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A revised classification of Ukrainian forests of the order *Fagetalia sylvaticae*

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Abstract

The paper presents a new classification and informations about associations of the order *Fagetalia sylvaticae* on the territory of Ukraine. The order includes 9 alliances (*Asperulo-Fagion*, *Cephalanthero-Fagion*, *Carpinion betuli*, *Tilio platyphylli-Acerion pseudoplatani*, *Dentario quinquefolii-Fagion*, *Paeonio dauricae-Quercion petraeae*, *Querco roboris-Tilion cordatae*, *Scillo sibericae-Quercion roboris*, *Alnion incanae*) and 31 syntaxa of the level of association. The synoptic table contains data on constancy of species in all associations with constancy more than 10%. Maps of distribution of these associations in Ukraine are given.

Zusammenfassung: Überarbeitete Klassifikation ukrainischer Wälder der Ordnung *Fagetalia sylvaticae*

Die Arbeit präsentiert eine neue Klassifikation und Informationen über die Assoziationen der Ordnung *Fagetalia sylvaticae* in der Ukraine. Die Ordnung enthält 9 Verbände (*Asperulo-Fagion*, *Cephalanthero-Fagion*, *Carpinion betuli*, *Tilio platyphylli-Acerion pseudoplatani*, *Dentario quinquefolii-Fagion*, *Paeonio dauricae-Quercion petraeae*, *Querco robori-Tilion cordatae*, *Scillo sibericae-Quercion roboris*, *Alnion incanae*) und 31 Syntaxa auf Assoziationsebene. Die Übersichtstabelle enthält alle Arten der Assoziationen mit Stetigkeitswerten über 10 %. Außerdem sind Verbreitungskarten der Assoziationen in der Ukraine eingefügt.

Keywords: broadleaved deciduous forests, vegetation classification, distribution maps, eastern Europe.

1. Introduction

For many years the diversity of Ukrainian vegetation was studied using the dominant approach for classifying the plant communities. The first publication about the broadleaved forests of Ukraine using the floristic approach of Braun-Blanquet is probably the book by W. Szafer "Las i step na zachodniem Podolu" (1935) ("Forest and steppe in West Podolia", in Polish). In 1941, Y.D. Kleopov distinguished a number of regional associations of the broadleaved forests in his dissertation "Analysis of the flora of broadleaved forests of the European part of the USSR". In the period between 1982 and 2008, more than 30 articles and monographs have been published where *Fagetalia sylvaticae* forests of Ukraine were considered on the basis of the floristic classification. The full classification of Ukrainian forests of the order, documented with vegetation tables containing 802 relevés are presented in the monography by V.A. Onyshchenko (Onyshchenko 2009). The present article is a more compact presentation of these data on *Fagetalia sylvaticae* forests in Ukraine at the level of associations.

2. Study area

The area of Ukraine comprises four geobotanical regions: European deciduous forest region, Eurosiberian forest-steppe region, Eurasian steppe region, and Submediterranean forest region. There are two mountain systems: the Carpathians (in the European deciduous forest region) and the Crimean Mountains (in the Submediterranean forest region). Forests occupy about 15.7% (9.5 millions ha) of the total area of Ukraine. The largest areas are covered by pine (33.1%, mainly *Pinus sylvestris*), oak (24.2%, mainly *Quercus robur*), spruce (7.6%) and beech (7.3%) forests. About 30% of Ukrainian forests belong to the order *Fagetalia sylvaticae* (class *Querco-Fagetea*).

The mean temperature of the warmest month varies between +17 °C (in mountains +12 °C) and +23 °C, the mean temperature of the coldest month between –8 °C and +4 °C (LIPINSKY et al. 2003). The mean annual precipitation is between 350 and 750 mm within the flatland portion of Ukraine, in the Carpathians it is up to 1600 mm. The heterogeneity of the climate creates opportunities for a rather high level of geographic variety of the forest vegetation. In the southern and middle strips of the steppe zone, no forests of the order *Fagetalia sylvaticae* are found.

3. Materials and Methods

About 2000 relevés were used for the analysis of the diversity and distribution of the syntaxa. Constancies of species were calculated using 984 relevés of high quality (mainly double spring + summer relevés). Plot size varies from 100 m^2 to 2500 m^2, usually 400–900 m^2.

The concept of the order *Fagetalia sylvaticae* is rather traditional. Acidophilous beech forests (*Luzulo-Fagion*) and eutrophic fir forests (*Galio-Abietion*) are not included. Zonal associations are treated as large regional variants of alliances. All subassociations are edaphically determined. The presented classification is the result of a complex approach, making a distinction between geographical and local variability, distinguishing homological series of syntaxa, and making use of the estimation of similarities between syntaxa. This study is not based on any kind of numerical classifications with fixed parameters.

In the synoptic table, species are evaluated using the algorithm for determination of differential taxa (TSIRIPIDIS et al. 2009). Constancies of species of the associations were calculated as means of constancies of these species in subassociations (when subassociations are distinguished). The nomenclature of species follows the nomenclatural checklist of vascular plants of Ukraine (MOSYAKIN & FEDORONCHUK 1999).

4. Classification and characteristics of syntaxa

The data on constancy of vascular plant species are presented in a synoptic table (table 1). Nine alliances have been distinguished, including 31 associations all together.

4.1. *Asperulo-Fagion* Tx. 1955

Typical central European beech forests on neutral soils. Distribution of all associations of this alliance is shown on Fig. 1.

4.1.1. *Eu-Fagenion* Oberdorfer 1957

The suballiance is represented by one association.

Athyrio distentifolii-Fagetum Willner 2002
(*Aceri-Fagetum* Rübel 1930 ex J. et M.Bartsch 1940).
Main positive differential species versus other Ukrainian associations of the alliance are *Geranium sylvaticum* and *Phyteuma spicatum*. The association occurs in the upper part of the forest belt. In Ukraine, it is only known from the extreme western part of the Carpathians.

4.1.2. *Symphyto cordati-Fagenion* Vida 1963

Three associations belong to this suballiance, which is restricted to the Carpathians and adjacent areas. Main differential species are *Dentaria glandulosa* and *Rubus hirtus*.

Symphyto cordati-Fagetum Vida 1959
Typical Carpathian beech and fir-beech forests at altitudes (300) 500–1200 m.
Synonym: *Dentario glandulosae-Fagetum* W. Matuszkiewicz 1964 ex Guzikowa et Korna 1968 p.p. (mountain form).

Stellario holosteae-Fagetum Onyshchenko 2008
Beech forests of the Podolian upland (200–450 m).

Carpino-Fagetum Pauca 1941
This association occurs in the Carpathians at lower altitudes than the *Symphyto cordati-Fagetum* and on the Precarpathian plain in the Chernivtsi region. Most of its area is situated in Romania.

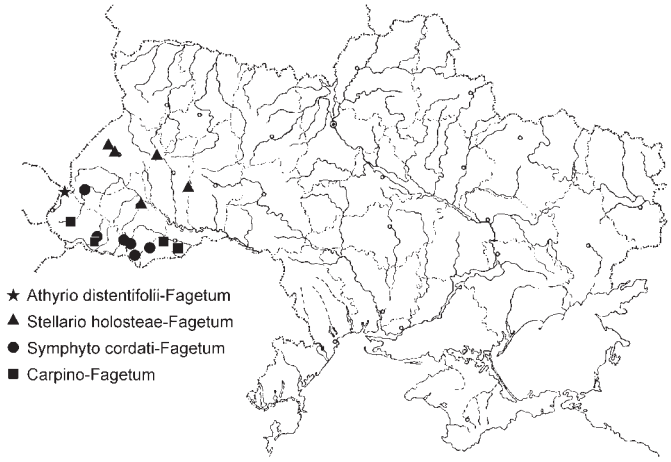

Fig. 1: Distribution of associations of the *Asperulo-Fagion* in Ukraine.

Abb. 1: Verteilung der Assoziationen des *Asperulo-Fagion* in der Ukraine.

4.2. *Cephalanthero-Fagion* Tx. 1955

Central European beech forests on calcareous soils. The distrubution of the associations of this alliance in Ukraine is shown in Fig. 2.

Euonymo verrucosae-Fagetum Onyshchenko 2008
Eastern association of lowland calciphilous beech forests. In other countries it is described as *Fagus sylvatica- Cruciata glabra* community or subassociation *Carici-Fagetum convallarietosum* Michalik 1972.

Seseli libanotidis-Fagetum Onyshchenko 2008 ass. prov.
Rare Carpathian association, which stands close to the *Taxo-Fagetum* Etter 1947.

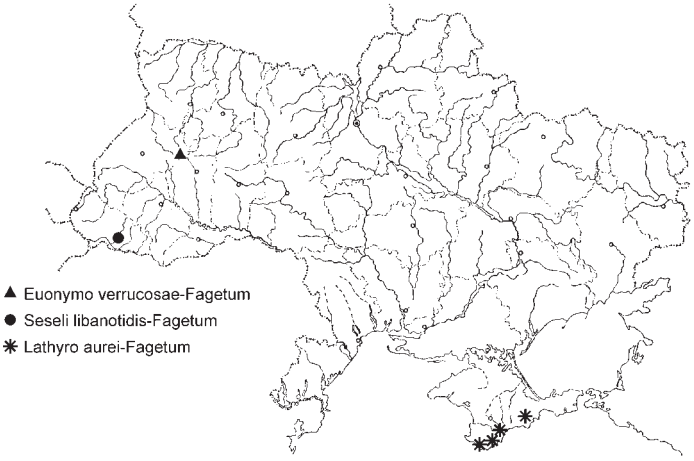

Fig. 2: Distribution of the associations of the *Cephalanthero-Fagion* and *Dentario quinquefoliae-Fagion* in Ukraine.

Abb. 2: Verteilung der Assoziationen des *Cephalanthero-Fagion* und *Dentario quinquefoliae-Fagion* in der Ukraine.

4.3. *Dentario quinquefoliae-Fagion sylvaticae* Didukh 1996

Crimean beech forests (Fig. 2).

Lathyro aurei-Fagetum Borhidi 1962
The main association of the Crimean Mountains at altitudes ranging from (600) 700 to 1200 m.

4.4. *Carpinion betuli* Issler 1931

This alliance includes most Europaean oak-hornbeam forests. The Crimean oak and hornbeam forests belong to the alliance *Paeonio dauricae-Quercion* (see 4.7).

Tilio-Carpinetum Traczyk 1962
Northeastern association of the alliance. It includes oak-hornbeam forests of the northern and western parts of Ukraine (Fig. 3). Besides it occurs in Poland, Belarus, Czech, Slovakia and Lithuania. The geographical variant from the Carpathians and adjacent areas differs by high constancy values of *Euphorbia amygdaloides*, *Fagus sylvatica*, and *Rubus hirtus*.

Circaeo-Carpinetum Borhidi 2003
(*Querco roboris-Carpinetum* Soó et Pócs 1957)
This association is found on the plains of Hungary and adjacent countries. In Ukraine, it occurs on the Transcarpathian lowland. Besides Transcarpatian forests with *Fraxinus pannonica*, a non-typical variant without this species was found in Precarpathian region. The main dominants in the tree layer are *Quercus robur* and *Carpinus betulus*.

Carici pilosae-Carpinetum Neuhäusl et Neuhäuslová 1964
(*Querco petraeae-Carpinetum* Soó et Pócs 1957)
This association occurs in the lower belt (100-500 m) of the Carpathians. In Ukraine, the association is found only on the southwestern macroslope (Transcarpathia). Probably it can be found in the Chernivtsi region as well. Outside Ukraine it occurs in Czech, Slovakia, Romania, Hungary. The main dominants in the tree layer are *Quercus petraea* and *Carpinus betulus*.

Isopyro thalictroidis-Carpinetum Onyshchenko 1998
Podolian oak-hornbeam forests (western part of the forest-steppe region and adjacent areas of the deciduous forests region). This is the most species-rich association of the alliance in Ukraine.

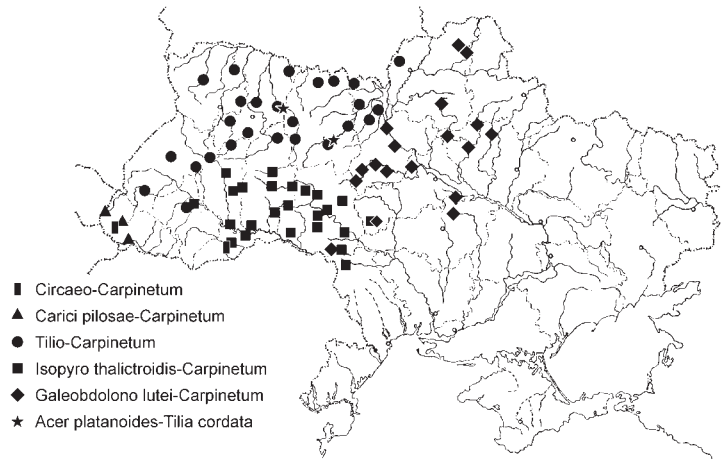

Fig. 3: Distribution of associations of the *Carpinion betuli* in Ukraine.

Abb. 3: Verteilung der Assoziationen des *Carpinion betuli* in der Ukraine.

Galeobdolono lutei-Carpinetum Shevchyk et al. 1996 em. Onyshchenko et Sidenko 2002
Oak-hornbeam forests of the Dnipro forest-steppe region. This association includes the subassociation *G.-C. melampyretosum nemorosi* Vorobyov et al. 2008. It is rich in light-demanding species (transitional to *Quercetalia pubescentis*) and may be treated as a separate association (*Carici michelii-Carpinetum* Vorobyov et al. 2008). TWINSPAN groups this community together with the homologous *Isopyro thalictroidis-Carpinetum brachypodietosum sylvaticae* Onyshchenko 2009. Another cluster is formed by more typical subassociations of the *Isopyro thalictroidis-Carpinetum* and the *Galeobdolono lutei-Carpinetum*.

Acer platanoides-Tilia cordata com. Jutrzenka-Trzebiatowski 1993
(*Poo nemoralis-Tilietum cordatae* Yakushenko 2004 nom. inv.)
Rare community of steep granite slopes of valleys in Zhytomyr Polissia. Outside Ukraine, more localities are known from Poland.

4.5. *Querco roboris-Tilion cordatae* Solomeshch et Laivins 1993

Mesophilous forests of order *Fagetalia sylvaticae* in the deciduous forest region and in the coniferous forest region of eastern Europe (Fig. 4).

Mercurialo perennis-Quercetum roboris Bulokhov et Solomeshch 2003
Mainly oak and lime forests. The association occurs in the northern part of Ukraine, as well as in the Bryansk and Kaluga regions of Russia.

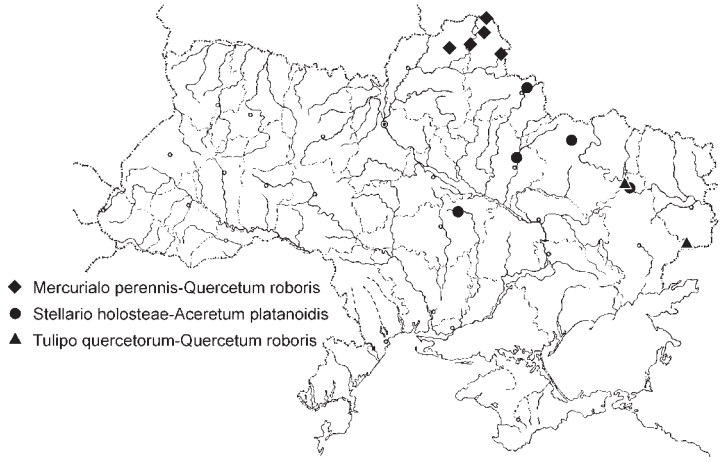

Fig. 4: Distribution of associations of the *Querco-Tilion* and *Scillo sibericae-Quercion* in Ukraine.
Abb. 4: Verteilung der Assoziationen des *Querco-Tilion* und *Scillo sibericae-Quercion* in der Ukraine.

4.6. *Scillo sibericae-Quercion roboris* Onyshchenko 2009

Mesophilous forests of the *Fagetalia sylvaticae* in the forest-steppe and steppe regions of eastern Europe (Fig. 4, 5).

Stellario holosteae-Aceretum platanoidis Bajrak 1996 em. Onyshchenko et Sidenko 2002
Zonal association of the eastern part of the forest-steppe region of Ukraine. Besides it occurs in the steppe region. In the tree layer, *Quercus robur*, *Tilia cordata*, *Fraxinus excelsior* and *Acer platanoides* predominate.

Tulipo quercetorum-Quercetum roboris (Onyshchenko et al. 2007) Onyshchenko 2009
In Ukraine, the association occurs in the eastern part of the steppe region. Character species of the order *Fagetalia sylvaticae* are represented mainly by spring ephemeroids. In summer, the herb layer is mainly formed by nitrophilous species. Dominant species in the tree layer are *Fraxinus excelsior* and *Quercus robur*.

Fig. 5: *Scilla siberica* and *Corydalis solida* in a forest in eastern Ukraine. (Photo: Yu. Karpenko, April 2006).
Abb. 5: *Scilla siberica* und *Corydalis solida* in einem Wald in der Ostukraine.

4.7. *Paeonio dauricae-Quercion petraeae* Didukh 1996

Crimean *Quercus petraea*, *Fraxinus excelsior*, *Carpinus betulus* and *Acer stevenii* forests. They have not many species that are common in forests in other regions of Europe. In Crimean broad-leaved forests, some endemic species occur, e.g. *Paeonia daurica* (Fig. 6).

Bromopsio benekenii-Carpinetum Didukh 1996
Hornbeam forests of the beech belt of the Crimean Mountains.

Lasero trilobi-Carpinetum Didukh 1996 em. Onyshchenko 2009
(*Corno maris-Quercetum petraeae* Didukh 1996, *Vincetoxico scandentis-Fraxinetum excelsioris* Didukh 1996)
Non-nitrophilous *Quercus petraea*, *Carpinus betulus* and *Fraxinus excelsior* forests of the *Quercus petraea* belt of the Crimean mountains.

Ranunculo constantinopolitani-Fraxinetum Didukh 1996 em. Onyshchenko 2009
(*Polygonato multiflori-Quercetum petraeae* Didukh 1996)
Nitrophilous *Fraxinus excelsior* and *Quercus petraea* forests of the Crimean Mountains (Fig. 7).

Fago-Aceretum stevenii Borhidi 1962 nom. invers. propos.
Acer stevenii forests on stony soils mainly at altitudes over 800 m.

4.8. *Tilio platyphylli-Acerion pseudoplatani* Klika 1955

Central European maple, lime and ash forests on steep slopes and on the bottom of ravines. In Ukraine, the alliance occurs only in the western part of the country (Fig. 8).

Arunco-Aceretum Moor 1952 s.l.
(*Lunario-Aceretum* Grüneberg et Schlüter 1957, *Mercuriali-Fraxinetum* (Klika 1942) Husová 1982).
In Ukraine, the association occurs on siliceous soils in the Carpathians.

Phyllitido-Aceretum Moor 1952 s.l.
In Ukraine, the association occurs on stony calcareous soils in the Carpathians and Roztochia.

Fig. 6.: *Paeonia daurica*, an endemic character species of Crimean forests
(Photo: V. Onyshchenko, May 2001).

Abb. 6: *Paeonia daurica*, eine endemische Charakterart der Wälder der Krim.

Fig. 7: Dominant *Ranunculus constatinopolitanus* in the *Ranunculo constantinopolitani-Fraxinetum* (Photo: V. Onyshchenko, May 2001).

Abb. 7: Vorherrschender *Ranunculus constatinopolitanus* im *Ranunculo constantinopolitani-Fraxinetum*

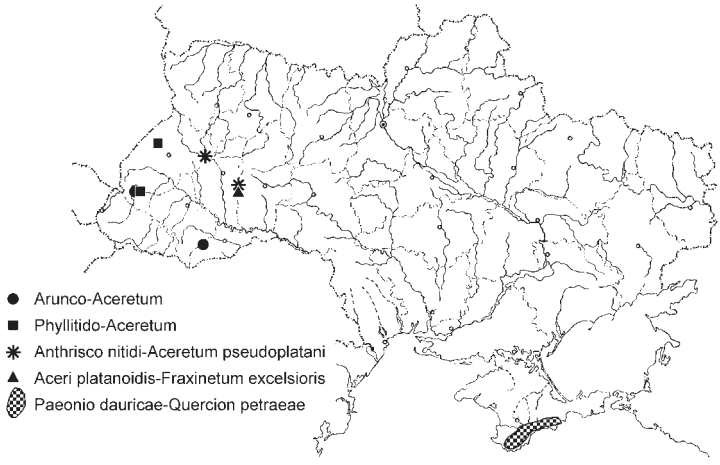

Fig. 8: Distribution of associations of the *Tilio-Acerion* and *Paeonio dauricae-Quercion petraeae* in Ukraine.

Abb. 8: Verteilung der Assoziationen des *Tilio-Acerion* und *Paeonio dauricae-Quercion petraeae* in der Ukraine.

Aceri platanoidis-Fraxinetum excelsioris Onyshchenko 1998
On limestone hills ("tovtras") and slopes of valleys in West Podillia. The tree layer is mainly formed by *Fraxinus excelsior* and *Acer platanoides*.

Anthrisco nitidi-Aceretum pseudoplatani Ralo et Onyshchenko 2008
The association occurs on bottoms of ravines in calcareous rocks in West Podillia. The tree layer is mainly formed by *Fraxinus excelsior* and *Acer pseudoplatanus*. This is the most species-rich association of the *Fagetalia sylvaticae* in Ukraine. The species number averages at 64 species of vascular plants species per 500 m^2. The association has some features of the *Alnion incanae*.

4.9. *Alnion incanae* Pawł. 1928

Hygrophilous forests of the *Fagetalia sylvaticae* s.l. (Fig. 9).

Alnetum incanae Lüdi 1921
Floodplain *Alnus incana* forests. In Ukraine, this association occurs in the Carpathians and adjacent areas. All Ukrainian forests of this association belong to its eastern (Carpathian) geographic variant. Differential species of this variant are *Dentaria glandulosa*, *Salvia glutinosa*, *Symphytum cordatum* (Fig. 10), and *Telekia speciosa.*

A similar differential block of species is a reason for distinguishing Carpathian and more western beech forests at the levels of association and suballiance (in some classification schemes at the level of alliance). So, we can consider eastern geographic variants of *Alnetum incanae*, *Arunco-Aceretum* and *Phyllitidi-Aceretum* as new potential associations.

Piceo-Alnetum Mráz 1959
(*Caltho laetae-Alnetum* (Zarzycki 1963) Stuchlik 1968)
Central European mountain alder and spruce-alder forests on moderately acidic gley soils. In Ukraine, this association occurs in the Carpathians.

Ficario-Ulmetum minoris Knapp 1942 em. J. Matuszkiewicz 1976
Forests on (seasonally) moist soils dominated by *Quercus robur*, *Alnus glutinosa*, *Ulmus minor* and *U. laevis*, occurring in lowlands in the deciduous forest and the forest-steppe geobotanical regions. It is found on floodplains and in gullies and depressions, sometimes on plateaus with poor drainage. This association is rather heterogenous. The analysis of Ukrainian relevés by TWINSPAN and the cluster analysis of syntaxa combine the subasso-

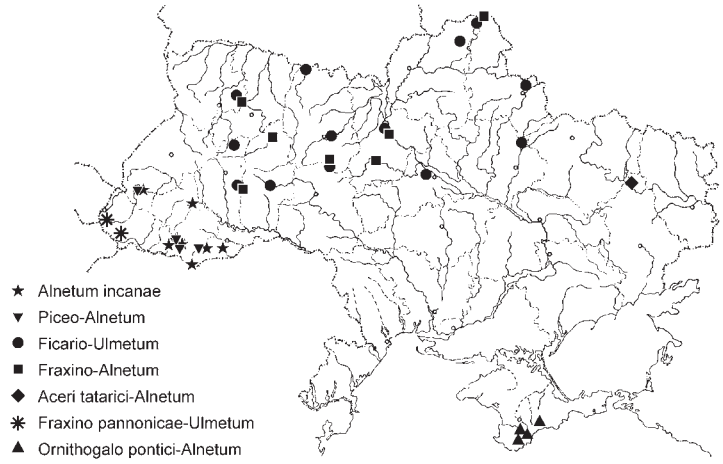

Fig. 9: Distribution of associations of the *Alnion incanae* in Ukraine.
Abb. 9: Verteilung der Assoziationen des *Alnion incanae* in der Ukraine.

Fig. 10: *Symphytum cordatum* in the *Alnetum incanae* (Photo: V. Onyshchenko, April 2007).
Abb. 10: *Symphytum cordatum* im *Alnetum incanae.*

ciation *F.-U. chrysosplenietosum* Knapp 1942 em. J. Matuszkiewicz 1976 with the *Fraxino-Alnetum*, but not with other subassociations of the *Ficario-Ulmetum.*

Fraxino-Alnetum W. Matuszkiewicz 1952
Lowland wet forests dominated by *Alnus glutinosa* or *Fraxinus excelsior* with presence of hygrophytes.

Aceri tatarici-Alnetum glutinosae Onyshchenko 2009 ass. prov.
Alnus glutinosa forests of the steppe region.

Fraxino pannonicae-Ulmetum Soó 1960
Pannonian hygrophilous forests dominated by *Fraxinus angustifolia* and *Quercus robur*. In Ukraine, this association occurs only on the Transcarpathian lowland.

Ornithogalo pontici-Alnetum glutinosae Didukh 1996 em. Onyshchenko 2009
Crimean alder forests at altitudes ranging from 400 to 700 m. This association forms narrow strips along mountain rivers.

5. Conclusion

According to the presented classification scheme in Ukraine the order *Fagetalia sylvaticae* is represented by 31 associations, belonging to 9 alliances, as mentioned before. The forests of western and central Ukraine are classified in 'traditional' European alliances. Mesophilous forests of the eastern Ukraine and Crimea are treated as four alliances that are absent in central Europe. The analysis of data from other countries shows that eight associations described on Ukrainian material probably occur only on the territory of Ukraine (*Galeobdolono lutei-Carpinetum*, *Aceri platanoidis-Fraxinetum* and all Crimean associations). It is possible that increasing of the data set will allow describing some new associations, in particular with respect to the *Tilio-Acerion* and *Alnion incanae* in the Carpathians.

Acknowledgement

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Table 1: Constancy of species in associations of order *Fagetalia sylvaticae* on the territory of Ukraine.
Tabelle 1: Stetigkeit der Arten in Assoziationen der Ordnung *Fagetalia sylvaticae* in der Ukraine.

	AdF	ScF	CF	ShF	EvF	SlF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Number of relevés	2	29	70	152	54	5	26	121	113	97	10	19	8	22	52	13	3	3	24	25	11	24	15	5	10	9	9	11	7	6	29
D.s. of one association																															
Cirsium erisithales	**100**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gentiana asclepiadea	**100**	*8*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*33*	.	.	.	.	.	.	.	.	.	.	*27*	*14*	.	.
Geranium sylvaticum	**100**	.	.	.	.	.	.	.	.	.	.	.	.	*7*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*17*	.
Hypericum maculatum	**100**	.	*2*	*4*	.	.	.	.	.	.	*5*	.	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	*14*	.	.
Laserpitium latifolium	**100**	.	.	.	*7*	.	.	*1*	*8*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lathyrus laevigatus	**100**	.	.	.	*2*	.	.	*2*	.	.	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phyteuma spicatum	**100**	.	.	.	.	.	.	*5*	.	.	.	.	.	.	.	.	*33*	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Aconitum besseranum	.	.	.	.	**21**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Astragalus glycyphyllos	.	.	.	*1*	**45**	.	*3*	*2*	*6*	*12*	.	.	.	.	*3*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cypripedium calceolus	.	.	*1*	*1*	**24**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hieracium gentile	.	.	.	19	**28**	.	10	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Staphylea pinnata	.	.	.	*4*	**34**	.	.	*2*	.	.	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Vicia sylvatica	.	.	.	.	**23**	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cardaminopsis arenosa	.	*2*	.	.	.	**83**	.	.	.	.	*10*	.	.	.	.	.	.	.	.	*8*	.	.	.	.	.	.	.	.	.	.	.
Epilobium montanum	.	8	5	4	*2*	**25**	3	*1*	*2*	*2*	10	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.	.	.	.
Euphorbia cyparissias	.	.	*1*	.	.	**25**	.	.	.	11	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.
Galium transcarpaticum	.	.	.	.	.	**42**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Helleborus purpurascens	.	.	*4*	.	.	**50**	.	.	.	.	*10*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hypericum hirsutum	.	.	.	.	.	**25**	.	.	5	5	.	.	.	.	*2*	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
Seseli libanotis	.	.	.	.	.	**58**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Moehringia muscosa	.	.	.	.	.	**42**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Orthilia secunda	.	.	*1*	15	*2*	**33**	10	8	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Securigera varia	.	.	.	.	.	**25**	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Taxus baccata	.	.	*5*	.	.	**83**	*3*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.
Tilia platyphyllos	.	.	.	.	.	**83**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Valeriana tripteris	.	*2*	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.
Vincetoxicum hirundinaria	.	.	.	*2*	*11*	**50**	.	*1*	*8*	*2*	*10*	.	.	.	.	.	.	.	.	*3*	.	.	.	.	.	.	.	.	.	.	.
Lathyrus laxiflorus	.	.	.	.	.	.	**21**	.	.	.	.	.	.	.	.	.	.	.	.	.	18	4	.	.	.	.	.	.	.	.	.
Corydalis intermedia	.	.	.	.	.	.	.	.	.	**29**	.	.	.	*7*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*2*
Viola hirta	.	.	.	.	.	.	.	*0*	8	**23**	.	.	13	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	13
Symphytum tuberosum s.l.	.	.	*19*	*1*	*3*	.	.	*1*	.	.	**90**	.	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.
Leucojum vernum	.	8	.	2	.	.	.	.	.	.	.	**21**	.	.	.	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.
Steris viscaria	.	.	.	.	.	.	.	.	.	4	.	.	**25**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Platanthera bifolia	.	.	12	.	.	.	.	4	.	*3*	.	.	.	**26**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rubus saxatilis	.	.	.	.	.	.	.	12	.	*2*	.	.	.	**44**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pteridium aquilinum	.	.	.	*1*	*2*	.	.	17	.	4	20	.	.	**26**	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	14	.	.
Trientalis europaea	.	.	.	.	.	.	.	13	.	.	.	.	.	**34**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ballota nigra	.	.	.	.	.	.	.	.	*3*	*4*	.	.	.	.	.	**31**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cynoglossum officinale	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**23**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Leonurus villosus	.	.	.	.	.	.	.	.	*0*	.	.	.	.	.	.	**38**	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.
Torilis japonica	.	.	.	.	.	.	.	*1*	*3*	*14*	.	.	.	.	.	**54**	.	.	.	*3*	.	*4*	*7*	.	.	.	.	.	.	.	*7*
Tulipa quercetorum	.	.	.	.	.	.	.	.	.	*9*	.	.	.	.	*30*	**100**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Calamagrostis villosa	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cicerbita alpina	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Equisetum hyemale	.	.	*3*	*2*	*2*	.	.	*3*	.	*2*	.	.	.	.	.	.	**33**	.	*4*	.	.	.	.	.	.	11	.	.	.	.	.
Oreopteris limbosperma	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phegopteris connectilis	.	15	.	10	.	.	.	*0*	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	9	14	.	.
Vinca minor	.	.	*4*	*4*	.	.	.	*1*	*4*	.	20	.	.	.	.	.	**33**	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.
Gagea spathacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.
Grossularia uva-crispa	.	8	.	*1*	.	.	.	7	9	*6*	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	9	.	.	.
Huperzia selago	.	.	.	20	.	.	.	*1*	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.
Ribes lucidum	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.
Anthriscus nitida	.	.	.	*1*	*2*	.	.	.	*11*	.	.	.	.	.	.	.	.	.	**96**	*10*	.	.	.	.	.	.	.	*9*	.	.	.
Campanula latifolia	.	.	.	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	**46**	.	.	.	.	.	.	.	.	.	.	.	.
Cerastium sylvaticum	.	.	.	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**58**	.	.	.	.	.	.	.	.	.	.	.	.
Dipsacus pilosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**21**	.	.	.	.	.	.	11	.	.	.	.	17
Equisetum arvense	.	4	.	*1*	.	.	.	*0*	.	*2*	.	.	.	.	.	.	.	.	**25**	.	9	.	.	.	.	.	.	9	.	.	4
Primula elatior	.	.	*1*	.	.	.	.	*2*	.	.	.	.	.	.	.	.	.	.	**42**	.	.	.	.	.	.	.	.	.	.	.	.
Rumex obtusifolius s.l.	.	.	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	**29**	.	.	.	.	.	.	11	.	.	14	.	.
Salix caprea	.	*2*	.	.	.	.	.	*2*	*0*	.	.	.	.	.	.	.	.	.	**25**	.	18	.	.	.	.	.	.	18	.	.	.
Galeopsis pubescens	.	.	.	12	.	.	.	15	6	.	.	.	.	.	.	.	.	.	13	**27**	.	.	.	.	.	.	.	.	.	.	8
Hordelymus europaeus	.	.	.	*2*	5	.	.	.	16	.	.	.	.	.	.	.	.	*4*	**29**	.	.	.	.	.	.	.	.	.	.	.	.
Omphalodes scorpioides	.	.	.	.	.	.	.	3	14	8	.	.	.	.	.	.	.	.	**21**	.	.	.	.	.	.	.	.	.	.	.	2
Paeonia daurica	.	.	.	.	.	.	**21**	.	.	.	.	.	.	.	.	.	.	.	.	*18*	**79**	*27*	*20*	.	.	.	.	.	.	.	.
Vincetoxicum scandens	.	.	.	.	.	.	*14*	.	.	.	.	.	.	.	*2*	*23*	.	.	.	.	**83**	.	*20*	.	.	.	.	.	.	.	.
Smyrnium perfoliatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*27*	*4*	**80**	.	.	.	.	.	.	.	.	.
Acer stevenii	.	.	.	.	.	.	*10*	.	.	.	.	.	.	.	.	.	.	.	.	*9*	*8*	.	**100**	.	.	.	.	.	.	.	.
Arctium nemorosum	.	.	.	.	.	.	.	.	*5*	.	.	.	.	.	.	.	.	.	.	*3*	.	.	.	.	.	**70**	.	.	.	.	.
Berberis vulgaris	.	.	.	.	.	.	.	1	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.
Bupleurum rotundifolium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**80**	.	.	.	.	.
Clematis vitalba	.	.	.	.	.	.	*8*	.	.	.	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	**40**	.	.	.	.	.
Colchicum umbrosum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*9*	*13*	.	20	**60**	.	.	.	.	.	.	.
Conium maculatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**30**	11	.	.	.	.	.	.
Geranium purpureum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**50**	.	.	.	.	.	.	.
Geum rivale	.	.	.	.	.	.	.	*11*	.	.	*21*	.	*7*	.	.	.	.	.	.	.	.	.	.	.	.	**67**	.	*9*	.	.	*17*
Ribes nigrum	.	.	.	.	.	.	.	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**44**	.	.	.	.	*8*
Agrostis capillaris	.	.	.	.	.	.	.	*1*	.	.	10	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	9	.	.	.
Calystegia sepium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	.	.	.	.
Carex elongata	.	.	.	.	.	.	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*11*	**100**	.	.	.
Carex pallescens	.	.	.	.	.	.	.	*1*	*0*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	7
Carduus personata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**27**	.	.	.
Matteuccia struthiopteris	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**55**	.	.	.
Petasites hybridus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**27**	.	.	.
Telekia speciosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**27**	.	.	.

	AdF	ScF	CF	ShF	EvF	SlF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Agrostis stolonifera	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**29**	.	.
Circaea alpina	.	*4*	*5*	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*9*	**43**	.	.
Equisetum sylvaticum	.	.	*2*	*5*	.	.	*5*	.	*1*	.	*5*	*13*	*5*	.	.	.	.	.	*17*	.	.	.	.	.	.	.	.	*9*	**71**	.	.
Lonicera nigra	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**29**	.	.
Picea abies	.	***28***	*1*	***28***	19	.	.	***23***	*5*	*2*	.	*11*	.	*7*	.	.	***33***	.	***29***	.	.	.	.	.	.	.	.	*9*	**100**	.	*2*
Prunella vulgaris	.	.	*1*	.	.	.	*10*	.	*0*	.	.	.	.	.	*2*	.	.	.	.	.	*9*	.	.	.	.	.	.	*9*	**43**	17	.
Salix aurita	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**29**	.	.
Leucanthemum rotundifolium	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**29**	.	.
Streptopus amplexifolium	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**29**	.	.
Carex strigosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**100**	.
Iris pseudacorus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*11*	.	.	.	**50**	.
Leucojum aestivum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.
Phalaroides arundinacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**67**	.
Polygonum hydropiper	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	**33**	.
Selinium carvifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**67**	.
Xanthoxalis fontana	.	.	.	.	.	.	.	*0*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.
D.s. of two associations																															
Lilium martagon	**50**	*4*	*6*	*1*	**62**	.	.	18	*8*	*3*	.	*5*	*13*	.	.	.	.	.	*4*	*3*	.	.	.	.	.	.	.	.	.	.	*4*
Calamagrostis arundinacea	**100**	*6*	.	.	.	**75**	.	*16*	.	.	.	.	*13*	***24***	.	.	.	.	.	.	.	.	.	.	.	*11*	.	.	.	.	.
Rosa pendulina	**50**	*2*	.	.	.	**75**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*14*	.	.
Luzula luzuloides	**50**	19	*10*	.	.	17	.	.	.	.	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gymnocarpium dryopteris	.	**25**	12	**25**	3	17	.	*1*	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Abies alba	.	**55**	*2*	*1*	.	.	.	*1*	.	.	.	.	.	.	.	.	**100**	***33***	.	.	.	.	.	.	.	.	.	*9*	***29***	.	.
Galeopsis speciosa	.	**26**	14	*3*	.	.	.	*1*	.	.	16	.	.	.	.	.	.	.	**38**	.	.	.	.	.	.	.	.	9	.	17	*2*
Cephalanthera longifolia	.	.	**21**	.	.	.	**35**	*2*	.	4	10	11	.	.	.	.	.	.	.	.	18	4	.	.	.	.	.	.	.	.	.
Melittis carpatica + M. sarmatica	.	.	*4*	*1*	**61**	**33**	.	*9*	*4*	.	*10*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cephalanthera rubra	.	.	.	.	**39**	.	**62**	*2*	.	.	.	.	.	.	.	.	.	.	.	.	*9*	*13*	.	.	.	.	.	.	.	.	.
Lonicera xylosteum	.	6	*3*	5	**36**	.	.	*4*	**22**	.	.	11	.	.	.	.	.	.	17	*3*	.	.	.	.	.	.	.	9	14	.	.
Clematis recta	.	.	.	.	**28**	.	.	*3*	17	*4*	.	.	**38**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Asplenium trichomanes	.	.	.	.	.	**100**	.	*1*	*8*	.	*10*	.	.	.	.	.	.	**67**	.	*20*	.	.	.	.	.	.	.	.	.	.	.
Asplenium viride	.	.	.	.	.	**50**	.	.	.	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	.	.	.
Phyllitis scolopendrium	.	4	*5*	.	.	**50**	.	.	.	.	.	.	.	.	.	.	.	**100**	.	.	.	.	.	.	.	.	.	.	.	.	.
Polypodium vulgare	.	*8*	*1*	*3*	.	**58**	.	*1*	.	*4*	*10*	.	***38***	.	.	.	***33***	**100**	.	*8*	.	.	.	.	.	.	.	*9*	.	.	.
Polystichum aculeatum	.	*19*	*5*	*6*	*3*	**83**	.	.	.	.	*10*	.	.	.	.	.	.	**67**	*17*	.	.	.	.	.	.	.	.	.	.	.	.
Vaccinium myrtillus	.	.	.	*3*	.	**33**	.	17	.	.	.	.	13	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**43**	.	.
Sorbus torminalis	.	.	*1*	.	.	.	**21**	.	*0*	.	10	.	.	.	.	.	.	.	.	.	.	**54**	*7*	.	.	.	.	.	.	.	.
Euonymus latifolia	.	.	.	.	.	.	**25**	.	.	.	.	.	.	.	.	.	.	.	.	.	9	17	*7*	.	**50**	.	.	.	.	.	.
Vicia sepium	.	.	.	*1*	.	.	.	.	**33**	*2*	.	.	.	**21**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carex spicata + C. muricata	.	.	.	.	.	.	.	*2*	**32**	11	.	.	.	.	14	**23**	.	.	.	14	.	13	7	.	.	.	.	.	.	.	7
Viburnum lantana	.	*0*	.	*1*	.	.	.	.	**60**	*14*	.	.	.	.	*4*	.	.	.	.	**47**	.	.	.	.	.	.	.	.	.	.	.
Melampyrum nemorosum s.l.	.	.	*2*	.	.	.	*5*	17	15	**40**	*5*	**25**	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7
Crocus heuffelianus	.	.	*6*	.	.	.	.	.	.	*20*	**74**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**50**	.
Fraxinus angustifolia	.	.	.	.	.	.	.	.	.	.	**42**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**100**	.
Taraxacum officinale	.	.	*6*	.	.	.	*3*	*1*	12	*7*	.	*5*	**25**	.	.	8	.	.	.	*6*	18	.	.	.	**50**	11	.	.	.	17	*7*
Phalacroloma annuum	.	.	*2*	.	.	.	.	.	*5*	*2*	.	.	**25**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**50**	.
Melica picta	.	.	.	.	.	.	.	.	17	.	.	.	.	.	**29**	**46**	.	.	.	11	.	.	.	.	.	.	.	.	.	.	.
Aruncus dioicus	.	4	4	*2*	5	.	.	.	.	.	10	.	.	.	.	.	**33**	.	**21**	.	.	.	.	.	.	.	.	.	.	.	.
Veratrum lobelianum	.	.	.	.	.	.	.	*3*	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	**22**	.	.	.	.	*2*
Ranunculus lanuginosus	.	.	*2*	*4*	.	.	.	*2*	*6*	.	.	*11*	.	.	.	.	.	**33**	**75**	.	.	.	.	.	.	.	.	.	.	.	.
Melandrium dioicum	.	4	*2*	.	.	.	.	*2*	*5*	.	.	*5*	.	.	.	.	.	.	**38**	**62**	.	.	.	.	.	.	.	*9*	.	.	.
Chaerophyllum aromaticum	.	.	.	*3*	*3*	.	.	*3*	*5*	*2*	.	.	.	.	.	.	.	.	**67**	*4*	.	.	.	.	.	.	.	**36**	.	.	17
Chelidonium majus	.	.	*1*	*2*	.	.	.	*7*	*2*	*8*	.	.	.	*3*	*5*	***23***	.	.	.	**69**	.	.	*7*	.	.	.	**56**	*9*	.	.	*2*
Bromopsis benekenii	.	.	.	*4*	***23***	.	*13*	*1*	***27***	*4*	.	.	.	.	.	.	.	.	.	***22***	**73**	***25***	*7*	***20***	**80**	.	.	.	.	.	.
Crocus tauricus	.	.	.	.	.	.	*15*	.	.	.	.	.	.	.	.	.	.	.	.	.	**50**	**89**	***27***	.	.	.	.	.	.	.	.
Tamus communis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**27**	17	**40**	.	.	.	.	.	.	.	.
Heracleum sibiricum	.	.	.	.	.	.	.	.	.	*1*	.	.	.	.	.	.	.	.	.	.	**36**	*4*	.	.	**50**	.	.	.	.	.	.
Aegonychon purpureo-caeruleum	.	.	.	.	.	.	17	.	*4*	*2*	.	.	.	.	*3*	.	.	.	.	.	18	**46**	**27**	.	10	.	.	.	.	.	.
Lathyrus rotundifolius	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**38**	**33**	.	.	.	.	.	.	.	.
Ornithogalum ponticum	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.	*9*	17	**40**	.	**40**	.	.	.	.	.	.	.
Dictamnus gymnostylis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	8	.	.	.	9	**38**	13	**20**	.	.	.	.	.	.	.	.
Laser trilobum	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**38**	.	**20**	.	.	.	.	.	.	.
Equisetum telmateia	.	.	*2*	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*4*	.	9	.	.	.	**30**	.	.	.	**29**	.	.
Humulus lupulus	.	.	.	.	.	.	*8*	.	.	*2*	.	.	.	*3*	.	.	.	.	.	*8*	.	.	.	.	*20*	**56**	**78**	.	.	.	*20*
Lysimachia vulgaris	.	.	.	.	.	.	.	.	.	*0*	.	.	.	*5*	.	.	.	.	.	.	.	.	.	.	.	**44**	**89**	.	*14*	***33***	*11*
Scutellaria galericulata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	**22**	.	.	.	.
Caltha palustris s.l.	.	.	.	*1*	.	.	.	*2*	.	.	.	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	**44**	.	*18*	**100**	***33***	.
Galium palustre	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	.	9	**43**	17	*2*
Solanum dulcamara	.	*2*	*6*	.	.	.	.	.	*1*	.	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	.	.	**43**	.	*4*
Ulmus laevis	.	.	.	.	.	.	.	.	*4*	.	.	.	.	.	19	.	.	.	.	.	.	.	*7*	.	.	.	**78**	.	.	**33**	.
Acer negundo	.	.	.	.	.	.	.	.	*1*	*3*	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	11	**33**	.	.	.	**25**
Alnus incana	.	*2*	.	.	.	.	.	.	.	.	*10*	.	.	.	.	.	***33***	.	.	.	.	.	.	.	.	.	.	.	**100**	**100**	.	*2*
Petasites albus	.	14	.	*2*	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	**27**	**43**	.	.
Chaerophyllum hirsutum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	**27**	**29**	.	.
Myosotis palustris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**57**	**33**	.
Carex remota	.	.	*2*	*5*	.	.	.	.	*0*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**43**	**83**	.
Eastern European species																															
Corydalis marschalliana	.	.	.	.	.	.	*3*	.	.	*2*	.	.	.	.	***26***	**77**	.	.	.	.	**33**	.	**80**	**80**	*10*	.	.	.	.	.	.
Dentaria quinquefolia	.	.	.	.	.	.	**78**	*1*	.	*2*	.	.	.	.	**50**	.	.	.	.	.	**64**	**100**	**47**	**100**	**90**	.	.	.	.	.	.
Scilla siberica	.	.	.	.	.	.	.	.	.	*10*	.	.	.	.	**92**	**100**	.	.	.	.	.	**78**	***20***	.	.	.	***22***	.	.	.	.
"Carpathian" species																															
Dentaria glandulosa	.	**86**	***24***	*17*	*8*	*17*	.	*7*	***20***	.	.	*5*	.	.	.	.	.	**100**	**71**	*7*	.	.	.	.	.	*11*	.	**60**	.	.	.
Rubus hirtus	.	**82**	**85**	**56**	*9*	**42**	*10*	20	.	.	**80**	63	.	.	.	.	**67**	**33**	**46**	.	*27*	.	.	.	.	.	.	**45**	**43**	.	.
Salvia glutinosa	.	**22**	**29**	*6*	**23**	.	*3*	.	17	.	10	.	.	.	.	.	.	**33**	17	9	**27**	.	.	.	.	.	.	**64**	.	.	.
Symphytum cordatum	.	**74**	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	**67**	**67**	.	.	.	.	.	.	.	.	.	**55**	*14*	.	.
"Crimean" species		.																													
Allium cyrillii	.	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.	.	**45**	**42**	**47**	**20**	.	.	.	.	.	.	.
Arum elongatum	.	.	.	.	.	.	**51**	.	.	.	.	.	.	.	.	.	.	.	.	.	**67**	***22***	**100**	**60**	**90**	.	.	.	.	.	.
Galanthus plicatus	.	.	.	.	.	.	***29***	.	.	.	.	.	.	.	.	.	.	.	.	.	**67**	**44**	**87**	**60**	**80**	.	.	.	.	.	.
Lathyrus aureus	.	.	.	.	.	.	**53**	.	.	.	.	.	.	.	.	.	.	.	.	.	**82**	**71**	*13*	.	.	.	.	.	.	.	.
Physospermum cornubiense	.	.	.	.	.	.	24	.	.	.	.	.	.	.	.	.	.	.	.	.	**55**	**79**	**93**	**40**	20	.	.	.	.	.	.
Ranunculus constantinopolitanus	.	.	.	.	.	.	*16*	.	.	.	.	.	.	.	.	.	.	.	.	.	**36**	*13*	**87**	**40**	**50**	.	.	.	.	.	.
Main negative d.s. of crimean forests																															
Acer platanoides	.	**31**	**53**	**70**	**92**	**100**	.	**73**	**88**	**85**	*10*	***21***	**88**	**100**	**90**	*8*	.	***33***	**88**	**100**	.	.	.	.	**78**	.	.	.	.	**75**

	AdF	ScF	CF	ShF	EvF	SIF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Aegopodium podagraria	.	*19*	.	**42**	**88**	.	.	**61**	**87**	**46**	*10*	**68**	**50**	**89**	**55**	.	**33**	.	**100**	**29**	.	.	.	.	.	**67**	**44**	**64**	.	**33**	**59**
Asarum europaeum	.	*4*	*17*	**58**	**98**	**50**	.	**65**	**95**	**76**	*10*	**79**	**63**	**100**	**73**	.	.	**33**	**100**	**97**	.	.	.	.	.	**56**	**33**	*27*	*14*	.	*21*
Anemone ranunculoides	.	*15*	*4*	*18*	***31***	***25***	.	***30***	**83**	**78**	*10*	*5*	.	**58**	**93**	**85**	.	***33***	**88**	**94**	.	.	.	.	.	**67**	**56**	**60**	.	.	**47**
Carex pilosa	.	*6*	**43**	**27**	**20**	.	.	**34**	**48**	**53**	**80**	.	13	**75**	**31**	.	**33**	.	.	.	.	.	.	.	.	*11*	.	.	.	.	*2*
Stellaria holostea	**100**	*2*	*10*	**50**	**50**	.	.	**83**	**84**	**84**	**70**	**89**	**88**	**97**	**96**	**77**	**33**	.	**75**	**56**	.	.	.	.	.	*11*	**67**	*18*	.	.	*19*
Hygrophilous species																														
Alnus glutinosa	.	.	*1*	*4*	.	.	.	*6*	.	*3*	.	*5*	*13*	*3*	.	.	.	.	*8*	.	.	.	.	.	**100**	**100**	**100**	.	*14*	.	***21***
Cardamine amara	.	*4*	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**56**	**33**	18	**29**	.	.
Chrysosplenium alternifolium	.	*4*	*1*	*2*	.	.	.	*8*	*4*	*3*	.	*5*	.	*3*	.	.	.	.	**71**	*12*	.	.	.	.	.	**67**	.	**27**	.	.	***21***
Cirsium oleraceum	.	.	.	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**56**	.	**55**	**57**	.	*8*
Juncus effusus	.	.	.	*4*	.	.	.	*0*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	.	**29**	**33**	.	
Lycopus europaeus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	11	.	**29**	**33**	.	
Lysimachia nummularia	.	.	.	*1*	*3*	.	.	*3*	*1*	*2*	.	16	.	.	.	.	.	.	**54**	.	.	.	.	.	.	**56**	**22**	*9*	.	17	**43**	
Myosoton aquaticum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**25**	.	.	.	.	.	.	**22**	**33**	18	14	17	8	
Ranunculus repens	.	.	*2*	.	.	.	.	*1*	*0*	*1*	.	*5*	.	.	.	.	.	.	.	.	.	.	.	.	.	**44**	*11*	**55**	**86**	**33**	*6*	
Rubus caesius	.	.	*1*	*2*	*6*	.	.	*9*	*9*	*8*	.	***26***	.	.	.	*8*	.	.	*4*	*6*	.	.	*7*	.	**50**	*11*	**78**	***27***	.	**83**	**67**	
Stellaria nemorum	.	***22***	.	*8*	.	.	.	*2*	.	.	.	.	.	.	.	.	**67**	.	**75**	.	.	.	.	.	.	**33**	.	**64**	**29**	**33**	*8*	
Ch Fagetalia sylvaticae																														
Acer pseudoplatanus	**100**	**72**	**65**	**86**	**96**	**100**	.	***38***	**51**	*2*	*10*	***32***	.	.	.	.	**100**	**100**	**100**	**71**	.	.	.	.	.	*22*	.	**55**	**43**	.	*15*	
Actaea spicata	.	*10*	*13*	**31**	**93**	.	.	*8*	**23**	*7*	*10*	.	.	.	*5*	.	**33**	**100**	**50**	19	.	.	.	.	.	.	.	.	.	.	**23**	
Adoxa moschatellina	.	*6*	.	12	*5*	.	.	**26**	**27**	**43**	.	.	17	*7*	15	.	.	.	**79**	**24**	.	.	.	.	.	.	**56**	.	.	.	15	
Allium ursinum	.	.	*2*	.	.	.	.	*1*	**21**	*3*	.	5	.	*3*	*2*	.	.	.	**29**	**44**	.	.	.	.	.	**22**	.	**27**	.	.	*4*	
Carex sylvatica	.	19	**34**	**34**	**27**	.	.	16	**22**	*4*	20	**47**	.	*3*	.	.	**33**	.	**83**	.	9	.	.	.	.	.	.	**27**	14	**50**	*6*	
Circaea lutetiana	.	**35**	**34**	**22**	*3*	.	.	*3*	9	*2*	.	**37**	.	.	.	.	.	.	**63**	.	.	.	.	.	.	**22**	**33**	18	.	17	**29**	
Corydalis cava	.	**29**	.	**21**	*14*	**50**	.	**20**	**51**	**56**	.	.	.	***30***	*11*	.	.	.	**92**	**96**	.	.	.	.	.	*11*	.	.	.	.	**21**	
Corydalis solida s.l. (incl. C. paczoskii)	.	**67**	.	*23*	*23*	**50**	.	***35***	**77**	**81**	*10*	.	.	*20*	**85**	**100**	.	**100**	**92**	**89**	***33***	*11*	***40***	.	.	.	***22***	*20*	.	.	*21*	
Daphne mezereum	.	*2*	*5*	19	**71**	.	.	14	18	.	.	.	.	.	.	.	**33**	**33**	**58**	*7*	.	.	.	.	.	.	.	18	**43**	.	*2*	
Dentaria bulbifera	.	**85**	**55**	*4*	*5*	**50**	.	*9*	**24**	**35**	**40**	16	.	.	11	.	.	**33**	**25**	**44**	.	.	.	.	.	.	.	**20**	.	.	*4*	
Dryopteris filix-mas	.	68	**49**	**80**	**37**	**100**	*5*	**39**	**30**	**32**	**50**	**53**	**75**	*11*	*9*	.	**100**	**67**	**88**	**33**	.	.	.	**80**	.	.	.	*9*	**29**	.	25	
Euphorbia amygdaloides	.	**24**	20	.	.	.	**45**	.	10	.	**30**	**26**	.	.	.	.	**33**	.	.	.	**27**	**67**	.	**20**	10	.	.	9	14	.	.	
Fagus sylvatica	**100**	**100**	**100**	**100**	**100**	**100**	**100**	*22*	*3*	.	**50**	***26***	.	.	.	.	**67**	**100**	**50**	*4*	**73**	***38***	.	**60**	.	.	.	*9*	***29***	.	.	
Festuca gigantea	.	.	.	11	12	.	.	13	*6*	*7*	.	*5*	13	*5*	*2*	**38**	.	.	**63**	.	*9*	.	.	.	.	**22**	11	**36**	.	.	18	
Ficaria verna	.	.	.	*12*	*8*	.	.	**29**	**62**	**42**	**40**	**84**	?	**37**	**38**	**54**	.	.	**96**	**28**	*9*	22	**63**	**40**	**70**	**56**	**56**	**60**	.	**60**	**44**	
Gagea lutea	.	.	.	*14*	*8*	.	.	*15*	**54**	**41**	.	.	.	**27**	**52**	**54**	.	.	**88**	**63**	17	.	.	.	.	.	.	.	.	.	.	**29**	
Gagea minima	.	.	.	.	.	.	.	*7*	11	**28**	.	*5*	.	*7*	**25**	**54**	.	.	.	19	.	.	.	.	.	.	.	.	.	.	.	*2*	
Galium odoratum	.	**57**	**82**	**86**	**98**	**67**	**67**	**53**	**72**	**50**	**30**	**89**	.	*13*	**47**	**46**	**33**	.	**100**	**66**	**91**	**33**	.	**80**	**30**	*11*	.	*9*	*14*	.	**27**	
Hepatica nobilis	.	.	*12*	**43**	**93**	**100**	.	***31***	***30***	.	.	***21***	.	.	.	.	.	***33***	**42**	.	.	.	.	.	.	.	.	.	.	.	.	*2*	
Lamium galeobdolon	.	**41**	**54**	**81**	**96**	.	.	**68**	**88**	**66**	**40**	**79**	*13*	.	.	.	.	**67**	**96**	**66**	.	.	.	.	.	***33***	.	***36***	***29***	.	*17*	
Lathraea squamaria	.	.	*1*	*1*	*2*	.	.	14	7	5	.	.	.	10	9	.	.	.	**33**	.	**27**	.	.	.	10	.	.	**20**	.	.	2	
Mercurialis perennis	.	**63**	*21*	*7*	**65**	**100**	29	*20*	**58**	***22***	*10*	*5*	.	**50**	27	.	33	33	**67**	**57**	**64**	**88**	**73**	**100**	**40**	*11*	.	**36**	29	.	*4*	
Milium effusum	.	*13*	*7*	**38**	*5*	.	**33**	**44**	**43**	*11*	20	**58**	.	25	*2*	*8*	**100**	.	**67**	21	**64**	*13*	*13*	.	.	*11*	**44**	.	.	17	*13*	
Neottia nidus-avis	.	.	***26***	*3*	**89**	.	**81**	*12*	*9*	*7*	.	*5*	.	.	.	.	.	.	.	.	**91**	***33***	.	.	.	.	.	.	.	.	.	
Polygonatum multiflorum	.	*2*	*13*	**68**	**93**	**50**	.	**61**	**69**	**67**	**70**	**79**	.	**50**	**85**	**69**	.	.	**92**	**88**	.	*4*	**47**	.	.	.	**33**	.	.	.	**48**	
Paris quadrifolia	.	*10*	*5*	***25***	***24***	.	.	**42**	***39***	*11*	.	***26***	.	***40***	*5*	.	**100**	**67**	**67**	*6*	.	.	.	.	.	**67**	.	*9*	***29***	.	**53**	
Pulmonaria obscura + P. officinalis	.	4	30	**44**	**94**	.	*8*	**51**	**91**	**76**	**40**	**58**	**38**	**48**	**81**	*8*	**33**	**33**	**100**	**57**	*9*	.	.	*20*	**50**	22	.	**64**	.	.	**42**	
Ranunculus cassubicus	.	*2*	*5*	16	**45**	.	.	**29**	**72**	*4*	.	**47**	.	.	*7*	.	.	.	**63**	19	.	.	.	.	.	**22**	*11*	*9*	.	.	*8*	
Sanicula europaea	.	*4*	**31**	18	**83**	.	13	**25**	**24**	*5*	10	11	.	.	.	.	.	.	**50**	12	18	13	*7*	.	*10*	*11*	.	.	.	.	*4*	
Scrophularia nodosa	.	6	15	**34**	**69**	.	.	*8*	13	15	10	**32**	.	.	*4*	*8*	.	.	**42**	4	.	.	.	.	.	**22**	**22**	9	.	17	13	
Stachys sylvatica	.	**39**	20	**30**	**42**	.	.	13	**26**	10	*10*	16	.	.	*7*	*8*	.	.	**88**	16	*9*	.	.	.	**60**	**44**	.	**45**	**29**	**33**	23	
Ulmus glabra	.	*14*	23	**41**	**85**	**67**	*3*	**29**	**67**	**44**	.	*11*	**50**	20	**28**	.	.	**33**	**100**	**88**	*9*	.	*7*	.	**70**	**44**	.	*9*	.	.	**46**	
Viola reichenbachiana	.	*14*	**60**	**57**	**70**	.	.	**42**	**57**	12	**60**	**68**	.	.	*2*	.	.	.	**71**	*6*	*9*	*4*	*7*	.	.	.	.	**27**	*14*	.	*2*	
Ch Querco-Fagetea																														
Acer campestre	.	.	*16*	*9*	25	.	**38**	*8*	**77**	**65**	**30**	**68**	.	*18*	**96**	**100**	.	.	*13*	**54**	**36**	**88**	**93**	.	**50**	**33**	.	.	.	**33**	**58**	
Carex digitata	.	*6*	**23**	**64**	**95**	**100**	**57**	**49**	**23**	**33**	**40**	.	**63**	**37**	*5*	15	.	.	**42**	*6*	**55**	**25**	.	20	.	.	.	.	.	.	.	
Brachypodium sylvatica	.	.	*5*	*5*	**43**	.	.	*6*	**27**	18	.	11	.	.	16	**38**	.	.	**54**	8	**27**	8	*7*	.	**30**	.	**33**	9	.	.	**33**	
Euonymus europaea	.	*8*	*2*	**31**	**71**	25	*8*	**33**	**71**	**50**	*10*	**74**	**38**	.	**70**	**85**	.	.	**79**	**60**	**55**	**46**	*7*	.	**40**	**56**	*11*	*9*	.	*17*	**83**	
Euonymus verrucosa	.	.	.	**27**	**98**	.	21	**43**	**71**	**67**	.	*5*	**100**	**79**	**51**	*15*	.	.	**54**	**72**	*18*	**67**	**40**	.	20	22	.	.	.	.	21	
Epipactis helleborine	.	.	**33**	*3*	**61**	**42**	**56**	*4*	13	15	.	**21**	.	**21**	*2*	.	.	.	.	.	9	**33**	.	.	.	.	.	9	.	.	.	
Fraxinus excelsior	.	*19*	*21*	*19*	**79**	**83**	**39**	33	**78**	**48**	.	*11*	*13*	*13*	**87**	**100**	33	.	**100**	**100**	**73**	**83**	**93**	**100**	**40**	33	*11*	*18*	.	.	**88**	
Corylus avellana	**50**	***27***	*22*	*24*	**77**	**67**	*4*	**64**	**57**	**42**	**60**	**42**	**100**	**93**	**54**	.	.	33	**67**	**91**	**45**	25	*7*	.	**60**	**56**	.	27	**43**	*17*	**47**	
Hedera helix	.	.	***34***	***36***	**46**	**100**	***31***	*5*	*2*	.	**80**	**58**	.	.	.	.	.	.	***25***	***34***	**45**	**49**	**47**	.	*10*	.	.	.	.	.	.	
Lathyrus vernus	.	.	28	**45**	**96**	.	.	**42**	**66**	36	20	26	**63**	**87**	**58**	31	.	.	**50**	*6*	.	.	.	.	.	.	.	.	.	.	*6*	
Melica nutans	**100**	.	*2*	*18*	**68**	**67**	.	39	33	26	.	*16*	**88**	34	*2*	.	.	.	*4*	*3*	.	.	.	.	.	.	.	.	.	.	*7*	
Scilla bifolia	.	.	.	*1*	.	.	**48**	.	*11*	37	.	.	.	.	.	.	.	.	.	26	**84**	**100**	**83**	**60**	.	.	.	**60**	.	.	*2*	
Viola mirabilis	.	.	*1*	18	**91**	.	*3*	**29**	**64**	**44**	.	.	**25**	**50**	**44**	.	.	.	**46**	**41**	*9*	*4*	.	.	**20**	*11*	.	.	.	.	*11*	
Viola odorata	.	.	.	.	.	.	*7*	*4*	**46**	**67**	.	.	**38**	**46**	**85**	.	.	.	**89**	**45**	21	*13*	**60**	.	.	22	.	.	.	.	*2*	
Other species																														
Acer tataricum	.	.	.	.	.	.	.	*5*	16	**23**	**30**	16	**63**	.	18	**31**	.	.	.	.	.	.	.	.	.	*11*	**89**	.	.	.	**31**	
Achillea stricta	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Ajuga reptans	.	*2*	18	**30**	**82**	.	.	**56**	**52**	*5*	**40**	**79**	*13*	.	.	.	.	.	**83**	*3*	.	.	.	.	**22**	.	*9*	.	.	*2*	
Alliaria petiolata	.	*4*	9	*1*	*5*	**25**	.	10	**35**	**24**	10	*5*	13	*3*	**24**	**77**	.	.	**33**	**43**	.	.	13	**40**	**30**	.	.	.	17	**28**	
Anemone nemorosa	**100**	52	***36***	**88**	**100**	.	.	**87**	***33***	*4*	**70**	**89**	.	*3*	.	***33***	**67**	**92**	*3*	.	.	.	.	.	.	***33***	.	**60**	.	**100**	*13*	
Anthriscus sylvestris	.	16	.	.	.	.	**22**	*1*	*1*	.	.	**25**	.	*4*	*8*	.	.	*4*	*7*	**36**	17	13	**60**	**100**	.	.	**27**	.	.	.	*4*	
Arum besserianum + A. alpinum	.	.	.	*4*	*2*	.	.	.	**46**	.	.	.	.	.	.	.	.	**33**	**38**	**85**	.	.	.	.	.	.	.	*18*	.	.	*2*	
Aposeris foetida	**50**	.	.	**27**	**37**	.	.	13	.	.	*10*	11	.	.	.	.	.	.	**46**	.	.	.	.	.	.	.	.	*9*	.	.	.	
Astrantia major	50	.	1	.	3	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	14	.	.	
Athyrium filix-femina	**50**	**88**	**37**	**60**	*6*	*17*	.	**27**	*11*	*7*	.	**37**	.	20	.	.	**100**	**67**	**67**	.	.	.	.	.	.	**44**	**44**	**36**	**86**	.	*13*	
Betula pendula	.	*8*	*1*	18	*2*	.	.	**50**	12	**20**	.	.	13	**50**	*5*	.	.	.	13	*4*	.	.	.	.	.	**33**	**56**	.	14	.	**21**	
Campanula persicifolia	.	.	.	*4*	**62**	**25**	.	*4*	*4*	***20***	.	.	**25**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Campanula rapunculoides	**50**	.	*1*	*1*	.	.	.	*2*	**49**	**22**	.	.	**50**	.	*4*	.	.	.	*4*	17	.	.	.	.	.	.	.	.	.	.	*7*	
Campanula trachelium	.	.	*1*	*8*	**68**	**50**	.	*9*	**54**	17	*10*	*11*	.	*7*	*3*	*8*	.	.	**58**	**40**	**27**	*8*	.	.	.	.	.	.	.	.	.	
Cardaminopsis halleri	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Carex brizoides	.	*4*	.	*8*	.	.	.	**23**	.	*0*	.	**63**	.	.	.	.	.	.	13	.	.	.	.	.	.	*11*	.	*9*	**43**	.	.	
Carpinus betulus	.	*13*	**53**	**50**	**58**	**50**	**70**	**100**	**100**	**99**	**90**	**95**	*13*	*3*	26	.	.	**100**	**83**	**62**	**91**	**96**	**93**	**100**	.	*11*	.	*18*	.	**50**	**58**	
Cephalanthera damasonium	.	.	*4*	*1*	**91**	17	**39**	*5*	*10*	.	.	.	.	.	.	.	.	.	*4*	.	**27**	.	.	.	.	.	.	.	.	.	.	
Cerasus avium	.	*4*	**52**	19	**54**	.	*13*	18	**63**	22	**90**	**53**	.	.	*6*	.	.	**33**	**38**	*8*	18	**29**	13	.	**40**	.	.	.	.	.	**36**	
Chaerophyllum temulum	.	.	.	*2*	.	.	*3*	9	16	**22**	.	.	.	.	14	**54**	.	.	*4*	**38**	**27**	.	.	.	.	11	.	.	.	.	.	**36**
Convallaria majalis	.	.	.	*7*	**66**	.	*7*	**39**	**51**	**43**	.	.	**50**	**63**	**34**	*8*	.	**33**	*4*	**62**	18	13	.	.	.	*11*	**22**	.	.	.	.	**24**
Cornus mas	.	.	.	.	.	.	*17*	.	*16*	*5*	.	.	.	.	*2*	.	.	.	.	.	**55**	**88**	**60**	***20***	**60**	.	.	.	.	.	.	
Crataegus curvisepala	.	.	**16**	*3*	**24**	.	*12*	*13*	***35***	**40**	**80**	**42**	.	.	**30**	**69**	.	.	*4*	**18**	**45**	**46**	*7*	20	**60**	*11*	**78**	*9*	.	.	**47**	
Cruciata glabra	.	.	*2*	.	**27**	.	.	**30**	14	.	**50**	*5*	13	.	.	.	.	.	.	.	.	.	.	.	.	11	.	9	.	.	.	
Cystopteris fragilis	.	.	.	*3*	.	**50**	*3*	*2*	*4*	20	*10*	.	**38**	*7*	.	.	.	**67**	*4*	**23**	.	.	.	.	.	.	.	.	.	17	*2*	

	AdF	ScF	CF	ShF	EvF	SlF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Dactylis glomerata s.l.	**50**	.	*5*	*2*	*6*	.	**27**	*5*	*37*	*31*	*50*	16	**25**	.	13	**69**	.	.	*4*	*17*	**45**	*4*	.	**40**	.	.	**22**	*9*	.	17	.
Deschampsia caespitosa	**50**	.	.	*1*	.	.	.	5	.	.	.	.	.	*3*	.	.	.	.	8	.	.	.	.	.	.	**22**	.	9	**29**	.	**22**
Digitalis grandiflora	**50**	.	.	.	*2*	.	.	.	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dryopteris carthusiana	.	*14*	*9*	**60**	19	.	.	**48**	*8*	*9*	*10*	16	**25**	**64**	*2*	.	**33**	**33**	**63**	.	.	.	.	.	.	**78**	**44**	*9*	**86**	.	**33**
Dryopteris dilatata +D. expansa	.	**28**	*1*	**40**	.	.	.	6	*2*	.	.	.	.	.	.	.	.	**33**	**29**	.	.	.	.	.	.	.	.	.	14	.	.
Fallopia dumetorum	.	.	*4*	.	.	**25**	.	.	10	15	.	.	**38**	.	*6*	**38**	.	.	.	**35**	.	.	.	.	.	.	**33**	.	.	.	13
Filipendula ulmaria	.	.	.	.	.	.	.	.	.	.	.	*5*	.	.	.	.	**67**	.	.	.	.	.	.	.	.	**89**	*22*	**36**	**57**	**50**	*8*
Fragaria vesca	.	.	9	*1*	*6*	.	**28**	14	16	9	**30**	11	.	*5*	.	.	.	**33**	*4*	.	**45**	8	.	.	.	.	.	9	14	.	*6*
Frangula alnus	.	.	.	*6*	*4*	.	.	14	*2*	*2*	**50**	11	.	**27**	.	.	.	.	.	.	.	.	.	.	.	**33**	**56**	.	14	.	**27**
Galanthus nivalis	.	.	.	*4*	20	.	.	13	**33**	*5*	.	.	.	.	.	.	.	.	**46**	**87**	.	.	.	.	.	.	.	**20**	.	.	*2*
Galium aparine	.	.	*3*	*2*	.	.	.	*4*	**35**	**27**	.	**42**	13	.	**23**	**38**	.	.	**25**	**78**	18	17	**53**	20	**80**	**44**	**33**	18	.	**33**	**40**
Galium intermedium	**100**	*6*	**40**	*1*	*2*	**100**	.	*9*	*12*	*2*	**60**	*5*	.	.	.	.	.	.	.	*3*	.	.	.	.	.	.	.	.	.	.	.
Galium verum	.	4	.	3	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.	.	.	.
Genista tinctoria	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Geranium phaeum	.	.	.	*1*	.	.	.	*6*	19	.	.	**21**	.	.	.	.	**33**	.	**79**	**21**	.	.	.	.	.	.	.	18	.	.	*2*
Geranium robertianum	.	26	20	**27**	22	**50**	*8*	23	**28**	25	20	*5*	.	*3*	*2*	**38**	.	**33**	**96**	**79**	*9*	.	.	.	.	*11*	**44**	18	14	**33**	**34**
Geum urbanum	.	*4*	*12*	*6*	*12*	**50**	23	23	**73**	**60**	.	**42**	.	25	**37**	**92**	.	.	**83**	**64**	**73**	25	**47**	*20*	**60**	*22*	**56**	*18*	.	*17*	**66**
Glechoma hederacea	.	*11*	*8*	.	.	.	.	*4*	*0*	*1*	.	16	.	.	*2*	.	.	.	**58**	.	.	.	.	**30**	*11*	**44**	**27**	.	**83**	**27**
Glechoma hirsuta	.	31	.	.	.	**50**	.	*10*	**77**	**57**	20	16	.	**58**	**40**	*8*	**67**	.	17	**46**	18	.	.	.	.	*22*	.	**45**	14	.	**42**
Hesperis matronalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.	.	.
Hylotelephium argutum	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**33**	**33**	.	.	.	.	.	.	.	.	.	18	.	.	.
Hylotelephium polonicum s.l.	**50**	.	.	.	.	**50**	.	.	*8*	14	*10*	.	**50**	.	*2*	.	.	.	*4*	**39**	.	.	.	.	.	.	.	.	.	.	.
Impatiens noli-tangere	.	**37**	*7*	13	2	**25**	.	*2*	*5*	*2*	.	*5*	.	*3*	*9*	.	**67**	.	**88**	.	.	.	.	.	.	**22**	**33**	**55**	**29**	**50**	*10*
Impatiens parviflora	.	10	8	*6*	.	.	.	*0*	*1*	**23**	.	.	**50**	.	.	.	.	.	17	.	.	.	.	.	.	**22**	.	18	.	.	**39**
Isopyrum thalictroides	.	**43**	.	**36**	**37**	.	.	**21**	**59**	1	**20**	16	.	.	.	.	.	.	**92**	**45**	.	.	.	.	.	**22**	.	**20**	.	.	*8*
Knautia dipsacifolia	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*14*	.	.
Lamium maculatum	.	*9*	*1*	*4*	*2*	.	*8*	*5*	**35**	**24**	.	*5*	**63**	*13*	**25**	**46**	.	.	**79**	**69**	*9*	*8*	*7*	.	**40**	**33**	.	**55**	.	.	17
Lamium purpureum	.	.	.	.	.	.	*3*	.	.	*4*	.	.	.	.	.	.	**67**	.	.	.	.	*4*	.	**60**	.	*11*	.	.	.	.	.
Lapsana communis	.	.	*3*	*3*	.	.	**27**	*5*	**27**	*9*	.	*5*	.	.	*6*	**46**	.	.	**46**	**25**	**45**	**29**	20	20	**40**	11	.	.	.	.	17
Lathyrus niger	.	.	*2*	.	**27**	.	.	*1*	**28**	**26**	10	*5*	**38**	.	*3*	15	.	.	.	*6*	**27**	**42**	.	.	.	.	.	.	.	.	.
Ligustrum vulgare	.	.	.	.	.	.	17	.	.	*2*	**60**	.	.	.	.	*8*	.	.	.	.	18	**50**	*7*	**20**	**60**	.	.	.	.	.	.
Lunaria rediviva	.	**33**	.	.	.	**25**	.	.	.	.	.	.	.	.	.	.	**67**	**33**	17	**44**	.	.	.	.	.	.	**27**	.	.	.	.
Luzula pilosa	.	*2*	7	**37**	7	.	.	**41**	.	.	**20**	.	**25**	18	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.
Majanthemum bifolium	.	*6*	.	**78**	**94**	**33**	.	**80**	**33**	17	**20**	**53**	**25**	**73**	.	.	**33**	.	**46**	.	.	.	.	.	.	*11*	.	.	.	.	*15*
Malus sylvestris	.	.	.	.	.	.	.	8	.	2	**20**	.	.	10	8	8	.	.	4	3	.	.	.	.	.	.	.	.	14	.	8
Melica uniflora	.	.	.	.	.	.	.	.	6	.	**20**	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.
Mentha longifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.	.
Moehringia trinervia	.	**20**	6	10	*2*	.	.	14	8	**22**	.	*5*	.	*7*	*2*	8	.	**33**	**54**	9	.	.	.	.	.	**22**	**44**	.	.	.	**26**
Mycelis muralis	.	**33**	**39**	**37**	**70**	**67**	18	16	*7*	11	10	.	.	.	.	.	.	**33**	**25**	11	**27**	.	.	.	.	.	.	**27**	14	17	11
Orchis mascula	**50**	.	.	.	.	.	*4*	.	.	.	.	.	.	.	.	.	.	.	.	.	*9*	*4*	.	.	*10*	.	.	.	.	.	.
Oxalis acetosella	.	**53**	19	**42**	*12*	.	.	**51**	.	.	.	**21**	.	.	.	.	**67**	**33**	**88**	.	.	.	.	.	.	*11*	.	**27**	**43**	.	*2*
Padus avium	.	.	.	*5*	*2*	.	.	20	*1*	*9*	.	11	**25**	**52**	.	.	.	.	**29**	.	.	.	.	.	.	**67**	**33**	**27**	.	.	**46**
Picris hieracioides	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pinus sylvestris	.	.	*4*	15	16	.	.	**41**	*1*	*3*	.	.	.	**26**	.	.	.	.	8	.	.	.	.	.	.	.	**33**	.	.	.	*7*
Platanthera chlorantha	.	.	.	**21**	**42**	.	**78**	**25**	*8*	.	.	.	.	*3*	.	.	.	.	17	.	**36**	17	**27**	.	10	.	.	.	.	.	.
Pleurospermum austriacum	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Poa chaixii	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Poa nemoralis	.	*2*	*12*	**46**	**97**	25	**64**	14	**41**	**42**	**70**	*11*	**100**	*10*	21	**54**	.	33	**46**	33	**73**	33	*13*	20	30	*11*	**56**	*18*	.	.	*7*
Polygonatum hirtum	.	.	.	*1*	.	.	*8*	.	**74**	*16*	.	*5*	.	.	.	.	.	.	*13*	**71**	**27**	**54**	*7*	.	**40**	.	.	.	.	.	*6*
Polygonatum odoratum	.	.	.	.	*4*	.	**92**	18	.	*11*	.	.	**25**	**26**	*6*	.	.	.	.	.	*82*	*42*	*40*	*40*	.	*11*	.	.	.	.	.
Polygonatum verticillatum	**50**	**21**	.	*3*	*2*	.	.	*2*	.	.	.	.	.	.	.	.	**33**	.	.	.	.	.	.	.	.	.	.	9	.	.	.
Polystichum braunii	.	*2*	.	*1*	.	.	.	.	.	.	.	.	.	.	.	.	**67**	**33**	*4*	.	.	.	.	.	.	.	.	.	.	.	.
Populus tremula	.	.	*2*	19	6	.	**30**	**33**	8	16	.	11	.	**33**	9	.	.	.	13	.	**27**	13	.	.	10	11	11	.	14	.	**28**
Potentilla erecta	**50**	.	.	.	.	.	.	*2*	.	.	*10*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Primula acaulis	.	.	.	.	.	**50**	**53**	*7*	.	.	.	.	.	.	.	.	.	.	.	.	**64**	**71**	**60**	**60**	**80**	*11*	.	*9*	.	.	.
Pyrethrum clusii	**50**	2	.	.	.	.	.	.	*13*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pyrethrum corymbosum	.	.	.	.	11	.	.	.	8	4	.	.	13	.	.	.	.	.	.	.	9	8	.	**20**	.	.	.	.	.	.	.
Pyrus communis	.	.	*1*	.	.	.	.	*9*	.	**27**	**40**	.	.	.	**20**	**46**	.	.	.	.	.	13	13	.	10	.	**67**	.	.	.	17
Quercus petraea	.	.	22	*7*	*2*	.	**35**	.	.	*1*	**90**	.	.	.	.	.	.	.	.	.	**55**	**88**	**87**	20	.	.	.	*9*	.	.	.
Quercus robur	.	.	*9*	32	*19*	.	.	**89**	**83**	**80**	.	**68**	**75**	**92**	**91**	**100**	.	.	**63**	25	.	.	.	.	.	**44**	**56**	.	.	**83**	**83**
Rosa canina	.	.	.	.	.	.	.	.	*5*	9	**40**	*5*	.	.	*2*	8	.	.	.	.	.	**38**	13	.	**20**	.	.	.	.	.	.
Rubus idaeus	**50**	*4*	*7*	13	*3*	**25**	.	10	*2*	*2*	.	.	13	*3*	.	.	**33**	.	**25**	.	.	.	.	.	.	11	.	**45**	**57**	.	*2*
Sambucus ebulus	.	*0*	.	.	*2*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*9*	.	.	.	**20**	.	.	.	.	.	.
Sambucus nigra	.	**46**	**36**	**49**	**57**	*25*	*5*	21	**29**	24	*10*	**47**	.	.	*9*	**31**	.	**33**	**96**	**92**	18	.	20	.	**50**	**33**	.	**45**	*14*	.	**55**
Sambucus racemosa	.	10	.	**34**	6	.	.	*3*	*2*	*1*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	**22**	.	**29**	.	.	.
Scutellaria altissima	.	.	.	.	.	.	*3*	.	17	18	.	.	.	.	.	*5*	**31**	.	.	**65**	.	*8*	**20**	.	**40**	.	.	.	.	.	.	.
Senecio ovatus	**50**	**51**	.	*1*	.	.	.	.	.	.	.	.	.	.	.	.	**67**	.	*8*	.	.	.	.	.	.	.	.	*18*	**71**	.	.
Solidago virgaurea	**50**	*6*	*1*	*3*	8	**42**	.	*4*	.	13	**30**	.	**25**	14	.	.	.	.	*4*	.	9	.	.	.	.	.	.	**27**	.	.	.
Sorbus aucuparia	**50**	*22*	*6*	**28**	**37**	**100**	*13*	**40**	*0*	*15*	.	*5*	**50**	**49**	.	.	.	.	*4*	.	*9*	*4*	*13*	.	.	*11*	.	18	**71**	.	*11*
Stellaria media	.	.	.	.	.	.	.	.	0	0	.	16	.	.	.	.	.	.	.	.	.	.	**20**	.	.	.	.	.	.	.	.
Swida sanquinea	.	.	**28**	*13*	**89**	.	*4*	*13*	**53**	21	**70**	**37**	.	*5*	**42**	.	.	.	**42**	**44**	**36**	*8*	*7*	.	**70**	*11*	.	18	.	**50**	**56**
Tilia cordata	.	.	*13*	**30**	**66**	.	**30**	**65**	**76**	**64**	20	**63**	**100**	**87**	**87**	**46**	.	.	**88**	**41**	**45**	.	.	.	.	**44**	.	*9*	.	.	**45**
Ulmus minor	.	.	.	.	.	.	*8*	*4*	**29**	14	.	11	.	**23**	**40**	**62**	.	.	*4*	*6*	9	**21**	**27**	.	.	**22**	11	.	.	**50**	**60**
Urtica dioica s.l.	.	34	*20*	*25*	*3*	*25*	*10*	33	34	32	*10*	*26*	.	27	34	31	33	33	**100**	**81**	27	.	.	*20*	**80**	**78**	**56**	**73**	**43**	**100**	**83**
Valeriana collina	**50**	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Veronica chamaedrys	.	.	*3*	*1*	8	.	.	6	8	17	.	*5*	**50**	.	.	.	.	.	8	**20**	.	.	.	.	.	.	**22**	.	.	.	.	.
Viburnum opulus	.	*2*	*2*	*2*	**45**	.	.	15	18	*6*	10	**32**	.	**21**	.	.	.	.	*4*	*3*	18	.	.	.	.	**22**	.	**29**	.	**58**
Viola dehnhardtii	.	.	.	.	.	.	33	.	.	.	.	.	.	.	.	.	.	.	.	.	**100**	**75**	*13*	.	**70**	.	.	.	.	.	.
Other species with constancy >10%																															
Achillea submillefolium	.	.	.	.	.	.	.	.	.	4	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Aconitum moldavicum	.	15	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.
Aconitum sp.	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Alisma plantago-aquatica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	17	.	.
Alopecurus aequalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	.
Anemone sylvestris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Angelica sylvestris	.	.	.	.	.	.	.	.	.	0	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	13
Archangelica officinalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Arctium sp.	.	.	.	.	.	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.	18	.	.	.	.	.	.	.	.	.	4
Aristolochia clematitis	.	.	.	.	.	.	.	.	.	.	.	.	13	.	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7
Artemisia vulgaris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	.
Asplenium ruta-muraria	.	.	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	AdF	ScF	CF	ShF	EvF	SlF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Barbarea vulgaris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Bidens frondosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Bidens tripartita	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Calamagrostis epigeios	.	.	.	3	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Calamintha grandiflora	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Carduus cinereus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Campanula patula	.	.	1	.	.	.	.	2	0	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Caragana arborescens	.	.	.	.	.	.	.	.	2	1	.	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Cardamine impatiens	.	4	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	14	.	7
Carex acutiformis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	11	.	.	.	.
Carex cinerea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.
Carex cuspidata	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	18	4	7	.	.	.	.	.	.	.	.
Carex michelii	.	.	.	.	.	.	.	.	.	18	.	.	.	.	2	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.
Carex riparia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Carex sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Carpinus orientalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	13	.	.	.	.	.	.	.	.	.
Cimicifuga europaea	.	.	.	.	19	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Cirsium arvense	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	17	.
Cirsium rivulare	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Clinopodium vulgare	.	.	.	.	2	.	.	5	2	8	.	.	.	.	2	15	.	.	.	.	.	13	7	20	.	.	.	.	.	.	.
Corallorhiza trifida	.	.	.	.	11	.	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Coccyganthe flos-cuculi	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Crataegus orientalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.
Dryopteris cristata	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Epipactis atrorubens	.	.	5	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Epipactis microphylla	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	9	4	.	.	.	.	.	.	.	.	.
Equisetum palustre	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Festuca drymeja	.	.	5	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Galeopsis bifida	.	.	.	.	.	.	.	.	.	3	.	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.
Geranium sanguineum	.	.	.	.	.	.	.	.	.	1	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Glyceria fluitans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Glyceria plicata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Hieracium sp.	.	.	.	13	15	.	.	.	.	60	.	.	.	.	.	.	.	.	.	.	9	.	.	.	.	.	.	.	.	.	.
Hypericum tetrapterum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Juncus tenuis	.	.	.	.	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Lactuca chaixii	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Leersia oryzoides	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Listera ovata	.	.	2	.	3	.	4	5	13	.	.	5	.	.	.	.	.	.	17	.	9	.	.	.	10	11	.	.	.	8
Luzula forsteri	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	4	.	.	.	.	.	.	.	.	.
Luzula sylvatica	.	2	2	.	.	17	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Matricaria perforata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Lysimachia nemorum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lythrum salicaria	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	17	.
Mentha sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.
Morus nigra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Myosotis nemorosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.	.	17	.
Myosotis sylvatica	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	.	17	.
Parietaria officinalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.
Phragmites australis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Physocaulis nodosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.
Plantago major	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Poa longifolia	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	18	.	.	.	.	.	.	.	.	.	.
Poa sterilis	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Poa sylvicola	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.
Poa trivialis	.	.	.	.	.	.	.	.	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Potentilla micrantha	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	13	.	10	.	.	.	.	.	.
Prenanthes purpurea	.	12	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.
Quercus pubescens	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ranunculus flammula	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Ribes carpaticum	.	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ribes sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ribes spicatum	.	.	.	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15
Robinia pseudoacacia	.	.	4	.	.	.	.	1	.	3	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	11	.	.	.	.
Rorippa sylvestris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Rosa dumalis	.	.	.	.	14	.	.	1	.	.	.	.	.	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.	.
Rosa sp.	.	.	.	.	.	.	13	.	.	1	.	.	.	.	.	.	.	.	.	.	18	4	.	.	.	.	33	.	.	.	.
Rumex conglomeratus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Salix cinerea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	14	.	11
Salix fragilis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18	.	.	2
Salix triandra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Scirpus sylvaticus	.	.	.	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	11	11	.	14	.	.
Senecio jacobaea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Stachys palustris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Swida alba	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	.
Symphytum tauricum	.	.	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	13	.	.	.	.	.	.	.	.
Tilia begoniifolia	.	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	.	.	.	.	9	8	.	.	10	.	.	.	.	.	.
Valeriana dioica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Valeriana stolonifera	.	.	.	.	.	17	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Veronica beccabunga	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	14	.	.
Veronica hederifolia	.	.	.	.	.	.	.	4	.	.	.	.	.	.	2	15	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.
Veronica officinalis	.	.	6	17	5	.	.	8	.	0	10	.	13	5	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.
Veronica umbrosa	.	.	.	.	.	.	13	.	.	.	.	.	.	.	.	.	.	.	.	.	18	13	7	.	.	.	.	.	.	.	.
Vicia dumetorum	.	.	.	1	20	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Viola biflora	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14	.	.
Tree layer (h> 5,0 m)																															
Number of relevés with data on tree layer	2	29	18	119	54	5	26	121	113	63	10	19	8	22	51	13	3	1	24	25	6	9	5	0	0	9	9	4	3	6	29
Abies alba	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	100	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Acer campestre	.	.	.	2	12	.	16	8	35	18	.	.	.	.	85	69	.	.	8	27	33	33	80	nd	nd	.	.	.	.	33	27
Acer negundo	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	14
Acer platanoides	.	40	.	29	63	42	.	40	45	60	10	.	50	74	78	8	.	.	71	100	.	.	.	nd	nd	22	.	.	.	.	23
Acer pseudoplatanus	100	60	6	37	78	25	.	32	29	.	10	.	.	.	.	.	100	.	100	52	.	.	.	nd	nd	.	.	25	33	.	7

	AdF	ScF	CF	ShF	EvF	SIF	LaF	TC	IC	GC	CpC	CC	A-T	MQ	ShA	TQ	AA	PhA	AnA	ApF	BC	LC	RF	FAs	OA	FA	AtA	Ai	PA	FpU	FU
Acer stevenii	.	.	.	.	.	.	20	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Acer tataricum	.	.	.	.	.	.	.	.	4	2	.	.	.	.	.	8	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	9
Alnus glutinosa	.	.	.	3	.	.	.	3	.	.	.	2	13	3	.	.	.	.	.	.	.	.	.	nd	nd	100	100	.	.	.	21
Alnus incana	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	100	100	.	2
Betula pendula	.	6	.	15	.	.	.	42	12	17	.	.	13	50	6	.	.	.	13	.	.	.	.	nd	nd	33	44	.	33	.	13
Carpinus betulus	.	4	22	53	53	.	43	96	13	89	70	100	.	.	23	.	.	.	83	59	83	89	60	nd	nd	11	.	.	.	50	27
Cersus avium	.	.	.	8	23	.	.	9	15	11	30	.	.	.	5	.	.	100	29	3	17	.	.	nd	nd	.	.	.	.	.	35
Fagus sylvatica	100	100	100	100	100	100	100	20	2	.	30	.	.	.	.	.	67	100	29	4	50	.	.	nd	nd	.	.	25	33	.	.
Fraxinus angustifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	100	.
Fraxinus excelsior	.	.	.	17	55	66	10	22	52	35	.	.	.	7	85	85	33	.	100	100	.	11	100	nd	nd	11	.	25	.	.	55
Larix sp.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Malus sylvestris	.	.	.	.	.	.	.	1	.	.	.	.	.	5	5	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	5
Picea abies	.	8	.	4	.	.	.	14	1	.	.	.	.	3	.	.	.	.	13	.	.	.	.	nd	nd	.	.	.	67	.	.
Pinus sylvestris	.	.	6	8	16	.	.	43	1	1	.	.	.	26	.	.	.	.	8	.	.	.	.	nd	nd	.	22	.	.	.	7
Populus tremula	.	.	.	17	6	.	20	22	2	20	.	8	.	30	10	.	.	.	13	.	17	.	.	nd	nd	11	11	.	.	.	22
Pyrus communis	.	.	.	.	.	.	.	9	.	3	.	.	.	.	10	15	.	.	.	.	.	22	40	nd	nd	.	22	.	.	.	18
Quecus borealis	.	.	.	1	.	.	.	.	1	3	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Quercus petraea	.	.	22	8	.	.	7	.	.	1	90	.	.	.	.	.	.	.	.	.	33	100	80	nd	nd	.	.	.	.	.	.
Quercus pubescens	.	.	.	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Quercus robur	.	.	.	19	15	.	.	90	73	82	.	83	25	92	88	92	.	.	58	25	.	.	.	nd	nd	33	.	.	.	83	65
Robinia pseudoacacia	.	.	.	.	.	.	.	3	.	4	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Salix alba	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	50	.	.	2
Salix fragilis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	2
Salix caprea	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	4	.	33	.	.	nd	nd	.	.	.	.	.	.
Sorbus aucuparia	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	2
Sorbus torminalis	.	.	.	.	.	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	78	20	nd	nd	.	.	.	.	.	.
Tilia cordata	.	.	.	30	58	.	20	60	50	45	10	50	100	66	74	31	.	.	79	41	50	.	.	nd	nd	44	.	.	.	17	34
Tilia platyphyllos	.	.	.	.	.	33	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	nd	nd	.	.	.	.	.	.
Ulmus glabra	.	33	.	24	49	.	.	11	23	13	.	.	.	10	14	.	.	100	79	57	.	.	20	nd	nd	.	.	.	.	.	27
Ulmus laevis	.	.	.	.	.	.	.	.	.	1	.	.	.	.	6	.	.	.	.	.	.	.	.	nd	nd	.	44	.	.	.	.
Ulmus minor	.	.	.	.	.	.	.	1	9	11	.	.	.	10	6	31	.	.	4	.	.	.	.	nd	nd	11	11	.	.	17	35

Abbreviations:
AdF – Athyrio distentifolii-Fagetum, ScF – Symphyto cordati-Fagetum, CF – Carpino-Fagetum, ShF – Stellario holostaeae-Fagetum, EvF – Euonymo verrucosae-Fagetum, SIF – Seseli libanotidis-Fagetum, LaF – Lathyro aurei-Fagetum, TC – Tilio-Carpinetum, IC – Isopyro thalictrodis-Carpinetum, GC – Galeobdolono lutei-Carpinetum, CpC – Carici pilosae-Carpinetum, CC – Circaeo-Carpinetum, A-T – Acer platanoides-Tilia cordata com., MQ – Mercurialo perennis-Quercetum roboris, ShA – Stellario holostaeae-Aceretum platanoidis, TQ – Tulipo quercetorum-Quercetum roboris, AA – Arunco-Aceretum, PhA – Phyllitido-Aceretum, AnA – Anthrisco nitidi-Aceretum pseudoplatani, ApF – Aceri platanoidis-Fraxinetum, BC – Bromopsio-Carpinetum, LC – Lasero trilobi-Carpinetum, RF – Ranunculo constantinopolitani-Fraxinetum, FAs – Fago-Aceretum stevenii, FA – Fraxino-Alnetum, AtA – Aceri tatarici-Alnetum, OA – Ornithogalo pontici-Alnetum, Ai – Alnetum incanae, PA – Piceo-Alnetum, FpU – Fraxino pannonicae-Ulmetum, FU – Ficario-Ulmetum campestris;
nd – no data.

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