

Tuexenia 42: 95–128. Göttingen 2022.
doi: 10.14471/2022.42.007, available online at www.tuexenia.de

Syntaxonomic revision of the Pannonian grasslands of Austria – Part III: Danube and March-Thaya floodplain (including the Slovak side of the river March/Morava)

Syntaxonomische Revision der pannischen Rasengesellschaften in Österreich – Teil III: Donau- und March-Thayaauen (einschließlich der slowakischen Seite der March)

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Abstract

The floodplain of the rivers Danube, March/Morava and Thaya/Dyje in eastern Austria and western Slovakia harbours a great diversity of meadows, reed swamps and sedge-bed communities. However, the grasslands along the Danube have not been adequately addressed by any study up to now, and a transnational revision of the alluvial grasslands is completely lacking. In this third part of a series focusing on the syntaxonomy of the Pannonian grasslands of Austria, we present a detailed classification of the grassland and marsh vegetation of the Danube and March-Thaya floodplain. We compiled all available relevés from the study area belonging to the classes *Phragmito-Magnocaricetea*, *Molinio-Arrhenatheretea* and *Festuco-Brometea*. In total, our data set comprised 2119 relevés, of which 355 were from Slovakia. We conducted a TWINSPLAN classification and, based on a provisional syntaxonomic interpretation of the clusters, assigned all relevés to classes, orders, alliances and associations using the total cover of the diagnostic species in each relevé as the assignment criterion. We identified 42 associations and five provisional communities belonging to 14 alliances. Our revision includes substantial changes to previous overviews, in particular regarding the alluvial grasslands of the March-Thaya floodplain. We merge *Lathyrno palustris-Gratiolietum*, *Gratiolo-Caricetum suzae*, *Cnidio-Violetum pumilae*, *Serratulo-Plantaginetum altissimae* and “*Silaetum pratensis*” into only two associations (*Gratiolo-Caricetum suzae* and *Cnidio-Violetum pumilae*, alliance *Deschampsion*), which are differentiated along the moisture gradient. The *Ophioglosso-Caricetum tomentosae* is revealed as a geographical vicariant of the *Cnidio-Violetum pumilae*, replacing the latter along the Danube. The *Agropyro-Alopecuretum pratensis* is newly reported for Austria. The mesic *Festuca rupicola* grasslands along the March/Morava (previously named “*Serratulo-Festucetum commutatae*”) are included in the *Colchico-Festucetum rupicolae* (*Cirsio-Brachypodium*). *Ranunculo bulbosi-Arrhenatheretum*, *Pastinaco-Arrhenatheretum*, *Festuco rupicolae-Brometum* and *Polygalo-Brachypodietum* (the latter in a new

Manuscript received 20 April 2022, accepted 30 August 2022

Published online 23 October 2022

Co-ordinating Editor: Thomas Becker

subass. *selaginelletosum helveticae*) are confirmed as widespread grassland types in the Danube floodplain, and the *Teucrio botryos-Andropogonetum* (*Festucion valesiacae*) is split into two sub-associations. Moreover, we report four grassland types dominated by *Elymus repens* and *Calamagrostis epigejos*, provisionally treated as rankless communities, which have been neglected by all previous authors.

Keywords: Austria, *Festuco-Brometea*, grasslands, *Molinio-Arrhenatheretea*, *Phragmito-Magnocaricetea*, phytosociology, Slovakia, syntaxonomy

Erweiterte deutsche Zusammenfassung am Ende des Artikels

1. Introduction

The floodplain of the rivers Danube, March (Morava in Slovak and Czech) and Thaya (Dyje in Czech) is one of the most important grassland areas of eastern Austria and western Slovakia, harbouring a great diversity of wet and dry meadows, reed swamps and sedge-bed vegetation that form a mosaic with alluvial forests and water bodies (LAZOWSKI 1997, ŠEFFER & STANOVÁ 1999, RUŽIČKOVÁ et al. 2003, SUSKE et al. 2003). It is a wetland area of international significance, comprising a national park, several nature reserves, as well as Natura 2000 and Ramsar sites.

Phytosociological studies of these floodplains have focused on small areas and/or particular vegetation types so far, while a comprehensive study of their grasslands is still lacking. In the Danube floodplain, most studies focused on the Lobau within the political borders of Vienna (SAUBERER 1942, MARGL 1973, ROTTER 1999, 2002, WIEDERMANN et al. 2000). WAGNER (1950) and WENDELBERGER-ZELINKA (1952) described the vegetation of the Danube floodplain at the border between Lower and Upper Austria (Machland). Alluvial grasslands of the Tullner Feld northwest of Vienna were studied by STRAKA & ELLMAUER (1990), STRAKA (1992), ESSL (1999), STARK (2010) and KURMANN (2013). A detailed study on the wet meadows and marsh vegetation of the March-Thaya floodplain was presented by BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974), and a more local study of the same vegetation type was done by PLENK (1991). Finally, dry grasslands in the March-Thaya floodplain were studied by CHYTRÝ et al. (1997) and PAUER (2005).

The marsh and grassland vegetation of the Slovak part of the Morava floodplain was studied by ŠMARDA (1951), KLIKA (1958), BALÁTOVÁ-TULÁČKOVÁ (1968, 1976) and BOSÁČKOVÁ (1970, 1975). More intensive research of the flora and vegetation of this territory began in the 1990s after the political changes in Czechoslovakia and the opening of the border area to Austria. Important studies from this period were published by OŠAHEĽOVÁ & ZLINSKÁ (1993), BANÁSOVÁ et al. (1994), OŠAHEĽOVÁ et al. (1994), RUŽIČKOVÁ (1994), OŠAHEĽOVÁ (1996), ZLINSKÁ (1999) and STANOVÁ & VICENÍKOVÁ (2003).

The grasslands of the National Park “Donau-Auen” between Vienna and the Slovak border have not been adequately addressed by any study up to now. BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) included a few relevés from the Danube floodplain, but only from a single locality. However, a huge number of unpublished relevés has been accumulated in the course of several projects since 1991, both inside and outside the national park. Therefore, the time is ripe for a synthesis. This is the third part of a series focusing on the syntaxonomy of the Pannonic grasslands of Austria (for parts one and two, see WILLNER et al. 2013a, b). The preliminary numerical classification presented in the first part showed that the Danube and March-Thaya floodplain harbours a quite peculiar set of grassland types not found in other parts of the Pannonic region of Austria. Our present study is based on a strongly enlarged

data set, which also goes beyond the geographical and ecological coverage of the former one: To provide a more complete picture of the grasslands in the March/Morava floodplain, we also include the Slovak side of the river. Moreover, unlike WILLNER et al. (2013a), we include the reed and sedge-bed communities of the class *Phragmito-Magnocaricetea*, as they are in close spatial and successional contact with wet grasslands, and some of them are regularly mown.

The aim of this study is to present a detailed syntaxonomic classification of the grassland and marsh vegetation of the area including distribution maps and a description of the site conditions.

2. Study area

The study area comprises the floodplains of the rivers Danube, March/Morava and Thaya/Dyje in Eastern Austria, as well as the Morava floodplain in Slovakia (Fig. 1). From west to east, the study area can be divided into the following parts: (1) Machland. This floodplain lies at the border between the federal states of Upper and Lower Austria, between the confluence of the Danube and its tributary Enns in the west and the narrow Danube valley of Strudengau in the east. Biogeographically, it is already outside the Pannonic region (NIKLFELD 1993). However, we included it in our analysis because of the monographic study of WAGNER (1950) who described several alluvial grassland associations from this region. Downstream, the Danube flows for about 80 km within or along the Bohemian Massif, with the valleys of Strudengau and Wachau being the narrowest sections. We don't have plot data from these regions as there are hardly any floodplains in these areas.

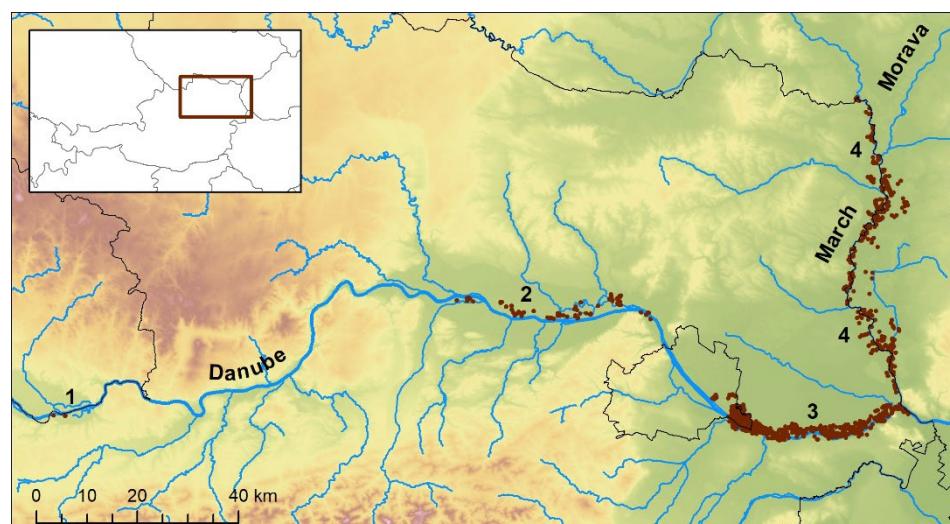


Fig. 1. The study area (1: Machland, 2: Tullnerfeld, 3: National Park „Donau-Auen“, 4: March-Thaya-Auen). Brown dots represent the relevé locations. The borders of the federal states of Austria are indicated as black lines.

Abb. 1. Untersuchungsgebiet (1: Machland, 2: Tullnerfeld, 3: Nationalpark „Donau-Auen“, 4: March-Thaya-Auen). Die braunen Punkte stellen die Aufnahmelokalitäten dar. Die schwarzen Linien sind die Grenzen der österreichischen Bundesländer.

At the town of Krems, the Danube reaches the Pannonian lowland, and here our main study area starts with the (2) Tullnerfeld. This floodplain, named after the town Tulln, is confined by the Wachau valley in the west and the water gap of Vienna (Wiener Pforte) in the east, where the Danube cuts through the flysch zone of the Alps and reaches the Vienna Basin. East of Vienna, the Danube floodplain forms the (3) National Park “Donau-Auen” (NP “Donau-Auen” in the following), which geographically belongs to the Vienna Basin. Most of the alluvial grasslands in the national park are located north of the Danube due to a steep slope bordering the southern shore of the river, which restricts the southern part of the alluvial plain to a narrow strip. At the Austrian-Slovak border, east of the mouth of the river March, the Danube passes another water gap (Hainburger Pforte = Devínska brána = Porta Hungarica) which cuts through the western end of the Carpathians. Beyond this gap, at the city of Bratislava, the Danube enters the Little Hungarian Plain. To the north lies the (4) March-Thaya floodplain. Geologically part of the Vienna Basin, the alluvial lowland along the river March and its tributary Thaya is markedly different from the Danube floodplain. While most of the sediments of the Danube come from the Northern Alps and are calcareous, the catchment area of the March River is the Bohemian Massif and the flysch zone of the Carpathians. Therefore, the sediments are relatively acidic and clay-rich, while gravel is completely absent. The March has a very low height of fall in the study area, leading to a meandering river bed that is in strong contrast to the still alpine character of the Danube.

The altitude ranges from 240 m a.s.l. in the Machland to 140 m a.s.l. at the mouth of the river March. The mean annual temperature shows only little variation within the study area, with a range between 9.5 °C and 10 °C, while the mean annual rainfall has a clear gradient from ca. 800 mm in the Machland to 500–600 mm along the Pannonian part of the Danube and only 460 mm at the confluence of March and Thaya (ZAMG 2012). BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) report for the latter location 560 mm for the period 1901–1960, which indicates a strong decrease of annual precipitation over the last century. The most important ecological factor in the study area is the (ground)water level and its periodic fluctuation, including floodings. The Danube reaches its maximum water level in late spring to mid-summer (i.e., during snow melt in the Alps), but floods caused by heavy rainfall can occur in all seasons. The river March has its maximum in early spring, mainly during the snow-melting period in March and April, and floods occur more regularly (JAROLÍMEK et al. 2018). However, flooding also occurs irregularly in summer and autumn and rarely even in winter. Moreover, due to its low height of fall, the last few kilometres of the March floodplain are also affected by backwater of Danube floods (LAZOWSKI 1997, ZULKÁ & LAZOWSKI 1999).

All three rivers have been straightened – the Danube in the 19th century, the March and Thaya in the 20th century. As a consequence, the natural river dynamic is lost and flooding regimes are strongly altered. A chain of hydroelectric power plants transformed most of the Danube into a rather artificial channel, Wachau and NP “Donau-Auen” being the last remaining free-flowing stretches. The National Park was implemented in 1996. Most of the study area is part of the Natura 2000 network. The March-Thaya floodplain is also protected by the Ramsar-Convention on both the Austrian and Slovak side. Rewilding efforts in the National Park and in the March-Thaya floodplain have aimed at improving the hydrological situation. Nevertheless, a substantial part of the NP “Donau-Auen” as well as of the March-Thaya-Auen is cut off from natural floodings by dams built in the course of the river regulations. Thus, open gravel banks with pioneer vegetation, which covered huge areas

along the Danube until the 19th century, are now restricted to small fragments, and many oxbows have disappeared due to natural succession (SCHRATT-EHRENDORFER & ROTTER 1999). In the Tullner Feld, an artificial stream (called “Gießgang”) was built north of the dammed main channel in order to inundate the remaining alluvial plain (ESSL 1999). In the March-Thaya-Auen, the regulations mainly led to a drop in the groundwater level, especially in the peripheral parts of the floodplain, and suppressed the initialisation of new waterbodies in the course of regular alterations of the river stretch.

The area and extent of grasslands along the river Danube was higher before the regulation in the 19th century, but their spatial arrangement was much more dynamic. Many grasslands were grazed and not mown. Some areas between the city of Vienna and the Slovakian border were closed for the public and used as hunting areas for the nobility. After the regulation, the position of the meadows was more and more fixed, and their extent decreased. The meadows were partly intensified with chemical fertilisers, but with the implementation of the National Park, the use of fertilisers has been abandoned. Today, ca. 10% of the NP “Donau-Auen” are meadows. The biggest problem for the vegetation in the National Park is currently the incision of the Danube, which leads to significant effects of drying due to lowering of the groundwater level (SCHÖPFER 2017).

The alluvial grasslands of the March-Thaya floodplain are mown twice a year (usually at the end of May and in late summer). In the past, they were also grazed (LAZOWSKI 1997), and several small-scale grazing projects have been initiated again since 1995. After a strong decline caused by transformation into arable fields and forests, only 9% of the Austrian, but still 22% of the Slovak March-Thaya floodplain are covered by grasslands (ZUNA-KRATKY et al. 2000).

3. Material and methods

3.1 Data set

We compiled all available relevés from the study area belonging to the classes *Phragmito-Magnocaricetea*, *Molinio-Arrhenatheretea* and *Festuco-Brometea*. To exclude relevés of other classes, we calculated the total cover of the character species of all classes (following MUCINA et al. 1993 and GRABHERR & MUCINA 1993), and each relevé was assigned to the class with the highest cover value. Grasslands dominated by *Elymus repens* and *Calamagrostis epigejos* were also included, although they are usually classified within the class *Artemisietea vulgaris*. Pioneer vegetation of the class *Koelerio-Corynephoretea*, which occurs on some sand dunes along the river March, is not included as it will be treated together with the sand vegetation of the adjacent Marchfeld in a later part of the series.

We excluded relevés with a plot size $< 4 \text{ m}^2$ or $> 40 \text{ m}^2$. These limits were chosen to include as many data as possible and, at the same time, not exceed a ratio of 1:10 between the smallest and the largest plots. Relevés without plot size information (403 = 19%) were maintained. However, we did not include the swamp and reed relevés of WENDELBERGER-ZELINKA (1952) because they were obviously too complex, each one comprising several communities. In total, our data set comprised 2119 relevés, of which 355 were from Slovakia (Fig. 1). Species taxonomy and nomenclature of vascular plants was unified, following FISCHER et al. (2008). Some species had to be merged into aggregates which follow FISCHER et al. (2008), too. Occurrences in different layers were merged, using the formula of FISCHER (2015). Taxa only identified on the genus level were excluded. Bryophytes and lichens were excluded because they were recorded only in a small subset of the relevés.

All data used are available from the Austrian Vegetation Database (EU-AT-001; WILLNER et al. 2012) and the Slovak Vegetation Database (EU-SK-001; ŠIBÍK 2012) as well as the European Vegetation Archive (CHYTRÝ et al. 2016).

3.2 Data analysis and table work

In a first step, we conducted a TWINSPAN classification (HILL 1979) using three pseudospecies cutlevels (0%, 5%, 25%), six levels of division and a minimum groups size for division of two. After a provisional syntaxonomic interpretation of the TWINSPAN clusters, relevés were manually rearranged into classes, orders, alliances and associations following the hierarchical approach of WILLNER (2011) and WILLNER et al. (2019) and using the total cover of the diagnostic species in each relevé as assignment criterion. The diagnostic species of classes, orders and alliances were adopted from MUCINA et al. (1993) and GRABHERR & MUCINA (1993). In case of doubt (due to similar cover values for two or more syntaxa), we maintained the TWINSPAN classification. For the associations of the *Phragmito-Magnocaricetea*, we mostly followed the recent pan-European revision of LANDUCCI et al. (2020). For the other classes, we did additional TWINSPAN classifications of smaller data sets including only the relevés of one alliance in order to identify the main floristic gradients, evaluate previous association concepts and determine the diagnostic species of associations.

It is important to note that the term “diagnostic species” is used here in a slightly different sense than in CHYTRÝ et al. (2002) and the majority of recent phytosociological studies. We consider only those species as diagnostic which we used to assign relevés to syntaxa, i.e. the character and differential species that would be used in a formal definition of the vegetation units (see WILLNER et al. 2019). While optimally these are the species with the highest fidelity to the syntaxon within the data set, we did not rely on a certain fidelity threshold. Our final selection of diagnostic species was also informed by external information about the habitat requirements and distribution of the species. This supervised approach seemed more robust than relying merely on the information contained in our regional data set.

All calculations and table manipulations were done with JUICE 7.1 (TICHÝ 2002).

4. Results and Discussion

4.1 TWINSPAN classification

At the first and second level of division, reed swamps and sedge beds (*Phragmito-Magnocaricetea*; clusters 1–28) were separated from meadows (*Molinio-Arrhenatheretea*; clusters 29–44) and dry grasslands (*Festuco-Brometea*; clusters 45–60). However, temporarily flooded meadows (*Potentillion anserinae* and the wetter part of *Deschampsion cespitosae*) were nested within the *Phragmito-Magnocaricetea*. Alliances were mostly well separated from each other, with three notable exceptions: the *Phragmition*, *Potentillion anserinae* and *Deschampsion cespitosae* were split into several non-adjacent parts. Three alliances accepted by us in the final classification (*Glycerio-Sparganion*, *Convolvulo-Agropyron*, *Rubo-Calamagrostion epigeji*) were not reproduced, which might be attributed to their marginal and non-representative occurrence in the data set.

A comparison of the TWINSPAN result and our supervised classification is given in Supplement E1.

4.2 Syntaxonomic overview

Syntaxon names derived from incorrect taxon names have been corrected in accordance with article 44 of the ICPN, 4th ed. (THEURILLAT et al. 2021). Synonyms in brackets refer to names adopted in MUCINA et al. (1993) and GRABHERR & MUCINA (1993).

Class *Phragmito-Magnocaricetea* Klika 1941

Order *Phragmitetalia* Koch 1926

All. (1) *Phragmitiaustralis* Koch 1926 nom. corr.

- (1.1) *Scirpetum lacustris* Chouard 1924
- (1.2) *Typhetum angustifoliae* Pignatti 1953
- (1.3) *Typhetum latifoliae* Nowiński 1930
- (1.4) *Phragmitetum australis* Savič 1926 nom. corr.
- (1.5) *Glycerietum maximaee* Nowiński 1930 nom. corr.
- (1.6) *Sparganietum erecti* Roll 1938
- (1.7) *Equisetetum fluviatilis* Nowiński 1930 nom. corr.
- (1.8) *Acoretum calami* Dagys 1932
- (1.9) *Phalarido-Bolboschoenetum laticarpi* Passarge 1999 corr. Krumbiegel 2006

All. (2) *Phalaridion arundinaceae* Kopecký 1961

- (2.1) *Phalaridetum arundinaceae* Libbert 1931 (incl. *Rorippo-Phalaridetum* Kopecký 1961)

All. (3) *Magnocaricion* Koch 1926

- (3.1) *Caricetum acutae* Savič 1926 nom. corr. ("*Caricetum gracilis*")
- (3.2) *Caricetum vesicariae* Chouard 1924
- (3.3) *Caricetum distichae* Steffen 1931 nom. corr. ("*Caricetum intermediae*")
- (3.4) *Caricetum vulpinae* Nowiński 1927
- (3.5) *Caricetum ripariae* Máthé et Kovács 1959 (= *Galio palustris-Caricetum ripariae* Balátová-Tuláčková et al. 1993)
- (3.6) *Caricetum acutiformis* Eggler 1933
- (3.7) *Caricetum elatae* Koch 1926
- (3.8) *Calamagrostietum canescens* Simon 1960
- (3.9) *Iridetum pseudacori* Eggler ex Brzeg et Wojterska 2001

Order *Nasturtio-Glycerietalia* Pignatti 1953

All. (4) *Glycerio-Sparganion* Br.-Bl. et Sissingh 1942

- (4.1) *Glycerietum fluitantis* Nowiński 1930

Order *Oenanthalenia aquatica* Hejný 1965 nom. inval.

[Remark: The nomenclature of this order needs further study.]

All. (5) *Eleocharito-Sagittarion* Passarge 1964 (= *Oenanthon aquatica* auct.)

- (5.1) *Sagittario-Sparganietum emersi* Tx. 1953 nom. corr.
- (5.2) *Oenanthon-Rorippetum amphibiae* Lohmeyer 1950
- (5.3) *Butometum umbellati* Philippi 1973
- (5.4) *Eleocharitetum palustris* Savič 1926 nom. corr.

Class *Molinio-Arrhenatheretea* Tx. 1937

Order *Potentillo-Polygonetalia* Tx. 1947

All. (6) *Potentillion anserinae* Tx. 1947

- (6.1) *Rorippo-Agrostietum stoloniferae* Oberd. et Müller 1961 ("*Rumici crispi-Agrostietum*")
- (6.2) *Ranunculetum repensis* Knapp ex Oberd. 1957
- (6.3) *Ranunculo repensis-Alopecuretum geniculati* Tx. 1937
- (6.4) *Dactylido-Festucetum arundinaceae* Tx. ex Lohmeyer 1953

Order Molinietales Koch 1926

All. (7) *Deschampsia cespitosa* Horvatić 1930 (incl. *Cnidion dubii* Balátová-Tuláčková 1966)

- (7.1) *Gratiolo-Caricetum suzae* Balátová-Tuláčková 1966 (incl. *Lathyro palustris-Gratioletum* Balátová-Tuláčková 1966)
- (7.2) *Poa palustris-Alopecurus pratensis* comm.
- (7.3) *Gratiolo-Caricetum nigrae* Wagner 1950 nom. corr. ("*Gratiolo-Caricetum fuscae*")
- (7.4) *Cnidio-Violetum pumilae* Balátová-Tuláčková 1969
- (7.5) *Ophioglosso-Caricetum tomentosae* Wagner 1950 nom. invers.
- (7.6) *Agropyro-Alopecuretum pratensis* Moravec 1965

All. (8) *Molinion caeruleae* Koch 1926

- (8.1) *Molinietum caeruleae* Koch 1926 (*Selino-Molinietum* Kuhn 1937)

Order Arrhenatheretalia Tx. 1931

All. (9) *Arrhenatherion* Koch 1926

- (9.1) *Ranunculo bulbosi-Arrhenatheretum* Ellmauer 1993
- (9.2) *Pastinaco-Arrhenatheretum* Passarge 1964

All. (10) *Cynosurion* Tx. 1947

- (10.1) *Plantagini-Lolietum* Beger 1932 (= *Lolietum perennis* Gams 1927 nom. inval.)

Class Artemisieta vulgaris Lohmeyer et al. ex von Rochow 1951

Order Agropyretalia intermedio-repentis Müller et Görs 1969 (= *Agropyretalia repens* Oberd. et al. 1967 nom. inval.)

All. (11) *Convolvulo-Agopyrion repens* Görs 1967

- (11.1) *Ranunculus repens-Elymus repens* comm.
- (11.2) *Dactylis-Elymus repens* comm.

All. (12) *Rubo caesii-Calamagrostion epigeji* (Dengler 1997) Dengler et Wollert 2003

- (12.1) *Deschampsia cespitosa-Calamagrostis epigejos* comm.
- (12.2) *Colchicum-Calamagrostis epigejos* comm.

Class Festuco-Brometea Br.-Bl. et Tx. ex Klika et Hadač 1944

Order Brometalia erecti Koch 1926 (= *Brachypodietalia pinnati* Korneck 1974 nom. cons. propos.)

[Remark: A formal proposal to conserve the name *Brachypodietalia pinnati* Korneck 1947 is under preparation.]

All. (13) *Cirsio-Brachypodion* Hadač et Klika 1944

- (13.1) *Colchico-Festucetum rupicolae* Lengyel et al. 2016
- (13.2) *Festuco rupicolae-Brometum* Zielonkowski 1973 (= *Onobrychido viciifoliae-Brometum* auct.)
- (13.3) *Polygonum majoris-Brachypodietum* Wagner 1941

Order Festucetalia valesiacae Br.-Bl. et Tx. ex Br.-Bl. 1950 nom. cons. propos.

[Remark: See Willner et al. (2021) for details on the proposal to conserve this order name.]

All. (14) *Festucion valesiacae* Klika 1931

- (14.1) *Peucedano oreoselini-Festucetum rupicolae* Vicherek et al. 1997
- (14.2) *Teucrio botryos-Andropogonetum* Sauberer et Wagner in Sauberer 1942 nom. invers.

4.3 Description and syntaxonomic discussion of the vegetation units

A shortened synoptic table is provided in Supplement S1, the full version of the same table in Supplement E2. Photos of selected associations are given in Figure 2–3. The geographical distribution of the relevé locations of individual associations is shown in Figure 4–7 and Supplement E3. The detailed data sources for each community are provided in Supplement E4.

(1) *Phragmition australis*

(1.1) *Scirpetum lacustris*

Reed vegetation with dominant *Schoenoplectus lacustris* (= *Scirpus lacustris*) has only been documented from Untere Lobau in Vienna and the Slovak side of the March/Morava River, but it has also been observed in other places of the study area. According to the personal observations of one of us (L.S.-E.), the community has decreased in recent decades. It is a pioneer community reaching the deepest water levels of all studied associations. The *Scirpetum lacustris* occurs in oxbows with very little water movement.

(1.2) *Typhetum angustifoliae*

This association was observed along the Gießgang in Tullnerfeld and in Untere Lobau. It replaces the *Scirpetum lacustris* in areas where the gravel is covered by a silt layer of > 15 cm (ROTTER 1999). Transitions between the two communities are quite frequent.

(1.3) *Typhetum latifoliae*

Reeds with dominant *Typha latifolia* are very rare in the study area. The only larger patch of this community was found near Devínska Nová Ves on the Slovak side of the March/Morava River (ZLINSKÁ 1999). In the single relevé from Untere Lobau (ROTTER 1999), *T. angustifolia* is co-dominant. One relevé of WENDELBERGER-ZELINKA (1952) from Machland includes *T. latifolia* with higher cover. According to BALÁTOVÁ-TULÁČKOVÁ et al. (1993), the *Typhetum latifoliae* prefers more eutrophic sites than the *Typhetum angustifoliae*.

(1.4) *Phragmitetum australis*

This is by far the most frequent association of the alliance. It mainly occurs along oxbows with stagnating or slowly flowing water, but can also be found in wet depressions with a balanced water regime. The silt layer is well developed and usually deeper than 20 cm (ROTTER 1999, ZLINSKÁ 1999). Stands in deeper water, either following one of the pioneer communities described above or directly adjacent to the open water, are species-poor and almost monodominant, while landward stands often contain some *Magnocaricion* species, *Rubus caesius* and tall-herb fringe vegetation. On the Austrian side of the March/Morava River, the *Phragmitetum australis* is relatively rare (see next association). BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) did not mention it at all.

(1.5) *Glycerietum maxima*

Reeds dominated by *Glyceria maxima* are very frequent along the March/Morava. In the Danube floodplain, they are rare and restricted to small patches in muddy oxbows. The predominance of *G. maxima* and the corresponding paucity of *Phragmites australis* along the March/Morava may be related to the strong annual fluctuation of the water level and the different substrate.

(1.6) *Sparganietum erecti*

This community, which is dominated by *Sparganium erectum*, has been documented from Untere Lobau in Vienna and the Slovak side of the March/Morava River. It is a rare community in the study area, forming only small patches and strips in oxbows (OŽAHELOVÁ 1996). In the Lobau, the *Sparganietum erecti* occurs mostly at disturbed places within the *Phragmites* belt (ROTTER 1999).

(1.7) *Equisetetum fluviatile*

A single relevé from the Gießgang in Tullnerfeld dominated by *Equisetum fluviatile* can perhaps be assigned to this association. The *Equisetetum fluviatile* prefers cooler climate and acidic bedrock (BALÁTOVÁ-TULÁČKOVÁ et al. 1993, ŠUMBEROVÁ et al. 2011). Therefore, this is a rather untypical community for the study area, where *E. fluviatile* mostly occurs as a minor companion in the *Magnocaricion*. In the single relevé from Tullnerfeld, *Carex acutiformis* is subdominant.

(1.8) *Acoretum calami*

The neophyte *Acorus calamus* has been observed at several places along the Danube and March/Morava, but in most cases, it is not forming a community. There is one relevé with dominant *Acorus* from the Slovakian March/Morava floodplain, and another location on the Austrian side of the river near Schlosshof is known where the species has become dominant. This patch has been increasing in size for several years (L.S.-E., personal observation).

(1.9) *Phalarido-Bolboschoenetum laticarpi*

This community has only been documented from the Slovak side of the March/Morava River, but occurrences in Austria are likely. In the original relevés, *Bolboschoenus maritimus* was recorded. However, the complete absence of halophytic species and the other species composition suggest that this is not *B. maritimus* s.str. but *B. laticarpus*, a species typical for river banks, oxbow lakes and other water bodies connected with river systems (HROUDOVÁ et al. 2009).

LANDUCCI et al. (2020) classified the *Phalarido-Bolboschoenetum laticarpi* in the *Eleocharito-Sagittarion*. However, despite the floristic affinities to the latter alliance (which are probably due to the regular spatial contact in the natural vegetation mosaic), we follow HROUDOVÁ et al. (2009) and ŠUMBEROVÁ et al. (2011) in including this association in the *Phragmition australis*, where it fits better from a functional-physiognomic point of view.

(2) *Phalaridion arundinaceae*

(2.1) *Phalaridetum arundinaceae*

This community includes stands strongly dominated by *Phalaris arundinacea*. It is widespread throughout the study area. Similarly to *Phragmites*, *Phalaris* has a broad ecological amplitude and frequently occurs in other communities of the class, and also in *Molinio-Arrhenatheretea* grasslands (Supplement S1). Therefore, the *Phalaridetum arundinaceae* is defined by the dominance of the name-giving species rather than by a unique species composition. In comparison to the *Phragmitetum australis* it prefers the more dynamic parts of the floodplain with higher water velocity and strong fluctuation of the water level. It is the only reed community occurring directly at the shore of the Danube. In the March-Thaya floodplain, the *Phalaridetum* can be found in depressions and along

oxbows where it occupies higher levels than the *Glycerietum maxima*. It also follows wetter *Deschampsion* meadows after abandonment. Along the rivers, the *Phalaridetum* prefers the accreting banks.

We follow LANDUCCI et al. (2020) in uniting *Phalaridetum arundinaceae* and *Rorippo-Phalaridetum* in a single association (cf. BALÁTOVÁ-TULÁČKOVÁ et al. 1993, ŠUMBEROVÁ et al. 2011). However, we prefer to keep the *Phalaridetum* in a separate alliance *Phalaridion* because of its peculiar ecology and ambiguous floristic affinity to the other alliances of the class.

(3) *Magnocaricion*

(3.1) *Caricetum acutae*

The *Caricetum acutae* (better known as *Caricetum gracilis*) is a frequent community in the March-Thaya floodplain, where it can be found in regularly flooded depressions in the centre of meadow complexes or close to streams, rarely also along river oxbows. According to BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974), it occupies here the same position in the relief as the *Phalaridetum arundinaceae* and the main differentiating ecological factor is the water velocity during flooding. However, management may also play a role, as the *Caricetum acutae* is regularly mown, in contrast to the *Phalaridetum*. In the Danube floodplain, the *Caricetum acutae* is rare and only forms small patches in wet places not affected by strong floods.

(3.2) *Caricetum vesicariae*

This is a very rare community in the study area. It has been documented from the Machland, and from three locations in the March/Morava floodplain. *Carex vesicaria* is the dominant species, but *Carex acuta* is also present in all relevés. WAGNER (1950) uses the name “*Caricetum vesicariae-gracilis*” for this community. Likewise, ZAHLHEIMER (1979) mentions the high similarity between *Caricetum vesicariae* and *Caricetum acutae* along the Danube in Bavaria. *Carex vesicaria* prefers deeper and longer inundation than *C. acuta* (BALÁTOVÁ-TULÁČKOVÁ & HÜBL 1974, ZAHLHEIMER 1979, BALÁTOVÁ-TULÁČKOVÁ et al. 1993). According to ŠUMBEROVÁ et al. (2011), the *Caricetum vesicariae* is most common in precipitation-rich areas. Therefore, its rarity in the study area is not surprising.

(3.3) *Caricetum distichae*

The *Caricetum distichae* is another relatively rare community, closely related to the *Caricetum acutae*. In contrast to the previous association, it prefers warmer climate and occurs on sites with shallower and shorter inundation (BALÁTOVÁ-TULÁČKOVÁ & HÜBL 1974, BALÁTOVÁ-TULÁČKOVÁ et al. 1993, ŠUMBEROVÁ et al. 2011). While *Carex disticha* is not rare in the study area, it only occasionally forms an independent community between the *Caricetum acutae* and the alluvial meadows of the *Deschampsion* alliance, which follow on the next higher level. *Lathyrus palustris* seems to have its optimum in this community, as already reported by ZAHLHEIMER (1979) for Bavaria.

(3.4) *Caricetum vulpinae*

This association was only found at a few places in the March/Morava floodplain. These small patches are characterised by heavy soils and short-term floods with low water levels, rapidly decreasing below the soil surface (BALÁTOVÁ-TULÁČKOVÁ et al. 1993, ZLINSKÁ 1999).

(3.5) *Caricetum ripariae*

The *Caricetum ripariae* occurs on eutrophic sites with high water level for most of the vegetation period (BALÁTOVÁ-TULÁČKOVÁ et al. 1993). Along the Danube, it only forms small patches in deep, muddy depressions (ROTTER 1999). In the March/Morava floodplain, it is mostly found at the margin or outside of the alluvial zone proper, especially in depressions within meadows, where there is only moderate fluctuation of the water level (ZLINSKÁ 1999).

(3.6) *Caricetum acutiformis*

Stands attributable to the *Caricetum acutiformis* were almost exclusively observed in the Danube floodplain, where they form small fringe-like communities along oxbows, between the *Phragmitetum australis* and the adjacent forest (ROTTER 1999).

(3.7) *Caricetum elatae*

This association is currently concentrated in two areas: Untere Lobau in the NP “Donau-Auen”, and the national nature reserve “Abrod” near the village Závod in the Slovak part of the March/Morava floodplain just outside the regular floodings. In general, the *Caricetum elatae* is a typical community of the zonation of mesotrophic still waters, usually positioned landwards of the *Phragmitetum australis* (ELLENBERG & LEUSCHNER 2010). After the Danube regulation, the gravelly shores of cut-off river branches were quickly colonised by *Carex elata*, and the *Caricetum elatae* became the most wide-spread sedge-bed community in the Danube floodplain east of Vienna (ROTTER 1999). In the meanwhile, however, *Phragmites australis* has outcompeted *Carex elata* in most places, and the *Caricetum elatae* is becoming increasingly rare.

(3.8) *Calamagrostietum canescens*

In parts of the *Caricetum elatae*, which mostly developed after the Danube regulation (see previous association), the absence of strong water level fluctuations led to the accumulation of peat and, in consequence, to a succession towards mire conditions. Thus, *Calamagrostis canescens* has become dominant in many places while *Carex elata* is decaying. Floristic records from the 19th century show that *C. canescens* was extremely rare in the Danube floodplain before the regulation (ROTTER 1999). Therefore, the presence of this association in the NP “Donau-Auen” is a direct consequence of the strongly altered hydrological conditions. Besides Untere Lobau, the *Calamagrostietum canescens* is only documented from the nature reserve “Abrod” in Slovakia by a single relevé.

(3.9) *Iridetum pseudacori*

Iris pseudacorus is a frequent companion of sedge-bed vegetation and can be considered as a character species of the *Magnocaricion* (BALÁTOVÁ-TULÁČKOVÁ et al. 1993). In rare cases, it forms almost monodominant patches that can be interpreted as a kind of basal community of the alliance. In accordance with LANDUCCI et al. (2020), we classify such stands as association *Iridetum pseudacori*. However, the latter authors included this association in the *Phragmitition*, even though their own synoptic tables show that the species is more frequent in the *Magnocaricion*.

The *Iridetum pseudacori* has been documented from Untere Lobau and the Slovak side of the March/Morava River. Further monodominant stands of *I. pseudacorus* have been observed in the northern part of the Austrian March-Thaya floodplain.

(4) Glycerio-Sparganion

(4.1) Glycerietum fluitantis

Communities of the alliance *Glycerio-Sparganion* are rare in the study area. In Lobau, small stands dominated by *Glyceria fluitans* occur in shallow oxbow lakes, usually accompanied by *Alopecurus aequalis* (ROTTER 1999). The community was also observed in the Slovak March/Morava floodplain (OŤAHEĽOVÁ 1996, ZLINSKÁ 1999).

(5) Eleocharito-Sagittarion

(5.1) Sagittario-Sparganietum emersi

This is a rare community in the study area. It has been observed in the Tullnerfeld and in the March/Morava floodplain. Several relevés from Machland (WENDELBERGER-ZELINKA 1952) might include this association, but they are too complex to be classified with certainty. The *Sagittario-Sparganietum* occurs at eutrophic, muddy sites with fluctuating water level, usually at the shore of oxbow lakes (ZLINSKÁ 1999). *Sagittaria sagittifolia* is more frequent than *Sparganium emersum*, the latter being absent in more than half of the relevés.

(5.2) Oenanthe-Rorippetum amphibiae

The *Oenanthe-Rorippetum* is more widespread in the study area than the previous association. It has been observed in all parts of the Danube floodplain and is even more frequent along the March/Morava. The site conditions are similar to the *Sagittario-Sparganietum*, but the *Oenanthe-Rorippetum* seems to prefer sites with less hydrological dynamics. The stands are mostly dominated by *Roripa amphibia*, in a few cases also by *Oenanthe aquatica*. However, deviating from ŠUMBEROVÁ et al. (2011) and LANDUCCI et al. (2020), we refrain from recognising a separate *Oenanthesetum aquatica*.

(5.3) Butometum umbellati

This association includes stands dominated by *Butomus umbellatus*. It is only documented from the Slovak side of the March/Morava floodplain, although small stands of *B. umbellatus* have also been observed on the Austrian side. The site conditions are similar to the previous two associations. The ecological differences between *Sagittario-Sparganietum*, *Oenanthe-Rorippetum* and *Butometum umbellati* seem rather small and need further investigation (see also HRODOVÁ & ZÁKRAVSKÝ 1994).

(5.4) Eleocharitetum palustris

The only recent observation of this community in the Austrian part of the study area is a disturbed shore of a river oxbow in Untere Lobau (ROTTER 1999). One relevé of WAGNER (1950) from the Machland, originally classified as “*Ranunculus repens-Alopecurus geniculatus*-Ass.”, can also be included here. In the Slovak part of the March/Morava floodplain, the *Eleocharitetum palustris* is a relatively frequent community. It forms small-scale stands in depressions of alluvial meadows with heavy clay soils and on the margins of sandy and gravel depressions (ZLINSKÁ 1999).

BALÁTOVÁ-TULÁČKOVÁ et al. (1993) classified this association within the *Magnocaricion*. Here, we follow OŤAHEĽOVÁ et al. (2001), ŠUMBEROVÁ et al. (2011) and LANDUCCI et al. (2020) who assign the *Eleocharitetum palustris* to the *Eleocharito-Sagittarion*.



Fig. 2. Examples of *Phragmito-Magnocaricetea* and *Potentillion anserinae* communities: **a)** *Glycerietum maximaе* near Schlosshof; **b)** *Phalaridetum arundinaceae* near Orth an der Donau; **c)** *Caricetum acutae* near Devínska Nová Ves; **d)** *Oenanthe-Rorippetum amphibiae* near Moravský sv. Ján; **e)** *Rorippo-Agrostietum stoloniferae* near Orth an der Donau; **f)** *Dactylido-Festucetum arundinaceae* near Orth an der Donau (Photos a: W. Willner, May 2021; b, e, f: M. Staudinger, May 2010; c, d: K. Hegedüšová Vantarová, 2004).

Abb. 2. Beispiele von *Phragmito-Magnocaricetea* und *Potentillion anserinae*: **a)** *Glycerietum maximaе* bei Schlosshof; **b)** *Phalaridetum arundinaceae* bei Orth an der Donau; **c)** *Caricetum acutae* bei Devínska Nová Ves; **d)** *Oenanthe-Rorippetum amphibiae* bei Moravský sv. Ján; **e)** *Rorippo-Agrostietum stoloniferae* bei Orth an der Donau; **f)** *Dactylido-Festucetum arundinaceae* bei Orth an der Donau (Fotos a: W. Willner, Mai 2021; b, e, f: M. Staudinger, Mai 2010; c, d: K. Hegedüšová Vantarová, 2004).



Fig. 3. Examples of *Deschampsion*, *Molinion*, *Arrhenatherion* and *Festuco-Brometea* communities: **a)** *Cnidio-Violetum pumilae* near Schlosshof; **b)** *Ophioglosso-Caricetum tomentosae* between Eckartsau and Stopfenreuth; **c)** *Molinietum caeruleae* in the nature reserve „Abrod“; **d)** *Ranunculo bulbosi-Arrhenatheretum* NW of Wolfsthal; **e)** *Festuco rupicolae-Brometum* E of Stopfenreuth; **f)** *Teucro botryos-Andropogonetum* in Schüttlau near Schönau an der Donau (Photos a: T. Zuna-Kratky, August 2010; b, d, e: M. Staudinger, May 2010; c: I. Škodová, August 2020; f: N. Sauberer, June 2019).

Abb. 3. Beispiele von *Deschampsion*, *Molinion*, *Arrhenatherion* und *Festuco-Brometea*: **a)** *Cnidio-Violetum pumilae* bei Schlosshof; **b)** *Ophioglosso-Caricetum tomentosae* zwischen Eckartsau und Stopfenreuth; **c)** *Molinietum caeruleae* im Naturreservat „Abrod“ (Slowakei); **d)** *Ranunculo bulbosi-Arrhenatheretum* NW von Wolfsthal; **e)** *Festuco rupicolae-Brometum* E von Stopfenreuth; **f)** *Teucro botryos-Andropogonetum* in der Schüttlau bei Schönau an der Donau (Fotos a: T. Zuna-Kratky, August 2010; b, d, e: M. Staudinger, Mai 2010; c: I. Škodová, August 2020; f: N. Sauberer, Juni 2019).

(6) *Potentillion anserinae*

(6.1) *Rorippo sylvestris-Agrostietum stoloniferae*

This association is almost exclusively found along the Danube, where it is quite frequent, both directly at the shore of the main river and along oxbows having a stronger flooding dynamics. It also occurs on dirt roads. The *Rorippo-Agrostietum* is a pioneer community on gravel and sand, usually forming only small patches. In the study area, the *Rorippo-Agrostietum* is a kind of central association of the alliance, being mainly negatively differentiated from the following associations. The dominant species is *Agrostis stolonifera*. Positive differential species are *Rorippa amphibia* and several *Bidentetea* species, such as *Persicaria dubia*, *P. hydropiper*, *P. lapathifolia* and *Rorippa palustris*.

(6.2) *Ranunculetum repens*

The *Ranunculetum repens* usually occupies shallow depressions in the centre of periodically flooded meadows. In Untere Lobau, the community also occurs in the higher parts of former river beds. The main differential species against the other associations of the alliance are *Alopecurus pratensis*, *Cardamine pratensis*, *Galium palustre* agg., *Lysimachia nummularia* and *Poa palustris*. The dominant species are *Agrostis stolonifera*, *Ranunculus repens* and *Potentilla reptans*.

Although the *Ranunculetum repens* is a well differentiated vegetation unit, it has often been neglected in the literature (see also ZLINSKÁ 1999). BALÁTOVÁ-TULÁČKOVÁ et al. (1993) mentioned it under the name “*Ranunculus repens-(Potentillion anserinae)-Gesellschaft*”. The “*Ranunculus repens-Alopecurus geniculatus-Ass.*” of WAGNER (1950) also belongs here. ZAHLHEIMER (1979) reported the association from the Danube valley in Bavaria.

(6.3) *Ranunculo repens-Alopecuretum geniculati*

Grasslands with dominant *Alopecurus geniculatus* are only documented from the Slovak part of the March/Morava floodplain, although the species has also been observed on the Austrian side of the river. The association usually occurs in contact with the *Gratiolo-Caricetum suzae* (see below) and seems to be related to trampling (ZLINSKÁ 1999). The stands are periodically flooded, but none of them is directly adjacent to the river.

(6.4) *Dactyrido-Festucetum arundinaceae*

Meadows with dominant *Festuca arundinacea* have been frequently observed in the NP “Donau-Auen”, but the ecological peculiarities of these sites are not well studied. DIERSCHKE (2012) mentions compressed soil and disturbance by trampling and driving as potential factors. Indeed, personal observations suggest that the abundance of *Festuca arundinacea* has been increasing in recent years, which might be a result of heavier tractors. Apart from the Danube floodplain east of Vienna, the *Dactyrido-Festucetum arundinaceae* has also been recorded from two localities in the northern March-Thaya floodplain. No observations of this association are known from the Slovak side of the river.

From our data alone, the syntaxonomic position of this association seems doubtful. It hardly contains any *Potentillion* species, but has strong floristic affinities to the *Arrhenatherion*. In the TWINSPAN classification, this unit was not reproduced (Supplement E1). However, the stands in our study area are probably not typical for the association as a whole (see DIERSCHKE 2012).

(7) *Deschampsion cespitosae* (incl. *Cnidion dubii*)

In our analysis, two clearly separated association groups were revealed within the alliance *Deschampsion*: (i) a **wetter group** (associations 7.1–7.3), mainly differentiated by *Phragmito-Magnocaricetea* species (*Carex acuta*, *C. disticha*, *C. riparia*, *C. vulpina* agg., *Eleocharis palustris*, *Galium palustre* agg., *Iris pseudacorus*, *Phalaris arundinacea*) as well as *Caltha palustris* and *Poa palustris*; and (ii) a **drier group** (associations 7.4–7.6), differentiated by *Molinio-Arrhenatheretea* species having an optimum in the alliances *Molinion* (*Carex tomentosa*, *Galium boreale*, *Inula salicina*, *Ophioglossum vulgatum*, *Silaum silaus*) and *Arrhenatherion* (*Colchicum autumnale*, *Festuca pratensis*, *Leucanthemum vulgare* agg., *Ranunculus acris*, *Trifolium pratense*) as well as *Galium verum* and *Viola pumila*.

Within both groups, a marked geographical differentiation between the March-Thaya floodplain on the one hand and the Danube floodplain on the other hand can be observed. The grasslands along the March/Morava and Thaya are characterised by the presence of several species, mostly with eastern or southeastern distribution, which are rare or completely absent along the Danube: *Carex melanostachya*, *Clematis integrifolia*, *Cerastium dubium*, *Gratiola officinalis*, *Lythrum virgatum*, *Plantago altissima*, *Scutellaria hastifolia* and *Selinum venosum*. *Leucojum aestivum* has a similar overall distribution, but it has no diagnostic value in our data set because it occurs with relatively high constancy in the eastern part of the NP “Donau-Auen”, where the majority of our relevés comes from.

(7.1) *Gratiolo-Caricetum suzae* (incl. *Lathyro palustris-Gratioletum*)

This association includes the *Deschampsion* meadows in the March-Thaya floodplain where spring floods may last for several weeks and summer droughts are less pronounced. It therefore occupies shallow depressions, in a position between the various *Phragmito-Magnocaricetea* communities and the *Cnidio-Violetum pumilae* (association 7.4).

The here adopted concept of the *Gratiolo-Caricetum suzae* differs from both the original one (BALÁTOVÁ-TULÁČKOVÁ 1966, 1969, BALÁTOVÁ-TULÁČKOVÁ & HÜBL 1974) and that used in more recent overviews from the Czech Republic (HÁJKOVÁ et al. 2007) and Slovakia (HÁJKOVÁ et al. 2014). BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) distinguished three associations within the *Cnidion* (= *Deschampsion*) (see also ELLMAUER & MUCINA 1993): *Lathyro palustris-Gratioletum* (wettest), *Gratiolo-Caricetum suzae* (middle position) and *Cnidio-Violetum pumilae* (driest). In accordance with HÁJKOVÁ et al. (2007, 2014), we think that only two associations can be distinguished along this gradient. However, the latter authors use the name *Lathyro palustris-Gratioletum* for the wetter community while the *Gratiolo-Caricetum suzae* is considered as a syntaxonomic synonym of the *Cnidio dubii-Deschampsietum cespitosae* Passarge 1960, the name adopted for the drier community. According to the diagnostic species listed above, the nomenclatural type of the *Gratiolo-Caricetum suzae* clearly belongs to the wet group. Therefore, as the *Lathyro palustris-Gratioletum* and *Gratiolo-Caricetum suzae* were described in the same publication, one of the two names has to be selected for the united association (Art. 25 ICPN). Here we select the name *Gratiolo-Caricetum suzae* [orig. “*Gratiola officinalis-Carex praecox-suzae*-Association”, named after *Carex praecox* var. *suzae*] because *Carex praecox* is much more frequent in the community than *Lathyrus palustris*, and the majority of the included relevés were originally assigned to the *Gratiolo-Caricetum suzae*.

The single relevé published by BALÁTOVÁ-TULÁČKOVÁ (1987) under the name *Serratulo tinctoriae-Plantaginetum altissimae* also belongs to this community. *Plantago altissima* is known from only a few localities in the March/Morava floodplain, but it occurs in both

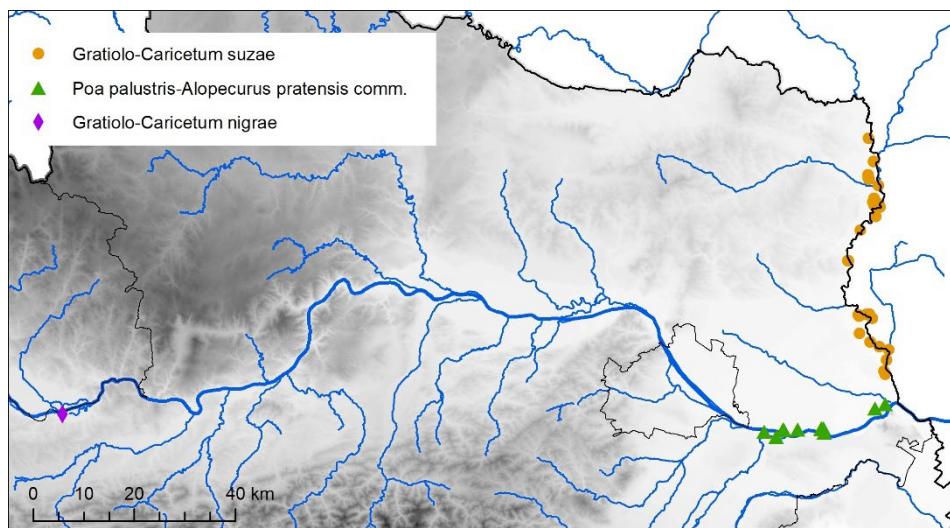


Fig. 4. Distribution of the wet association group of the *Deschampion* in the study area.

Abb. 4. Verbreitungskarte der feuchten Assoziationsgruppe des *Deschampion* im Untersuchungsgebiet.

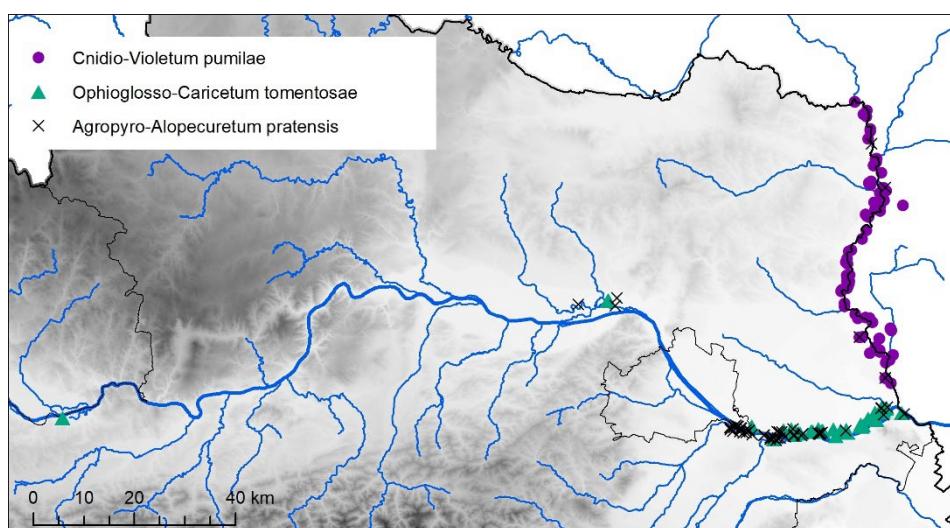


Fig. 5. Distribution of the drier association group of the *Deschampion* in the study area.

Abb. 5. Verbreitungskarte der trockeneren Assoziationsgruppe des *Deschampion* im Untersuchungsgebiet.

the wetter and drier community. The *Serratulo tinctoriae-Plantaginetum altissimae* was originally described from the Drava floodplain in northeastern Croatia (ILIJANIĆ 1968) and probably represents a southern Pannonic vicariant of the *Cnidio-Violetum pumilae*. Splitting the *Deschampion* communities along the March/Morava River merely according to the presence or absence of *Plantago altissima* is hardly justified.

(7.2) *Poa palustris-Alopecurus pratensis* community

This community replaces the *Gratiolo-Caricetum suzae* in the Danube floodplain. Compared to the latter, it is only negatively differentiated, and its overall species composition is quite similar to the *Ranunculetum repantis*. However, it is dominated by *Alopecurus pratensis* and therefore included in the *Deschampsion*. It corresponds to the “Wet *Alopecurus pratensis* meadows with *Poa palustris* of the Danube floodplain” (clusters 43–44) in WILLNER et al. (2013a). We are not aware of a valid association name for this unit, and its syntaxonomic status can only be evaluated by a broad-scale revision. ZAHLHEIMER (1979) reports similar grasslands under the name *Sanguisorbo-Silaetum myosotidetosum palustris*. He also mentions that this grassland type has developed from the *Caricetum distichae* after management intensification, a statement that might also be true for our study area.

(7.3) *Gratiolo-Caricetum nigrae*

This community was described by WAGNER (1950) from Machland and has not been found anywhere else in the study area so far. It is similar to the *Cnidio-Deschampsietum juncetosum effusi* described by BURKART et al. (2004).

(7.4) *Cnidio-Violetum pumilae*

The *Cnidio-Violetum pumilae* occupies the higher levels in the *Deschampsion* meadows of the March-Thaya floodplain. Spring floods usually last for only a few days and summer droughts are more pronounced than in the *Gratiolo-Caricetum suzae*. Judging from the number of relevés, it seems to be the more widespread of the two communities.

Our concept of this association is slightly broader than in BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) because we also include the *Gratiolo-Caricetum suzae filipenduletosum vulgaris* and the “*Silaetum pratensis*” of the latter authors. On the other hand, the *Cnidio-Violetum pumilae caricetosum tomentosae* of the Danube floodplain must be transferred to the following association. As mentioned above, HÁJKOVÁ et al. (2007, 2014) included this community in the *Cnidio-Deschampsietum cespitosae* described from the Elbe floodplain (PASSARGE 1960, BURKART et al. 2004). In our opinion, the merging of these associations is premature and can only be evaluated by a broad-scale revision of the alliance. In any case, several of the species found along the March/Morava River are absent in eastern Germany (*Clematis integrifolia*, *Leucojum aestivum*, *Lythrum virgatum*, *Plantago altissima*), and others are very rare (*Carex melanostachya*, *Viola pumila*).

(7.5) *Ophioglosso-Caricetum tomentosae*

This association is closely related to the *Cnidio-Violetum pumilae*, replacing the latter along the Danube. It corresponds to the “*Alopecurus pratensis* meadows with *Ophioglossum vulgatum* of the Danube floodplain” (clusters 41–42) in WILLNER et al. (2013a). *Ophioglossum vulgatum* and *Carex tomentosa*, which are rare along the March/Morava, have a high constancy in this community, while *Carex melanostachya*, *Clematis integrifolia*, *Cerastium dubium*, *Galium boreale*, *Gratiola officinalis* and *Selinum venosum* are (almost) absent.

The *Ophioglosso-Caricetum tomentosae* was originally described by WAGNER (1950) from the Machland and later also reported from Upper Austria (STOCKHAMMER 1955) and from the Tullnerfeld (ELLMAUER & MUCINA 1993). Here, we extend the association further to the east, including the *Cnidio-Violetum pumilae caricetosum tomentosae* and the *Molinietum coeruleae violetosum pumilae* of BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974). Towards the west, the “*Molinietum coeruleae*” of ZAHLHEIMER (1979) partly corresponds to

the *Ophioglosso-Caricetum tomentosae* as well. Thus, the distribution of this association seems to extend at least from Bavaria in the west to the confluence of Danube and March/Morava in the east.

(7.6) *Agropyro-Alopecuretum pratensis*

This vegetation unit is mainly distributed along the Danube, although there are also some records from the March-Thaya floodplain. It corresponds to the “*Alopecurus pratensis* meadows with *Silaum silaus* of the Danube floodplain” (cluster 39) in WILLNER et al. (2013a). The community differs from the *Cnidio-Violetum pumilae* and *Ophioglosso-Caricetum tomentosae* by the lack of all “better” *Deschampsion* and *Molinion* species (*Carex tomentosa*, *Galium boreale*, *Inula salicina*, *Ophioglossum vulgatum*, *Selinum venosum*, *Serratula tinctoria*, *Viola pumila*). In some locations, it might have developed from these grassland types due to management intensification, but it probably also occurs naturally on sites strongly effected by flooding (“natural eutrophication”).

HÁJKOVÁ et al. (2007, 2014) adopted the name *Poo trivialis-Alopecuretum pratensis* Regel 1925 for this association. However, there are two problems with this name: (i) In the single relevé of the original diagnosis (i.e., the holotype), *Poa trivialis* is dominant, and the correct name would be *Alopecuro pratensis-Poetum trivialis* nom. invers. (Art. 42 ICPN), unless the name is conserved in a different way. (ii) A broad-scale revision proving that the grassland described by REGEL (1925) from Lithuania is really the same association as this Central European unit is lacking. Thus, for the time being, we prefer the name *Agropyro-Alopecuretum pratensis* Moravec 1965. A similar community was reported by ZAHLHEIMER (1979) under the name *Sanguisorbo-Silaetum galietosum veri*.

(8) *Molinion caeruleae*

In accordance with the recent revisions from Germany, the Czech Republic and Slovakia (BURKART et al. 2004, HÁJKOVÁ et al. 2007, 2014), we unite all *Molinion* meadows on base-rich soils in a broadly defined *Molinietum caeruleae*. The “*Silaetum pratensis*” and “*Serratulo-Festucetum commutatae*”, reported by BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974) within this alliance (see also ELLMAUER & MUCINA 1993), are transferred to the *Cnidio-Violetum pumilae* (*Deschampsion*) and *Colchico-Festucetum rupicolae* (*Cirsio-Brachypodion*), respectively.

(8.1) *Molinietum caeruleae* (s.l.)

The single record from the Austrian part of the study area (“Nanni-Au” near Marchegg; BALÁTOVÁ-TULÁČKOVÁ & HÜBL 1974) is historical, as this site has been completely overgrown by shrubs. At present, the *Molinietum* is well preserved only in the nature reserve “Abrod” in Slovakia.

(9) *Arrhenatherion*

(9.1) *Ranunculo bulbosi-Arrhenatheretum* (s.l.)

Mesic meadows of the *Arrhenatherion* alliance are quite frequent along the Danube. Most of them have probably developed from semi-dry grasslands after fertilisation. The less nutrient-rich ones, which still contain some *Festuco-Brometea* species (e.g., *Briza media*, *Bromus erectus*, *Festuca rupicola*, *Ranunculus polyanthemos*, *Salvia pratensis*), are united in this association, while those without *Festuco-Brometea* species belong to the next unit.

The dominant grass is usually *Arrhenatherum elatius*. In the March/Morava floodplain, this association mostly occurs on the slopes of dams, where the conditions are much drier compared to the surrounding alluvial habitats.

This unit mostly corresponds to the “Mesic meadows of the Danube floodplain” (cluster 33) in WILLNER et al. (2013a). Here, we include it in a broadly conceived *Ranunculo bulbosi-Arrhenatheretum*. However, in comparison to the Vienna Woods (WILLNER et al. 2013b), several diagnostic species of the association are absent or rare (e.g., *Centaurea scabiosa*, *Ranunculus bulbosus*). On the other hand, there are species that normally do not occur in the *Ranunculo bulbosi-Arrhenatheretum* (e.g. *Cirsium arvense*, *Equisetum arvense*). We were not able to distinguish between *Ranunculo bulbosi-Arrhenatheretum* and *Filipendulo vulgaris-Arrhenatheretum* in our study area, although differential species of both associations are present in the data set. This might be a hint that these two associations should only be separated at the subassociation level, as already suggested in WILLNER et al. (2013b).

(9.2) *Pastinaco-Arrhenatheretum*

This unit includes the *Arrhenatherion* meadows with higher nutrient, and perhaps also better water supply. It corresponds to the “Moist *Arrhenatherum* meadows of the Danube floodplain” (clusters 37–38) in WILLNER et al. (2013a). Inclusion in the *Pastinaco-Arrhenatheretum* seems to be a reasonable solution. The association is equally frequent as the *Ranunculo bulbosi-Arrhenatheretum* along the Danube, but it is almost absent along the March/Morava. We suspect that this is mainly a result of the different land-use history, as all sites in the March-Thaya floodplain potentially suitable for the *Pastinaco-Arrhenatheretum* are covered by arable fields. As in the previous association, the dominant grass is usually *Arrhenatherum elatius*, but *Festuca pratensis* or *Poa trivialis* can be dominant as well.

(10) *Cynosurion*

(10.1) *Plantagini-Lolietum*

This association is characterised by the co-dominance of *Lolium perenne*, *Plantago major* and *Poa annua*. It has only been documented from the Tullnerfeld, but it is more widespread in the study area. Typical sites are median strips of dirt roads.

(11) *Convolvulo-Agropyrrion*

Stands with dominant *Elymus repens* (= *Agropyron repens*) are united in this alliance, although they did not form separate clusters in the TWINSPLAN classification (Supplement E1). According to their floristic affinity to the *Deschampson* or *Arrhenatherion*, respectively, we distinguish two provisional communities. They are probably a product of abandonment and/or site deterioration (accumulation of sediments after flooding, eutrophication, burning). *Elymus repens* has creeping rhizomes which enable it to rapidly colonise disturbed sites.

(11.1) *Ranunculus repens-Elymus repens* community

This community seems to have developed from *Deschampson* meadows, or perhaps in some cases from *Potentillion* communities. It was found both along the Danube and March/Morava River. Similar communities have been described under the names *Rorippo austriacae-Agropyretum repens* (TÜXEN 1950, SOÓ 1964), *Ranunculo repensis-Agopyretum repensis* (TÜXEN 1977) and *Ranunculus repens-Elymus repens*-Gesellschaft (DIERSCHKE 2012) and usually were assigned to the *Potentillion anserinae*. In our study area,

the community could be seen as an *Elymus* facies of the *Agropyro-Alopecuretum pratensis*. However, the strong dominance of *Elymus repens* might also justify inclusion in the *Convolvulo-Agopyrion*, as preliminarily proposed here.

(11.2) *Dactylis glomerata-Elymus repens* community

This unit has been documented only from the NP “Donau-Auen” so far. It lacks the *Potentillion* and *Molinietalia* species, which differentiate the previous community and, therefore, is floristically close to the *Arrhenatherion*. Due to the high constancy of *Bromus inermis* the inclusion in the *Convolvulo-Agopyrion* seems well justified.

(12) *Rubo-Calamagrostion epigeji*

Stands with strong dominance of *Calamagrostis epigejos* are probably a product of late or irregular mowing in combination with a reduced groundwater level. Like the *Elymus repens* communities, they did not form separate clusters in the TWINSPAN classification (Supplement E1), but their inclusion in any of the other alliances is unsatisfying. We therefore adopt the alliance *Rubo-Calamagrostion epigeji* to accommodate these communities (DENGLER 1997, DENGLER et al. 2003).

(12.1) *Deschampsia cespitosa-Calamagrostis epigejos* community

This is a rare community in the study area. In the Untere Lobau, it occurs adjacent to the *Calamagrostietum canescens* on drier, sandy slopes of river oxbows. Other stands near the confluence of March/Morava and Danube have probably developed from *Deschampson* meadows.

(12.2) *Colchicum autumnale-Calamagrostis epigejos* community

This unit includes the majority of stands dominated by *Calamagrostis epigejos*. They are differentiated from the previous community by species indicating mesic or semi-dry conditions and, therefore, are floristically most similar to the *Ranunculo bulbosi-Arrhenatheretum*, with which they formed a common TWINSPAN cluster (Supplement E1). Stands might have developed from *Arrhenatherion* or *Cirsio-Brachypodion* grasslands, or in some cases even from *Deschampson* where the water level dropped very fast within a few years. *Calamagrostis epigejos* is able to colonise such sites very quickly, outcompeting *Arrhenatherum elatius*, *Bromus erectus* and other grasses. The community has been documented from the Tullnerfeld and the NP “Donau-Auen”.

(13) *Cirsio-Brachypodion*

(13.1) *Colchico-Festucetum rupicolae*

This association occupies sites in the March-Thaya floodplain that are not regularly flooded, but relatively moist in spring due to capillary water transport. The stands have a peculiar combination of *Potentillion*, *Molinietalia*, *Arrhenatheretalia* and *Festuco-Brometea* species, reflecting the fluctuation between moist and dry phases. *Arabidopsis thaliana*, *Luzula campestris* agg. and others indicate slightly acidic conditions.

The community was included in the “*Serratulo-Festucetum commutatae*” (recte: *Serratulo-Festucetum rubrae*) by BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974), even though *Festuca rubra* is completely absent and replaced by *F. rupicola*. ZLINSKÁ (1999) classified it as *Serratulo-Festucetum commutatae festucetosum rupicolae*. In our opinion, the *Serratulo-Festucetum rubrae* does not occur in Austria (or at least not in the study area). Instead, these

semi-dry grasslands correspond to the *Colchico-Festucetum rupicolae* described from Hungary (LENGYEL et al. 2016, see also WILLNER et al. 2019). The assignment to the *Cirsio-Brachypodion* is justified by the dominance of *F. rupicola*.

(13.2) *Festuco rupicolae-Brometum*

Semi-dry grasslands are among the most widespread communities in the Danube floodplain, occupying the higher levels that are not affected by flooding. They are usually dominated by *Bromus erectus*, while *Festuca rupicola* can also reach high cover. We distinguish two associations which differ in their moisture supply. The more mesic one corresponds to the “*Bromus erectus* meadows of the Danube floodplain” (cluster 31) in WILLNER et al. (2013a). According to the revision of WILLNER et al. (2019), they belong to the *Festuco rupicolae-Brometum*. Differential species against the following association are *Arrhenatherum elatius*, *Colchicum autumnale*, *Trifolium pratense* and *Leucanthemum vulgare* agg., among others. The community is widespread along the Danube, but has also been found in two localities along the March/Morava.

(13.3) *Polygalo majoris-Brachypodietum*

This association is similar to the previous one, but occurs on drier soils, as indicated by differential species such as *Potentilla verna* agg. (mostly *P. pusilla*), *Helianthemum nummularium*, *Dorycnium germanicum*, *Euphorbia seguieriana* and *Stipa pennata* (= *S. joannis*). The community is common along the Danube, but seems to be absent from the March-Thaya floodplain. It was included in the “Dry grasslands on base-rich sandy soils” (cluster 21) in WILLNER et al. (2013a). The species composition is somewhat different from the typical *Polygalo majoris-Brachypodietum* on hard limestone and dolomite, e.g. along the eastern margin of the Alps (WAGNER 1941, WILLNER et al. 2013b). We therefore describe a new subassociation for the stands in the Danube floodplain:

Polygalo majoris-Brachypodietum selaginelletosum helveticae subass. nov.

Differential species against the *Polygalo majoris-Brachypodietum typicum*: *Selaginella helvetica*, *Carex liparocarpos*, *Thesium ramosum*, *Calamagrostis epigejos*, *Orchis coriophora*.

Nomenclatural type: see chapter 4.4.

(14) *Festucion valesiacae*

(14.1) *Peucedano oreoselini-Festucetum rupicolae*

The highest and driest sites in the March-Thaya floodplain are occupied by this community, which is dominated by *Festuca rupicola*. In comparison to the *Colchico-Festucetum rupicolae*, *Potentillion* and *Molinietalia* species are completely absent. Important diagnostic species are *Potentilla argentea*, *Rumex acetosella*, *Trifolium arvense*, *Vicia lathyroides* and *Armeria elongata*. The name-giving *Peucedanum oreoselinum* has only a low constancy, but it is also a good differential species against the following association. The sites are sandy ridges with relatively deep and acidic soils.

Inclusion in the *Festucion valesiacae* is preliminary. In the original description, CHYTRÝ et al. (1997) classified this association into the *Koelerio-Phleion*. CHYTRÝ et al. (2007) merged it with an association described from the Central Bohemian Uplands (*Potentillo heptaphyllae-Festucetum rupicolae*) within the same alliance.

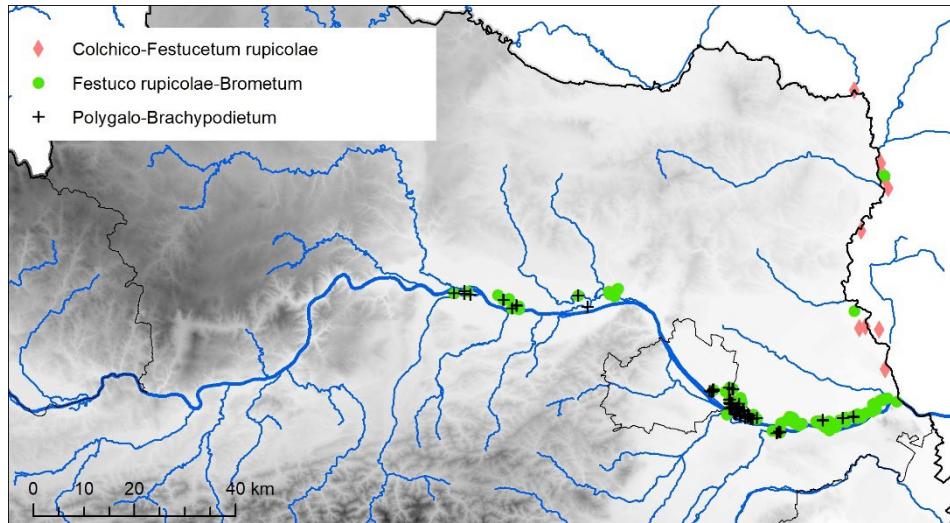


Fig. 6. Distribution of the *Cirsio-Brachypodion* communities in the study area.

Abb. 6. Verbreitungskarte der *Cirsio-Brachypodion*-Gesellschaften im Untersuchungsgebiet.

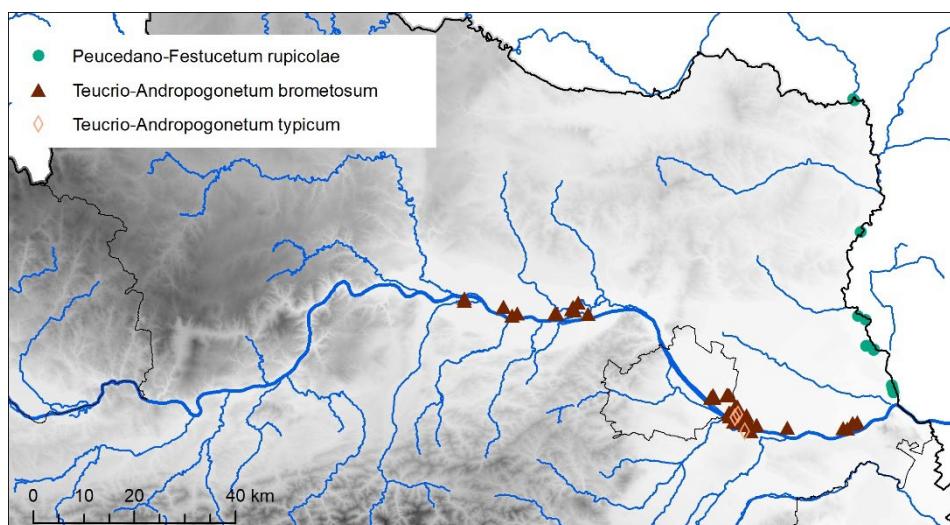


Fig. 7. Distribution of the *Festucion valesiacae* communities in the study area.

Abb. 7. Verbreitungskarte der *Festucion valesiacae*-Gesellschaften im Untersuchungsgebiet.

(14.2) *Teucrio botryos-Andropogonetum*

This association is found on gravel and sand banks (called “Heißländer”) in the Danube floodplain. It corresponds to the “Dry grasslands on alluvial gravel soils” (clusters 17–18) and partly also to the “Dry grasslands on base-rich sandy soils” (cluster 21) in WILLNER et al. (2013a). Two subassociations can be distinguished:

Teucrio botryos-Andropogonetum typicum

The typical subassociation, corresponding to the original description of the association from Untere Lobau (SAUBERER 1942), includes the early successional stages with low cover of the herb layer and many annuals. The dominant grass is *Bothriochloa ischaemum* (= *Andropogon ischaemum*), while *Festuca valesiaca* is present with low cover and constancy. Differential species against the following subassociation are *Melica ciliata*, *Apera interrupta*, *Teucrium botrys* and lichens (*Cladonia* sp.). Today, this subassociation has become very rare, as no new gravel banks are being formed, and it is mostly replaced by grasslands with denser herb layer, dominated by *Bromus erectus* and *Festuca rupicola*, which are transitional towards the *Cirsio-Brachypodion* and belong to the following subassociation.

Teucrio botryos-Andropogonetum brometosum erecti subass. nov.

Differential species against the *Teucrio botryos-Andropogonetum typicum*: *Bromus erectus*, *Festuca rupicola*, *Carex liparocarpos*, *Elymus hispidus*, *Selaginella helvetica*.

Nomenclatural type: see chapter 4.4.

4.4 Type relevés

In the following, we select neo- and lectotypes for the associations described in the study area, and present the type relevés of the new subassociations. WAGNER (1950) only published a synoptic table, but with the help of Paul Heiselmayer (Salzburg) we were able to retrieve the original hand-written relevé table that was the basis for the published one. The following neotypes are taken from this original table. All of Wagner's unpublished relevés have been computerised and are available via the Austrian Vegetation Database and the European Vegetation Archive (see also Supplement E4). The species nomenclature has been adopted according to FISCHER et al. (2008).

(7.3) *Gratiolo-Caricetum nigrae* Wagner 1950 nom. corr.

(original form of the name: “*Gratiola officinalis-Carex fusca*-Ass.”; WAGNER 1950, p. 10)

Neotypus hoc loco: H. Wagner, ca. 1947, Machland, between Mauthausen and Ardagger, Austria. Vascular plants: *Carex nigra* 4, *Carex disticha* 2, *Gratiola officinalis* 2, *Phragmites australis* 2, *Potentilla reptans* 2, *Ranunculus repens* 2, *Stachys palustris* 2, *Agrostis stolonifera* 1, *Caltha palustris* 1, *Deschampsia cespitosa* 1, *Equisetum palustre* 1, *Galium palustre* 1, *Iris pseudacorus* 1, *Lythrum salicaria* 1, *Mentha aquatica* 1, *Phalaris arundinacea* 1, *Carex acuta* +, *Carex vesicaria* +, *Centaurea jacea* +, *Lysimachia nummularia* +, *Mentha verticillata* +, *Persicaria amphibia* +, *Plantago major* +, *Sanguisorba officinalis* +, *Sympytum officinale* +, *Thalictrum lucidum* +, *Valeriana dioica* +. Bryophytes: *Drepanocladus sendtneri* 3, *Calliergonella cuspidata* 2.

(7.5) *Ophioglosso-Caricetum tomentosae* Wagner 1950 nom. invers.

(original form of the name: “*Carex tomentosa-Ophioglossum vulgatum*-Assoziation”; WAGNER 1950, p. 11)

Neotypus hoc loco: H. Wagner, ca. 1947, Machland, between Mauthausen and Ardagger, Austria. Vascular plants: *Carex tomentosa* 3, *Deschampsia cespitosa* 3, *Sanguisorba officinalis* 3, *Colchicum autumnale* 2, *Festuca rubra* 2, *Lysimachia nummularia* 2, *Ophioglossum vulgatum* 2, *Poa pratensis* 2, *Potentilla reptans* 2, *Prunella vulgaris* 2, *Ranunculus repens* 2, *Taraxacum officinale* agg. 2, *Agrostis stolonifera* 1, *Elymus repens* 1, *Festuca*

pratensis 1, *Symphytum officinale* 1, *Trifolium pratense* 1, *Trifolium repens* 1, *Viola stagnina* 1, *Bellis perennis* +, *Cardamine pratensis* +, *Carex caryophyllea* +, *Carex hirta* +, *Centaurea jacea* +, *Equisetum arvense* +, *Galium verum* +, *Glechoma hederacea* +, *Lotus corniculatus* +, *Pimpinella major* +, *Ranunculus acris* +, *Silaum silaus* +, *Vicia cracca* +. Bryophytes: *Thuidium delicatulum* 3, *Calliergonella cuspidata* 2, *Eurhynchium speciosum* 1, *Abietinella abietina* +, *Brachythecium mildeanum* +, *Drepanocladus sendtneri* +.

(13.3) *Polygalo majoris-Brachypodietum* Wagner 1941

Polygalo majoris-Brachypodietum selaginelletosum helveticae subass. nov. hoc loco

Holotypus: L. Schratt-Ehrendorfer, 5 June 1996, Untere Lobau, Vienna, Austria (16.55239°E, 48.15923°N), plot size 30 m², cover herb layer: 100%, field number: F069, Turboveg ID: 317606. Vascular plants: *Bromus erectus* 5, *Dorycnium germanicum* 2b, *Festuca rupicola* 2a, *Teucrium chamaedrys* 2a, *Dianthus pontederae* 1, *Euphorbia cyparissias* 1, *Koeleria macrantha* 1, *Selaginella helvetica* 1, *Achillea collina* +, *Arenaria serpyllifolia* +, *Brachypodium pinnatum* +, *Carex caryophyllea* +, *Dactylis glomerata* +, *Elymus hispidus* +, *Eryngium campestre* +, *Galium verum* +, *Helianthemum ovatum* +, *Hieracium piloselloides* +, *Ligustrum vulgare* +, *Linum catharticum* +, *Orchis coriophora* +, *Orchis militaris* +, *Orchis ustulata* +, *Polygala comosa* +, *Potentilla pusilla* +, *Rhinanthus minor* +, *Scabiosa ochroleuca* +, *Securigera varia* +, *Silene vulgaris* +, *Stipa joannis* +, *Thymus kosteleckyanus* +.

(14.2) *Teucrio botryos-Andropogonetum* Sauberer et Wagner in Sauberer 1942 nom. invers. (original form of the name: “*Andropogoneto-Teucrietum botrydis*”; SAUBERER 1942, p. 25)

Lectotypus hoc loco: SAUBERER 1942, Tab. 8, Aufnahme 2.

Since the original publication might not be easily available to everyone, we provide here the type relevé in full (species nomenclature updated): A. Sauberer, 1936, Untere Lobau, Austria, on gravel, total vegetation cover 70%, plot size 4 m². Vascular plants: *Bothriochloa ischaemum* (orig. *Andropogon ischaemum*) 3, *Erophila verna* 1, *Teucrium chamaedrys* 1, *Asperula cynanchica* +, *Cerastium pumilum* +, *Cruciata pedemontana* +, *Helianthemum ovatum* +, *Hypericum perforatum* +, *Melica ciliata* +, *Petrorhagia saxifraga* +, *Sanguisorba minor* +, *Saxifraga tridactylites* +, *Scabiosa columbaria* (more likely *S. triandra*) +, *Sedum sexangulare* +, *Teucrium botrys* +, *Veronica arvensis* +. Bryophytes: *Tortella inclinata* 1, *Abietinella abietina* +, *Racomitrium canescens* +, *Tortula ruralis* +. Lichens: *Cladonia pyxidata* +, *Toninia sedifolia* +.

Teucrio botryos-Andropogonetum brometosum erecti subass. nov. hoc loco

Holotypus: L. Schratt-Ehrendorfer, 2 June 1996, Fuchshäufel, Obere Lobau, Vienna, Austria (16.48239°E, 48.19645°N), plot size 18 m², cover herb layer: 97%, cover moss layer: 3%, field number: F050, Turboveg ID: 317587. Vascular plants: *Koeleria macrantha* 3, *Carex liparocarpos* 2b, *Euphorbia cyparissias* 2b, *Euphorbia seguieriana* 2b, *Festuca rupicola* 2b, *Thymus kosteleckyanus* 2b, *Dorycnium germanicum* 2a, *Acinos arvensis* 1, *Bromus erectus* 1, *Eryngium campestre* 1, *Helianthemum ovatum* 1, *Orchis coriophora* 1, *Orchis morio* 1, *Potentilla pusilla* 1, *Selaginella helvetica* 1, *Teucrium chamaedrys* 1, *Arabis hirsuta* +, *Arenaria serpyllifolia* +, *Cerastium pumilum* +, *Elymus hispidus* +, *Hypericum perforatum* +, *Rhinanthus minor* +, *Stipa joannis* +, *Thesium ramosum* +, *Verbascum lychnitis* +, *Veronica arvensis* +, *Veronica prostrata* +.

5. Conclusions

This study presents the first comprehensive overview of the grassland diversity in the Danube and March-Thaya floodplain of Austria, including also the Slovak side of the March/Morava River. It is an important piece in the syntaxonomic revision of the Pannonian grasslands of Austria, and we expect that it will become a valuable tool for mapping and monitoring in nature conservation.

In comparison to previous works, in particular those of BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974), ELLMAUER & MUCINA (1993) and MUCINA & KOLBEK (1993), our revision includes the following main changes: (1) we accept the *Ranunculetum repentis* as a floristically well-defined association within the *Potentillion anserinae*; (2) we merge the four *Cnidion (Deschampsion)* associations of the March-Thaya floodplain (*Lathyro palustris-Gratioletum*, *Gratiolo-Caricetum suzae*, *Cnidio-Violetum pumilae*, *Serratulo-Plantaginetum altissimae*) into two (*Gratiolo-Caricetum suzae* and *Cnidio-Violetum pumilae*); (3) the *Ophioglosso-Caricetum tomentosae* is revealed as a geographical vicariant of the *Cnidio-Violetum pumilae*, replacing the latter along the Danube; (4) the “*Silaetum pratensis*” and “*Serratulo-Festucetum commutatae*”, previously included in the *Molinion*, are transferred to the *Cnidio-Violetum pumilae (Deschampsion)* and *Colchico-Festucetum rupicolae (Cirsio-Brachypodion)*, respectively; (5) the *Agropyro-Alopecuretum pratensis* is newly recognised for Austria; (6) *Ranunculo bulbosi-Arrhenatheretum*, *Pastinaco-Arrhenatheretum*, *Festuco rupicolae-Brometum* (= *Onobrychido-Brometum* sensu MUCINA & KOLBEK 1993) and *Polygalio-Brachypodietum* (with a new subass. *selaginelletosum helveticae*) are confirmed as widespread grassland types in the Danube floodplain; (7) the *Teucrio botryos-Andropogonetum (Festucion valesiacae)* is split into two subassociations. Moreover, we document four grassland types dominated by *Elymus repens* and *Calamagrostis epigejos* which have been neglected by all previous authors. The syntaxonomic status of these communities needs further study.

Given the regional scope of our study, the alliance assignment of some associations/communities is preliminary and can only be clarified by a broad-scale comparison. However, we are confident that the basic units presented here are floristically and ecologically well-defined and will hold in future revisions using data sets from larger geographical areas.

Erweiterte deutsche Zusammenfassung

Einleitung – Die Flussniederungen der Donau, March und Thaya stellen eines der bedeutendsten Wiesengebiete im Osten Österreichs dar. Gemeinsam mit dem slowakischen Anteil der March-Auen ist es ein Feuchtgebiet von internationaler Bedeutung, beherbergt neben Feuchtwiesen aber auch Frischwiesen und Trockenrasen (LAZOWSKI 1997, ŠEFFER & STANOVÁ 1999, RUŽIČKOVÁ et al. 2003, SUSKE et al. 2003). Pflanzensoziologische Studien beschränkten sich bislang auf Teilgebiete oder spezielle Gesellschaften (z. B. SAUBERER 1942, WAGNER 1950, BALÁTOVÁ-TULÁČKOVÁ & HÜBL 1974, ESSL 1999, ROTTER 1999 in Österreich; ŠMARDA 1951, BALÁTOVÁ-TULÁČKOVÁ 1976, ZLINSKÁ 1999 in der Slowakei), während ein zusammenfassender Vergleich fehlte. In diesem dritten Teil der Serie „Syntaxonomische Revision der pannonischen Rasengesellschaften in Österreich“ (vgl. WILLNER et al. 2013a, b) geben wir zum ersten Mal einen umfassenden Überblick über die Röhrichte, Großseggenrieder, Feucht- und Frischwiesen und Trockenrasen der Donau- und March-Thaya-Auen.

Untersuchungsgebiet – Das untersuchte Gebiet lässt sich in vier Teilgebiete untergliedern (Abb. 1): (1) Machland. Diese an der Grenze zwischen Ober- und Niederösterreich gelegene Niederung befindet sich biogeographisch schon außerhalb des pannonischen Raums. Sie wurde hauptsächlich

wegen der monographischen Studie von WAGNER (1950) inkludiert, welche die Erstbeschreibung einiger Wiesengesellschaften enthält. (2) Tullnerfeld, zwischen Wachau und Wiener Pforte gelegen. (3) Donau-Auen östlich von Wien (seit 1996 Nationalpark „Donau-Auen“). (4) March-Thaya-Auen. Während die Donau durch karbonatische Sedimente und ein alpines Abflussregime (mit Hochwässern besonders während der alpinen, sommerlichen Schneeschmelze) gekennzeichnet ist, führt die March fast ausschließlich silikatisches Material mit sich und erreicht den Höchststand meist im zeitigen Frühjahr. Die Seehöhe im Untersuchungsgebiet beträgt zwischen 240 m ü. Adria im Machland und 140 m ü. Adria am Zusammenfluss von March und Donau. Die mittlere Jahrestemperatur zeigt nur geringe Variation (9,5–10 °C), während die Jahresniederschläge einen deutlichen West-Ost-Gradienten aufweisen, mit ca. 800 mm im Machland, 500–600 mm im pannonischen Abschnitt der Donau und lediglich 460 mm am Zusammenfluss von March und Thaya (ZAMG 2012).

Die Donauregulierung im 19. Jahrhundert und die Regulierung der March und Thaya im 20. Jahrhundert bedeuteten schwerwiegende Eingriffe in die Gewässerdynamik, welche auch durch die Renaturierungsbemühungen der letzten Jahrzehnte nur zum kleinen Teil rückgängig gemacht werden konnten. So sind Teile des Gebiets durch Dämme von den jährlichen Überflutungen abgeschnitten, und neue Flächen mit Pioniervegetation entstehen nur in sehr beschränktem Ausmaß. Die Ausdehnung der Wiesen hat seit den Regulierungen stark abgenommen. Im Nationalpark „Donau-Auen“ machen Wiesen heute ca. 10 % der Fläche aus. In den österreichischen March-Thaya-Auen liegt der Wiesenanteil bei 9 %, auf der slowakischen Seite hingegen bei 22 %. Manche Wiesen wurden in der Vergangenheit durch Kunstdünger intensiviert, an der March wurde ein Großteil der Wiesen in Ackerland umgewandelt. Die meisten Wiesen werden zweimal jährlich gemäht. An der March wurde an einigen Stellen wieder eine traditionelle Beweidung eingeführt. Im Nationalpark „Donau-Auen“ stellt gegenwärtig die Eintiefung der Donau, bedingt durch fehlende Sedimentzufluss aufgrund der zahlreichen stromaufwärts gelegenen Kraftwerke, und die daraus resultierende Austrocknung das größte Problem dar.

Methoden – In einem ersten Schritt wurden sämtliche Vegetationsaufnahmen der Klassen *Festuco-Brometea*, *Molinio-Arrhenatheretea* und *Phragmito-Magnocaricetea* aus dem Untersuchungsgebiet recherchiert und in eine Datenbank eingepflegt. Von *Elymus repens* und *Calamagrostis epigejos* dominierte Bestände wurden ebenfalls inkludiert. Für die Auswertung wurden Aufnahmen mit Flächengrößen < 4 m² oder > 40 m² ausgeschlossen, Aufnahmen ohne Angabe der Flächengröße (403 = 19 %) aber behalten. Damit umfasste unser Datensatz 2119 Aufnahmen (davon 355 aus der Slowakei; Abb. 1). Die Taxonomie und Nomenklatur der Arten folgt FISCHER et al. (2008). Moose und Flechten wurden exkludiert, da sie nur in einem kleinen Teil der Aufnahmen erfasst sind. Der gesamte Datensatz wurde zunächst mit TWINSPLAN (HILL 1979) klassifiziert und die resultierenden Gruppen wurden syntaxonomisch interpretiert. Jeder Cluster wurde provisorisch einem Verband (und, wenn möglich, auch einer Assoziation) zugeordnet. Die endgültige Klassifikation der Aufnahmen erfolgte manuell und hierarchisch, beginnend mit der Klasse, entsprechend der Deckungssumme der diagnostischen Arten (siehe WILLNER 2011 und WILLNER et al. 2019 für eine ausführliche Darstellung der Methode). Die diagnostischen Arten der Klassen, Ordnungen und Verbände wurden weitgehend von MUCINA et al. (1993) und GRABHERR & MUCINA (1993) übernommen. Im Zweifelsfall (d. h., wenn die Deckungssummen von zwei oder mehr Syntaxa nahe beieinander lagen) wurde die Position im TWINSPLAN-Ergebnis beibehalten. Bei den Assoziationen der *Phragmito-Magnocaricetea* folgten wir großteils LANDUCCI et al. (2020). In den übrigen Klassen wurden innerhalb jedes Verbands separate TWINSPLAN-Klassifikationen durchgeführt, um die Assoziationen genauer abzugrenzen und deren diagnostische Arten zu eruieren.

Ergebnisse und Diskussion – In der TWINSPLAN-Klassifikation zeigte sich ein klarer Gradient von Röhrichten und Großseggenriedern (*Phragmito-Magnocaricetea*; Cluster 1–28) über Feucht- und Frischwiesen (*Molinio-Arrhenatheretea*; Cluster 29–44) zu Trockenrasen (*Festuco-Brometea*; Cluster 45–60). Allerdings kamen die Flutrasen (*Potentillion anserinae*) und der feuchtere Teil der Überschwemmungswiesen (*Deschampsion cespitosae* p.p.) innerhalb der *Phragmito-Magnocaricetea* zu liegen. Insgesamt konnten wir 14 Verbände mit 42 Assoziationen und fünf ranglosen Gesellschaften

unterscheiden (siehe syntaxonomischen Überblick in Kap. 4.2). Ein Vergleich zwischen TWINSPAN-Ergebnis und finaler Zuordnung der Aufnahmen ist in Anhang E1 wiedergegeben. Beilage S1 stellt eine gekürzte Stetigkeitstabelle dar (für die vollständige Version, siehe Anhang E2).

Im Vergleich zu früheren Übersichten, insbesondere jenen von BALÁTOVÁ-TULÁČKOVÁ & HÜBL (1974), ELLMAUER & MUCINA (1993) und MUCINA & KOLBEK (1993), weist unsere Revision einige Neuerungen auf. (1) Das *Ranunculetum repantis* wird als floristisch gut definierte Assoziation des *Potentillion anserinae* anerkannt. (2) Die vier in den March-Thaya-Auen unterschiedenen *Deschampsion-* (bzw. *Cnidion-*) Assoziationen *Lathyro palustris-Gratioretum*, *Gratiolo-Caricetum suzae*, *Cnidio-Violetum pumilae* und *Serratulo-Plantaginetum altissimae* werden auf zwei, entlang des Feuchtegradienten klar getrennte Assoziationen reduziert (feuchter, länger überschwemmt: *Gratiolo-Caricetum suzae*; trockener, kürzer überschwemmt: *Cnidio-Violetum pumilae*). (3) Das *Ophioglosso-Caricetum tomentosae* ersetzt das *Cnidio-Violetum pumilae* entlang der Donau an standörtlich analogen Standorten (Abb. 5). (4) Die bisher im *Molinion* untergebrachten Einheiten „*Silaetum pratensis*“ und „*Serratulo-Festucetum commutatae*“ werden ins *Cnidio-Violetum pumilae* (*Deschampsion*) bzw. *Colchico-Festucetum rupicolae* (*Cirsio-Brachypodion*) überstellt. (5) Das *Agropyro-Alopecuretum pratensis* wird erstmals für Österreich nachgewiesen. Es handelt sich um Fuchsschwanz-Wiesen, denen *Deschampsion*- und *Molinion*-Arten weitgehend fehlen. Sie dürften einerseits durch Intensivierung, andererseits aber auch durch natürliche Eutrophierung an häufig überfluteten Standorten bedingt sein. (6) *Ranunculo bulbosi-Arrhenatheretum*, *Pastinaco-Arrhenatheretum*, *Festuco rupicolae-Brometum* (= *Onobrychido-Brometum* sensu MUCINA & KOLBEK 1993) und *Polygalo-Brachypodietum* (in einer neuen Subass. *selaginellosum helveticae*) werden erstmals als in den Donau-Auen weitverbreitete Wiesengesellschaften dokumentiert. (7) Die Trockenrasen der Heißländer (*Teucrio botryos-Andropogonetum*, Verband *Festucion valesiacae*) werden in zwei Subassoziationen untergliedert, welche im Wesentlichen unterschiedlich weit fortgeschrittenen Sukzessionsstadien entsprechen (Subass. *typicum*: Pionierstadien, Subass. *brometosum erecti*: reifere, zu Halbtrockenrasen überleitende Stadien). Darüber hinaus dokumentieren wir vier bislang kaum beachtete, von *Elymus repens* bzw. *Calamagrostis epigejos* dominierte Wiesengesellschaften, deren syntaxonomischer Status vorläufig offenbleiben muss. *Elymus repens* ist wohl in erster Linie ein Störungszeiger (Überlandung, Brand), während *Calamagrostis epigejos* durch späte oder ausbleibende Mahd in Kombination mit sinkendem Grundwasserspiegel gefördert wird.

Schlussfolgerungen – Mit der vorliegenden Studie liegt erstmals ein umfassender und grenzüberschreitender Überblick über die Vielfalt der Rasengesellschaften in den Donau- und March-Thaya-Auen in Ost-Österreich und der West-Slowakei vor. Es handelt sich nicht nur um einen wichtigen Mosaikstein in der syntaxonomischen Revision der pannonicischen Rasengesellschaften Österreichs, sondern auch um eine wesentliche Grundlage für künftige Kartierungen und künftiges Monitoring im Naturschutz.

Author contributions

W.W. conceived the idea of this study and led the data analysis and writing. M.S., N.S., K.H.V., I.Š., T.Z.-K. and L.S.-E. contributed a substantial part of the relevé data, G.K. prepared the data set and assisted with the data analysis. All co-authors contributed to the writing and revised the manuscript.

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Supplements

Supplement S1. Shortened synoptic table.

Beilage S1. Gekürzte synoptische Tabelle.

Additional supporting information may be found in the online version of this article.

Zusätzliche unterstützende Information ist in der Online-Version dieses Artikels zu finden.

Supplement E1. Comparison of TWINSPAN result and supervised classification of the relevés.

Anhang E1. Vergleich von TWINSPAN-Ergebnis und nachbearbeiteter Klassifikation der Aufnahmen.

Supplement E2. Synoptic table (full version).

Anhang E2. Synoptische Tabelle (ungekürzte Version).

Supplement E3. Distribution maps of the associations and rankless communities.

Anhang E3. Verbreitungskarten der Assoziationen und ranglosen Gesellschaften.

Supplement E4. Data sources.

Anhang E4. Herkunft der Aufnahmen.

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Alliance	1	1	1	1	1	1	2	3	3	3	3	3	3	5	5	5	5	6	6	6	6	7	7	7	7	8	9	9	10	11	11	12	13	13	13	14	14	14			
Association	1	2	4	5	6	9	1	1	2	3	5	6	7	8	1	2	3	4	1	2	3	4	1	2	4	5	6	1	1	2	1	1	2	1	2	3	1	2	3		
Number of relevés	15	13	96	31	10	6	139	89	9	22	56	17	71	62	7	35	6	11	71	79	5	32	66	15	160	60	62	61	118	111	8	26	15	15	36	20	132	142	17	139	14

Molinio-Arrhenatheretea

Colchicum autumnale	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	8	.	25	2	20	31	90	40	20	60	22	.	19	20	20	69	90	66	15	12	6	.
Ranunculus acris	.	.	.	.	.	.	1	9	.	.	.	.	.	.	.	.	5	.	50	9	.	65	63	53	85	42	51	.	35	33	27	42	25	14					
Trifolium pratense	1	14	.	44	11	.	29	37	35	5	60	50	13	27	33	.	19	30	60	25	.	4	.	.	.							
Festuca pratensis s.str.	14	.	22	8	.	38	53	37	28	61	61	50	15	53	.	42	35	30	.	6							
Leucanthemum vulgare agg.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	.	19	2	.	32	25	19	25	53	19	.	12	7	13	25	50	55	9	6	1	.	
Lathyrus pratensis	.	.	4	.	.	.	5	12	.	9	4	6	1	8	.	.	.	13	.	31	61	20	77	40	34	21	31	44	.	27	33	20	25	45	14	4	.	.	.								
Centaurea jacea	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	4	.	13	12	.	42	38	13	54	38	35	.	12	13	7	36	35	48	23	6	3	.	
Poa trivialis	.	5	6	.	.	.	14	12	.	9	11	24	6	6	.	3	.	17	13	40	13	47	40	20	17	47	.	35	33	.	3	5										
Cerastium holosteoides	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	22	11	13	19	23	32	11	44	28	38	12	7	22	30	31	15	6	2	.	.	.
Prunella vulgaris	.	1	1	2	.	5	2	.	2	37	.	9	20	7	23	53	13	54	22	18	38	19	.	27	31	5	8	1						
Leontodon hispidus	.	.	3	1	.	5	.	.	2	.	.	.	1	.	6	2	.	4	7	6	46	29	11	.	.	13	14	25	40	7	.	1	.	.	.						
Holcus lanatus	.	.	.	.	.	.	.	1	.	5	.	.	2	.	.	.	.	3	.	6	2	.	2	3	5	43	5	1	.	4	7	.	10	.	.	.	1	.	.
Ajuga reptans	3	.	.	.	5	.	3	7	2	.	.	.	3	.	4					
Glechoma hederacea	.	1	8	1	.	5	4	9	20	22	41	7	50	33	34	.	25	25	.	23	7	7	22	10	9

Nardetea/Calluno-Ulicetea

Anthoxanthum odoratum	2	3	.	9	3	3	64	15	1	50	6	3	24	1	.												
Luzula campestris agg.	4	.	2	.	.	2	.	48	1	35	3	1	12	.	.															
Potentilla erecta	4	.	2	.	.	90										
Genista tinctoria	1	.	15	.	15	34	6	.	9	47	27	3	42	61	.	60	100	100	25	52	49	6	13
Danthonia decumbens	15	9	.	2	7	1	8	6	.	7	9	13	8	7	40	17	.	.	1					
Carex pallescens	2	13	.	8						

Agropyretalia intermedio-repentis

Elymus repens	5	1	.	2	9	6	35	20	19	41	27
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Alliance	1	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	3	4	5	5	5	5	6	7	7	7	7	8	9	9	10	11	11	12	13	13	13	14	14	14								
Association	1	2	3	4	5	6	7	8	9	1	1	2	3	4	5	6	7	8	9	10	11	12	13	13	13	14	14	14	14	14	14	14	14															
Number of relevés	15	13	3	96	31	10	1	1	6	139	89	9	22	3	56	17	71	62	4	4	7	35	6	11	71	79	5	32	66	15	4	160	60	62	61	118	111	8	26	15	15	36	20	132	142	17	139	14
Leonturus marrubiastrum	1	2	3	7	3	.	2	1	.	.				
Linum perenne	1	3	2	.	2					
Mentha longifolia	1	1	1					
Menyanthes trifoliata	1	1	1					
Oenothera biennis agg.	3	1	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	.	.					
Persicaria minor	3	1	.	.	6	17	9	1						
Ranunculus circinatus	1	14	.	17	9	1						
Salix eleagnos	1	1	8				
Trichophorum alpinum	1	1	3				
Veronica praecox	1	1	3				
Armoracia rusticana	1	4	1	1				
Bidens cernua	3	1	4				
Calamagrostis pseudophragmites	3	1	9				
Cardaria draba	3	3	2	.	2				
Carex rostrata	3	3	2	.	2				
Chenopodium rubrum	.	1	3	.	.	33	.	.	.	29	60	.	1	1				
Dactylorhiza incarnata	9	1	.	.	.	3	5				
Geranium pusillum	11	2	1	2	.	1	2	.	2						
Geum urbanum	9	2	2				
Globularia punctata	3	2	2	.	2				
Lotus tenuis	60	3	5				
Matricaria matricarioides	1	1	1				
Pedicularis sylvatica	3	29	.	1	1				
Peucedanum alsaticum	3	2	1				
Peucedanum palustre	2	2	1				
Pinus nigra	2	9	1	3				
Potentilla supina	2	11	2	1	2	.	.	.	1					
Primula veris	1	1	9	1				
Prunus domestica ssp. insititia	1	1	1				
Ranunculus lingua	11	2	1	2	.	1	2	.	2						
Rhinanthus acetosella	1	9	2	.	1				
Salix triandra	2	3	2	.	1				
Sambucus nigra	.	2	.	.	.	.	.	.	.	1	.	.	.	.	3	.	.	.	.	.	.	2	.	1	.																			

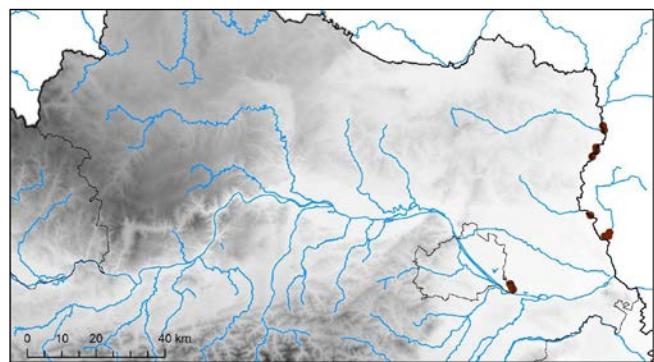
Supplement E3. Distribution maps of the associations and rankless communities.

Anhang E3. Verbreitungskarten der Assoziationen und ranglosen Gesellschaften.

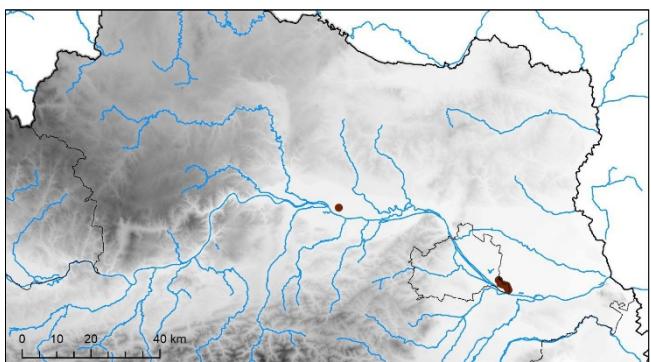
Phragmito-Magnocaricetea

Phragmition

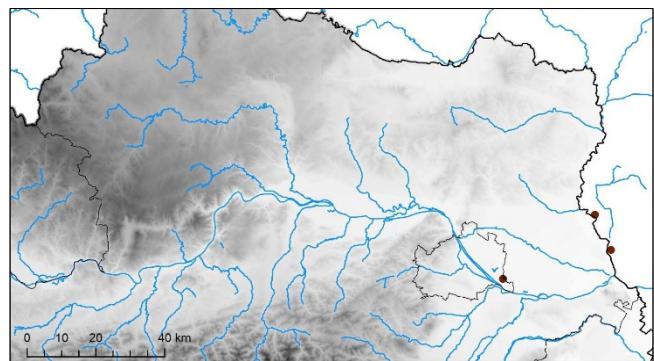
1.1 *Scirpetum lacustris*



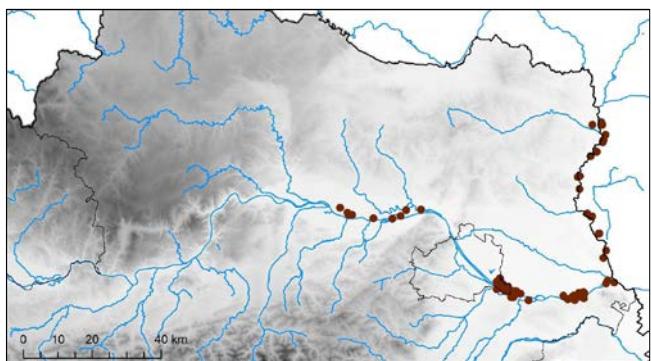
1.2 *Typhetum angustifoliae*



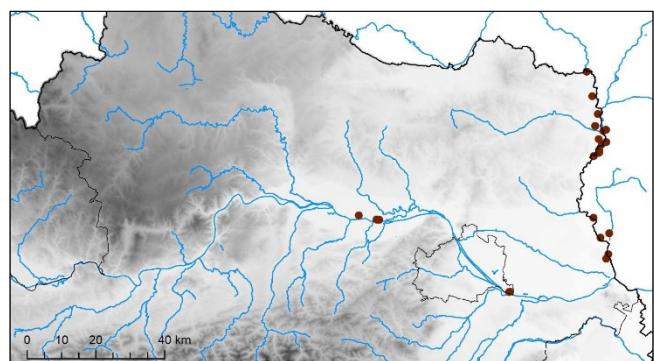
1.3 *Typhetum latifoliae*



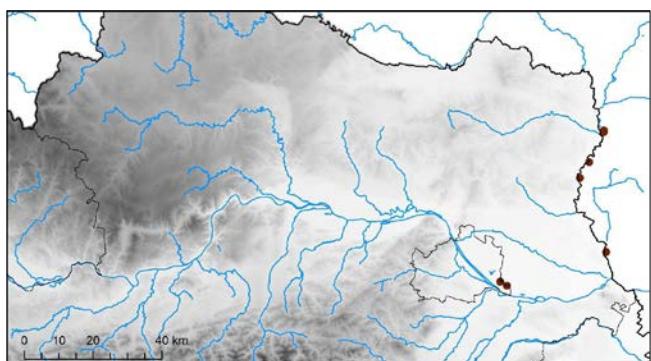
1.4 *Phragmitetum australis*



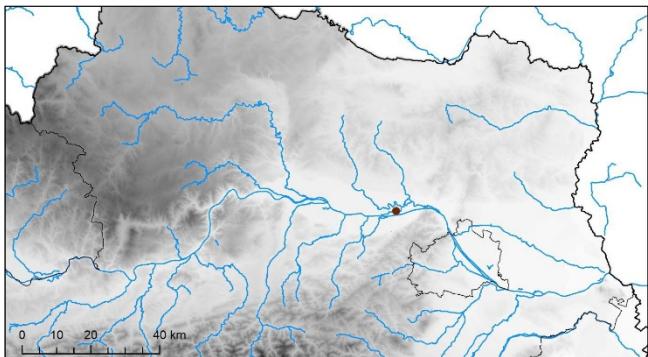
1.5 *Glycerietum maximaе*



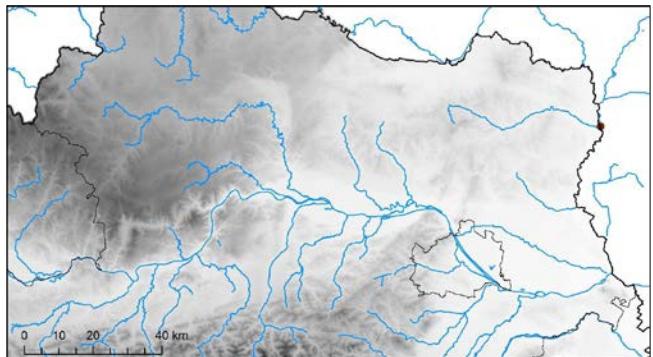
1.6 *Sparganiетum erecti*



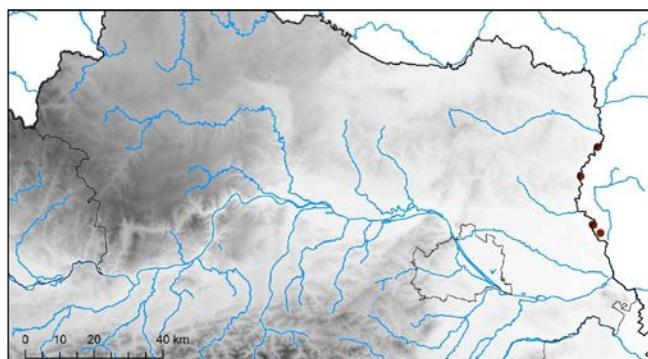
1.7 *Equisetetum fluvialis*



1.8 *Acoretum calami*

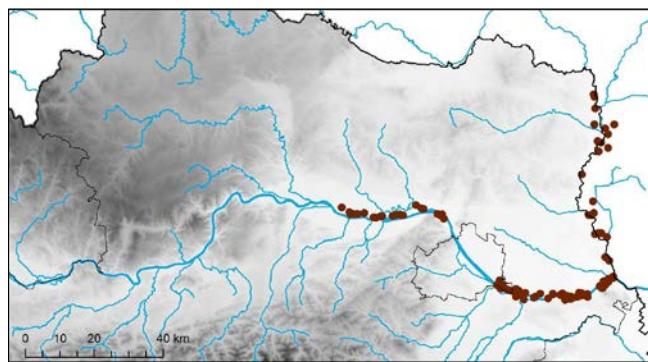


1.9 *Phalarido-Bolboschoenetum laticarpi*



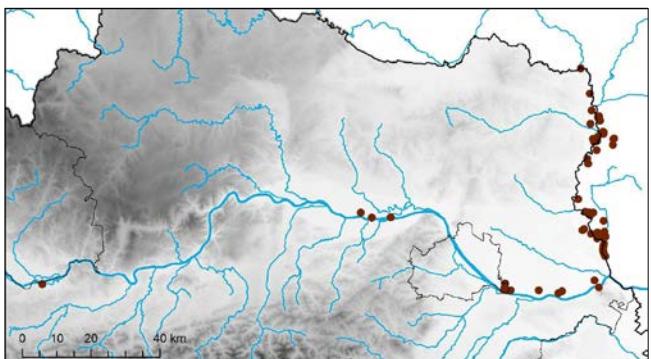
Phalaridion

2.1 *Phalaridetum arundinacei*

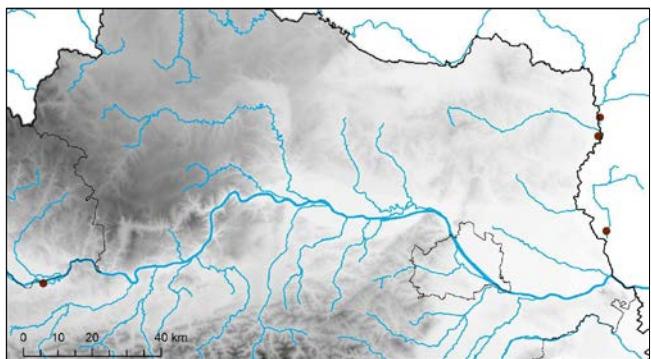


Magnocaricion

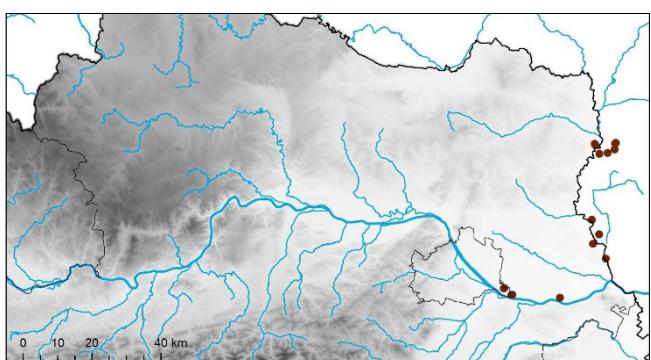
3.1 *Caricetum acutae*



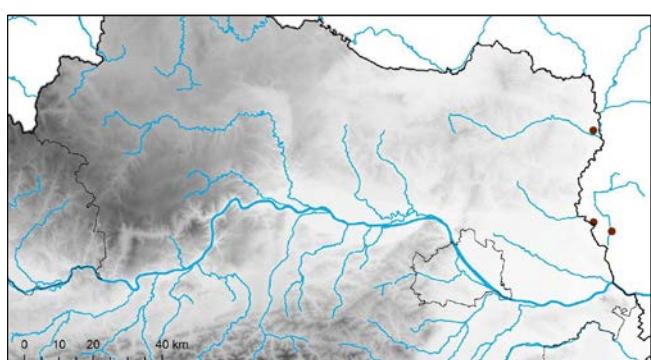
3.2 *Caricetum vesicariae*



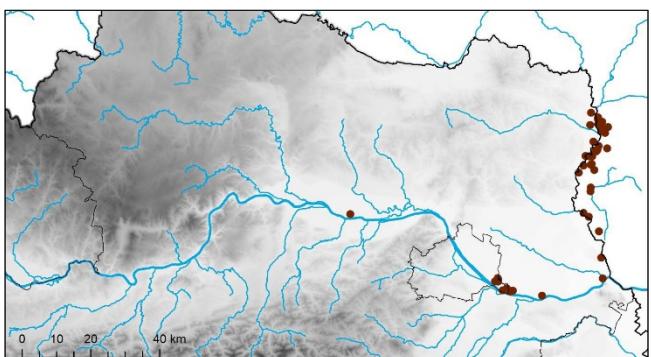
3.3 *Caricetum distichiae*



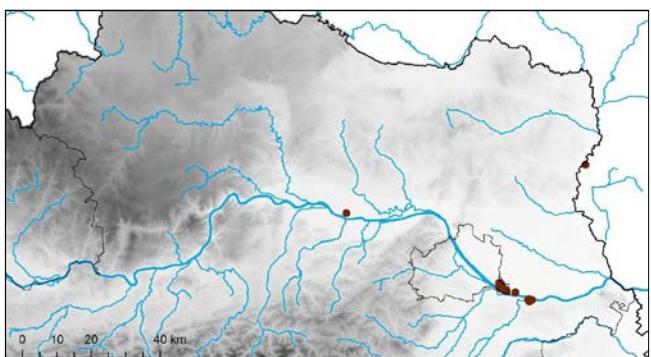
3.4 *Caricetum vulpariae*



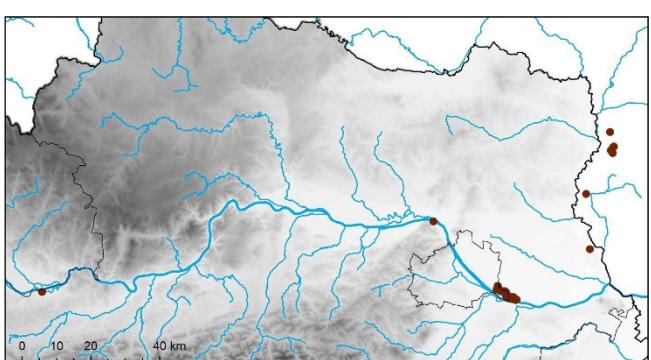
3.5 *Caricetum ripariae*



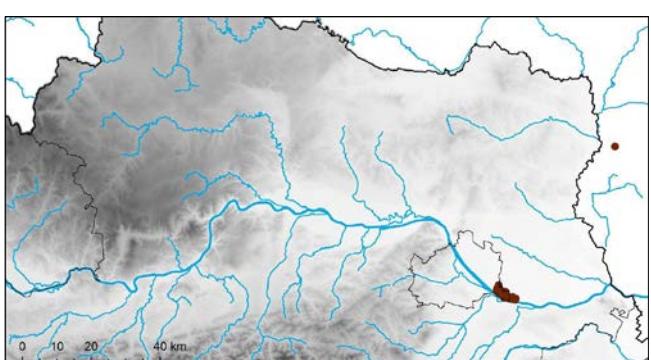
3.6 *Caricetum acutiformis*



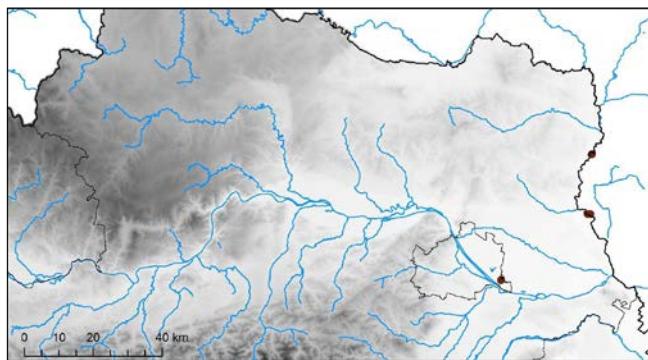
3.7 *Caricetum elatae*



3.8 *Calamagrostietum canescens*

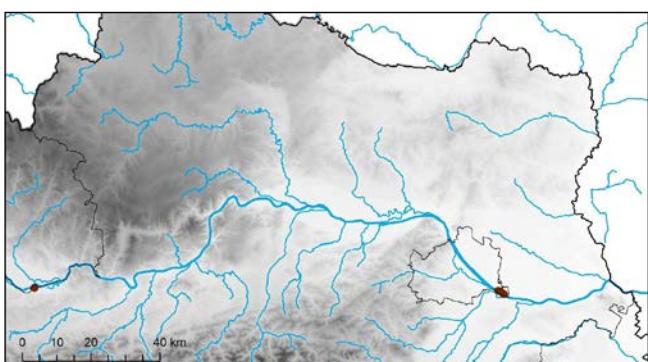


3.9 *Iridetum pseudacori*



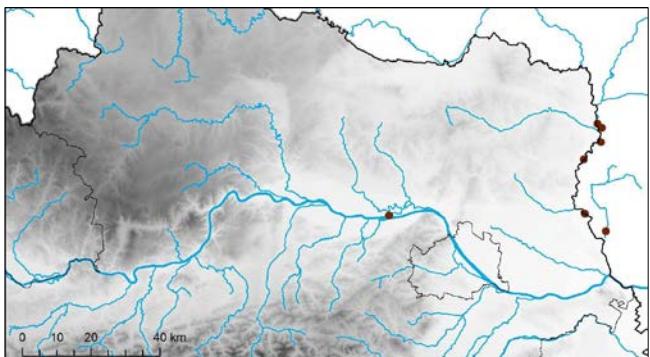
Glycerio-Sparganion

4.1 *Glycerietum fluitantis*

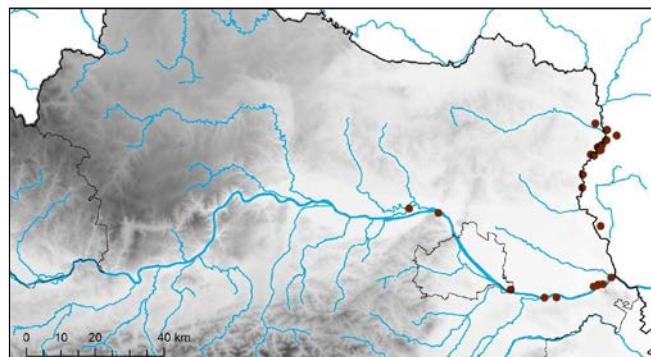


Eleocharito-Sagittario

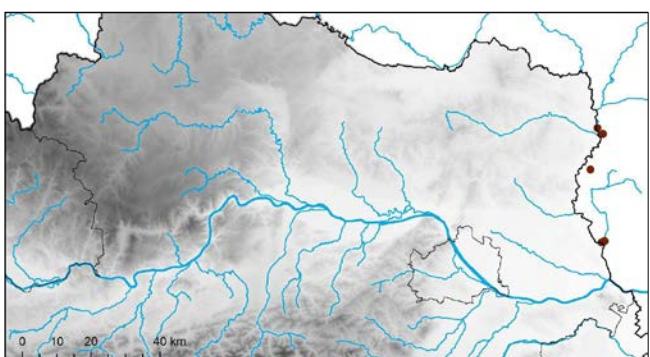
5.1 *Sagittario-Sparganietum emersi*



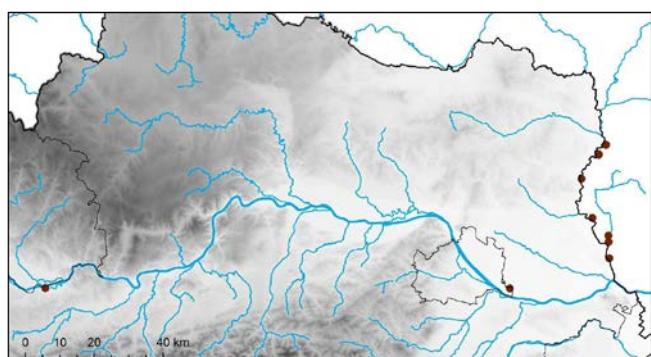
5.2 *Oenanthe-Rorippetum amphibiae*



5.3 *Butometum umbellati*



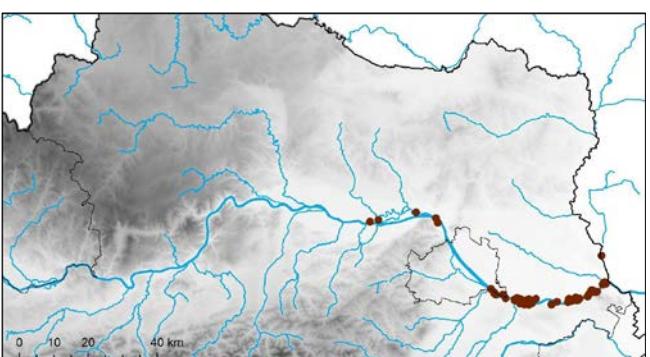
5.4 *Eleocharitetum palustris*



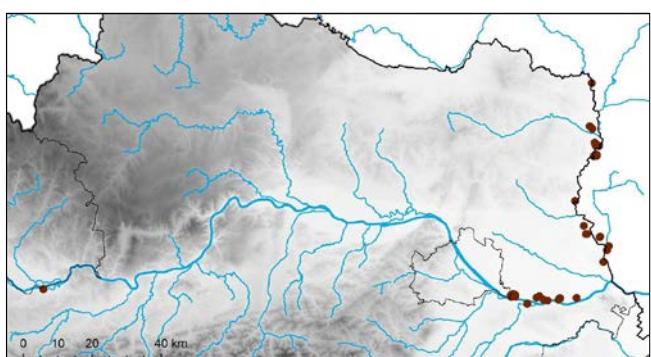
Molinio-Arrhenatheretea

Potentillion anserinae

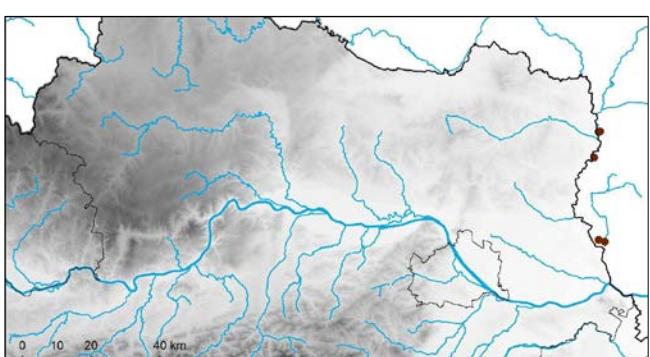
6.1 *Rorippo-Agrostietum stoloniferae*



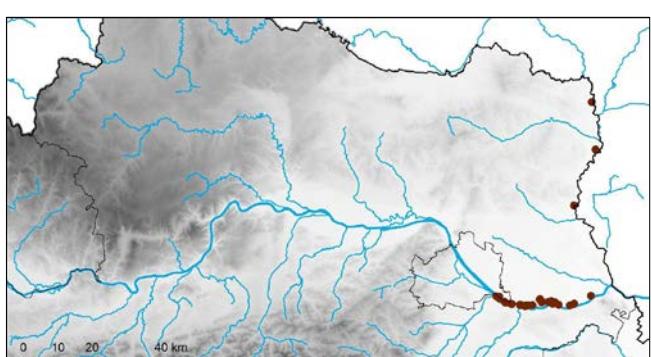
6.2 *Ranunculetum repens*



6.3 *Ranunculo-Alopecuretum geniculati*

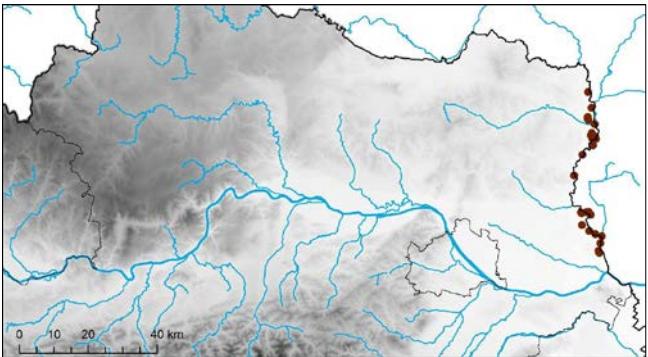


6.4 *Dactyrido-Festucetum arundinaceae*

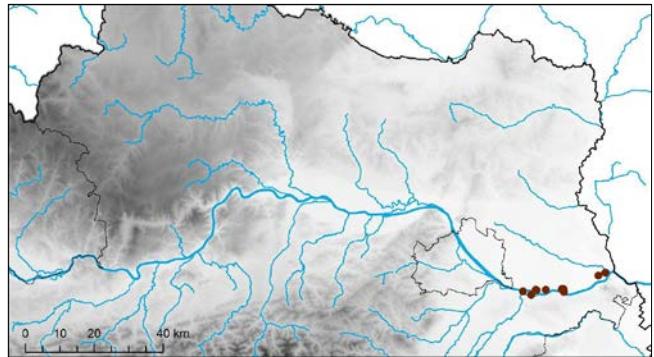


Deschampion

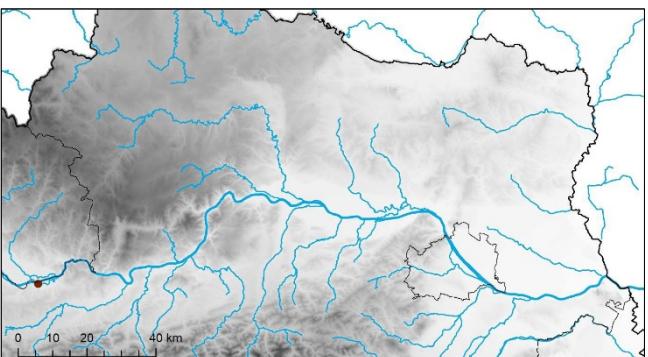
7.1 *Gratiolo-Caricetum suzae*



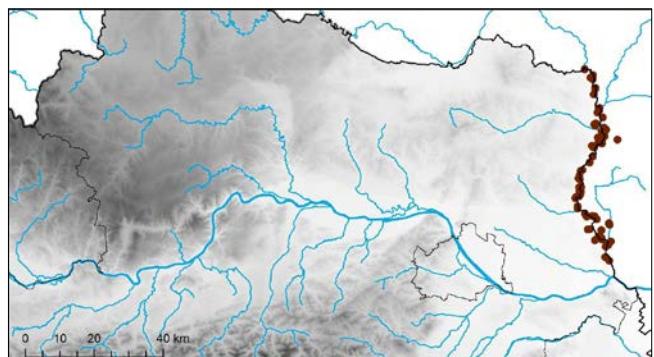
7.2 "Poa palustris-Alopecurus pratensis community"



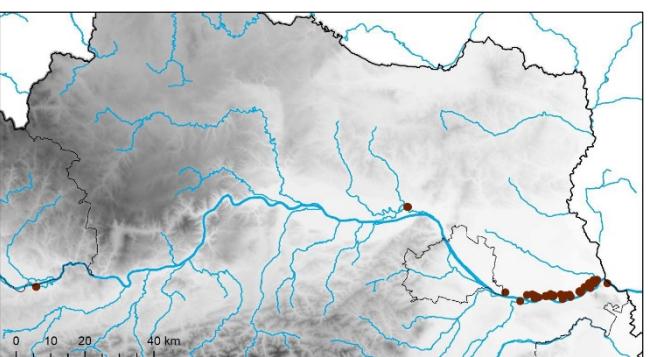
7.3 *Gratiolo-Caricetum nigrae*



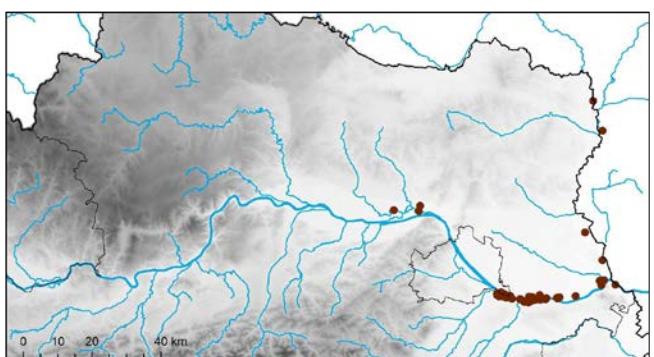
7.4 *Cnidio-Violetum pumilae*



7.5 *Ophioglosso-Caricetum tomentosae*

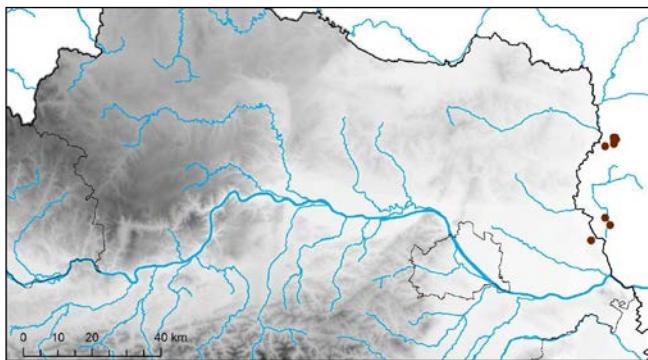


7.6 *Agropyro-Alopecuretum pratensis*



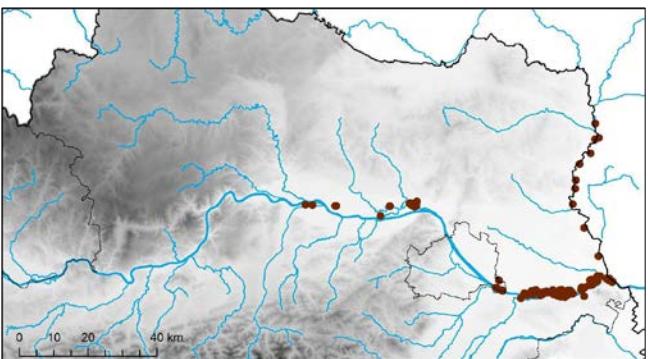
Molinion

8.1 *Molinietum caeruleae* s.l.

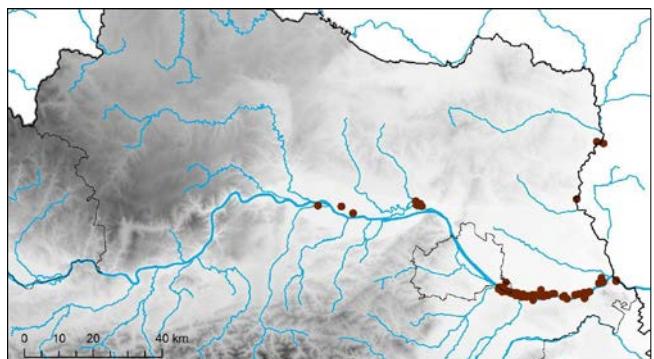


Arrhenatherion

9.1 *Ranunculo bulbosi-Arrhenatheretum*

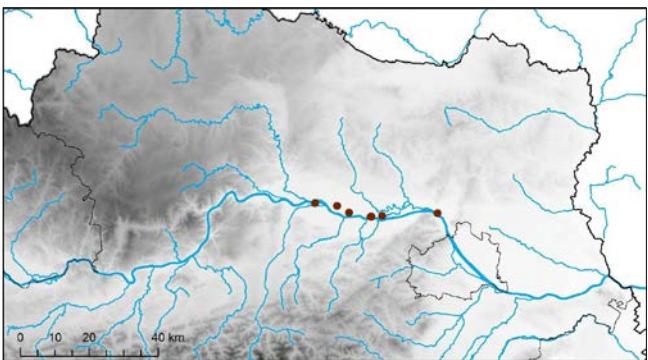


9.2 *Pastinaco-Arrhenatheretum*



Cynosurion

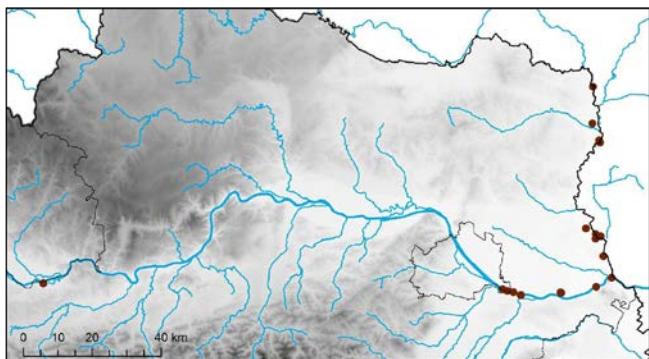
10.1 *Plantagini-Lolietum*



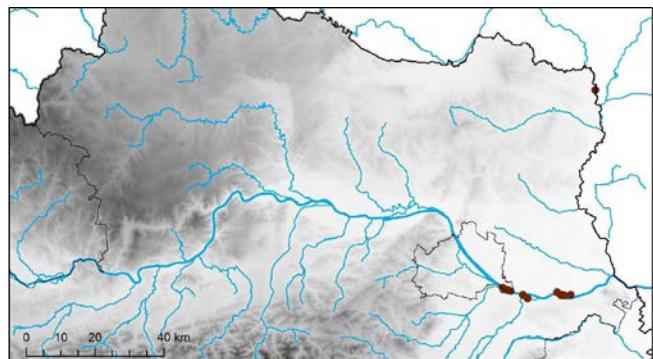
Artemisietea

Convolvulo-Agropyrion

11.1 *Ranunculus repens-Elymus repens* community

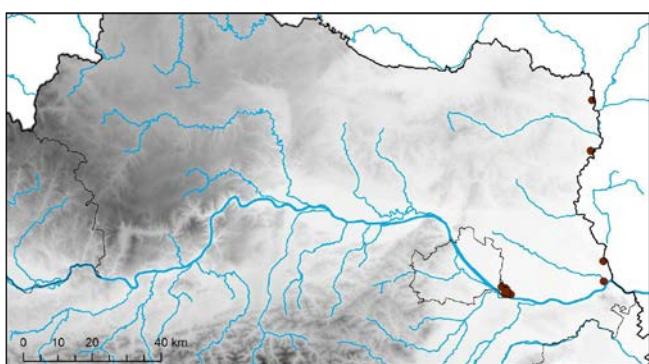


11.2 *Dactylis glomerata-Elymus repens* community

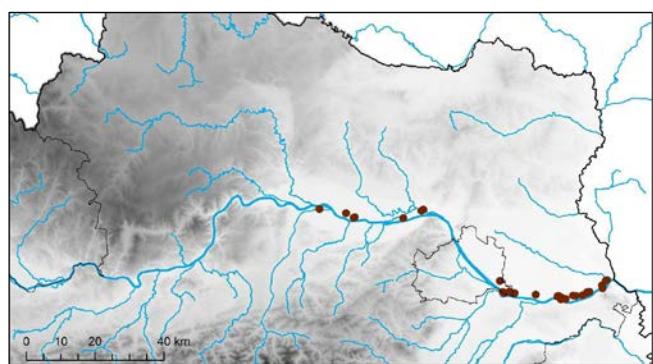


Rubo caesii-Calamagrostion epigeii

12.1 *Deschampsia cespitosa-Calamagrostis epigejos* community



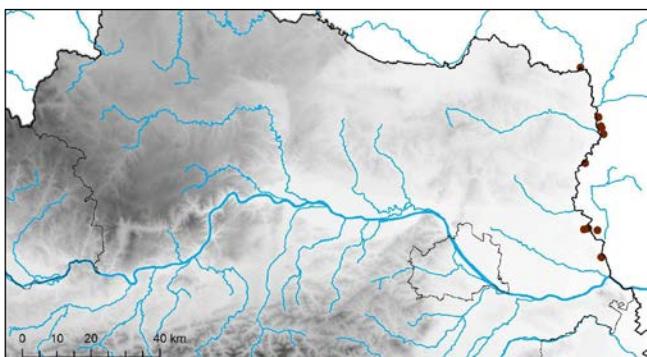
12.2 *Colchicum autumnale-Calamagrostis epigejos* community



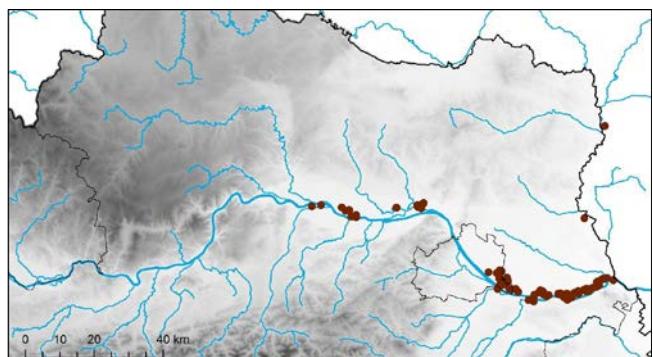
Festuco-Brometea

Cirsio-Brachypodion

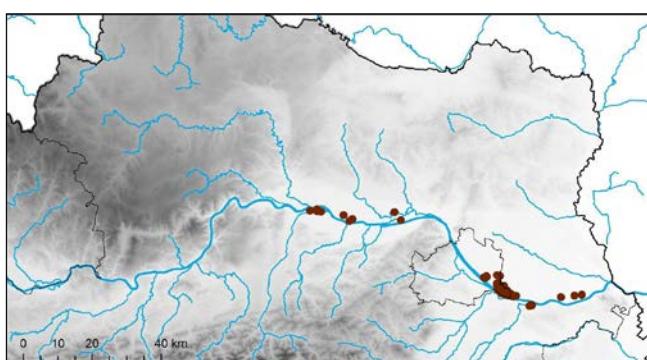
13.1 *Colchico-Festucetum rupicolae*



13.2 *Festuco rupicolae-Brometum*

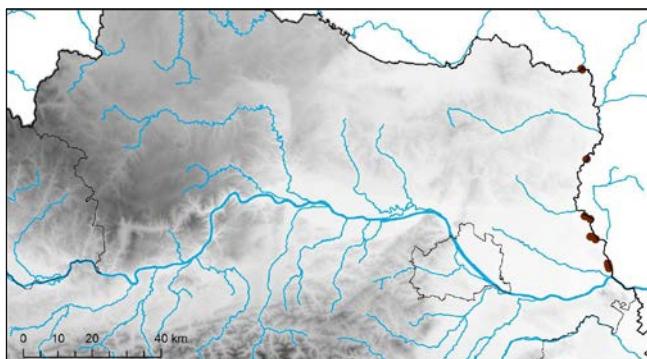


13.3 *Polygalo majoris-Brachypodietum selaginelletosum helveticae* subass. nov.

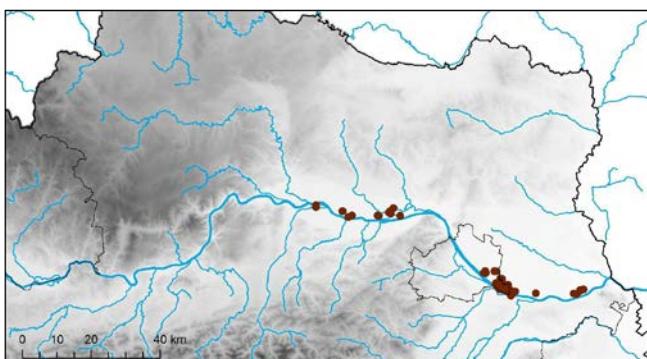


Festucion valesiacae

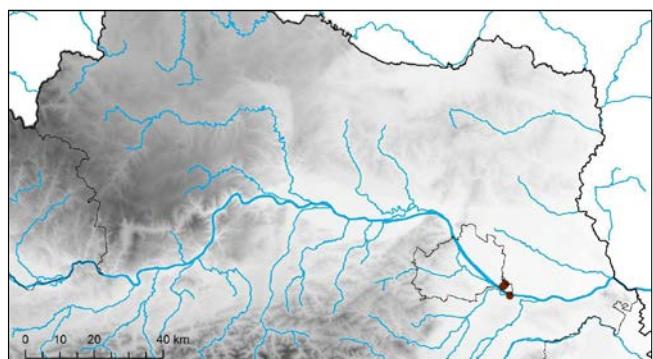
14.1 *Peucedano-Festucetum rupicolae*



14.2a *Teucrio-Andropogonetum brometosum erecti* subass. nov.



14.2b *Teucrio-Andropogonetum typicum*



Supplement E4. Data sources.**Anhang E4.** Herkunft der Aufnahmen.

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
1.1	AT	341670		Rotter D. (1999)	2	28	Scirpetum lacustris	16.56459	48.16076	7
1.1	AT	341671		Rotter D. (1999)	2	29	Scirpetum lacustris	16.5706	48.15081	9
1.1	AT	341672		Rotter D. (1999)	2	30	Scirpetum lacustris	16.57247	48.14968	8
1.1	AT	341673		Rotter D. (1999)	2	31	Scirpetum lacustris	16.57521	48.14589	8
1.1	AT	341674		Rotter D. (1999)	2	32	Scirpetum lacustris	16.567	48.15846	8
1.1	AT	341675		Rotter D. (1999)	2	33	Scirpetum lacustris	16.56466	48.16103	8
1.1	SK	611154	Otahelová H. (1996)		1	13	Scirpetum lacustris Chouard 1924	16.938889	48.280556	20
1.1	SK	611156	Otahelová H. (1996)		1	16	Scirpetum lacustris Chouard 1924	16.913889	48.5125	20
1.1	SK	611157	Otahelová H. (1996)		1	17	Scirpetum lacustris Chouard 1924	16.947222	48.558333	10
1.1	SK	611158	Otahelová H. (1996)		1	18	Scirpetum lacustris Chouard 1924	16.885556	48.336111	20
1.1	SK	611159	Otahelová H. (1996)		1	15	Scirpetum lacustris Chouard 1924	16.897222	48.489444	20
1.1	SK	611251	Otahelová H. (1996)		1	10	Scirpetum lacustris Chouard 1924	16.958333	48.289444	20
1.1	SK	611253	Otahelová H. (1996)		1	11	Scirpetum lacustris Chouard 1924	16.943889	48.568889	20
1.1	SK	611254	Otahelová H. (1996)		1	12	Scirpetum lacustris Chouard 1924	16.954167	48.280556	11
1.1	SK	624676	Otahelová H., Janauer G.-A., Husák, S. (1994)		3	20	Scirpetum lacustris Chouard 1924	16.913889	48.504167	12
1.2	AT	341590	Essl F. (1999)		9	319	Typhetum angustifoliae	15.914744	48.369037	1
1.2	AT	341676	Rotter D. (1999)		2	34	Typhetum angustifoliae	16.57054	48.15269	2
1.2	AT	341677	Rotter D. (1999)		2	35	Typhetum angustifoliae	16.56794	48.15792	2
1.2	AT	341678	Rotter D. (1999)		2	36	Typhetum angustifoliae	16.57274	48.14918	3
1.2	AT	341679	Rotter D. (1999)		2	37	Typhetum angustifoliae	16.5706	48.15081	2
1.2	AT	341680	Rotter D. (1999)		2	38	Typhetum angustifoliae	16.56794	48.15792	2
1.2	AT	341681	Rotter D. (1999)		2	39	Typhetum angustifoliae	16.54411	48.16372	1
1.2	AT	341682	Rotter D. (1999)		2	40	Typhetum angustifoliae	16.53756	48.1725	1
1.2	AT	341683	Rotter D. (1999)		2	41	Typhetum angustifoliae	16.57461	48.14626	1
1.2	AT	341684	Rotter D. (1999)		2	42	Typhetum angustifoliae	16.55928	48.1596	1
1.2	AT	341685	Rotter D. (1999)		2	43	Typhetum angustifoliae	16.55438	48.16105	1
1.2	AT	341686	Rotter D. (1999)		2	44	Typhetum angustifoliae	16.55317	48.16114	4
1.2	AT	341687	Rotter D. (1999)		2	45	Typhetum angustifoliae	16.54975	48.16195	6
1.3	AT	341688	Rotter D. (1999)		2	46	Typhetum angustifoliae	16.53749	48.17295	5
1.3	SK	613861	Seffer J., Stanová V. (eds.) (1999)		1	4	Typhetum latifoliae Lang 1973	16.9625	48.241667	20
1.3	SK	712574	Hegedűsová K.				Caricetum gracilis Almqvist 1929	16.903056	48.334444	20
1.4	AT	317455	Schratt-Ehrendorfer, unpubl.					16.53322238	48.15284477	26
1.4	AT	317515	Schratt-Ehrendorfer, unpubl.					16.59849257	48.13673784	26
1.4	AT	341207	Staudinger M., unpubl.					16.52719	48.15143	27
1.4	AT	341224	Staudinger M., unpubl.					16.5889	48.1281	28
1.4	AT	341225	Staudinger M., unpubl.					16.5795	48.12875	27
1.4	AT	341230	Staudinger M., unpubl.					16.64721	48.11883	27
1.4	AT	341235	Staudinger M., unpubl.					16.82798	48.11748	27
1.4	AT	341237	Staudinger M., unpubl.					16.86401	48.12105	27
1.4	AT	341247	Staudinger M., unpubl.					16.78356	48.12962	27
1.4	AT	341251	Staudinger M., unpubl.					16.8002	48.11966	27
1.4	AT	341259	Staudinger M., unpubl.					16.81723	48.12472	27
1.4	AT	341263	Staudinger M., unpubl.					16.81338	48.12221	27
1.4	AT	341268	Staudinger M., unpubl.					16.82385	48.12851	27
1.4	AT	341284	Staudinger M., unpubl.					16.84519	48.13126	27
1.4	AT	341285	Staudinger M., unpubl.					16.84719	48.13187	27
1.4	AT	341288	Staudinger M., unpubl.					16.84425	48.13341	27
1.4	AT	341289	Staudinger M., unpubl.					16.8426	48.12937	27
1.4	AT	341293	Staudinger M., unpubl.					16.84155	48.13176	27
1.4	AT	341295	Staudinger M., unpubl.		9	111	Phragmitetum communis	16.85013	48.12988	27
1.4	AT	341592	Essl F. (1999)		9	402	Phragmitetum communis	15.961399	48.350005	28
1.4	AT	341593	Essl F. (1999)		9	220	Phragmitetum communis	16.045248	48.340232	28
1.4	AT	341594	Essl F. (1999)		9	317	Phragmitetum communis	15.915568	48.369152	19
1.4	AT	341595	Essl F. (1999)		9	10	Phragmitetum communis	16.119836	48.339166	27
1.4	AT	341596	Essl F. (1999)		9	802	Phragmitetum communis	16.152008	48.345421	27
1.4	AT	341643	Rotter D. (1999)		2	1	Phragmitetum vulgaris	16.57139	48.14793	28
1.4	AT	341644	Rotter D. (1999)		2	2	Phragmitetum vulgaris	16.5369	48.17772	28
1.4	AT	341645	Rotter D. (1999)		2	3	Phragmitetum vulgaris	16.52531	48.16996	28
1.4	AT	341646	Rotter D. (1999)		2	4	Phragmitetum vulgaris	16.53739	48.16566	28
1.4	AT	341647	Rotter D. (1999)		2	5	Phragmitetum vulgaris	16.54136	48.16498	28
1.4	AT	341648	Rotter D. (1999)		2	6	Phragmitetum vulgaris	16.53644	48.17839	28
1.4	AT	341649	Rotter D. (1999)		2	7	Phragmitetum vulgaris	16.53684	48.1779	28
1.4	AT	341650	Rotter D. (1999)		2	8	Phragmitetum vulgaris	16.53637	48.17763	28
1.4	AT	341651	Rotter D. (1999)		2	9	Phragmitetum vulgaris	16.53629	48.17646	28
1.4	AT	341652	Rotter D. (1999)		2	10	Phragmitetum vulgaris	16.53741	48.16967	28
1.4	AT	341653	Rotter D. (1999)		2	11	Phragmitetum vulgaris	16.60547	48.13827	28
1.4	AT	341654	Rotter D. (1999)		2	12	Phragmitetum vulgaris	16.53916	48.15266	28
1.4	AT	341655	Rotter D. (1999)		2	13	Phragmitetum vulgaris	16.54654	48.15099	25
1.4	AT	341656	Rotter D. (1999)		2	14	Phragmitetum vulgaris	16.56425	48.14308	25
1.4	AT	341657	Rotter D. (1999)</							

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
1.5	SK	611181	Otahelová H. (1996)		1	21	Glycerietum aquaticaue Hueck 1931	16.923611	48.281111	20
1.5	SK	611183	Otahelová H. (1996)		1	23	Glycerietum aquaticaue Hueck 1931	16.957778	48.291667	20
1.5	SK	611184	Otahelová H. (1996)		1	25	Glycerietum aquaticaue Hueck 1931	16.927778	48.510556	20
1.5	SK	611193	Otahelová H. (1996)		1	19	Glycerietum aquaticaue Hueck 1931	16.927222	48.503889	20
1.5	SK	611194	Otahelová H. (1996)		1	22	Glycerietum aquaticaue Hueck 1931	16.955556	48.562222	18
1.5	SK	611195	Otahelová H. (1996)		1	26	Glycerietum aquaticaue Hueck 1931	16.955556	48.562222	20
1.5	SK	611196	Otahelová H. (1996)		1	27	Glycerietum aquaticaue Hueck 1931	16.905	48.494722	20
1.5	SK	624677	Otahelová H., Janauer G.-A., Husák, S. (1994)	3	21	Glycerietum aquaticaue Hueck 1931	16.945	48.559444	20	
1.5	SK	712558	Hegedűsová K.				Glycerietum aquaticaue Hueck 1931	16.898056	48.333056	20
1.5	SK	712638	Hegedűsová K.				Glycerietum aquaticaue Hueck 1931	16.953056	48.236944	20
1.6	AT	341666	Rotter D. (1999)		2	24	Sparganietum erecti	16.53749	48.17295	20
1.6	AT	341667	Rotter D. (1999)		2	25	Sparganietum erecti	16.53749	48.17295	20
1.6	AT	341668	Rotter D. (1999)		2	26	Sparganietum erecti	16.53749	48.17295	9
1.6	AT	341669	Rotter D. (1999)		2	27	Sparganietum erecti	16.56352	48.16175	28
1.6	SK	611225	Otahelová H. (1996)		1	33	Sparganietum erecti Roll 1938	16.955	48.243333	20
1.6	SK	611228	Otahelová H. (1996)		1	34	Sparganietum erecti Roll 1938	16.958333	48.558333	19
1.6	SK	611229	Otahelová H. (1996)		1	30	Sparganietum erecti Roll 1938	16.897222	48.48	19
1.6	SK	611231	Otahelová H. (1996)		1	31	Sparganietum erecti Roll 1938	16.858611	48.439722	19
1.6	SK	624678	Otahelová H., Janauer G.-A., Husák, S. (1994)	3	22	Sparganietum erecti Roll 1938	16.954722	48.244167	20	
1.6	SK	712586	Hegedűsová K.				Sparganietum erecti Roll 1938	16.958611	48.562222	20
1.7	AT	343056	Straka A. (1992)		1	33	Equisetetum limosí	16.14188	48.34816	19
1.8	SK	624679	Otahelová H., Janauer G.-A., Husák, S. (1994)	3	23	Acoretum calami Schultz 1941	16.945	48.559444	20	
1.9	SK	611162	Otahelová H. (1996)		3	1	Bolboschoenetalia maritimí Hejný in Holub et al. 1967	16.931111	48.291667	19
1.9	SK	611163	Otahelová H. (1996)		3	2	Bolboschoenetalia maritimí Hejný in Holub et al. 1967	16.927778	48.516111	19
1.9	SK	611169	Otahelová H. (1996)		3	3	Bolboschoenetalia maritimí Hejný in Holub et al. 1967	16.904167	48.313333	19
1.9	SK	611170	Otahelová H. (1996)		3	4	Bolboschoenetalia maritimí Hejný in Holub et al. 1967	16.904167	48.313333	13
1.9	SK	611177	Otahelová H. (1996)		3	5	Bolboschoenetalia maritimí Hejný in Holub et al. 1967	16.858333	48.441111	19
1.9	SK	624685	Otahelová H., Janauer G.-A., Husák, S. (1994)	3	29	Oenanthe aquaticaue-Rorippetum amphibiae Lohmayer 1950	16.900833	48.314444	14	
2.1	AT	317043	Schratt-Ehrendorfer, unpubl.					16.93316748	48.16202446	24
2.1	AT	317044	Schratt-Ehrendorfer, unpubl.					16.93427846	48.16188563	27
2.1	AT	317167	Schratt-Ehrendorfer, unpubl.					16.7629153	48.1297999	27
2.1	AT	317171	Schratt-Ehrendorfer, unpubl.					16.77235817	48.13341101	23
2.1	AT	317524	Schratt-Ehrendorfer, unpubl.					16.54738737	48.1496512	27
2.1	AT	317758	Staudinger M., unpubl.				Basalgesellschaft des Senecionion fluvialis	16.66633	48.12633	27
2.1	AT	318673	Zuna-Kratky T., unpubl. (2017)					16.91642	48.654759	24
2.1	AT	340549	Plenk S. (1991)		20		Cnidion	16.938083	48.525139	23
2.1	AT	340572	Plenk S. (1991)		46		Phalaridetum arundinaceae Faz. Poa palustris	16.924472	48.529583	24
2.1	AT	340983	Balatova-Tulackova E. & Hübl E. (1974)	3	1		Phalaridetum arundinaceae	16.91469	48.65229	24
2.1	AT	340984	Balatova-Tulackova E. & Hübl E. (1974)	3	2		Phalaridetum arundinaceae	16.91469	48.65229	24
2.1	AT	340985	Balatova-Tulackova E. & Hübl E. (1974)	3	3		Phalaridetum arundinaceae	16.91469	48.65229	24
2.1	AT	340986	Balatova-Tulackova E. & Hübl E. (1974)	3	4		Phalaridetum arundinaceae	16.95865	48.21626	24
2.1	AT	340987	Balatova-Tulackova E. & Hübl E. (1974)	3	5		Phalaridetum arundinaceae	16.90547	48.28619	24
2.1	AT	340988	Balatova-Tulackova E. & Hübl E. (1974)	3	6		Phalaridetum arundinaceae	16.90547	48.28619	24
2.1	AT	340989	Balatova-Tulackova E. & Hübl E. (1974)	3	7		Phalaridetum arundinaceae	16.90547	48.28619	24
2.1	AT	340990	Balatova-Tulackova E. & Hübl E. (1974)	3	8		Phalaridetum arundinaceae	16.91901	48.61535	24
2.1	AT	341211	Staudinger M., unpubl.					16.53101	48.14931	27
2.1	AT	341218	Staudinger M., unpubl.					16.59104	48.12778	27
2.1	AT	341248	Staudinger M., unpubl.					16.78904	48.12681	27
2.1	AT	341253	Staudinger M., unpubl.					16.7999	48.12402	27
2.1	AT	341255	Staudinger M., unpubl.					16.7855	48.12143	27
2.1	AT	341256	Staudinger M., unpubl.					16.80247	48.11857	27
2.1	AT	341257	Staudinger M., unpubl.					16.81088	48.12016	27
2.1	AT	341258	Staudinger M., unpubl.					16.80528	48.12432	27
2.1	AT	341265	Staudinger M., unpubl.					16.82575	48.12306	27
2.1	AT	341283	Staudinger M., unpubl.					16.84633	48.13259	27
2.1	AT	341286	Staudinger M., unpubl.					16.83728	48.13443	27
2.1	AT	341287	Staudinger M., unpubl.					16.84058	48.12866	22
2.1	AT	341290	Staudinger M., unpubl.					16.84281	48.13027	22
2.1	AT	341299	Staudinger M., unpubl.					16.85207	48.12915	22
2.1	AT	341301	Staudinger M., unpubl.					16.84667	48.12643	27
2.1	AT	341303	Staudinger M., unpubl.					16.84687	48.12643	27
2.1	AT	341305	Staudinger M., unpubl.					16.86328	48.12883	27
2.1	AT	341313	Staudinger M., unpubl.					16.97288	48.17045	27
2.1	AT	341317	Staudinger M., unpubl.					16.96192	48.17029	22
2.1	AT	341318	Staudinger M., unpubl.					16.97273	48.17418	27
2.1	AT	341323	Staudinger M., unpubl.					16.93058	48.14572	27
2.1	AT	341332	Staudinger M., unpubl.					16.95307	48.16103	22
2.1	AT	341334	Staudinger M., unpubl.					16.95219	48.16	22
2.1	AT	341340	Staudinger M., unpubl.					16.95914	48.16774	22
2.1	AT	341346	Staudinger M., unpubl.					16.		

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster	
2.1	SK	604152	Balárová-Tuláčková E. (1976)		6	5	Phalaridetum arundinaceae Libbert 1931	16.965278	48.511111	24	
2.1	SK	604153	Balárová-Tuláčková E. (1976)		6	6	Phalaridetum arundinaceae Libbert 1931	16.902778	48.341667	24	
2.1	SK	604155	Balárová-Tuláčková E. (1976)		6	8	Phalaridetum arundinaceae Libbert 1931	16.991667	48.572222	24	
2.1	SK	611166	Otahelová H. (1996)		2	32	Eleocharitetum palustris Ubrizsy 1948	16.952222	48.277778	24	
2.1	SK	611200	Otahelová H. (1996)		2	19	Phalaridetum arundinaceae Libbert 1931	16.918889	48.288889	24	
2.1	SK	611201	Otahelová H. (1996)		2	20	Phalaridetum arundinaceae Libbert 1931	16.93	48.288611	22	
2.1	SK	611202	Otahelová H. (1996)		2	18	Phalaridetum arundinaceae Libbert 1931	16.929722	48.288333	27	
2.1	SK	611205	Otahelová H. (1996)		2	23	Phalaridetum arundinaceae Libbert 1931	16.955556	48.562222	24	
2.1	SK	611206	Otahelová H. (1996)		2	22	Phalaridetum arundinaceae Libbert 1931	16.893056	48.335833	24	
2.1	SK	611207	Otahelová H. (1996)		2	21	Phalaridetum arundinaceae Libbert 1931	16.858889	48.443056	24	
2.1	SK	624689	Otahelová H., Janauer G.-A., Husák, S. (1994)		3	33	Phalaridetum arundinaceae Libbert 1931	16.883333	48.336944	24	
2.1	SK	624777	Banášová V. et al. (1994)		1	5	Cnidion venosi Bal.-Tul. 1966	16.928056	48.502778	24	
3.1	AT	317815	Beiser A., unpubl.					16.91472	48.16486	24	
3.1	AT	340532	Plenk S. (1991)		3		Caricetum gracilis	16.938889	48.528333	23	
3.1	AT	340568	Plenk S. (1991)		41		Caricetum gracilis	16.922167	48.534306	24	
3.1	AT	340570	Plenk S. (1991)		44		Caricetum gracilis	16.924472	48.529583	24	
3.1	AT	340576	Plenk S. (1991)		47		Caricetum gracilis	16.925917	48.526111	24	
3.1	AT	340995	Balatova-Tulackova E. & Hübl E. (1974)		4	1	Caricetum gracilis	16.88039	48.71833	24	
3.1	AT	340996	Balatova-Tulackova E. & Hübl E. (1974)		4	2	Caricetum gracilis	16.88039	48.71833	24	
3.1	AT	340997	Balatova-Tulackova E. & Hübl E. (1974)		4	3	Caricetum gracilis	16.91469	48.65229	24	
3.1	AT	340998	Balatova-Tulackova E. & Hübl E. (1974)		4	4	Caricetum gracilis	16.87249	48.29611	24	
3.1	AT	340999	Balatova-Tulackova E. & Hübl E. (1974)		4	5	Caricetum gracilis	16.94135	48.53889	24	
3.1	AT	341000	Balatova-Tulackova E. & Hübl E. (1974)		4	6	Caricetum gracilis	16.90547	48.28619	20	
3.1	AT	341001	Balatova-Tulackova E. & Hübl E. (1974)		4	7	Caricetum gracilis	16.92008	48.60815	24	
3.1	AT	341002	Balatova-Tulackova E. & Hübl E. (1974)		4	8	Caricetum gracilis	16.77171	48.13344	25	
3.1	AT	341003	Balatova-Tulackova E. & Hübl E. (1974)		4	9	Caricetum gracilis	16.69559	48.14194	24	
3.1	AT	341004	Balatova-Tulackova E. & Hübl E. (1974)		4	10	Caricetum gracilis	16.78666	48.13824	24	
3.1	AT	341458	Staudinger M., unpubl.				Heleocharito acicularis-Limoselletum aquatica	16.93123	48.145699	21	
3.1	AT	341610	Essl F. (1999)		9	10	Phalaridetum arundinaceae	16.120364	48.339421	24	
3.1	AT	341611	Essl F. (1999)		9	10	Caricetum gracilis	16.120435	48.339303	24	
3.1	AT	341612	Essl F. (1999)		9	225	Caricetum gracilis	16.045419	48.33976	27	
3.1	AT	341746	Rotter D. (1999)		4	2	Caricetum gracilis	16.56352	48.16175	25	
3.1	AT	341747	Rotter D. (1999)		4	3	Caricetum gracilis	16.5648	48.1612	25	
3.1	AT	341748	Rotter D. (1999)		4	4	Caricetum gracilis	16.56721	48.14452	24	
3.1	AT	341749	Rotter D. (1999)		4	5	Caricetum gracilis	16.55962	48.14489	25	
3.1	AT	341750	Rotter D. (1999)		4	6	Caricetum gracilis	16.567	48.1438	16	
3.1	AT	341751	Rotter D. (1999)		4	7	Caricetum gracilis	16.56098	48.14975	25	
3.1	AT	341752	Rotter D. (1999)		4	8	Caricetum gracilis	16.58501	48.14367	24	
3.1	AT	342011	Projektstudie 1991 (Gottfried et al.)		3	14	Gratiolo-Caricetum suzace	16.9131	48.57316	23	
3.1	AT	342045	Projektstudie 1991 (Gottfried et al.)		5	1	Caricetum gracilis	16.9131	48.57316	23	
3.1	AT	342046	Projektstudie 1991 (Gottfried et al.)		5	2	Caricetum gracilis	16.9131	48.57316	24	
3.1	AT	342047	Projektstudie 1991 (Gottfried et al.)		5	3	Caricetum gracilis	16.9131	48.57316	23	
3.1	AT	342052	Projektstudie 1991 (Gottfried et al.)		5	8	Caricetum gracilis	16.9131	48.57316	23	
3.1	AT	342053	Projektstudie 1991 (Gottfried et al.)		5	9	Caricetum gracilis	16.9131	48.57316	23	
3.1	AT	342055	Projektstudie 1991 (Gottfried et al.)		5	11	Caricetum gracilis	16.9131	48.57316	24	
3.1	AT	342056	Projektstudie 1991 (Gottfried et al.)		5	12	Caricetum gracilis	16.9131	48.57316	24	
3.1	AT	342058	Projektstudie 1991 (Gottfried et al.)		5	14	Caricetum gracilis	16.9131	48.57316	37	
3.1	AT	342060	Projektstudie 1991 (Gottfried et al.)		5	16	Caricetum gracilis	16.87845	48.29887	23	
3.1	AT	343059	Straka A. (1992)		1	36	Caricetum gracilis	16.00202	48.35287	25	
3.1	AT	425862	Wagner H. (1950)				Caricetum vesicariae-gracilis	14.7507	48.1708	24	
3.1	AT	425866	Wagner H. (1950)				Caricetum vesicariae-gracilis	14.7507	48.1708	24	
3.1	AT	425868	Wagner H. (1950)				Caricetum vesicariae-gracilis	14.7507	48.1708	24	
3.1	AT	425869	Wagner H. (1950)				Caricetum vesicariae-gracilis	14.7507	48.1708	24	
3.1	AT	425877	Wagner H. (1950)				Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23	
3.1	SK	600165	Bosáčková E. (1975)		4	10	Caricetum gracilis Almqvist 1929	17	48.516667	24	
3.1	SK	604033	Klika J. (1958)		pp.14	1	Caricetum gracilis Almqvist 1929	17.002778	48.531944	25	
3.1	SK	604045	Bosáčková E. (1970)			3	1	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604046	Bosáčková E. (1970)			3	2	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604047	Bosáčková E. (1970)			3	3	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604048	Bosáčková E. (1970)			3	4	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604049	Bosáčková E. (1970)			3	5	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604050	Bosáčková E. (1970)			3	6	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604051	Bosáčková E. (1970)			3	7	Caricetum gracilis Almqvist 1929	17.002778	48.531944	24
3.1	SK	604195	Balárová-Tuláčková E. (1976)			11	5	Caricetum gracilis Almqvist 1929	16.944444	48.588889	24
3.1	SK	604198	Balárová-Tuláčková E. (1976)			11					

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
3.5	AT	341787		Rotter D. (1999)	4	43	Caricetum ripariae	16.59287	48.14441	25
3.5	AT	341788		Rotter D. (1999)	4	44	Caricetum ripariae	16.58487	48.14187	25
3.5	AT	341789		Rotter D. (1999)	4	45	Caricetum ripariae	16.59455	48.14423	23
3.5	AT	342051		Projektstudie 1991 (Gottfried et al.)	5	7	Caricetum gracilis	16.9131	48.57316	24
3.5	AT	342077		Projektstudie 1991 (Gottfried et al.)	7	9	Glycerietum maximae	16.94402	48.22529	24
3.5	AT	342078		Projektstudie 1991 (Gottfried et al.)	7	10	Glycerietum maximae	16.94402	48.22529	24
3.5	SK	604160		Balárová-Tulácková E. (1976)	7	5	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.944444	48.58889	25
3.5	SK	604161		Balárová-Tulácková E. (1976)	7	6	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.961111	48.58056	20
3.5	SK	604162		Balárová-Tulácková E. (1976)	7	7	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.977778	48.511111	20
3.5	SK	604164		Balárová-Tulácková E. (1976)	7	9	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.925	48.45556	20
3.5	SK	611182		Otahelová H. (1996)	2	15	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.930556	48.50556	20
3.5	SK	611187		Otahelová H. (1996)	2	16	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.9375	48.294444	28
3.5	SK	611188		Otahelová H. (1996)	2	10	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.961389	48.556667	20
3.5	SK	611189		Otahelová H. (1996)	2	11	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.955556	48.562222	25
3.5	SK	611190		Otahelová H. (1996)	2	17	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.955556	48.561667	28
3.5	SK	611191		Otahelová H. (1996)	2	12	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.959722	48.558333	20
3.5	SK	611192		Otahelová H. (1996)	2	13	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.905556	48.491389	28
3.5	SK	616355		Malcová-Stanková M. (2004)	3	1	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.983333	48.566389	25
3.5	SK	616356		Malcová-Stanková M. (2004)	3	2	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.909167	48.409444	28
3.5	SK	616364		Malcová-Stanková M. (2004)	3	10	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.915278	48.471111	24
3.5	SK	616369		Malcová-Stanková M. (2004)	3	15	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.911944	48.469167	28
3.5	SK	616374		Malcová-Stanková M. (2004)	3	20	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.908611	48.397722	28
3.5	SK	624687		Otahelová H., Janauer G.-A., Husák, S. (1994)	3	31	Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.891667	48.492222	28
3.5	SK	712559		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.898611	48.333056	25
3.5	SK	712560		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.878889	48.343889	28
3.5	SK	712578		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.882778	48.467778	24
3.5	SK	712587		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.939444	48.507778	25
3.5	SK	712590		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.9393	48.503889	24
3.5	SK	712596		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.971111	48.551389	25
3.5	SK	712608		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.863611	48.449167	25
3.5	SK	712609		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.918889	48.491667	25
3.5	SK	712611		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.945556	48.592222	28
3.5	SK	712612		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.944444	48.575	24
3.5	SK	712613		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.955	48.568333	20
3.5	SK	712647		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.960278	48.555833	24
3.5	SK	712648		Hegedűsová K.			Galio palustris-Caricetum ripariae Bal.-Tul. in Bal.-Tul.	16.944444	48.5175	24
3.6	AT	341231		Staudinger M., unpubl.				16.65431	48.11683	23
3.6	AT	341358		Staudinger M., unpubl.				16.64944	48.12089	23
3.6	AT	341360		Staudinger M., unpubl.				16.65308	48.12322	23
3.6	AT	341427		Staudinger M., unpubl.				16.66501	48.12004	23
3.6	AT	341916		Rotter D. (1999)	7	26	An Galio-Urticetea-Arten reiche Verges.	16.59991	48.14085	25
3.6	AT	341919		Rotter D. (1999)	7	29	An Galio-Urticetea-Arten reiche Verges.	16.53916	48.15266	25
3.6	AT	341921		Rotter D. (1999)	7	31	An Galio-Urticetea-Arten reiche Verges.	16.53863	48.15662	26
3.6	AT	341922		Rotter D. (1999)	7	32	An Galio-Urticetea-Arten reiche Verges.	16.54518	48.16412	28
3.6	AT	341926		Rotter D. (1999)	7	36	An Galio-Urticetea-Arten reiche Verges.	16.53793	48.16499	26
3.6	AT	341927		Rotter D. (1999)	7	37	An Galio-Urticetea-Arten reiche Verges.	16.53706	48.16616	26
3.6	AT	341929		Rotter D. (1999)	7	39	An Galio-Urticetea-Arten reiche Verges.	16.54467	48.154	25
3.6	AT	341930		Rotter D. (1999)	7	40	An Galio-Urticetea-Arten reiche Verges.	16.56358	48.14452	25
3.6	AT	341931		Rotter D. (1999)	7	41	An Galio-Urticetea-Arten reiche Verges.	16.56098	48.14975	25
3.6	AT	341932		Rotter D. (1999)	7	42	An Galio-Urticetea-Arten reiche Verges.	16.567	48.1438	25
3.6	AT	341933		Rotter D. (1999)	7	43	An Galio-Urticetea-Arten reiche Verges.	16.53863	48.15662	27
3.6	AT	343071		Straka A. (1992)	1	48	Phalaridetum arundinaceae	15.94337	48.35602	25
3.6	SK	712577		Hegedűsová K.			Caricetum acutiformis Eggler 1933	16.886944	48.470833	25
3.7	AT	340994		Balatova-Tulackova E. & Hübl E. (1974)	5	4	Caricetum elatae	16.90094	48.26697	25
3.7	AT	341689		Rotter D. (1999)	3	1	Caricetum elatae	16.60608	48.13823	25
3.7	AT	341690		Rotter D. (1999)	3	2	Caricetum elatae	16.58535	48.14367	25
3.7	AT	341691		Rotter D. (1999)	3	3	Caricetum elatae	16.59058	48.14285	24
3.7	AT	341692		Rotter D. (1999)	3	4	Caricetum elatae	16.57761	48.1427	25
3.7	AT	341693		Rotter D. (1999)	3	5	Caricetum elatae	16.59596	48.14396	25
3.7	AT	341694		Rotter D. (1999)	3	6	Caricetum elatae	16.59964	48.13959	25
3.7	AT	341695		Rotter D. (1999)	3	7	Caricetum elatae	16.59287	48.1441	25
3.7	AT	341696		Rotter D. (1999)	3	8	Caricetum elatae	16.600053	48.14359	25
3.7	AT	341697		Rotter D. (1999)	3	9	Caricetum elatae	16.60991	48.1388	25
3.7	AT	341698		Rotter D. (1999)	3	10	Caricetum elatae	16.56554	48.16075	25
3.7	AT	341699		Rotter D. (1999)	3	11	Caricetum elata			

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
3.8	AT	341865		Rotter D. (1999)	6	17	Molinio-Arrhenatheretea	16.57045	48.14842	26
3.8	AT	341868		Rotter D. (1999)	6	20	Molinio-Arrhenatheretea	16.58575	48.14385	26
3.8	AT	341870		Rotter D. (1999)	6	22	Molinio-Arrhenatheretea	16.57762	48.14409	26
3.8	AT	341871		Rotter D. (1999)	6	23	Molinio-Arrhenatheretea	16.55955	48.16081	26
3.8	AT	341876		Rotter D. (1999)	6	28	Molinio-Arrhenatheretea	16.5885	48.14384	25
3.8	AT	341879		Rotter D. (1999)	6	31	Molinio-Arrhenatheretea	16.53615	48.15784	26
3.8	AT	341880		Rotter D. (1999)	6	32	Molinio-Arrhenatheretea	16.58199	48.14413	26
3.8	AT	341881		Rotter D. (1999)	6	33	Calamagrostietum canescens	16.58662	48.14407	25
3.8	AT	341882		Rotter D. (1999)	6	34	Calamagrostietum canescens	16.59288	48.14518	26
3.8	AT	341883		Rotter D. (1999)	6	35	Calamagrostietum canescens	16.59964	48.13959	25
3.8	AT	341884		Rotter D. (1999)	6	36	Calamagrostietum canescens	16.53636	48.17569	26
3.8	AT	341885		Rotter D. (1999)	6	37	Calamagrostietum canescens	16.54437	48.163	26
3.8	AT	341886		Rotter D. (1999)	6	38	Calamagrostietum canescens	16.54437	48.163	26
3.8	AT	341887		Rotter D. (1999)	6	39	Calamagrostietum canescens	16.54908	48.16231	26
3.8	AT	341888		Rotter D. (1999)	6	40	Calamagrostietum canescens	16.58622	48.1443	25
3.8	AT	341889		Rotter D. (1999)	6	41	Calamagrostietum canescens	16.53741	48.16967	26
3.8	AT	341890		Rotter D. (1999)	6	42	Calamagrostietum canescens	16.53868	48.16759	25
3.8	AT	341891		Rotter D. (1999)	6	43	Calamagrostietum canescens	16.58973	48.14708	26
3.8	AT	341892		Rotter D. (1999)	7	1	An Galio-Urticetea-Arten reiche Verges.	16.6018	48.14278	25
3.8	AT	341897		Rotter D. (1999)	7	6	An Galio-Urticetea-Arten reiche Verges.	16.5885	48.14384	26
3.8	AT	341903		Rotter D. (1999)	7	13	An Galio-Urticetea-Arten reiche Verges.	16.56015	48.15946	26
3.8	AT	341904		Rotter D. (1999)	7	14	An Galio-Urticetea-Arten reiche Verges.	16.54223	48.16422	26
3.8	AT	341907		Rotter D. (1999)	7	17	An Galio-Urticetea-Arten reiche Verges.	16.54411	48.16417	26
3.8	AT	341912		Rotter D. (1999)	7	22	An Galio-Urticetea-Arten reiche Verges.	16.53733	48.16566	26
3.8	AT	341913		Rotter D. (1999)	7	23	An Galio-Urticetea-Arten reiche Verges.	16.53174	48.16387	26
3.8	AT	341914		Rotter D. (1999)	7	24	An Galio-Urticetea-Arten reiche Verges.	16.53867	48.16508	26
3.8	AT	341917		Rotter D. (1999)	7	27	An Galio-Urticetea-Arten reiche Verges.	16.53671	48.17884	27
3.8	AT	341918		Rotter D. (1999)	7	28	An Galio-Urticetea-Arten reiche Verges.	16.52975	48.17044	26
3.8	AT	341923		Rotter D. (1999)	7	33	An Galio-Urticetea-Arten reiche Verges.	16.54545	48.16443	25
3.8	SK	608142		Posltová A. (1997)	7	7	Caricetum gracilis Almquist 1929	17.005556	48.533333	23
3.9	AT	341790		Rotter D. (1999)	4	50	Iris pseudacorus-Gesellschaft	16.53741	48.16917	28
3.9	SK	611208		Otahelová H. (1996)	1	36	Iris pseudacorus-comm.	16.892778	48.336111	24
3.9	SK	611209		Otahelová H. (1996)	1	37	Iris pseudacorus-comm.	16.904722	48.493056	20
3.9	SK	624680		Otahelová H., Janauer G.-A., Husák, S. (1994)	3	24	Iris pseudacorus-comm.	16.883333	48.336944	24
4.1	AT	341640		Rotter D. (1999)	1	19	Glycerietum fluitantis	16.53638	48.15388	19
4.1	AT	341641		Rotter D. (1999)	1	20	Glycerietum fluitantis	16.54444	48.15277	19
4.1	AT	341642		Rotter D. (1999)	1	21	Glycerietum fluitantis	16.55861	48.145	19
4.1	AT	425857		Wagner H. (1950)	p.3	150	Glycerieto-Sparganietum neglecti	14.7203064	48.17112289	19
5.1	AT	343081		Straka A. (1992)	1	58	Sagittario-Sparganietum	16.1127	48.34226	16
5.1	SK	611218		Otahelová H. (1996)	4	16	Sagittario-Sparganietum emersi R.Tx. 1953	16.963889	48.289444	18
5.1	SK	611223		Otahelová H. (1996)	4	17	Sagittario-Sparganietum emersi R.Tx. 1953	16.941111	48.570278	18
5.1	SK	611224		Otahelová H. (1996)	4	18	Sagittario-Sparganietum emersi R.Tx. 1953	16.883333	48.478056	18
5.1	SK	611232		Otahelová H. (1996)	4	19	Sagittario-Sparganietum emersi R.Tx. 1953	16.957778	48.559167	18
5.1	SK	611233		Otahelová H. (1996)	4	20	Sagittario-Sparganietum emersi R.Tx. 1953	16.952778	48.522222	18
5.1	SK	624684		Otahelová H., Janauer G.-A., Husák, S. (1994)	3	28	Sagittario-Sparganietum emersi R.Tx. 1953	16.883333	48.336944	18
5.2	AT	341378		Staudinger M., unpubl.			Bidention tripartiti	16.7448	48.12077	21
5.2	AT	341402		Staudinger M., unpubl.			Rumici-Alopecuretum aequalis	16.56583	48.14333	19
5.2	AT	341405		Staudinger M., unpubl.			Rumici-Alopecuretum aequalis	16.56666	48.14388	16
5.2	AT	341406		Staudinger M., unpubl.			Oenanthe aquatica-Rorippetum amphibiae	16.9131	48.57316	19
5.2	AT	341408		Staudinger M., unpubl.			Oenanthe aquatica-Rorippetum amphibiae	16.9131	48.57316	19
5.2	AT	341409		Staudinger M., unpubl.			Oenanthe aquatica-Rorippetum amphibiae	16.90922	48.15199	16
5.2	AT	341486		Staudinger M., unpubl.			Oenanthon-Rorippetum	16.9273	48.15262	16
5.2	AT	341636		Rotter D. (1999)	1	15	Rumici-Alopecuretum aequalis	16.56556	48.14333	19
5.2	AT	341639		Rotter D. (1999)	1	18	Rumici-Alopecuretum aequalis	16.56666	48.14388	16
5.2	AT	342085		Projektstudie 1991 (Gottfried et al.)	9	1	Oenanthe aquatica-Rorippetum amphibiae	16.9131	48.57316	19
5.2	AT	342087		Projektstudie 1991 (Gottfried et al.)	9	3	Oenanthe aquatica-Rorippetum amphibiae	16.9131	48.57316	19
5.2	AT	342088		Projektstudie 1991 (Gottfried et al.)	9	4	Oenanthe aquatica-Rorippetum amphibiae	16.9131	48.57316	19
5.2	AT	343076		Straka A. (1992)	1	53	Oenanthon-Rorippetum	16.17429	48.36039	16
5.2	AT	343117		Fink M., Korner I. & Wrbka T. (1987)			Oenanthon aquatica	16.28887	48.34763	19
5.2	SK	611211		Otahelová H. (1996)	4	6	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.955556	48.529167	19
5.2	SK	611212		Otahelová H. (1996)	4	4	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.953333	48.528333	19
5.2	SK	611213		Otahelová H. (1996)	4	11	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.9375	48.517222	24
5.2	SK	611214		Otahelová H. (1996)	4	9	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.92	48.511111	19
5.2	SK	611215		Otahelová H. (1996)	4	7	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.930556	48.504167	19
5.2	SK	611216		Otahelová H. (1996)	4	15	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.855556	48.405556	16
5.2	SK	611217		Otahelová H. (1996)	4	8	Oenanthe aquatica-Rorippetum amphibiae Lohmayer 1950	16.856111	48.405556	19

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
6.1	AT	341481		Staudinger M., unpubl.			Rumici crispi-Agrostietum stoloniferae	16.62499	48.1317	21
6.1	AT	341492		Staudinger M., unpubl.			Rumici crispi-Agrostietum stoloniferae	16.96233	48.17033	21
6.1	AT	341545		Staudinger M., unpubl.			Rumici crispi-Agrostietum stoloniferae	16.51721	48.15931	21
6.1	AT	341546		Staudinger M., unpubl.			Rumici crispi-Agrostietum stoloniferae	16.517	48.15931	15
6.1	AT	341547		Staudinger M., unpubl.			Rumici crispi-Agrostietum stoloniferae	16.51687	48.15918	15
6.1	AT	341577		Essl F. (1999)	5	115	Lolietum perennis	16.229853	48.36267	21
6.1	AT	341578		Essl F. (1999)	6	513	Rumici crispi-Agrostietum	16.30702	48.347179	22
6.1	AT	341580		Essl F. (1999)	6	216	Rumici crispi-Agrostietum	16.047973	48.340509	22
6.1	AT	341626		Rotter D. (1999)	1	5	Rumici-Alopecuretum aequalis	16.56388	48.14361	16
6.1	AT	343095		Straka A. (1992)	1	73	Cyperus fuscus-Gesellschaft	16.08112	48.34471	22
6.1	AT	343112		Fink M., Korner I. & Wrbka T. (1987)			Potentillion anserinae	16.3139	48.33518	22
6.1	AT	360007		Staudinger M., unpubl.			Rumici obtusifolii-Agrostietum stoloniferae	16.91613333	48.14951667	21
6.1	SK	712628		Hegedűsová K.			Beruletum angustifoliae Roll 1938	16.953056	48.239444	19
6.2	AT	317078		Schratt-Ehrendorfer, unpubl.				16.706534	48.1335349	40
6.2	AT	317132		Schratt-Ehrendorfer, unpubl.				16.83568295	48.13327437	42
6.2	AT	317278		Schratt-Ehrendorfer, unpubl.				16.67903726	48.13618518	42
6.2	AT	317354		Schratt-Ehrendorfer, unpubl.				16.77096947	48.13341096	40
6.2	AT	317371		Schratt-Ehrendorfer, unpubl.				16.7690253	48.13341089	39
6.2	AT	317405		Schratt-Ehrendorfer, unpubl.				16.64209901	48.12090789	23
6.2	AT	317406		Schratt-Ehrendorfer, unpubl.				16.64251564	48.12076903	23
6.2	AT	317514		Schratt-Ehrendorfer, unpubl.				16.58377195	48.14173673	23
6.2	AT	317539		Schratt-Ehrendorfer, unpubl.				16.58488276	48.143681	23
6.2	AT	317794		Sauberer N., unpubl.				16.76421	48.12954	23
6.2	AT	317831		Beiser A., unpubl.				16.77133	48.13258	23
6.2	AT	318619		Zuna-Kratky T., unpubl. (2017)				16.9155	48.69233	37
6.2	AT	318653		Zuna-Kratky T., unpubl. (2017)				16.83828	48.38606	23
6.2	AT	340536		Plenk S. (1991)	7		Gratiolo-Caricetum suzae Faz. Lysimachia vulgaris	16.938889	48.528333	23
6.2	AT	340573		Plenk S. (1991)	42		Potentillion anserinae	16.924472	48.529583	23
6.2	AT	340583		Kuyper T.W. et al. (1978)	170		Agrostio-Poetum trivalis	16.690111	48.139833	42
6.2	AT	341017		Balatova-Tulackova E. & Hübl E. (1974)	7	11	Gratiolo-Caricetum suzae	16.88229	48.29876	23
6.2	AT	341412		Staudinger M., unpubl.				16.72216	48.12782	23
6.2	AT	341622		Rotter D. (1999)	1	1	Agrosti stolonifera-Gesellschaft	16.58833	48.1425	22
6.2	AT	341834		Rotter D. (1999)	5	45	Calam.epig.-reiche Vergesellschaftungen	16.58535	48.14367	23
6.2	AT	341846		Rotter D. (1999)	5	57	Calam.epig.-reiche Vergesellschaftungen	16.58076	48.13927	23
6.2	AT	341847		Rotter D. (1999)	5	58	Calam.epig.-reiche Vergesellschaftungen	16.58501	48.14367	23
6.2	AT	341848		Rotter D. (1999)	5	60	Calam.epig.-reiche Vergesellschaftungen	16.58622	48.14443	23
6.2	AT	341849		Rotter D. (1999)	6	1	Molinio-Arrhenatheretea	16.57863	48.14382	23
6.2	AT	341850		Rotter D. (1999)	6	2	Molinio-Arrhenatheretea	16.57863	48.14382	23
6.2	AT	341858		Rotter D. (1999)	6	10	Molinio-Arrhenatheretea	16.58622	48.1438	39
6.2	AT	341859		Rotter D. (1999)	6	11	Molinio-Arrhenatheretea	16.59059	48.14438	23
6.2	AT	341860		Rotter D. (1999)	6	12	Molinio-Arrhenatheretea	16.59577	48.14518	23
6.2	AT	341861		Rotter D. (1999)	6	13	Molinio-Arrhenatheretea	16.59547	48.13964	23
6.2	AT	341862		Rotter D. (1999)	6	14	Molinio-Arrhenatheretea	16.57863	48.14382	23
6.2	AT	341863		Rotter D. (1999)	6	15	Molinio-Arrhenatheretea	16.57916	48.14346	23
6.2	AT	341864		Rotter D. (1999)	6	16	Molinio-Arrhenatheretea	16.58501	48.14367	23
6.2	AT	341869		Rotter D. (1999)	6	21	Molinio-Arrhenatheretea	16.58622	48.14443	23
6.2	AT	341872		Rotter D. (1999)	6	24	Molinio-Arrhenatheretea	16.58798	48.14636	26
6.2	AT	341878		Rotter D. (1999)	6	30	Molinio-Arrhenatheretea	16.58749	48.14272	23
6.2	AT	341984		Projektstudie 1991 (Gottfried et al.)	2	29	Cnidio venosi-Violetum pumilae	16.87845	48.29887	40
6.2	AT	342021		Projektstudie 1991 (Gottfried et al.)	3	24	Gratiolo-Caricetum suzae	16.9131	48.57316	40
6.2	AT	342027		Projektstudie 1991 (Gottfried et al.)	3	30	Gratiolo-Caricetum suzae	16.9131	48.57316	37
6.2	AT	342043		Projektstudie 1991 (Gottfried et al.)	4	6	Cerastio-Ranunculetum sardoi	16.94402	48.22529	23
6.2	AT	342044		Projektstudie 1991 (Gottfried et al.)	4	7	Cerastio-Ranunculetum sardoi	16.94402	48.22529	40
6.2	AT	342048		Projektstudie 1991 (Gottfried et al.)	5	4	Caricetum gracilis	16.9131	48.57316	23
6.2	AT	342049		Projektstudie 1991 (Gottfried et al.)	5	5	Caricetum gracilis	16.9131	48.57316	23
6.2	AT	355076		Sauberer N., unpubl.				16.90376	48.58018	25
6.2	AT	355077		Sauberer N., unpubl.				16.90408	48.57956	25
6.2	AT	355078		Sauberer N., unpubl.				16.90422	48.57928	23
6.2	AT	355079		Sauberer N., unpubl.				16.92192	48.5371	39
6.2	AT	355080		Sauberer N., unpubl.				16.92351	48.53549	23
6.2	AT	355081		Sauberer N., unpubl.				16.87102	48.32067	23
6.2	AT	425870		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425871		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425872		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425873		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425874		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425875		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425876		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425878		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425879		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	23
6.2	AT	425881		Wagner H. (1950)</td						

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
7.1	AT	340561		Plenk S. (1991)		33	Gratiolo-Caricetum suzae	16.928833	48.525778	23
7.1	AT	340563		Plenk S. (1991)		36	Gratiolo-Caricetum suzae	16.928833	48.525778	37
7.1	AT	340564		Plenk S. (1991)		31	Potentillion anserinae	16.928833	48.525778	23
7.1	AT	340565		Plenk S. (1991)		34	Potentillion anserinae	16.928833	48.525778	23
7.1	AT	340578		Plenk S. (1991)		49	Cnidion	16.925917	48.526111	23
7.1	AT	340581		Plenk S. (1991)		52	Cnidium dubium-Carex disticha-Gesellschaft	16.922194	48.532389	23
7.1	AT	341005		Balatova-Tulackova E. & Hübl E. (1974)	6	1	Lathyro palustris-Gratiuletum	16.92695	48.60443	23
7.1	AT	341006		Balatova-Tulackova E. & Hübl E. (1974)	6	2	Lathyro palustris-Gratiuletum	16.92695	48.60443	23
7.1	AT	341007		Balatova-Tulackova E. & Hübl E. (1974)	7	1	Gratiolo-Caricetum suzae	16.90631	48.28344	23
7.1	AT	341008		Balatova-Tulackova E. & Hübl E. (1974)	7	2	Gratiolo-Caricetum suzae	16.90631	48.28344	23
7.1	AT	341009		Balatova-Tulackova E. & Hübl E. (1974)	7	3	Gratiolo-Caricetum suzae	16.90631	48.28344	23
7.1	AT	341010		Balatova-Tulackova E. & Hübl E. (1974)	7	4	Gratiolo-Caricetum suzae	16.90631	48.28344	23
7.1	AT	341011		Balatova-Tulackova E. & Hübl E. (1974)	7	5	Gratiolo-Caricetum suzae	16.92558	48.53874	23
7.1	AT	341012		Balatova-Tulackova E. & Hübl E. (1974)	7	6	Gratiolo-Caricetum suzae	16.92558	48.53874	37
7.1	AT	341013		Balatova-Tulackova E. & Hübl E. (1974)	7	7	Gratiolo-Caricetum suzae	16.92558	48.53874	37
7.1	AT	341015		Balatova-Tulackova E. & Hübl E. (1974)	7	9	Gratiolo-Caricetum suzae	16.92695	48.60443	23
7.1	AT	341985		Projektstudie 1991 (Gottfried et al.)	2	30	Cnidio venosi-Violetum pumilae	16.87845	48.29887	37
7.1	AT	342004		Projektstudie 1991 (Gottfried et al.)	3	7	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.1	AT	342017		Projektstudie 1991 (Gottfried et al.)	3	20	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.1	AT	342019		Projektstudie 1991 (Gottfried et al.)	3	22	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.1	AT	342022		Projektstudie 1991 (Gottfried et al.)	3	25	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.1	AT	342023		Projektstudie 1991 (Gottfried et al.)	3	26	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.1	AT	342025		Projektstudie 1991 (Gottfried et al.)	3	28	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.1	AT	342033		Projektstudie 1991 (Gottfried et al.)	3	36	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.1	AT	342034		Projektstudie 1991 (Gottfried et al.)	3	37	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.1	AT	342040		Projektstudie 1991 (Gottfried et al.)	4	3	Cerastio-Ranunculetum sardoi	16.9131	48.57316	23
7.1	AT	342042		Projektstudie 1991 (Gottfried et al.)	4	5	Cerastio-Ranunculetum sardoi	16.94402	48.22529	23
7.1	AT	342054		Projektstudie 1991 (Gottfried et al.)	5	10	Caricetum gracilis	16.9131	48.57316	23
7.1	AT	342059		Projektstudie 1991 (Gottfried et al.)	5	15	Caricetum gracilis	16.9131	48.57316	23
7.1	AT	342083		Projektstudie 1991 (Gottfried et al.)	8	5	Phragmites-Urtica-Gesellschaft	16.94402	48.22529	37
7.1	AT	343246		Staudinger M., unpubl.			Alopecurion	16.85206667	48.42915	23
7.1	AT	343247		Staudinger M., unpubl.			Alopecurion	16.85231667	48.4291333	23
7.1	AT	343248		Staudinger M., unpubl.			Alopecurion	16.85296667	48.42896667	23
7.1	AT	343251		Staudinger M., unpubl.			Alopecurion	16.88725	48.48265	23
7.1	SK	412068		Balárová-Tuláčková E. (1968)	3	11	Molinio-Arrhenatheretea R.Tx. 1937 em. 1970	16.896944	48.332778	23
7.1	SK	604329		Balárová-Tuláčková E. (1968)	2	4	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.905556	48.333333	23
7.1	SK	613690		Zlinská J. (1993)	1	8	Potentillion anserinae R.Tx. 1947	16.929722	48.274444	23
7.1	SK	613692		Zlinská J. (1993)	1	10	Rorippo-Agrostietum stoloniferae Oberd. et	16.955278	48.268611	23
7.1	SK	613695		Zlinská J. (1993)	1	13	Potentillion anserinae R.Tx. 1947	16.929444	48.506111	23
7.1	SK	613844		Seffer J., Stanová V. (eds.) (1999)	2	7	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.913889	48.325	23
7.2	AT	317184		Schratt-Ehrendorfer, unpubl.			Poo trivialis-Alopecuretum	16.91400323	48.16443183	23
7.2	AT	317282		Schratt-Ehrendorfer, unpubl.				16.66876129	48.13090766	40
7.2	AT	317283		Schratt-Ehrendorfer, unpubl.				16.66820581	48.13076876	23
7.2	AT	317359		Schratt-Ehrendorfer, unpubl.				16.77513575	48.13189195	23
7.2	AT	317360		Schratt-Ehrendorfer, unpubl.				16.77569118	48.13174465	23
7.2	AT	317366		Schratt-Ehrendorfer, unpubl.				16.77055309	48.13063349	40
7.2	AT	317367		Schratt-Ehrendorfer, unpubl.				16.77027532	48.13091123	40
7.2	AT	317370		Schratt-Ehrendorfer, unpubl.				16.77041412	48.13188334	23
7.2	AT	317416		Schratt-Ehrendorfer, unpubl.				16.65015369	48.1126959	23
7.2	AT	317527		Schratt-Ehrendorfer, unpubl.				16.61849053	48.12812843	23
7.2	AT	317759		Staudinger M., unpubl.				16.66831	48.13082	23
7.2	AT	317798		Sauberer N., unpubl.				16.77754	48.12425	23
7.2	AT	317803		Huspeka J., unpubl.				16.70699	48.13026	23
7.2	AT	317812		Huspeka J., unpubl.				16.67053	48.13024	23
7.2	AT	317817		Beiser A., unpubl.				16.94187	48.17154	23
7.3	AT	425906		Wagner H. (1950)			Gratiola off.-Carex fusca-Ass.	14.7507	48.1708	39
7.3	AT	425907		Wagner H. (1950)			Gratiola off.-Carex fusca-Ass.	14.7507	48.1708	23
7.3	AT	425908		Wagner H. (1950)			Gratiola off.-Carex fusca-Ass.	14.7507	48.1708	23
7.4	AT	318615		Zuna-Kratky T., unpubl. (2017)		1	Cnidion	16.91066	48.69176	37
7.4	AT	318618		Zuna-Kratky T., unpubl. (2017)		2	Cnidion	16.91253	48.70245	43
7.4	AT	318620		Zuna-Kratky T., unpubl. (2017)		9	Gratiolo-Caricetum suzae subass. Galium boreale	16.91993	48.57627	37
7.4	AT	318621		Zuna-Kratky T., unpubl. (2017)		12	Thalictro flavi-Veronicetum longifoliae	16.942028	48.531694	37
7.4	AT	318622		Zuna-Kratky T., unpubl. (2017)		13	Arrhenatherion	16.942028	48.531694	38
7.4	AT	318623		Zuna-Kratky T., unpubl. (2017)		18	Potentillion anserinae	16.938083	48.525139	23
7.4	AT	318624		Zuna-Kratky T., unpubl. (2017)		26	Gratiolo-Caricetum suzae	16.942139	48.523278	37
7.4	AT	318625		Zuna-Kratky T., unpubl. (2017)		35	Gratiolo-Caricetum suzae	16.928833	48.525778	37
7.4	AT	318641		Zuna-Kratky T., unpubl. (2017)	7	8	Gratiolo-Caricetum suzae	16.92558	48.53874	

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
7.4	AT	342014		Projektstudie 1991 (Gottfried et al.)	3	17	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342015		Projektstudie 1991 (Gottfried et al.)	3	18	Gratiolo-Caricetum suzae	16.94402	48.22529	37
7.4	AT	342016		Projektstudie 1991 (Gottfried et al.)	3	19	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342018		Projektstudie 1991 (Gottfried et al.)	3	21	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342020		Projektstudie 1991 (Gottfried et al.)	3	23	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.4	AT	342026		Projektstudie 1991 (Gottfried et al.)	3	29	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342029		Projektstudie 1991 (Gottfried et al.)	3	32	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342030		Projektstudie 1991 (Gottfried et al.)	3	33	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342031		Projektstudie 1991 (Gottfried et al.)	3	34	Gratiolo-Caricetum suzae	16.94402	48.22529	37
7.4	AT	342032		Projektstudie 1991 (Gottfried et al.)	3	35	Gratiolo-Caricetum suzae	16.94402	48.22529	37
7.4	AT	342035		Projektstudie 1991 (Gottfried et al.)	3	38	Gratiolo-Caricetum suzae	16.9131	48.57316	37
7.4	AT	342036		Projektstudie 1991 (Gottfried et al.)	3	39	Gratiolo-Caricetum suzae	16.9131	48.57316	23
7.4	AT	342037		Projektstudie 1991 (Gottfried et al.)	3	40	Gratiolo-Caricetum suzae	16.87845	48.29887	37
7.4	AT	342041		Projektstudie 1991 (Gottfried et al.)	4	4	Cerastio-Ranunculetum sardoi	16.94402	48.22529	38
7.4	AT	342093		Pauer E. (2005)	1	4	Gratiolo-Caricetum praeocis	16.86819	48.34041	37
7.4	AT	342094		Pauer E. (2005)	1	6	Gratiolo-Caricetum praeocis	16.87477	48.33305	38
7.4	AT	343149		Staudinger M., unpubl.			Alopecurion	16.83221667	48.3814	38
7.4	AT	343150		Staudinger M., unpubl.			Alopecurion	16.83581667	48.385	38
7.4	AT	343152		Staudinger M., unpubl.			Alopecurion	16.84813333	48.3865	41
7.4	AT	343153		Staudinger M., unpubl.			Alopecurion	16.84988333	48.39058333	41
7.4	AT	343154		Staudinger M., unpubl.			Alopecurion	16.85285	48.3941	38
7.4	AT	343155		Staudinger M., unpubl.			Alopecurion	16.85323333	48.39621667	41
7.4	AT	343156		Staudinger M., unpubl.			Alopecurion	16.85445	48.3975	38
7.4	AT	343157		Staudinger M., unpubl.			Alopecurion	16.85401667	48.39955	38
7.4	AT	343158		Staudinger M., unpubl.			Alopecurion	16.85133333	48.4026	41
7.4	AT	343159		Staudinger M., unpubl.			Alopecurion	16.84818333	48.40331667	37
7.4	AT	343160		Staudinger M., unpubl.			Alopecurion	16.8474	48.40961667	37
7.4	AT	343161		Staudinger M., unpubl.			Alopecurion	16.84933333	48.39893333	37
7.4	AT	343162		Staudinger M., unpubl.			Alopecurion	16.8485	48.39873333	37
7.4	AT	343163		Staudinger M., unpubl.			Alopecurion	16.84995	48.39845	37
7.4	AT	343245		Staudinger M., unpubl.			Alopecurion	16.84988333	48.43975	38
7.4	AT	343249		Staudinger M., unpubl.			Alopecurion	16.8508333	48.43021667	37
7.4	AT	343253		Staudinger M., unpubl.			Alopecurion	16.90508333	48.51461667	37
7.4	AT	343254		Staudinger M., unpubl.			Alopecurion	16.90463333	48.51633333	37
7.4	SK	412065		Balátvá-Tulácková E. (1968)	3	8	Molinio-Arrhenatheretea R.Tx. 1937 em. 1970	16.957222	48.2575	37
7.4	SK	412066		Balátvá-Tulácková E. (1968)	3	9	Molinio-Arrhenatheretea R.Tx. 1937 em. 1970	16.895833	48.334167	37
7.4	SK	604326		Balátvá-Tulácková E. (1968)	2	1	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.966667	48.266667	37
7.4	SK	604327		Balátvá-Tulácková E. (1968)	2	2	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.905556	48.333333	37
7.4	SK	604335		Balátvá-Tulácková E. (1968)	2	10	Filipendulo-Geranietum palustris Koch 1926	17.002778	48.531944	23
7.4	SK	608426		Zlinská J. & Stanová V. (1995)	p. 83	1	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.275	38
7.4	SK	608427		Zlinská J. & Stanová V. (1995)	p. 83	2	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.272222	37
7.4	SK	613691		Zlinská J. (1993)	1	9	Potentillion anserinae R.Tx. 1947	16.925278	48.278056	37
7.4	SK	613841		Seffer J., Stanová V. (eds.) (1999)	2	4	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.941667	48.555556	37
7.4	SK	613845		Seffer J., Stanová V. (eds.) (1999)	2	8	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.913889	48.325	37
7.4	SK	613846		Seffer J., Stanová V. (eds.) (1999)	2	9	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	37
7.4	SK	613850		Seffer J., Stanová V. (eds.) (1999)	2	13	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.952778	48.541667	38
7.4	SK	613851		Seffer J., Stanová V. (eds.) (1999)	2	14	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.952778	48.541667	38
7.4	SK	613852		Seffer J., Stanová V. (eds.) (1999)	2	15	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	38
7.4	SK	613853		Seffer J., Stanová V. (eds.) (1999)	2	16	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	38
7.4	SK	613854		Seffer J., Stanová V. (eds.) (1999)	2	17	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.919444	48.280556	38
7.4	SK	613855		Seffer J., Stanová V. (eds.) (1999)	2	18	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.913889	48.325	38
7.4	SK	613856		Seffer J., Stanová V. (eds.) (1999)	2	19	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	38
7.4	SK	613857		Seffer J., Stanová V. (eds.) (1999)	2	20	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	38
7.4	SK	613858		Seffer J., Stanová V. (eds.) (1999)	2	21	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.930556	48.295833	38
7.4	SK	628500		Banásová V., Otahelová H., Záliberová M. (1995)	1	1	Molinietalia Koch 1926	16.961667	48.313611	39
7.4	SK	628501		Banásová V., Otahelová H., Záliberová M. (1995)	1	2	Molinietalia Koch 1926	16.961667	48.3125	39
7.4	SK	628502		Banásová V., Otahelová H., Záliberová M. (1995)	1	3	Alopecurion pratensis Passarge 1964	16.962778	48.311667	38
7.4	SK	628503		Banásová V., Otahelová H., Záliberová M. (1995)	1	4	Alopecurion pratensis Passarge 1964	16.963333	48.31	38
7.4	SK	714421		Skodová I.			Alopecurion pratensis Passarge 1964	16.855833	48.410278	41
7.4	SK	714426		Skodová I.			Molinietalia Koch 1926	16.891389	48.473889	37
7.4	SK	714429		Skodová I.			Molinietalia Koch 1926	16.903889	48.488889	41
7.4	SK	714433		Skodová I.			Alopecurion pratensis Passarge 1964	16.947222	48.590833	38
7.4	SK	714437		Skodová I.			Molinietalia Koch 1926	16.9525	48.564167	41
7.4	SK	714443		Skodová I.			Molinietalia Koch 1926	16.958889	48.558889	41
7.5	AT	317011		Schratt-Ehrendorfer, unpubl.	</					

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7.6	AT	317736		Wiedermann M. et al. (2000)			Alopecurus pratensis-Ranunculus repens-Ges.	16.57849521	48.13757038	40
7.6	AT	317738		Wiedermann M. et al. (2000)			Alopecurus pratensis-Ranunculus repens-Ges.	16.57821747	48.13757037	40
7.6	AT	317739		Wiedermann M. et al. (2000)			Ranunculo repens-Alopecuretum pratensis typicum	16.57793976	48.13729262	40
7.6	AT	317748		Staudinger M., unpubl.			Poo trivialis-Alopecuretum pratensis	16.69729	48.12597	40
7.6	AT	317770		Staudinger M., unpubl.			Ausgetrocknete Fuchsschwanzwiese mit Reitgras	16.99231	48.16022	42
7.6	AT	341215		Staudinger M., unpubl.				16.52815	48.13973	40
7.6	AT	341216		Staudinger M., unpubl.				16.52821	48.14306	43
7.6	AT	341217		Staudinger M., unpubl.				16.52777	48.14387	43
7.6	AT	341220		Staudinger M., unpubl.				16.56998	48.13363	40
7.6	AT	341229		Staudinger M., unpubl.				16.6503	48.11882	37
7.6	AT	341357		Staudinger M., unpubl.				16.63406	48.1212	23
7.6	AT	341367		Staudinger M., unpubl.				16.55306	48.13546	43
7.6	AT	341369		Staudinger M., unpubl.				16.56232	48.1336	43
7.6	AT	341390		Staudinger M., unpubl.				16.53885	48.14358	43
7.6	AT	341392		Staudinger M., unpubl.				16.53486	48.13639	21
7.6	AT	341416		Staudinger M., unpubl.				16.58622	48.12964	40
7.6	AT	341417		Staudinger M., unpubl.				16.61778	48.12866	40
7.6	AT	341421		Staudinger M., unpubl.				16.63367	48.12417	43
7.6	AT	341425		Staudinger M., unpubl.				16.66053	48.12302	43
7.6	AT	341431		Staudinger M., unpubl.				16.64435	48.12405	40
7.6	AT	341432		Staudinger M., unpubl.				16.64307	48.12266	23
7.6	AT	341562		Essl F. (1999)	3	118	Trifolio medii-Agrimonietum	16.227724	48.364058	42
7.6	AT	341957		Projektstudie 1991 (Gottfried et al.)	2	2	Cnidio venosi-Violetum pumilae	16.94402	48.22529	38
7.6	AT	341992		Projektstudie 1991 (Gottfried et al.)	2	37	Cnidio venosi-Violetum pumilae	16.87845	48.29887	43
7.6	AT	341993		Projektstudie 1991 (Gottfried et al.)	2	38	Cnidio venosi-Violetum pumilae	16.87845	48.29887	40
7.6	AT	341997		Projektstudie 1991 (Gottfried et al.)	2	42	Cnidio venosi-Violetum pumilae	16.87845	48.29887	40
7.6	AT	342057		Projektstudie 1991 (Gottfried et al.)	5	13	Caricetum gracilis	16.94402	48.22529	23
7.6	AT	342090		Huspeka J.			Agropyro-Alopecuretum	16.9236	48.64244	43
7.6	AT	342777		Stark W. (2010)	1	28	Ranunculo repensis-Alopecuretum	16.12845	48.36679	39
7.6	AT	343318	714438	Straka A. & Ellmauer T. (1990) Skodová I.			Arrhenatheretum cirsietosum	16.23255	48.37759	42
8.1	AT	341037		Balatova-Tulackova E. & Hübl E. (1974)	11	1	Molinietalia Koch 1926	16.95667	48.563889	41
8.1	AT	341038		Balatova-Tulackova E. & Hübl E. (1974)	11	2	Molinietum caeruleae	16.90094	48.26697	29
8.1	AT	341040		Balatova-Tulackova E. & Hübl E. (1974)	11	4	Molinietum caeruleae	16.90094	48.26697	35
8.1	SK	412069		Balátová-Tuláčková E. (1968)	3	12	Molinion Koch 1926	17.008333	48.529167	29
8.1	SK	412070		Balátová-Tuláčková E. (1968)	3	13	Molinion Koch 1926	17.0025	48.528333	29
8.1	SK	600120		Bosácková E. (1975)	12	1	Selino-Molinietum coeruleae Kuhn 1937(=Knapp)	17	48.516667	34
8.1	SK	600121		Bosácková E. (1975)	12	2	Selino-Molinietum coeruleae Kuhn 1937(=Knapp)	17	48.516667	34
8.1	SK	604017		Smarda J. (1951)	4	2	Molinion Koch 1926	17.002778	48.531944	29
8.1	SK	604018		Smarda J. (1951)	4	3	Molinion Koch 1926	17.002778	48.531944	29
8.1	SK	604019		Smarda J. (1951)	4	4	Molinion Koch 1926	17.002778	48.531944	29
8.1	SK	604021		Smarda J. (1951)	5	1	Molinion Koch 1926	17.002778	48.531944	29
8.1	SK	604062		Klicová J. (1993)	pp.29	2		17.008333	48.527778	34
8.1	SK	604330		Balátová-Tuláčková E. (1968)	2	5	Selino-Molinietum coeruleae Kuhn 1937(=Knapp)	17.002778	48.531944	29
8.1	SK	604331		Balátová-Tuláčková E. (1968)	2	6	Molinietum coeruleae Koch 1926	17.002778	48.531944	29
8.1	SK	604333		Balátová-Tuláčková E. (1968)	2	8	Silactum pratensis Knapp 1954	16.965278	48.511111	35
8.1	SK	608014		Bosácková E. (1975)	10	14	Molinion Koch 1926	16.976389	48.305556	30
8.1	SK	608015		Bosácková E. (1975)	10	15	Molinion Koch 1926	16.958333	48.325	33
8.1	SK	608017		Bosácková E. (1975)	10	17	Molinion Koch 1926	16.958333	48.325	33
8.1	SK	608019		Bosácková E. (1975)	10	19	Molinion Koch 1926	17	48.533333	33
8.1	SK	608020		Bosácková E. (1975)	10	20	Molinion Koch 1926	17	48.533333	33
8.1	SK	608021		Bosácková E. (1975)	10	21	Molinion Koch 1926	16.958333	48.325	35
8.1	SK	608091		Bosácková E. (1970)	7	1	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608092		Bosácková E. (1970)	7	2	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608093		Bosácková E. (1970)	7	3	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608094		Bosácková E. (1970)	7	4	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608095		Bosácková E. (1970)	7	5	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608097		Bosácková E. (1970)	7	7	Molinion Koch 1926	17.005556	48.533333	29
8.1	SK	608098		Bosácková E. (1970)	7	8	Molinion Koch 1926	17.005556	48.533333	29
8.1	SK	608099		Bosácková E. (1970)	7	9	Molinion Koch 1926	17.005556	48.533333	29
8.1	SK	608100		Bosácková E. (1970)	7	10	Molinion Koch 1926	17.005556	48.533333	29
8.1	SK	608101		Bosácková E. (1970)	8	1	Molinion Koch 1926	17.005556	48.533333	33
8.1	SK	608102		Bosácková E. (1970)	8	2	Molinion Koch 1926	17.005556	48.533333	33
8.1	SK	608103		Bosácková E. (1970)	8	3	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608104		Bosácková E. (1970)	8	4	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608105		Bosácková E. (1970)	8	5	Molinion Koch 1926	17.005556	48.533333	33
8.1	SK	608106		Bosácková E. (1970)	8	6	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608107		Bosácková E. (1970)	8	7	Molinion Koch 1926	17.005556	48.533333	30
8.1	SK	608108		Bosácková E. (1970)	8	8	Molinion Koch 1926	17.005556	48.533333	33
8.1	SK	608109		Bosácková E. (1970)	8	9	Molinion Koch 1			

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
9.1	AT	317767		Staudinger M., unpubl.			Cirsio pannonic-Brometum	16.98339	48.16144	42
9.1	AT	317769		Staudinger M., unpubl.			Ranunculo bulbosi-Arrhenatheretum	16.99204	48.16009	42
9.1	AT	317771		Staudinger M., unpubl.			Pastinaco-Arrhenatheretum alopecuretosum pratensis	16.99478	48.15886	42
9.1	AT	317772		Staudinger M., unpubl.			Ranunculo bulbosi-Arrhenatheretum	16.99659	48.15804	42
9.1	AT	317773		Staudinger M., unpubl.			Filipendulo vulgaris-Arrhenatheretum	16.99516	48.15652	42
9.1	AT	317775		Staudinger M., unpubl.			Filipendulo vulgaris-Arrhenatheretum	16.97276	48.16609	42
9.1	AT	317783		Staudinger M., unpubl.			Pastinaco-Arrhenatheretum	16.91616	48.15416	42
9.1	AT	317786		Staudinger M., unpubl.			Ranunculo bulbosi-Arrhenatheretum	16.84059	48.12929	42
9.1	AT	317787		Staudinger M., unpubl.			Pastinaco-Arrhenatheretum alopecuretosum pratensis	16.79343	48.12131	42
9.1	AT	317788		Staudinger M., unpubl.			Ranunculo bulbosi-Arrhenatheretum	16.79216	48.12163	48
9.1	AT	317790		Staudinger M., unpubl.			Ranunculi bulbosi-Arrhenatheretum	16.6617	48.12729	42
9.1	AT	317792		Sauberer N., unpubl.				16.87795	48.14024	48
9.1	AT	317797		Sauberer N., unpubl.				16.78004	48.12413	42
9.1	AT	317799		Sauberer N., unpubl.				16.78781	48.13813	42
9.1	AT	317807		Huspeka J., unpubl.				16.68857	48.13918	42
9.1	AT	340540		Plent S. (1991)		11	Arrhenatherion	16.942028	48.531694	41
9.1	AT	341272		Staudinger M., unpubl.				16.8839	48.12163	48
9.1	AT	341364		Staudinger M., unpubl.				16.63607	48.12021	42
9.1	AT	341568		Essl F. (1999)	4	302	Pastinaco-Arrhenatheretum	15.915343	48.369692	42
9.1	AT	341569		Essl F. (1999)	4	306	Pastinaco-Arrhenatheretum	15.917398	48.369895	42
9.1	AT	341589		Essl F. (1999)	8	313	Scabiosa triandra-(Festucion valesiacae)-Ges.	15.914289	48.369421	45
9.1	AT	341941		Projektstudie 1991 (Gottfried et al.)	1	7	Serratulo-Festucetum commutatae	16.94402	48.22529	41
9.1	AT	342095		Pauer E. (2005)	1	11		16.89113	48.30086	41
9.1	AT	342778		Stark W. (2010)	1	29	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	42
9.1	AT	342781		Stark W. (2010)	1	32	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	48
9.1	AT	342788		Stark W. (2010)	1	39	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	48
9.1	AT	342789		Stark W. (2010)	1	40	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	48
9.1	AT	342793		Stark W. (2010)	1	44	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	42
9.1	AT	342795		Stark W. (2010)	1	46	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	48
9.1	AT	342798		Stark W. (2010)	1	49	Ranunculo bulbosi-Arrhenatheretum feuchte var.	16.12845	48.36679	48
9.1	AT	343102		Straka A. (1992)	1	81	Grünlandmischung	16.09186	48.34244	42
9.1	AT	343319		Straka A. & Ellmauer T. (1990)			Arrhenatheretum typicum	16.22676	48.37345	42
9.1	AT	343321		Straka A. & Ellmauer T. (1990)			Arrhenatheretum typicum	16.23377	48.37575	42
9.1	AT	343322		Straka A. & Ellmauer T. (1990)			Arrhenatheretum	16.2248	48.37241	42
9.1	AT	343323		Straka A. & Ellmauer T. (1990)			Holcetum lanati	16.22568	48.37273	42
9.1	AT	343324		Straka A. & Ellmauer T. (1990)			Arrhenatheretum typicum	16.22608	48.37331	42
9.1	AT	343327		Straka A. & Ellmauer T. (1990)			Arrhenatheretum	16.21036	48.37383	42
9.1	AT	343330		Straka A. & Ellmauer T. (1990)			Glatthaferbrache	16.22651	48.3645	42
9.1	AT	343331		Straka A. & Ellmauer T. (1990)			Mesobrometum	16.2317	48.36752	42
9.1	AT	343332		Straka A. & Ellmauer T. (1990)			Mesobrometum	16.23244	48.3659	42
9.1	AT	343340		Straka A. & Ellmauer T. (1990)			Ranunculo bulbosi-Arrhenatheretum	16.22797	48.37313	48
9.1	AT	343341		Straka A. & Ellmauer T. (1990)			Ranunculo bulbosi-Arrhenatheretum	16.2273	48.37336	42
9.1	AT	343342		Straka A. & Ellmauer T. (1990)			Ranunculo bulbosi-Arrhenatheretum	16.20725	48.37388	42
9.1	AT	343343		Straka A. & Ellmauer T. (1990)			Ranunculo bulbosi-Arrhenatheretum	16.23606	48.37809	42
9.1	AT	343344		Straka A. & Ellmauer T. (1990)			Tanaceteto-Arrhenatheretum	16.21205	48.36961	42
9.1	AT	360507		Kurmann J. (2013)				15.82425	48.37304	45
9.1	AT	360514		Kurmann J. (2013)				15.79644	48.37404	45
9.1	SK	714418		Skodová I.			Arrhenathion elatioris Koch 1926	16.848611	48.363056	42
9.1	SK	714420		Skodová I.			Arrhenathion elatioris Koch 1926	16.858889	48.403889	42
9.1	SK	714422		Skodová I.			Arrhenathion elatioris Koch 1926	16.862222	48.425833	41
9.1	SK	714423		Skodová I.			Alopecurion pratensis Passarge 1964	16.861944	48.425833	41
9.1	SK	714427		Skodová I.			Alopecurion pratensis Passarge 1964	16.878333	48.467222	41
9.1	SK	714430		Skodová I.			Arrhenathion elatioris Koch 1926	16.923611	48.494722	41
9.1	SK	714436		Skodová I.			Molinietalia Koch 1926	16.945278	48.573056	41
9.1	SK	714441		Skodová I.			Arrhenathion elatioris Koch 1926	16.956667	48.535278	41
9.2	AT	317076		Schratt-Ehrendorfer, unpubl.				16.71417189	48.12979827	42
9.2	AT	317108		Schratt-Ehrendorfer, unpubl.				16.88220426	48.13549798	43
9.2	AT	317109		Schratt-Ehrendorfer, unpubl.				16.86290159	48.13202548	43
9.2	AT	317118		Schratt-Ehrendorfer, unpubl.				16.84123803	48.12980276	43
9.2	AT	317161		Schratt-Ehrendorfer, unpubl.				16.78346833	48.12646777	42
9.2	AT	317178		Schratt-Ehrendorfer, unpubl.				16.7020905	48.12590941	42
9.2	AT	317191		Schratt-Ehrendorfer, unpubl.				16.93038938	48.17091221	42
9.2	AT	317198		Schratt-Ehrendorfer, unpubl.				16.86206827	48.13327531	43
9.2	AT	317199		Schratt-Ehrendorfer, unpubl.				16.86012416	48.13244201	43
9.2	AT	317200		Schratt-Ehrendorfer, unpubl.				16.86123509	48.132171978	43
9.2	AT	317203		Schratt-Ehrendorfer, unpubl.				16.82512927	48.12758023	43
9.2	AT	317217		Schratt-Ehrendorfer, unpubl.				16.77791371	48.12410674	42
9.2	AT	317228		Schratt-Ehrendorfer, unpubl.				16.74347326	48.13257676	42
9.2	AT	317267		Schratt-Ehrendorfer, unpubl.				16.6932015	48.14257382	42
9.2	AT	317281		Schratt-Ehrendorfer, unpubl.				16.67042777	48.13035222	43
9.2	AT	317284		Schratt-Ehrendorfer, unpubl.				16.65876		

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
9.2	AT	341429		Staudinger M., unpubl.				16.66144	48.11744	43
9.2	AT	341564		Essl F. (1999)	3	409	Trifolio medii-Agrimonietum	15.961503	48.351827	42
9.2	AT	341567		Essl F. (1999)	4	301	Pastinaco-Arrhenatheretum	15.916325	48.369751	43
9.2	AT	343313		Straka A. & Ellmauer T. (1990)			Ranunculo repensis-Alopecuretum	16.23237	48.36783	43
9.2	AT	343314		Straka A. & Ellmauer T. (1990)			Arrhenatheretum cirsietosum oleracei	16.21082	48.37766	43
9.2	AT	343320		Straka A. & Ellmauer T. (1990)			Arrhenatheretum typicum	16.22689	48.37381	42
9.2	AT	343325		Straka A. & Ellmauer T. (1990)			Anthrisceum sylvestris	16.21111	48.37051	43
9.2	AT	343326		Straka A. & Ellmauer T. (1990)			Arrhenatheretum	16.20899	48.38067	43
9.2	AT	360512		Kurmann J. (2013)				15.82425	48.37304	43
9.2	SK	714419		Skodová I.			Arrhenathion elatioris Koch 1926	16.841111	48.3775	41
9.2	SK	714440		Skodová I.			Arrhenathion elatioris Koch 1926	16.951389	48.521667	41
10.1	AT	341570		Essl F. (1999)	5	410	Lolietum perennis	15.961957	48.351666	44
10.1	AT	341572		Essl F. (1999)	5	219	Lolietum perennis	16.046208	48.340169	44
10.1	AT	341573		Essl F. (1999)	5	314	Lolietum perennis	15.915112	48.369501	44
10.1	AT	341574		Essl F. (1999)	5	506	Lolietum perennis	16.309321	48.346555	44
10.1	AT	341576		Essl F. (1999)	5	205	Lolietum perennis	16.0496	48.340241	44
10.1	AT	343104		Straka A. (1992)	1	83	Grünlandmischung	16.09186	48.34244	44
10.1	AT	343105		Straka A. (1992)	1	84	Grünlandmischung	16.09186	48.34244	44
10.1	AT	360515		Kurmann J. (2013)				15.82859	48.37832	43
11.1	AT	317355		Schratt-Ehrendorfer, unpubl.				16.77235821	48.13299439	40
11.1	AT	317356		Schratt-Ehrendorfer, unpubl.				16.77235823	48.13271664	23
11.1	AT	317357		Schratt-Ehrendorfer, unpubl.				16.77319147	48.13243893	40
11.1	AT	317358		Schratt-Ehrendorfer, unpubl.				16.77430247	48.13202235	40
11.1	AT	317361		Schratt-Ehrendorfer, unpubl.				16.77458017	48.13243898	39
11.1	AT	317468		Schratt-Ehrendorfer, unpubl.				16.58821619	48.1365986	40
11.1	AT	317487		Schratt-Ehrendorfer, unpubl.				16.56433026	48.14034733	40
11.1	AT	317528		Schratt-Ehrendorfer, unpubl.				16.61849051	48.12840618	40
11.1	AT	317531		Schratt-Ehrendorfer, unpubl.				16.61682407	48.128545	40
11.1	AT	317690		Wiedermann M. et al. (2000)			Ranunculo repensis-Alopecuretum pratensis typicum	16.54655454	48.14479064	40
11.1	AT	317778		Staudinger M., unpubl.			Queckenbrache	16.97393	48.16847	22
11.1	AT	317780		Staudinger M., unpubl.			Poo trivialis-Alopecuretum pratensis	16.91257	48.14541	23
11.1	AT	318643		Zuna-Kratky T., unpubl. (2017)				16.91442	48.27202	40
11.1	AT	340533		Plenk S. (1991)	4		Alopecurus pratensis-Elymus repens-Gesellschaft	16.938889	48.528333	37
11.1	AT	340553		Plenk S. (1991)	24		Gratiolo-Caricetum suzae	16.942139	48.523278	37
11.1	AT	340556		Plenk S. (1991)	27		Gratiolo-Caricetum suzae	16.942139	48.523278	37
11.1	AT	340557		Plenk S. (1991)	28		Gratiolo-Caricetum suzae	16.942139	48.523278	37
11.1	AT	341960		Projektstudie 1991 (Gottfried et al.)	2	5	Cnidio venosi-Violetum pumilae	16.94402	48.22529	37
11.1	AT	341987		Projektstudie 1991 (Gottfried et al.)	2	32	Cnidio venosi-Violetum pumilae	16.87845	48.29887	40
11.1	AT	342000		Projektstudie 1991 (Gottfried et al.)	3	3	Gratiolo-Caricetum suzae	16.9131	48.57316	37
11.1	AT	342089		Huspeka J.			Agropyro-Alopecuretum	16.91903	48.66949	37
11.1	AT	425887		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	40
11.1	AT	425889		Wagner H. (1950)			Ranu.repens-Alop.geniculatus-Ass.	14.7507	48.1708	39
11.1	SK	613689		Zlinská J. (1993)	1	7	Rorippa austriaci-Agropyretum repensis R.Tx.	16.935278	48.27222	38
11.1	SK	613847		Seffer J., Stanová V. (eds.) (1999)	2	10	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.916667	48.283333	37
11.1	SK	613848		Seffer J., Stanová V. (eds.) (1999)	2	11	Gratiolo-Caricetum suzae Bal.-Tul. 1966	16.916667	48.283333	37
11.2	AT	317225		Schratt-Ehrendorfer, unpubl.				16.76569302	48.12563391	43
11.2	AT	317320		Schratt-Ehrendorfer, unpubl.				16.7504167	48.13341024	42
11.2	AT	317333		Schratt-Ehrendorfer, unpubl.				16.76652625	48.12563394	43
11.2	AT	317334		Schratt-Ehrendorfer, unpubl.				16.76763716	48.12618947	43
11.2	AT	317337		Schratt-Ehrendorfer, unpubl.				16.77319198	48.12591192	43
11.2	AT	317340		Schratt-Ehrendorfer, unpubl.				16.77874688	48.12480113	42
11.2	AT	317343		Schratt-Ehrendorfer, unpubl.				16.80402117	48.12563526	42
11.2	AT	317411		Schratt-Ehrendorfer, unpubl.				16.63515564	48.11924117	43
11.2	AT	317485		Schratt-Ehrendorfer, unpubl.				16.56905192	48.13923651	43
11.2	AT	317498		Schratt-Ehrendorfer, unpubl.				16.54599909	48.14437399	43
11.2	AT	317533		Schratt-Ehrendorfer, unpubl.				16.61696292	48.12868388	43
11.2	AT	317682		Wiedermann M. et al. (2000)			Ranunculo bulbosi-Arrhenatheretum, Brom.incr.-Elym.rep.-	16.53877755	48.14812331	43
11.2	AT	317700		Wiedermann M. et al. (2000)			Alopecurus pratensis-Elymus repens-(Molinion)-Ges.	16.55683119	48.14145805	43
11.2	AT	317712		Wiedermann M. et al. (2000)			Ranunculo bulbosi-Arrhenatheretum, Brom.incr.-Elym.rep.-	16.55988632	48.14145816	43
11.2	AT	342091		Huspeka J.			Agropyro-Alopecuretum	16.91979	48.6591	43
12.1	AT	317019		Schratt-Ehrendorfer, unpubl.				16.94372079	48.17244029	39
12.1	AT	318664		Zuna-Kratky T., unpubl. (2017)				16.90468	48.51529	37
12.1	AT	318665		Zuna-Kratky T., unpubl. (2017)				16.90513	48.51439	37
12.1	AT	318671		Zuna-Kratky T., unpubl. (2017)				16.91531	48.64735	40
12.1	AT	341833		Rotter D. (1999)	5	44	Calam.epig.-reiche Vergesellschaftungen	16.57916	48.14346	23
12.1	AT	341840		Rotter D. (1999)	5	51	Calam.epig.-reiche Vergesellschaftungen	16.554424	48.16331	36
12.1	AT	341841		Rotter D. (1999)	5	52	Calam.epig.-reiche Vergesellschaftungen	16.55693	48.16109	39
12.1	AT	341842		Rotter D. (1999)	5	53	Calam.epig.-reiche Vergesellschaftungen	16.54377	48.16417	26
12.1	AT	341844		Rotter D. (1999)	5	55	Calam.epig.-reiche Vergesellschaftungen	16.5433	48.16345	26
12.1	AT									

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
13.2	AT	317215		Schratt-Ehrendorfer, unpubl.				16.76513704	48.13202203	48
13.2	AT	317232		Schratt-Ehrendorfer, unpubl.				16.86678883	48.14632951	55
13.2	AT	317235		Schratt-Ehrendorfer, unpubl.				16.81985148	48.13674563	48
13.2	AT	317252		Schratt-Ehrendorfer, unpubl.				16.75624918	48.13424368	48
13.2	AT	317255		Schratt-Ehrendorfer, unpubl.				16.68570239	48.14424002	48
13.2	AT	317257		Schratt-Ehrendorfer, unpubl.				16.68542478	48.14257355	48
13.2	AT	317259		Schratt-Ehrendorfer, unpubl.				16.69403472	48.14271271	42
13.2	AT	317263		Schratt-Ehrendorfer, unpubl.				16.69709004	48.14035199	42
13.2	AT	317270		Schratt-Ehrendorfer, unpubl.				16.69709028	48.13729679	42
13.2	AT	317271		Schratt-Ehrendorfer, unpubl.				16.6945904	48.14007416	48
13.2	AT	317274		Schratt-Ehrendorfer, unpubl.				16.6859806	48.13826851	48
13.2	AT	317275		Schratt-Ehrendorfer, unpubl.				16.68486958	48.13896283	48
13.2	AT	317298		Schratt-Ehrendorfer, unpubl.				16.78985574	48.13424486	48
13.2	AT	317299		Schratt-Ehrendorfer, unpubl.				16.79013347	48.13438374	48
13.2	AT	317300		Schratt-Ehrendorfer, unpubl.				16.79044112	48.13452263	48
13.2	AT	317310		Schratt-Ehrendorfer, unpubl.				16.76499794	48.13493835	48
13.2	AT	317311		Schratt-Ehrendorfer, unpubl.				16.76583116	48.13493838	48
13.2	AT	317312		Schratt-Ehrendorfer, unpubl.				16.76485904	48.13535496	48
13.2	AT	317313		Schratt-Ehrendorfer, unpubl.				16.76485907	48.13493835	46
13.2	AT	317342		Schratt-Ehrendorfer, unpubl.				16.79291132	48.12869007	48
13.2	AT	317344		Schratt-Ehrendorfer, unpubl.				16.80513211	48.12591305	48
13.2	AT	317345		Schratt-Ehrendorfer, unpubl.				16.80610419	48.12605195	48
13.2	AT	317347		Schratt-Ehrendorfer, unpubl.				16.80888171	48.12452445	48
13.2	AT	317353		Schratt-Ehrendorfer, unpubl.				16.78985646	48.12507927	48
13.2	AT	317368		Schratt-Ehrendorfer, unpubl.				16.77208058	48.13146678	41
13.2	AT	317372		Schratt-Ehrendorfer, unpubl.				16.83484911	48.14105121	48
13.2	AT	317383		Schratt-Ehrendorfer, unpubl.				16.87706539	48.14396903	42
13.2	AT	317384		Schratt-Ehrendorfer, unpubl.				16.87650993	48.14383014	48
13.2	AT	317385		Schratt-Ehrendorfer, unpubl.				16.87567664	48.14466335	48
13.2	AT	317389		Schratt-Ehrendorfer, unpubl.				16.87498237	48.14369122	47
13.2	AT	317390		Schratt-Ehrendorfer, unpubl.				16.87484351	48.14355234	47
13.2	AT	317393		Schratt-Ehrendorfer, unpubl.				16.87484354	48.14313572	47
13.2	AT	317395		Schratt-Ehrendorfer, unpubl.				16.86873337	48.14174677	48
13.2	AT	317418		Schratt-Ehrendorfer, unpubl.				16.6604302	48.11674235	46
13.2	AT	317435		Schratt-Ehrendorfer, unpubl.				16.52738793	48.17728616	47
13.2	AT	317439		Schratt-Ehrendorfer, unpubl.				16.5334987	48.1710371	50
13.2	AT	317471		Schratt-Ehrendorfer, unpubl.				16.54488643	48.16603809	48
13.2	AT	317502		Schratt-Ehrendorfer, unpubl.				16.59960311	48.14201504	47
13.2	AT	317520		Schratt-Ehrendorfer, unpubl.				16.56516267	48.15062393	48
13.2	AT	317563		Schratt-Ehrendorfer, unpubl.				16.51683266	48.19200629	48
13.2	AT	317564		Schratt-Ehrendorfer, unpubl.				16.52877493	48.19895033	50
13.2	AT	317580		Schratt-Ehrendorfer, unpubl.				16.55460686	48.17214882	50
13.2	AT	317581		Schratt-Ehrendorfer, unpubl.				16.55460682	48.17256544	48
13.2	AT	317583		Schratt-Ehrendorfer, unpubl.				16.55821714	48.176454	48
13.2	AT	317584		Schratt-Ehrendorfer, unpubl.				16.55738362	48.1803424	48
13.2	AT	317585		Schratt-Ehrendorfer, unpubl.				16.55960629	48.17076027	48
13.2	AT	317591		Schratt-Ehrendorfer, unpubl.				16.55794003	48.16853825	48
13.2	AT	317593		Schratt-Ehrendorfer, unpubl.				16.54849683	48.16881567	48
13.2	AT	317594		Schratt-Ehrendorfer, unpubl.				16.55071876	48.16867687	48
13.2	AT	317625		Rotter D. (2002)				16.57527	48.14916	49
13.2	AT	317658		Rotter D. (2002)				16.52777	48.15944	49
13.2	AT	317665		Rotter D. (2002)				16.53164	48.16103	49
13.2	AT	317776		Staudinger M., unpubl.				16.9727	48.16676	48
13.2	AT	317781		Staudinger M., unpubl.				16.9161	48.15443	48
13.2	AT	317782		Staudinger M., unpubl.				16.91616	48.15366	46
13.2	AT	317784		Staudinger M., unpubl.				16.90631	48.1507	46
13.2	AT	317793		Sauberer N., unpubl.				16.87683	48.14236	48
13.2	AT	317802		Sauberer N., unpubl.				16.85557	48.14234	48
13.2	AT	317805		Huspeka J., unpubl.				16.71113	48.12905	48
13.2	AT	317808		Huspeka J., unpubl.				16.68639	48.13856	48
13.2	AT	317810		Huspeka J., unpubl.				16.67892	48.13877	48
13.2	AT	317814		Beiser A., unpubl.				16.91401	48.16445	48
13.2	AT	317822		Beiser A., unpubl.				16.76552	48.13493	48
13.2	AT	317824		Beiser A., unpubl.				16.75668	48.13487	48
13.2	AT	317827		Beiser A., unpubl.				16.91641	48.15384	48
13.2	AT	317832		Beiser A., unpubl.				16.79462	48.12973	48
13.2	AT	317834		Beiser A., unpubl.				16.92717	48.16939	48
13.2	AT	317845		Beiser A., unpubl.				16.53621	48.19646	48
13.2	AT	317847		Beiser A., unpubl.				16.52891	48.1989	50
13.2	AT	317849		Beiser A., unpubl.				16.54072	48.16143	48
13.2	AT	340817		Grass V., unpubl.				16.48532	48.19493	50
13.2	AT	341363		Staudinger M., unpubl.				16.6397	48.12015	48
13.2	AT	341394		Staudinger M., unpubl.				16.5198	48.15108	48
13.2	AT	341566		Essl F. (1999)	3	312	Trifolio medii-Agrimonietum	15.914352	48.369436	47
13.2	AT	342102		Pauer E. (2005)	1	8	Peucedano oreosclini-Festucetum rupicolae			

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
13.3	AT	317632		Rotter D. (2002)				16.55138	48.16361	49
13.3	AT	317636		Rotter D. (2002)				16.55611	48.14888	49
13.3	AT	317639		Rotter D. (2002)				16.55472	48.14722	49
13.3	AT	317641		Rotter D. (2002)				16.55166	48.16055	53
13.3	AT	317648		Rotter D. (2002)				16.54305	48.15722	49
13.3	AT	317654		Rotter D. (2002)				16.54555	48.16027	49
13.3	AT	317662		Rotter D. (2002)				16.53362	48.16338	49
13.3	AT	317664		Rotter D. (2002)				16.53111	48.16111	49
13.3	AT	317666		Rotter D. (2002)				16.53416	48.16083	49
13.3	AT	317669		Rotter D. (2002)				16.54027	48.15138	49
13.3	AT	317670		Rotter D. (2002)				16.54305	48.15	51
13.3	AT	317800		Sauberer N., unpubl.				16.85623	48.14197	48
13.3	AT	317823		Beiser A., unpubl.				16.82768	48.13961	49
13.3	AT	317838		Beiser A., unpubl.				16.59946	48.14258	46
13.3	AT	317840		Beiser A., unpubl.				16.5894	48.14191	49
13.3	AT	317841		Beiser A., unpubl.				16.57781	48.14893	49
13.3	AT	317842		Beiser A., unpubl.				16.5795	48.1474	49
13.3	AT	317843		Beiser A., unpubl.				16.57917	48.14754	53
13.3	AT	317844		Beiser A., unpubl.				16.53733	48.19523	50
13.3	AT	317850		Beiser A., unpubl.				16.53473	48.17133	49
13.3	AT	340777		Grass V., unpubl.				16.48465	48.19502	50
13.3	AT	340778		Grass V., unpubl.				16.48465	48.19502	50
13.3	AT	340779		Grass V., unpubl.				16.48465	48.19502	50
13.3	AT	340780		Grass V., unpubl.				16.48438	48.19502	50
13.3	AT	340781		Grass V., unpubl.				16.48438	48.19502	50
13.3	AT	340782		Grass V., unpubl.				16.48438	48.19502	50
13.3	AT	340783		Grass V., unpubl.				16.48438	48.19502	50
13.3	AT	340784		Grass V., unpubl.				16.48431	48.19493	50
13.3	AT	340785		Grass V., unpubl.				16.48431	48.19493	50
13.3	AT	340786		Grass V., unpubl.				16.48431	48.19493	50
13.3	AT	340787		Grass V., unpubl.				16.48431	48.19493	50
13.3	AT	340794		Grass V., unpubl.				16.48511	48.19335	53
13.3	AT	340795		Grass V., unpubl.				16.48511	48.19335	53
13.3	AT	340799		Grass V., unpubl.				16.48498	48.19335	50
13.3	AT	340801		Grass V., unpubl.				16.48498	48.19335	50
13.3	AT	340802		Grass V., unpubl.				16.48498	48.19335	50
13.3	AT	340804		Grass V., unpubl.				16.48478	48.19497	50
13.3	AT	340805		Grass V., unpubl.				16.48478	48.19497	50
13.3	AT	340806		Grass V., unpubl.				16.48478	48.19497	50
13.3	AT	340809		Grass V., unpubl.				16.48519	48.19515	50
13.3	AT	340810		Grass V., unpubl.				16.48519	48.19515	50
13.3	AT	340811		Grass V., unpubl.				16.48539	48.19529	50
13.3	AT	340812		Grass V., unpubl.				16.48539	48.19529	50
13.3	AT	340813		Grass V., unpubl.				16.48539	48.19529	50
13.3	AT	340814		Grass V., unpubl.				16.48539	48.19529	50
13.3	AT	340816		Grass V., unpubl.				16.48532	48.19493	50
13.3	AT	340818		Grass V., unpubl.				16.48465	48.19524	50
13.3	AT	340819		Grass V., unpubl.				16.48465	48.19524	50
13.3	AT	340820		Grass V., unpubl.				16.48465	48.19524	50
13.3	AT	340825		Grass V., unpubl.				16.48471	48.19358	50
13.3	AT	340826		Grass V., unpubl.				16.48471	48.19358	50
13.3	AT	340828		Grass V., unpubl.				16.48478	48.19335	50
13.3	AT	340833		Grass V., unpubl.				16.48478	48.19335	50
13.3	AT	340834		Grass V., unpubl.				16.48478	48.19335	50
13.3	AT	340835		Grass V., unpubl.				16.48431	48.19394	49
13.3	AT	340836		Grass V., unpubl.				16.48431	48.19394	50
13.3	AT	340837		Grass V., unpubl.				16.48431	48.19394	50
13.3	AT	340838		Grass V., unpubl.				16.48431	48.19394	50
13.3	AT	340843		Grass V., unpubl.				16.48538	48.1934	50
13.3	AT	340844		Grass V., unpubl.				16.48538	48.1934	50
13.3	AT	340849		Grass V., unpubl.				16.48525	48.19308	50
13.3	AT	340850		Grass V., unpubl.				16.48525	48.19308	50
13.3	AT	341273		Staudinger M., unpubl.				16.65075	48.11536	49
13.3	AT	341274		Staudinger M., unpubl.				16.65175	48.11531	49
13.3	AT	341428		Staudinger M., unpubl.				16.65962	48.11686	46
13.3	AT	341430		Staudinger M., unpubl.				16.65721	48.11808	51
13.3	AT	341583		Essl F. (1999)	7	805	Teucrio botryos-Andropogonetum ischaemii	16.153534	48.345986	51
13.3	AT	341586		Essl F. (1999)	7	414	Teucrio botryos-Andropogonetum ischaemii	15.963816	48.3504	51
13.3	AT	341587		Essl F. (1999)	7	413	Teucrio botryos-Andropogonetum ischaemii	15.963518	48.350652	51
13.3	AT	342751		Stark W. (2010)	1	2	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342755		Stark W. (2010)	1	6	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342758		Stark W. (2010)	1	9	Teucrio botryos-Andropogonetum ischaemii	15.951	48.34602	51
13.3	AT	342761		Stark W. (2010)	1	12	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342764		Stark W. (2010)	1	15	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342766		Stark W. (2010)	1	17	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342768		Stark W. (2010)	1	19	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342770		Stark W. (2010)	1	21	Teucrio botryos-Andropogonetum ischaemii	15.92828	48.361	51
13.3	AT	342771		Stark W. (2010)	1</td					

Syntaxon	Country	Turboveg ID (AT)	Turboveg ID (SK)	AUTHOR	Nr table	Nr relevé	Original classification	deg_lon	deg_lat	TWINSPAN Cluster
14.2a	AT	317570		Schratt-Ehrendorfer, unpubl.				16.52655314	48.19728379	55
14.2a	AT	317571		Schratt-Ehrendorfer, unpubl.				16.52655312	48.19756154	54
14.2a	AT	317572		Schratt-Ehrendorfer, unpubl.				16.5271086	48.19756156	54
14.2a	AT	317574		Schratt-Ehrendorfer, unpubl.				16.54821849	48.17645365	54
14.2a	AT	317575		Schratt-Ehrendorfer, unpubl.				16.54849622	48.1767314	53
14.2a	AT	317576		Schratt-Ehrendorfer, unpubl.				16.54821845	48.17700914	55
14.2a	AT	317577		Schratt-Ehrendorfer, unpubl.				16.54794071	48.177148	55
14.2a	AT	317578		Schratt-Ehrendorfer, unpubl.				16.54349681	48.17784221	57
14.2a	AT	317579		Schratt-Ehrendorfer, unpubl.				16.54433007	48.17742563	53
14.2a	AT	317586		Schratt-Ehrendorfer, unpubl.				16.48405891	48.1972823	54
14.2a	AT	317587		Schratt-Ehrendorfer, unpubl.				16.48239253	48.196449	53
14.2a	AT	317588		Schratt-Ehrendorfer, unpubl.				16.48350351	48.1961713	53
14.2a	AT	317601		Schratt-Ehrendorfer, unpubl.				16.54905299	48.16020558	53
14.2a	AT	317602		Schratt-Ehrendorfer, unpubl.				16.55266362	48.16006684	55
14.2a	AT	317603		Schratt-Ehrendorfer, unpubl.				16.55183039	48.16034455	54
14.2a	AT	317604		Schratt-Ehrendorfer, unpubl.				16.55155267	48.1600668	53
14.2a	AT	317611		Schratt-Ehrendorfer, unpubl.				16.55377434	48.1632207	55
14.2a	AT	317615		Schratt-Ehrendorfer, unpubl.				16.5459979	48.15951111	55
14.2a	AT	317617		Schratt-Ehrendorfer, unpubl.				16.54488696	48.15923332	54
14.2a	AT	317618		Schratt-Ehrendorfer, unpubl.				16.54710879	48.16048326	55
14.2a	AT	317620		Schratt-Ehrendorfer, unpubl.				16.47878211	48.19394917	53
14.2a	AT	317623		Rotter D. (2002)				16.57527	48.15	55
14.2a	AT	317624		Rotter D. (2002)				16.57555	48.14944	55
14.2a	AT	317630		Rotter D. (2002)				16.54888	48.16388	55
14.2a	AT	317631		Rotter D. (2002)				16.55027	48.16388	53
14.2a	AT	317634		Rotter D. (2002)				16.55166	48.15055	54
14.2a	AT	317635		Rotter D. (2002)				16.55242	48.14937	54
14.2a	AT	317646		Rotter D. (2002)				16.54194	48.16055	53
14.2a	AT	317650		Rotter D. (2002)				16.54416	48.15972	55
14.2a	AT	317653		Rotter D. (2002)				16.545	48.15916	54
14.2a	AT	317657		Rotter D. (2002)				16.56361	48.15805	53
14.2a	AT	317660		Rotter D. (2002)				16.52861	48.16166	53
14.2a	AT	317661		Rotter D. (2002)				16.52916	48.16194	53
14.2a	AT	317801		Sauberer N., unpubl.				16.85462	48.14305	56
14.2a	AT	317809		Huspeka J., unpubl.				16.68056	48.13796	54
14.2a	AT	317835		Beiser A., unpubl.				16.59848	48.14329	56
14.2a	AT	317836		Beiser A., unpubl.				16.59811	48.14326	56
14.2a	AT	317837		Beiser A., unpubl.				16.59928	48.14329	56
14.2a	AT	317846		Beiser A., unpubl.				16.52664	48.19746	54
14.2a	AT	317848		Beiser A., unpubl.				16.52272	48.19819	50
14.2a	AT	340788		Grass V., unpubl.				16.48491	48.19349	53
14.2a	AT	340789		Grass V., unpubl.				16.48491	48.19349	53
14.2a	AT	340790		Grass V., unpubl.				16.48491	48.19349	53
14.2a	AT	340791		Grass V., unpubl.				16.48491	48.19349	50
14.2a	AT	340792		Grass V., unpubl.				16.48511	48.19335	53
14.2a	AT	340793		Grass V., unpubl.				16.48511	48.19335	53
14.2a	AT	340796		Grass V., unpubl.				16.48498	48.19335	53
14.2a	AT	340797		Grass V., unpubl.				16.48498	48.19335	53
14.2a	AT	340798		Grass V., unpubl.				16.48498	48.19335	50
14.2a	AT	340800		Grass V., unpubl.				16.48498	48.19335	50
14.2a	AT	340803		Grass V., unpubl.				16.48478	48.19497	50
14.2a	AT	340807		Grass V., unpubl.				16.48519	48.19515	50
14.2a	AT	340808		Grass V., unpubl.				16.48519	48.19515	50
14.2a	AT	340815		Grass V., unpubl.				16.48532	48.19493	50
14.2a	AT	340821		Grass V., unpubl.				16.48478	48.19353	53
14.2a	AT	340822		Grass V., unpubl.				16.48478	48.19353	53
14.2a	AT	340823		Grass V., unpubl.				16.48478	48.19353	50
14.2a	AT	340824		Grass V., unpubl.				16.48478	48.19353	53
14.2a	AT	340827		Grass V., unpubl.				16.48471	48.19358	50
14.2a	AT	340829		Grass V., unpubl.				16.48484	48.1934	53
14.2a	AT	340830		Grass V., unpubl.				16.48484	48.1934	53
14.2a	AT	340831		Grass V., unpubl.				16.48484	48.1934	53
14.2a	AT	340832		Grass V., unpubl.				16.48484	48.1934	50
14.2a	AT	340839		Grass V., unpubl.				16.48465	48.19524	53
14.2a	AT	340840		Grass V., unpubl.				16.48465	48.19524	53
14.2a	AT	340841		Grass V., unpubl.				16.48465	48.19524	53
14.2a	AT	340842		Grass V., unpubl.				16.48538	48.1934	50
14.2a	AT	340845		Grass V., unpubl.				16.48538	48.19331	53
14.2a	AT	340846		Grass V., unpubl.				16.48538	48.19331	53
14.2a	AT	340847		Grass V., unpubl.				16.48538	48.19331	53
14.2a	AT	340848		Grass V., unpubl.				16.48525	48.19308	50
14.2a	AT	341584		Essl F. (1999)	7	806	Teucro botryos-Andropogonetum ischaemii	16.155041	48.346961	56
14.2a	AT	341585		Essl F. (1999)	7	415	Teucro botryos-Andropogonetum ischaemii	15.965029	48.349755	56
14.2a	AT	342750		Stark W. (2010)	1	1	Teucro botryos-Andropogonetum ischaemii	16.12845	48.36679	51
14.2a	AT	342752		Stark W. (2010)	1	3	Teucro botryos-Andropogonetum ischaemii	15.92828	48.361	54
14.2a	AT	342753		Stark W. (2010)	1	4	Teucro botryos-Andropogonetum ischaemii	15.92828	48.361	51