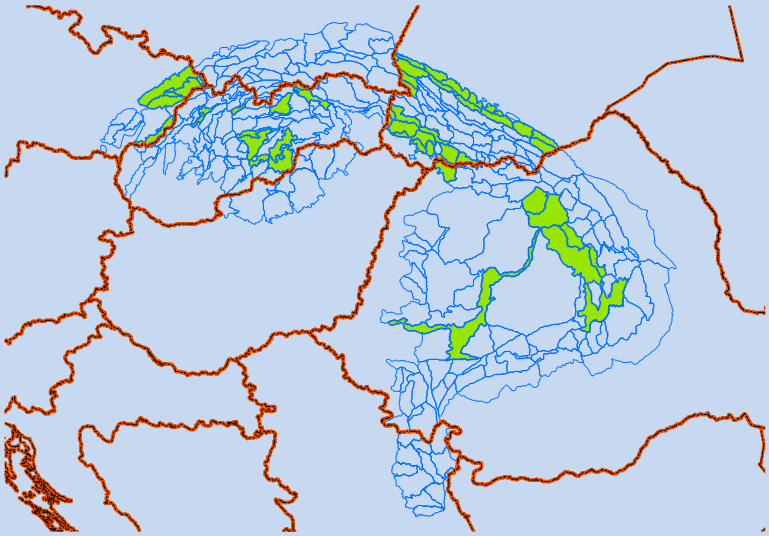


Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural		0		1	2	0	0
deciduos forests		0		0	1	0	0
succesion areas		0		0	1	0	0
wetlands		1		0	0	3	3
water bodies		3		3	2	3	2
Affinity to altitude							
minimal		200		300	100	200	150
maximal		600		600	1300	700	600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Phalaridion arundinaceae Kopecký 1961

Description: Riverine reed vegetation.

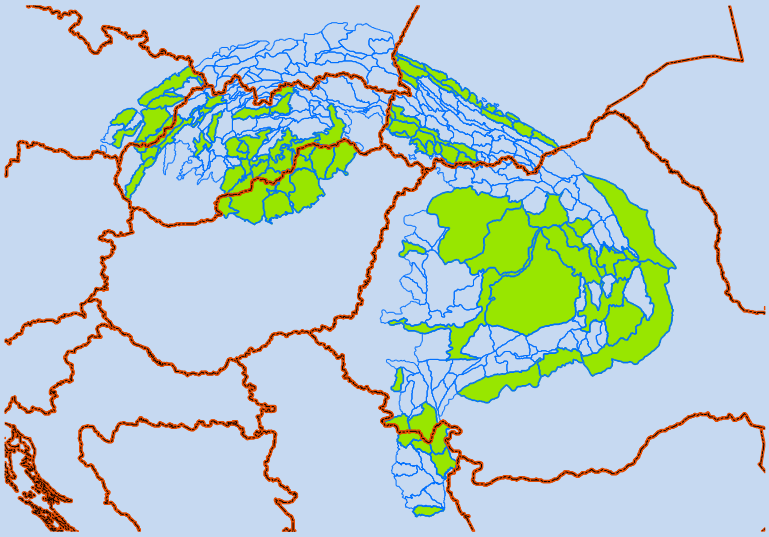


Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
barren land	0			1			
wetlands	0			3			3
water bodies	3			2			1
Affinity to altitude							
minimal	300			200			150
maximal	450			800			700
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Phragmition communis Koch 1926

Description: Swamps and fens dominated by tall graminoids in standing or gently mowing waters and winter-flooded fens.



Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0		0	2	0	0
deciduos forests	0	0		1	0	0	0
succesion areas	0	0		2	0	0	0
grasslands	0	0		2	0	1	0
wetlands	2	3		3	3	3	3
water bodies	2	3		0	3	3	3
Affinity to altitude							
minimal	190	200		300	200	70	150
maximal	450	800		800	700	1000	600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

C3.5 Periodically inundated shores with pioneer and ephemeral vegetation

Ecological description: Muddy, sandy and gravelly shores and dried-up bottoms of lakes and rivers, with moderate cover of vascular plants. These include annuals (e.g. *Bidens* spp., *Cyperus* spp., *Persicaria* spp.), developing during the exposure phase as well as perennials tolerant of temporary total immersion.

Nanocyperion Koch ex Libbert 1932

Syn: *Nanocyperion flavescentis* Koch ex Malcuit 1929

Description: Pioneer dwarf cyperaceous and therophyte communities on bare, periodically flooded ground.

Natura 2000 habitat: 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
		7110*, 7120, 91D0*	3130			3130

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural		3	0		2	0	0
barren land		0	3		0	0	0
wetlands		3	0		1	3	3
water bodies		0	0		1	2	1
urban areas		0	0		0	0	0
Affinity to altitude							
minimal		200	600		100	70	150
maximal		600	1125		700	1000	700
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

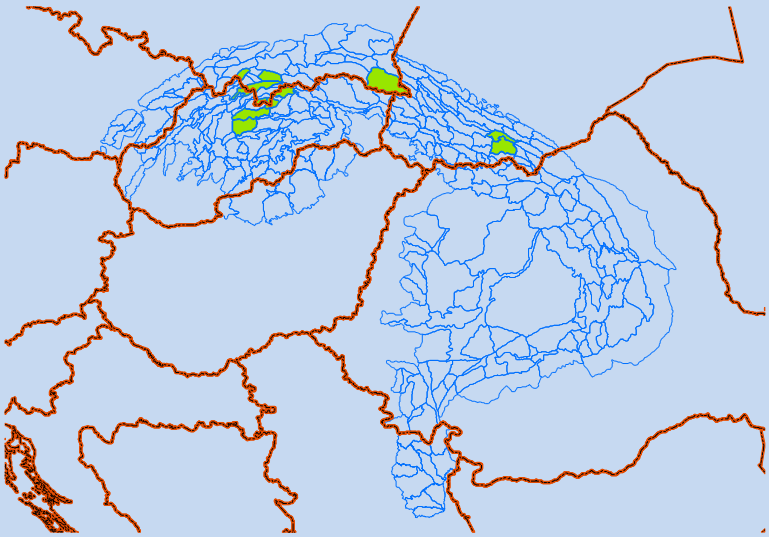
country	note
HU	Most of the stands are known from arable fields, wet pastures and old fields. Stands in the Cserehát are not documented exactly.

D1.1 Raised bogs

Ecological description: The mire surface and underlying peat of highly oligotrophic, strongly acidic peatlands with a raised centre from which water drains towards the edges. The peat is composed mainly of sphagnum remains. Raised bogs form on nearly flat ground and derive moisture and nutrients only from rainfall (ombrotrophic). Raised bog complexes include larger bog pools and a marginal lagg, as well as the main mire surface, which in actively-growing raised bogs typically comprises a complex of low hummocks, small pools and their associated vegetation. Raised bogs form only in cool climates with high rainfall. They are most widespread in the boreal zone and in the mountains and hills of the nemoral zone; they occur locally in the lowlands of the nemoral zone.Bogs harbour, in addition to sphagna, which are often abundant, a small number of vascular plants such as *Eriophorum vaginatum*, *Trichophorum cespitosum*, *Carex pauciflora*, *Ledum palustre*, *Vaccinium oxycoccos*, *Andromeda polifolia* and *Drosera rotundifolia*, and lichens.

Oxycocco-Empetrion hermaphroditi Nordh. 1936

Description: Boreal and high-altitude chamaephyte-rich raised bogs.



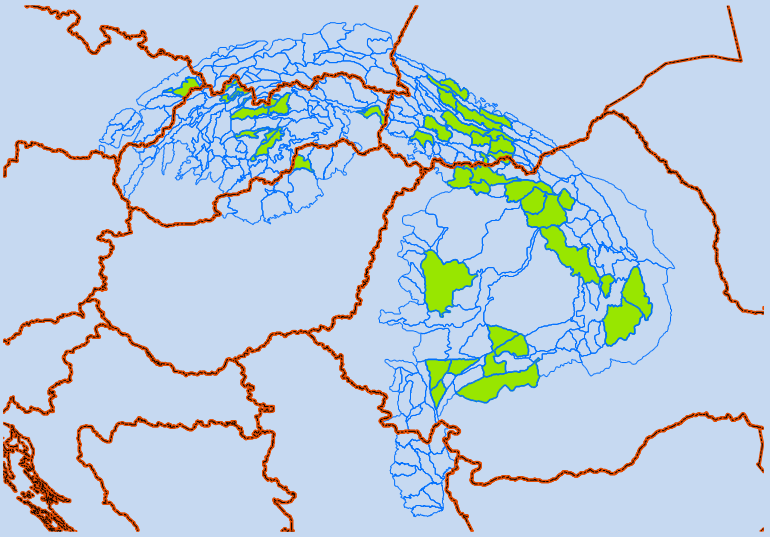
Natura 2000 habitat: 7110* Active raised bogs, 7120 Degraded raised bogs still capable of natural regeneration

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
		91D0*	7110*, 7120			7110*

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
coniferous forests			0	1			0
succesion areas			0	1			0
grasslands			0	0			1
wetlands			3	2			3
water bodies			0	2			0
Affinity to altitude							
minimal			600	1700			900
maximal			1200	2000			1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Sphagnion medii Kästner et Flößner 1933



Description: Bogs of sub-continental and montane regions. „Active“ is defined as ‘supporting a significant area of vegetation that is normally peat-forming’. Active bog vegetation is characteristic of intact (primary) bog surfaces, but peat-forming communities also occur frequently on bogs which have previously been cut for peat (secondary surfaces) but have since become revegetated.

Natura 2000 habitat: 7110* Active raised bogs, 7120 Degraded raised bogs still capable of natural regeneration

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7110*	7110*		7110*, 7120	7110*		7110*

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
coniferous forests	3	0		2	3		0
mixed forests	0	0		0	1		0
succesion areas	0	0		2	0		0
grasslands	0	0		1	1		1
wetlands	0	3		3	2		3
water bodies	0	1		0	0		0
Affinity to altitude							
minimal	590	200		700	800		500
maximal	590	300		1400	2100		1600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

D2.2 Poor fens and soft-water spring mires

Ecological description: Peatlands, flushes and vegetated springs with moderately acid ground water, within valley mires or on hillsides. As in the rich fens, the water level is at or near the surface of the substratum and peat formation depends on a permanently high watertable. Poor-fen vegetation is typically dominated by small sedges (*Carex canescens*, *Carex echinata*, *Carex nigra*, *Eriophorum angustifolium*, *Trichophorum cespitosum*), with pleurocarpous mosses (*Calliergonella cuspidata*, *Calliergon sarmentosum*, *Calliergon stramineum*, *Drepanocladus exannulatus*, *Drepanocladus fluitans*) or sphagna (*Sphagnum cuspidatum*, *Sphagnum papillosum*, *Sphagnum recurvum agg.*, *Sphagnum russowii*, *Sphagnum subsecundum agg.*). Other characteristic vascular plants are *Agrostis canina*, *Cardamine pratensis*, *Juncus filiformis*, *Ranunculus flammula* and *Viola palustris*. Soft-water spring mires are often dominated by *Montia fontana* or bryophytes (*Bryum* spp., *Philonotis* spp., *Pohlia* spp.).

Caricion fuscae Koch 1926 em. Klika 1934

Syn: *Caricion nigrae* Koch 1926 em. Klika 1934
Description: Vegetation of acid oligo-mesotrophic peats or peaty mineral soils

Natura 2000 habitat: 7140 Transition mires and quaking bogs

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7140	7140	7140	7140	7240*, 7140		7140

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0	0	0	1		0
barren land	0	0	3	0	0		0
coniferous forests	0	0	0	0	3		0
mixed forests	0	0	0	0	1		0
grasslands	3	0	0	0	0		3
wetlands	0	3	0	3	3		2
water bodies	0	1	0	0	0		1
Affinity to altitude							
minimal	400	300	740	200	500		400
maximal	700	500	1200	1000	2000		2000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Sphagno recurvi-Caricion canescentis Passarge 1964

Description: Small-sedge oligotrophic fens at the fridges of bog complexes.

Natura 2000 habitat: 7140 Transition mires and quaking bogs

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7140			7140			7140

Affinity to CORINE Land Cover units and altitude:

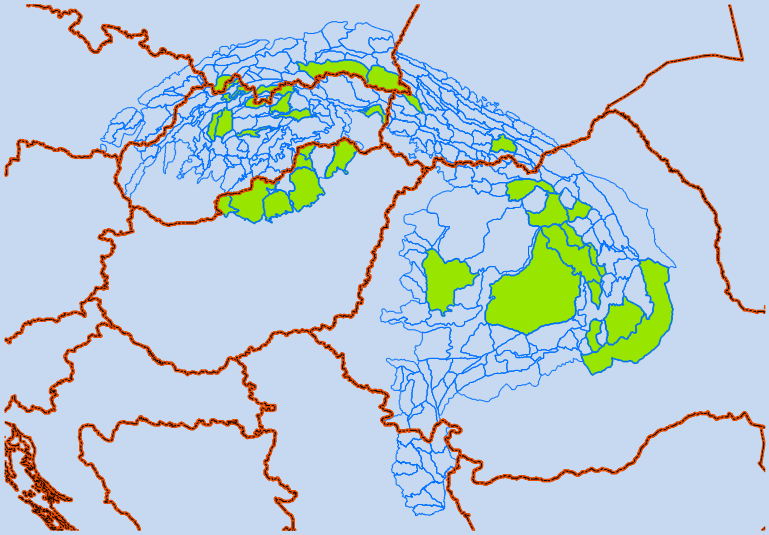
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
succesion areas	0			3			0
grasslands	1			1			0
wetlands	2			3			3
water bodies	0			1			1
Affinity to altitude							
minimal	495			500			1100
maximal	810			1000			1800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

D2.3 Transition mires and quaking bogs

Ecological description: Incompletely terrestrialized wetlands occupied by peat-forming vegetation with acid groundwater or (for vegetation rafts) acid underlying pool or lake water. Characteristic species are *Calla palustris*, *Carex chordorrhiza*, *Carex diandra*, *Carex lasiocarpa*, *Carex limosa*, *Carex rostrata*, *Menyanthes trifoliata*, *Potentilla palustris*, *Rhynchospora alba*, *Scheuchzeria palustris*. Included are rafts of *Sphagnum* and *Eriophorum* and quaking rafts of *Molinia caerulea*.

Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949

Description: Mires developing on more mesotrophic peats.



Natura 2000 habitat: 7140 Transition mires and quaking bogs

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
	7140	7140	7140	7140		7140

Affinity to CORINE Land Cover units and altitude:

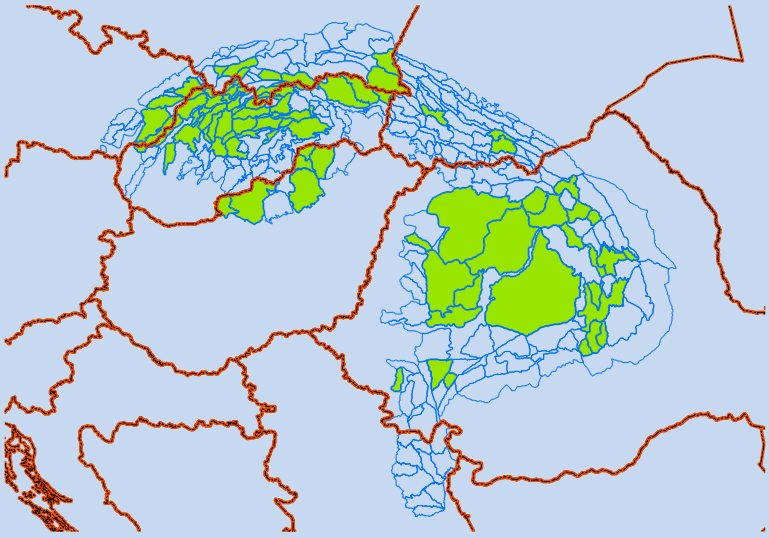
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural		0	0	0	1		0
coniferous forests		0	0	0	2		0
succesion areas		0	0	1	1		0
grasslands		0	0	0	0		2
wetlands		3	3	3	0		3
water bodies		1	0	0	0		0
Affinity to altitude							
minimal		200	600	600	700		450
maximal		500	1125	1500	1800		1500
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks

Ecological description: Wetlands and spring-mires, seasonally or permanently waterlogged, with a soligenous or topogenous base-rich, often calcareous water supply. Peat formation, when it occurs, depends on a permanently high watertable. Rich fens may be dominated by small or larger graminoids (*Carex* spp., *Eleocharis* spp., *Juncus* spp., *Molinia caerulea*, *Phragmites australis*, *Schoenus* spp., *Sesleria* spp.) or tall herbs (e.g. *Eupatorium cannabinum*). Where the water is base-rich but nutrient-poor, small sedges usually dominate the mire vegetation, together with a "brown moss" carpet. Hard-water spring mires often contain tufa cones and other tufa deposits. Excluded is the water body of hard-water springs; calcareous flushes of the alpine zone are a separate category. Rich fens are exceptionally endowed with spectacular, specialised, strictly restricted species. They are among the habitats that have undergone the most serious decline. They are essentially extinct in several regions and gravely endangered in much of central and western Europe.

Caricion davallianae Klika 1934

Description: Small-sedge rich vegetation of calcareous fens.



Natura 2000 habitat: 7230 Alkaline fens

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7230	7230	7230	7230, 7210*	7230		7230

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0	0	0	3		0
barren land	0	0	3	0	0		0
grasslands	3	0	0	0	1		3
wetlands	0	3	0	3	2		3
water bodies	0	1	0	0	0		0
Affinity to altitude							
minimal	300	200	425	200	400		900
maximal	600	600	1250	1000	700		1400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Sphagno warnstorfiani-Tomenthypnion Dahl 1957

Description: Small-sedge olig-mesotrophic fens developing over siliceous to base-rich substrates.

Natura 2000 habitat: 7230 Alkaline fens

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
7230			7230			7230

Affinity to CORINE Land Cover units and altitude:

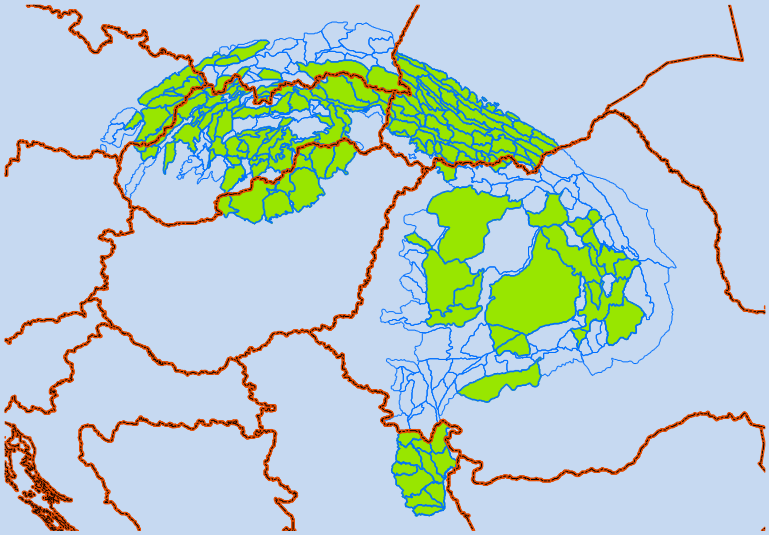
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
succesion areas	0			2			
grasslands	3			1			1
wetlands	0			3			3
water bodies	0			1			
Affinity to altitude							
minimal	400			500			700
maximal	700			900			1400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

E3.4 Moist or wet eutrophic and mesotrophic grassland

Ecological description: Wet eutrophic and mesotrophic grasslands and flood meadows of the boreal and nemoral zones, dominated by grasses *Poaceae*, rushes *Juncus* spp. or club-rush *Scirpus sylvaticus*.

Calthion R. Tx. 1937

Syn: *Calthenion* (R. Tx. 1937) Bal.-Tul. 1978
Description: Wet meadows and pastures of fertile, often manured soils.

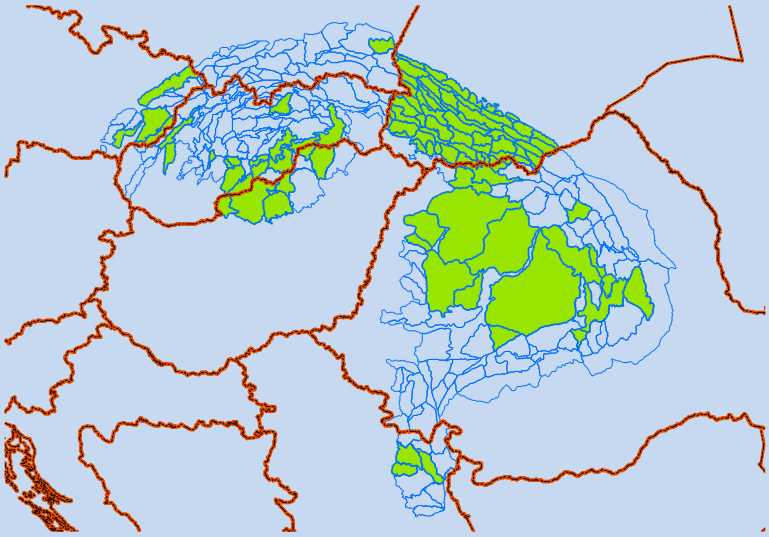


Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
barren land	0	0	0	0	0	1	0
coniferous forests	1	0	0	0	0	0	0
deciduos forests	1	1	0	0	1	0	0
mixed forests	1	0	0	0	2	0	0
grasslands	2	0	3	2	3	1	2
wetlands	2	3	0	3	2	3	3
water bodies	1	0	0	0	1	3	1
Affinity to altitude							
	CZ	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
minimal	300	200	600	200	300	200	150
maximal	900	700	1250	1360	900	1200	1600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Deschampsion caespitosae Horvatić 1930

Syn: *Agrostion stoloniferae* Soó (1933) 1971, *Leucanthemo-Agrostenion stoloniferae* (Soó 1933) Borhidi 2003, *Alopecurion pratensis* Passarge 1964
Description: Oligohaline moist tussocky meadows.



Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	1	0	0	3	0	0
grasslands	3	0	3	3	1	2	3
wetlands	0	3	2	1	0	3	2
water bodies	0	0	0	0	0	2	1
urban areas	0	1	0	0	0	0	0
Affinity to altitude							
minimal	200	200	250	170	400	500	200
maximal	350	500	300	238	1500	1000	1300
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
SK	Botta-Dukát - Chytry - Hájková - Havlová (2005, Preslia 77) suggested to unite alliances *Agrostion albae, Alopecurion pratensis* and *Deschampsion cespitosae* in a single alliance *Deschampsion cespitosae* Horvatić 1930 (the oldest valid name). Analysis was made for Czech Republic, Slovakia and Hungary, where i tis accepted by national classifications.
PL, RO, SB, UA	*Alopecurion pratensis* Passarge 1964 is used as valid name

Filipendulenion (Lohmeyer in Oberd. Et al. 1967) Bal.-Tul. 1978

Syn: *Filipendulion ulmariae* Segal 1966; *Filipendulion* Lohmeyer in Oberd. et al. 1967, *Filipendulo-Petasition* Br.-Bl. 1949.
Description: Tall-herb vegetation, seldom mown or grazed, on moist fertile mineral soils and peats.

Natura 2000 habitat: 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
6430	6430		6430			6430

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0	0	0	2		0
barren land	0	0	3	0	0		0
coniferous forests	1	1	0	0	0		0
deciduos forests	0	1	0	0	1		0
mixed forests	1	0	0	0	1		0
succesion areas	0	0	0	0	1		0
grasslands	2	1	0	0	1		1
wetlands	2	3	0	3	0		3
Affinity to altitude							
minimal		200	400	240	410		150
maximal		800	750	1000	1300		1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
SK	Generally, this unit can be merged with *Calthion*, but under Natura2000 only this suballiance was accepted as habitat unit.

E3.5 Moist or wet oligotrophic grassland

Ecological description: Grasslands on wet, nutrient-poor, often peaty soils, of the boreal, nemoral and steppe zones. Includes coarse acid grassland dominated by *Molinia caerulea* and shorter wet heathy grasslands with *Juncus squarrosus* and *Nardus stricta*.

Molinion coerulae Koch 1926

Description: Wet unmanured low-altitude meadows.

Natura 2000 habitat: 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
6410	6410	6410	6410	6410		6410

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0	0	0	3		0
succesion areas	0	0	0	0	0		1
grasslands	3	1	0	3	2		3
wetlands	0	3	3	0	2		2
Affinity to altitude							
minimal	300	200	250	280	400		250
maximal	600	900	300	800	900		800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

E5.4 Moist or wet tall-herb and fern fringes and meadows

Ecological description: Tall-herb and fern vegetation of the nemoral and boreal zones, including stands of tall herbs on hills and mountains below the montane level. Tall herbs are often dominant along watercourses, in wet meadows and in shade at the edge of woodlands.

Petasition officinalis Sillinger 1933

Description: Tall-herb vegetation of raw alluvium soils on montane streamsides.

Natura 2000 habitat: 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
6430	6430	6430	6430	6430		6430

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	1	0	0	0	0	0
barren land	0	0	3	0	0	0	0
coniferous forests	2	0	0	2	2	0	0
deciduos forests	1	1	0	0	3	1	1
mixed forests	2	0	0	1	3	0	1
succesion areas	0	0	0	1	0	1	0
wetlands	0	3	0	2	0	3	3
water bodies	2	0	0	3	0	1	1
Affinity to altitude							
minimal	400	200	300	600	400	200	200
maximal	900	800	1700	1500	1100	1000	1400
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Senecion fluviatilis R.Tx. 1950

Description: Communities of tall herbaceous nitrophyles around eutrophic lakes and ditches.

Natura 2000 habitat: 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
6430			6430			6430

Affinity to CORINE Land Cover units and altitude:

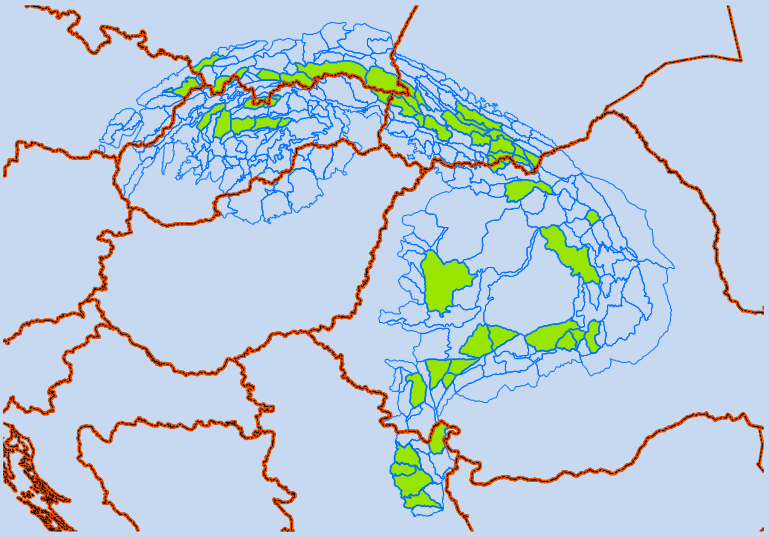
Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	1	0	2			
deciduos forests	0	1	0	2			
succesion areas	0	3	0	1			1
grasslands	0	0	0	1			
wetlands	0	3	0	2			3
water bodies	3	1	3	3			2
Affinity to altitude							
minimal	200	100	300	300			150
maximal	350	500	1700	900			1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

E5.5 Subalpine moist or wet tall-herb and fern stands

Ecological description: Luxuriant tall herb formations of deep, humid soils in the montane to alpine, but mostly subalpine, levels of the higher mountains.

Adenostylion alliariae Br.-Bl. 1926

Description: Subalpine tall herb vegetation.



Natura 2000 habitat: 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
6430		6430	6430	6430		6430

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
barren land	0		3	1	0	1	0
coniferous forests	3		0	0	2	0	0
succesion areas	0		0	0	3	1	3
grasslands	1		0	3	2	2	3
wetlands	0		0	0	0	3	1
water bodies	0		0	0	0	2	0
Affinity to altitude							
minimal	1100		1150	1400	1200	500	800
maximal	1300		1800	2000	1700	1200	1600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

F9.1 Riverine scrub

Ecological description: Scrub of broad-leaved willows, e.g. *Salix aurita*, *Salix cinerea*, *Salix pentandra*, beside rivers. Scrub of *Alnus* spp.and narrow-leaved willows, e.g. *Salix eleagnos*, where these are less than 5 m tall. Riverside scrub of *Myricaria germanica*.
Natural and near-natural watercourses of the Carpathians and their foothills with their gravel banks with scrub of *Myricaria germanica* and and their riparian woodland with willow *Salix elaeagnos*.

Salicion eleagno-daphnoidis (Moor 1958) Grass in Mucina et al. 1993

Syn: *Salicion elaeagni* Moor 1958
Description: Willow scrub of montane stream banks.

Natura 2000 habitat:

3230 Alpine rivers and their ligneous vegetation with *Myricaria germanica*

3240 Alpine rivers and their ligneous vegetation with *Salix elaeagnos*

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
3240		3230, 3240	3230, 3240	3230, 3240		3230, 3240

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
deciduos forests	0		0	2	2		0
mixed forests	0		0	2	2		0
succesion areas	0		0	2	1		2
grasslands	0		0	0	0		0
wetlands	0		0	0	0		1
water bodies	3		3	3	0		3
Affinity to altitude							
minimal	260		300	600	380		300
maximal	350		1200	1000	1200		800
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Salicion incanae Aichinger 1933

Description: Alpine and subalpine river gravel communities.

Natura 2000 habitat:

3230 Alpine rivers and their ligneous vegetation with *Myricaria germanica*

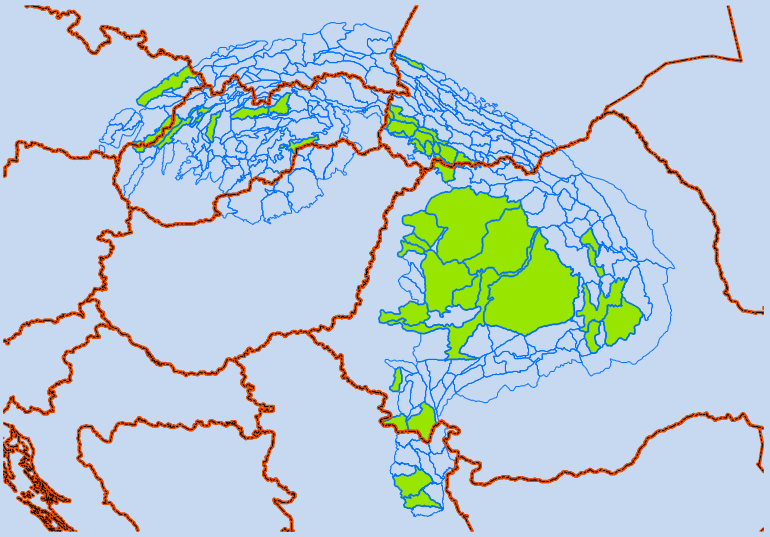
Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
		3230	3230			3230

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
mixed forests			0	1			0
succesion areas			0	2			1
grasslands			0	1			0
wetlands			0	0			1
water bodies			3	3			3
Affinity to altitude							
minimal			300	600			500
maximal			900	1000			1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Salicion triandrae Th. Müller et Gors. 1958

Description: Willow scrub of river banks below levées.



Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0			1	2	0	0
deciduos forests	0			2	1	0	2
succesion areas	0			0	1	0	0
grasslands	0			2	1	0	0
wetlands	0			2	0	0	3
water bodies	3			3	0	0	1
urban areas	0			1	0	0	0
Affinity to altitude							
minimal	300			500	100	400	150
maximal	350			700	800	700	700
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

F9.2 Sa*lix* carr and fen scrub

Ecological description: Low woods and scrubs colonizing fens, marshy floodplains and fringes of lakes and ponds, dominated by large or medium sized shrubby willows, generally *Salix aurita*, *Salix cinerea*, *Salix pentandra*, alone or in association with *Frangula alnus*, *Rhamnus cathartica*, *Alnus glutinosa* or *Betula pubescens*, any of which may dominate the upper canopy.

Salicion cinereae Th. Müll. & Görs ex Passarge 1961

Description: Willow scrub and woodland of mires.

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural	0	0		2	2	0	0
deciduos forests	0	3		2	1	2	0
succesion areas	0	0		2	1	1	0
grasslands	1	0		2	1	0	1
wetlands	3	0		3	2	3	3
water bodies	0	1		2	0	3	2
Affinity to altitude							
minimal	300	200		300	400	100	150
maximal	400	400		900	1300	500	1000
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

G1.1 Riparian and gallery woodland, with dominant *Alnus*, *Betula*, *Populus* or *Salix*

Ecological description: Riparian woods of the boreal, boreo-nemoral, nemoral and submediterranean and steppe zones, with one or few dominant species, typically *Alnus*, *Betula*, *Populus* or *Salix*. Includes woods dominated by narrow-leaved willows *Salix alba*, *Salix eleagnos*, *Salix purpurea*, *Salix viminalis* in all zones including the mediterranean.

Salicion albae Soó 1930

Syn: *Salicion albae* R. Tx. 1955
Description: Willow scrub and woodland of sub-montane and lowland river shoals and terraces.

Natura 2000 habitat: 91E0* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

Czech Republic	Hungary	Poland	Slovakia	Romania	Serbia	Ukraine
		91E0*	91E0*	91E0*	91E0*	91E0*

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
agricultural			3	0	2	0	0
barren land			0	0	0	1	0
deciduos forests			0	3	2	2	3
succesion areas			0	0	2	1	1
grasslands			0	0	1	0	0
wetlands			0	0	0	3	2
water bodies			0	3	2	3	3
Affinity to altitude							
minimal			250	300	100	100	150
maximal			1220	400	800	1000	450
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

G1.2 Mixed riparian floodplain and gallery woodland

Ecological description: Mixed riparian forests, sometimes structurally complex and species-rich, of floodplains and of galleries beside slow- and fast-flowing rivers of the nemoral, boreo-nemoral, steppe and submediterranean zones. Gallery woods with *Acer*, *Fraxinus*, *Prunus* or *Ulmus*, together with species listed for G1.1. Floodplain woodland characterized by mixtures of *Alnus*, *Fraxinus*, *Populus*, *Quercus*, *Ulmus*, *Salix*.

Alnion glutinosae Malcuit 1929

Syn: *Alnion glutinosae* (Malc. 1929) Meijer Dress 1936
Description: Alder and willow woodlands of swamps, fens and wet pastures.

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units							
Land Cover unit	**CZ**	**HU**	**PL**	**SK**	**RO**	**SB**	**UA**
deciduos forests	3	3	3	3	2	3	3
mixed forests	0	0	0	0	0	1	0
succesion areas	0	0	0	0	0	1	0
wetlands	0	0	0	3	3	2	3
water bodies	0	1	0	0	0	2	1
Affinity to altitude							
minimal	320	200	250	200	500	100	150
maximal	370	800	600	500	1050	1000	600
Legend: 0 - not important; 1 - low; 2 - medium; 3 - high affinity							

Notes on this alliance in countries:

country	note
HU	This vegetation type is not mentioned from the North Hungarian Mts. in the last Hungarian review (Borhidi 2003), but small fragments are known from the Bükk, Mátra, Cserhát Mts. One of the greatest stand (near by Ipolszög) was drained in the middle of the last century in the Cserhát.

References

Blaženčić J., Ranđelović V., Butorac B., Vukojičić S., Žukovec D., Ćalić I., Pavićević D. & Lakušić D., 2005. Habitats of Serbia (in Serbian). Institut za Botaniku i Botanička Bašta Jevremovac, Belgrade.

Borhidi A., 2003. Magyarország növényföldrajzi képe. In: Láng, I. Bedı, Z. & Csete, L.(szerk.): Magyar Tudománytár 3. Növény, Állat, Élıhely p. 66-88. MTA Társadalomkutató Központ, Kossuth Kiadó, Budapest.

Botta-Dukát Z., Chytrý M., Hájková P. & Havlová M., 2005: Vegetation of lowland wet meadows along a climatic continentality gradient in Central Europe. – Preslia, Praha, 77: 89–111.

Davies CE, Moss D & Hill MO 2004. Eunis Habitat Classification Revised 2004. http://eunis.eea.europa.eu/upload/EUNIS_2004_report.pdf

Doniţa N., Popescu A., Pauca-Comănescu M., Mihăilescu S. & Biriş I.A. 2005. Habitatele din România. Editura Tehnică Silvică, Bucureşti.

European Comission 2007. Interpretation Manual of European Union Habitats – EUR27. European Commission, DG Environment, Brussels: 144 pp.

Evans D. 2012. The EUNIS habitats classifcation - past, present & future. Revista de Investigación Marina, 19(2)/28.

Fekete G., Molnár Z. & Horváth F., 2007. Magyar Biodiverzitás-monitorozó Rendszer 2 – A magyarországi élőhelyek leírása, határozója és a Nemzeti Élőhely-osztályozási Rendszer (Guide and description of Hungarian habitats. The National Habitat Classification System). Magyar Természettudományi Múzeum, Budapest. http://www.zpok.zoldpok.hu/img_upload/cb39111eba7a31c9c0e48686fa8e3c87/1997_A_NER_konyv_vegleges_1997.pdf

Galvánek D. & Kadlečík J. 2014. Wetlands in the Carpahians. In: Appleton, M.R & Meyer, H. (eds.) 2014. Development of Common Integrated Management Measures for key natural assets in the Carpathians. Work Package 4. Integrated Management of Biological and Landscape Diversity for Sustainable Regional Development and Ecological Connectivity in the Carpathians. WWF. Vienna

Gafta D. & Mounford J. O. (eds.) 2008. Manual de interpretare a habitatelor Natura 2000 din România (Manual for interpreting Natura 2000 habitats from Romania).[in Romanian]. – Risoprint, Cluj: 101 pp.

Chytrý M., Kučera T. & Kočí M. (eds.) 2001. Katalog biotopů České republiky. AOPK ČR, Praha. http://www.sci.muni.cz/botany/chytry/Katalog.pdf

Herbich J. (ed.) 2004. Wody słodkie i torfowiska. Poradniki ochrony siedlisk i gatunków Natura 2000 - podręcznik metodyczny. Ministerstwo Środowiska, Warszawa. http://natura2000.gdos.gov.pl/strona/nowy-element-3

Kondracki, J. 1998. Geografia regionalna Polski. Wydawnictwo Naukowe PWN, Warszawa.

Prots B. & Kagalo A. (Eds) 2012. Catalogue of habitat types of the Ukrainian Carpathians and Transcarpathian Lowland (in Ukrainian). Mercator, Lviv. 294 p.

Rodwell J.S., Schaminée J.H.J., Mucina L., Pignatti S., Dring J. & Moss D. 2002. The Diversity of European Vegetation. An overview of phytosociological alliances and their relationships to EUNIS habitats. Wageningen, NL. EC-LNV. Report EC-LNV nr. 2002/054.

Stanová V. & Valachovič M. (eds.), 2002. Katalóg biotopov Slovenska (Catalogue of habitats in Slovakia). DAPHNE – Institute of Applied Ecology, Bratislava, 226 p.

Šeffer J., Lasák R., Šefferová-Stanová V., Janák M. & Guttová A. 2010. Towards an Ecological Network for the Carpathians II. Carpathian Ecoregion Initiative, Bratislava.

Valachovič, M. (ed.) 2001. Rastlinné spoločenstvá Slovenska 3. Vegetácia mokradí. (Plant communities of Slovakia. 3. Wetland Vegetation). Veda, Vydavateľstvo SAV Bratislava, 434 p.

Zingstra H.L., Šeffer J., Lasák R., Guttova A., Baltzer M., Bouwma I., Walters L. J., Smith B., Kitnaes K., Predoiu G. E., Prots B. & Sekulic G., 2009. Towards an Ecological Networ for the Carpathians. Wageningen International, Wageningen.

ISBN 978-80-89310-75-3

9 788089 310753