

A NEW FOREST ASSOCIATION IN HUNGARY: THERMOPHILOUS DRY OAKWOOD ON RUBBLE (*PAEONIO BANATICAE-QUERCETUM CERRIDIS* KEVEY ASS. NOVA)

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Abstract: In this paper a relic and edaphic (azonal) forest association new to science (*Paenion banaticae-Quercetum cerridis*) is described and characterized. This association is compared by traditional phytosociological methods to associations with which it is in physical contact in the Eastern Mecsek Hills (Southwest Hungary). Stands of *Paenion banaticae-Quercetum cerridis* occur on steep slopes with southern exposition between 280-640 m. The forest soil contains a large amount of rocks and rubble, and is slowly drifting. The microclimate of the forest is conducive to the survival of many species with submediterranean distribution. One of them is the endemic *Paenion banaticae* whose largest populations occur in this forest type. The new association is placed in the alliance *Quercion farnetto* I. Horvat 1954 and suballiance *Quercenion farnetto* Kevey in Kevey & Borhidi 2005.

Key words: *Paenion banaticae-Quercetum cerridis*, phytosociology, thermophilous dry oak woods on rubble, Mecsek Hills, Hungary.

Izveleček: V članku je opisana nova reliktna edafska (azonalna) gozdna asociacija (*Paenion banaticae-Quercetum cerridis*). S tradicionalnimi fitocenološkimi metodami so novo asociacijo primerjali z asociacijami, ki jih najdemo v vzhodnem delu hribovja Mecsek (jugozahodna Madžarska). Sestoji asociacije *Paenion banaticae-Quercetum cerridis* se pojavljajo na strmih južnih pobočjih na nadmorski višini od 280 do 640 metrov. Gozdna tla vsebujejo mnogo kamenja in grušča in se počasi debelijo. Gozdna mikroklima je ugodna za uspevanje številnih vrst s submediteransko razširjenostjo. Najpomembnejša je endemična vrsta *Paenion banaticae*, saj največje populacije te vrste najdemo v tem gozdnem tipu. Nova asociacija je uvrščena v zvezo *Quercion farnetto* I. Horvat 1954 in podzvezo *Quercenion farnetto* Kevey in Kevey et Borhidi 2005.

Ključne besede: *Paenion banaticae-Quercetum cerridis*, fitosociologija, suhi termofilni hrastovi gozdovi na grušču, hribovje Mecsek, Madžarska.

1. INTRODUCTION

Xerothermophilous oak forests are among the rarest plant associations in Hungary. Their stands are always small and local. Until today, they are known to occur only in the Bükk Mts. (*Seslerio hungaricae-Quercetum virgiliana* Suba, Kárász & Takács 1982; *Cirsio pannonicum-Quercetum pubescentis* Less 1998), in the Börzsöny and the Visegrád Hills (*Poo pannonicae-Quercetum petraeae* [Horánszky 1964] Soó 1971).

From the early 1980s I have surveyed the forests of the Eastern Mecsek Hills, and noticed a particular forest type growing on steep southerly stony slopes in a relatively small area at the follow-

ing localities: Hosszúhetény „Kisújbánya alatti 501 m-es névtelen hegy”, „Paraszik-tető”, „Róka-hegy”, „Zengő”, „Takanyó-hegy”; Mecseknádasd „Rékavár”; Pécsvárad „Somos”, „Zengő”. The stands of this association harbor several rare species including the endemic *Paenion banaticae* Rochel.

This forest type had been treated as identical to the zonal *Potentillo micranthae-Quercetum dalechampii* Horvát (1972). Because the species composition of this association seemed to be too heterogenous, I carried out a detailed comparative analysis to determine whether the classification of this particular forest type is correct, or else represents a new association. The results of this analysis are presented in this paper.

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2. METHODS

Data on the vegetation of the thermophilous dry forests occurring on rubble in the Eastern Mecsek have been collected from 25 plots (Table 1). For data collection I followed the methodology of the traditional Zürich-Montpellier school (Becking 1957). Preparation of the composite table and calculations on the proportion of social behavior types was carried out with the aid of the „NS” (Kevey & Hirmann 2002) software. Detailed descriptions of the methods and analyses used have been presented in earlier publications (Kevey 1993, 1997).

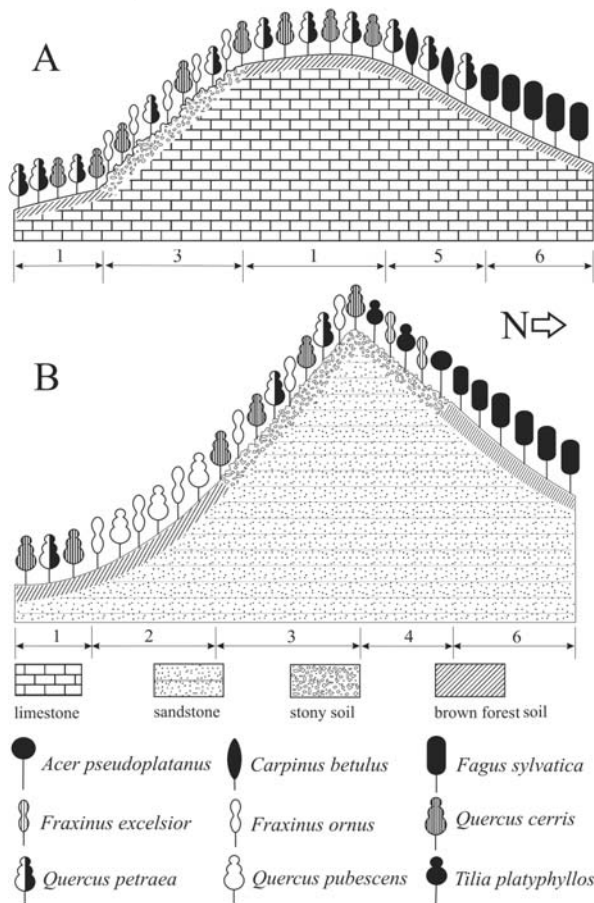


Figure 1: Vegetation profiles in the Eastern Mecsek.

A: Hosszúhetény „Róka-hegy”; B: Hosszúhetény „Zengő”.

Slika 1: Vegetacijski profil v vzhodnem delu hribovja Mecsek.

A: Hosszúhetény „Róka-hegy”; B: Hosszúhetény „Zengő”.

- 1: *Potentillo micranthae-Quercetum dalechampii*;
- 2: *Tamo-Quercetum virgiliana*;
- 3: *Paeonio banaticae-Quercetum cerridis*;
- 4: *Tilio tomentosae-Fraxinetum ornii*;
- 5: *Asperulo taurinae-Carpinetum*;
- 6: *Helleboro odoro-Fagetum* (original).

In order to analyse the similarity relations of the four forest associations studied, I performed binary cluster analyses using the SYN-TAX 2000 (Podani 2001) software package with similarity index of Baroni-Urbani–Buser, and fusion algorithm of complete linkage. I also considered the number of differential species with constancy values (K) differing at least by two between the compared associations.

Stands of the thermophilous dry oakwoods on rubble of the Eastern Mecsek are in direct contact with stands of three other associations (Fig. 1). These are the extrazonal hairy (pubescent) oak forests (*Tamo-Quercetum virgiliana*) on the southern slopes with no rocks in the soil, the zonal turkey oak forests (*Potentillo micranthae-Quercetum dalechampii*) at lower elevations, and the mesophilous linden-ash forests (*Tilio tomentosae-Fraxinetum ornii*) on steep, rocky slopes of the northern hillsides. The detailed description of these three associations is presented elsewhere (Kevey & Borhidi 1998). Thus, only relevés of these associations recorded in the Eastern Mecsek are presented here (20 relevés each, Tables 2–4).

For the names of species and associations I followed the nomenclature of Horváth et al. (1995), and Borhidi & Kevey (1996) and Borhidi (2003), respectively. In the tables, species are arranged in the order following the syntaxonomic system of Soó (1980) modified according to later results (Oberdorfer 1992; Mucina & al. 1993; Borhidi 2003; Borhidi & Kevey 1996; Kevey in ed.). The syntaxonomic classification of species is based primarily on Soó (1964, 1966, 1968, 1970, 1973, 1980) supplemented by the latest results (see Borhidi 1993, 1995; Horváth & al. 1995) and my own field experience.

3. RESULTS

3.1 Habitat characteristics of the thermophilous dry oakwood on rubble

The localities of this forest type are characterized by steep slopes with southern exposition between 280–640 m above sea level. As a consequence, their local climate is dry and warm, which is further enhanced by the low latitude of the Mecsek Hills. The bedrock is most often yellow sandstone, or more rarely different types of limestones. The shallow soil layer typically contains a large amount of rubble, and is almost continuously drifting downwards – particularly on sandstone.

3.2 Physiognomy

The thermophilous dry oakwoods on rubble are composed mainly of low growing (15–23 m) *Quercus cerris* and *Q. petraea* trees. The canopy cover is typically low and varies between 50 and 70 %. The trunk diameter ranges between 30 and 60 cm indicating the age of the stands. Because the roots of the trees are severed by the slowly drifting rubble, there are many fallen trees and rotten trunks on the ground (Fig. 2). There is a second canopy layer (10–16 m) with a cover of 20–50 % composed primarily of *Fraxinus ornus*. These trees mostly grow in the gaps of the upper canopy created by the fallen oak trees. Other tree species (*Acer campestre*, *Pyrus pyraeaster*, *Sorbus torminalis*) are infrequent.

The species composition of the shrub layer is variable depending on the structure of the canopy, and consists mainly of two species, *Cornus mas* and *Crataegus monogyna*, but other common species may also occur. Among the saplings, *Rosa arvensis* and *Rubus hirtus* may become locally abundant.



Figure 2: Typical physiognomy of *Paeonio banaticae-Quercetum cerridis* in the Mecsek Hills at Hosszúhetény: „Hármas Hill” (Photo: B. Kevey).

Slika 2: Značilna fizionomija sestojev asociacije *Paeonio banaticae-Quercetum cerridis* v hribovju Mecsek pri Hosszúhetény: „vrh Hármas” (Foto: B. Kevey).

The cover of the herb layer also is variable (40–90 %) depending on the amount of available light and the amount of rubble in the soil. The grass *Melica uniflora* and the herb *Scutellaria altissima* may be dominant at places. Other typical species are: *Brachypodium pinnatum*, *Campanula rapunculoides*, *Fallopia dumetorum*, *Helleborus odoratus*, *Lamium maculatum*, *Laser trilobum*, *Lithospermum purpureo-coeruleum*, *Paeonia banatica*, *Poa nemoralis*, *Vincetoxicum hirsutum*, *Viola odorata*. Herbs flowering en masse in early spring (geophytes) are missing.

3.3 Characteristic species combinations

The species combination of the studied forest type (Table 1) is the most similar to that of pubescent oak woods (*Tamo-Quercetum virgilianae*) (Table 2) and turkey oak woods (*Potentilla micranthae-Quercetum dalechampii*) (Table 3) and least to the linden-ash forests (*Tilio tomentosae-Fraxinetum ornii*) (Table 4). The frequent species of the stands are as follows.

Constant species (K V): *Galio-Alliarion*: *Alliaria petiolata*. – *Calystegion sepium*: *Lamium maculatum*. – *Quercio-Fagetea*: *Acer campestre*, *Brachypodium sylvaticum*, *Campanula rapunculoides*, *Carex pairae*, *Clematis vitalba*, *Clinopodium vulgare*, *Crataegus monogyna*, *Dactylis polygama*, *Fallopia dumetorum*, *Geranium robertianum*, *Geum urbanum*, *Lapsana communis*, *Melica uniflora*, *Poa nemoralis*, *Stellaria holostea*, *Quercus petraea*, *Veronica hederifolia*. – *Fagetalia sylvaticae*: *Arum maculatum*. – *Aremonio-Fagion*: *Helleborus odoratus*, *Rosa arvensis*, *Tamus communis*. – *Quercetea pubescentis-petraeae*: *Cornus mas*, *Fraxinus ornus*, *Lithospermum purpureo-coeruleum*, *Pyrus pyraeaster*, *Quercus cerris*, *Vincetoxicum hirsutum*. – *Quercion farnetto*: *Paeonia banatica*, *Tilia tomentosa*. – *Quercetalia cerris*: *Chrysanthemum corymbosum*. – Indifferent: *Galium aparine*.

Subconstant species (K IV): *Galio-Alliarion*: *Chaerophyllum temulum*. – *Quercio-Fagetea*: *Bromus ramosus*, *Campanula persicifolia*, *Ficaria verna*, *Fragaria vesca*, *Ligustrum vulgare*, *Sedum maximum*, *Symphytum tuberosum*, *Veronica chamaedrys*, *Viola alba*. – *Fagetalia sylvaticae*: *Carpinus betulus*, *Glechoma hirsuta*. – *Quercetea pubescentis-petraeae*: *Astragalus glycyphyllos*, *Calamintha menthifolia*, *Prunus spinosa*, *Rosa canina*, *Silene viridiflora*, *Verbascum austriacum*. – *Quercion farnetto*: *Potentilla micrantha*. – Indifferent: *Euphorbia cyparissias*, *Galium mollugo*, *Torilis japonica*.

Intermediate species (K III): *Festuco-Brometea*: *Brachypodium pinnatum*. – *Quercio-Fagetea*: *Euonymus europaea*, *Galeopsis speciosa*, *Galium schultesii*, *Melittis*

carpatica, *Polygonatum multiflorum*. – *Fagetalia sylvaticae*: *Anemone ranunculoides*, *Corydalis cava*, *Mercurialis perennis*. – *Quercetea pubescentis-petraeae*: *Festuca heterophylla*, *Inula conyza*, *Laser trilobum*, *Laserpitium latifolium*, *Lathyrus niger*, *Sorbus torminalis*, *Teucrium chamaedrys*. – *Quercetalia cerris*: *Muscari botryoides*. – Indifferent: *Coronilla varia*, *Rubus fruticosus* agg., *Silene vulgaris*, *Urtica dioica*, *Vicia hirsuta*.

Stands of the studied forest type are considerably different from those of the three compared associations as is shown by the results of cluster analyses show (Fig. 3). There are four distinct clusters of the total of 85 relevés in the dendrogram. Relevés of the studied forest type are more similar to those of *Tamo-Quercetum virgilianae* and *Potentillo micranthae-Quercetum dalechampii* characterized by habitats of southern exposition. The difference between them and the relevés of the linden-ash forests (*Tilio tomentosae-Fraxinetum ornii*) of northern slopes on rubble is greater.

3.4 Differential species

Differential species between the studied forest type and the other three related associations are identified from the synthetic table (Table 5) based on all 85 relevés.

The studied forest type differs from the pubescent oak woods (*Tamo-Quercetum virgilianae*) in 48 differential species: *Acer platanoides*, *Alliaria petiolata*, *Anemone ranunculoides*, *Arabis turrita*, *Arum maculatum*, *Asperula taurina*, *Astragalus glycyphyllos*, *Calamintha menthifolia*, *Cardamine impatiens*, *Carex pairae*, *Chaerophyllum temulum*, *Coronilla varia*, *Corydalis cava*, *Fagus sylvatica*, *Fallopia dumetorum*, *Ficaria verna*, *Galeopsis pubescens*, *Galium aparine*, *Geranium robertianum*, *Geum urbanum*, *Hesperis sylvestris*, *Hypericum hirsutum*, *Lactuca quercina* ssp. *sagittata*, *Lamium maculatum*, *Lapsana communis*, *Laserpitium latifolium*, *Lysimachia punctata*, *Melica uniflora*, *Mercurialis perennis*, *Moehringia trinervia*, *Poa nemoralis*,

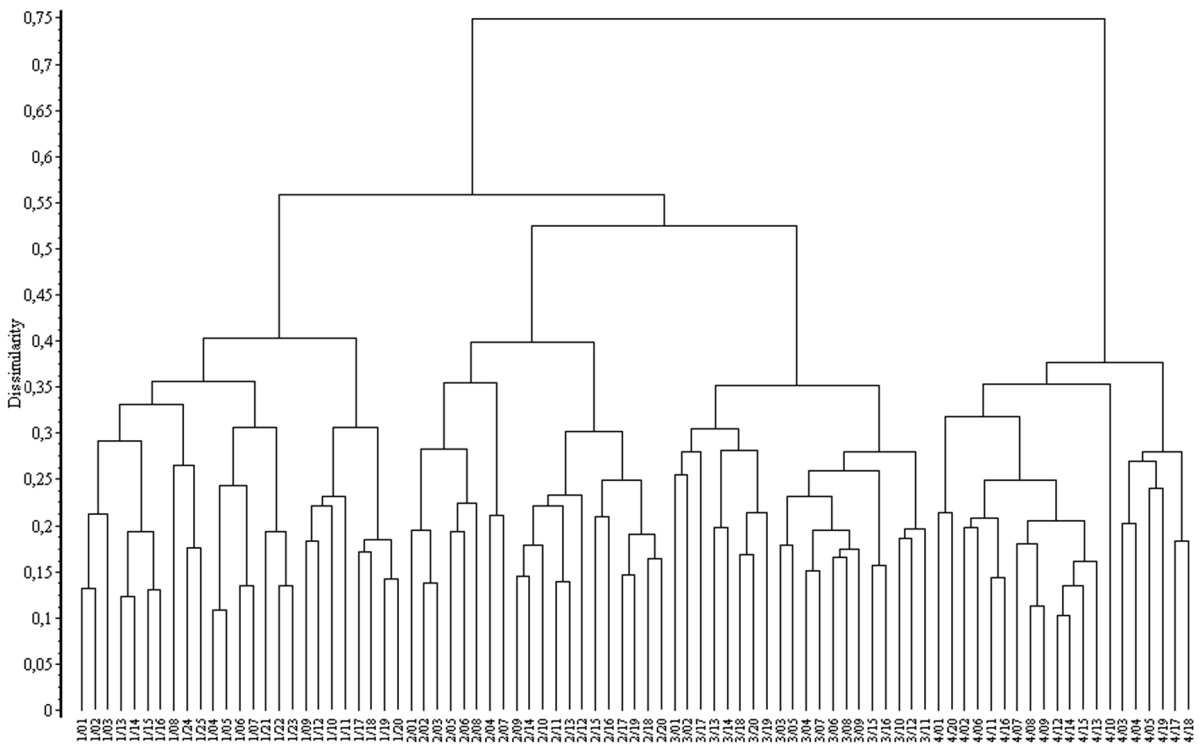


Figure 3: Dendrogram of the studied four associations occurring in the Eastern Mecsek. Similarity index: Baroni-Urbani-Buser, fusion algorithm: complete linkage.

Slika 3: Dendrogram proučevanih štirih asociacij, ki se pojavljajo v vzhodnem delu hribovja Mecsek. Indeks podobnosti: Baroni-Urbani-Buser, kopičenje na osnovi popolnega povezovanja.

1/1–25.: *Paeonia banaticae-Quercetum cerridis*; 2/1–20.: *Tamo-Quercetum virgilianae*;
3/1–20.: *Potentillo micranthae-Quercetum dalechampii*; 4/1–20.: *Tilio tomentosae-Fraxinetum ornii*.

Potentilla micrantha, *Quercus petraea* agg., *Rubus fruticosus* agg., *Rumex sanguineus*, *Scutellaria altissima*, *Sedum maximum*, *Silene viridiflora*, *Stellaria holostea*, *Stellaria media*, *Torilis japonica*, *Urtica dioica*, *Verbascum austriacum*, *Veronica chamaedrys*, *Veronica hederifolia*, *Vicia hirsuta*, *Viola arvensis*, *Viola odorata*, etc. The pubescent oak woods (*Tamo-Quercetum virgiliana*e) contain 38 differential species: *Acer tataricum*, *Adonis vernalis*, *Betonica officinalis*, *Brachypodium pinnatum*, *Bromus pannonicus*, *Carex michelii*, *Carex montana*, *Chamaecytisus supinus*, *Cornus sanguinea*, *Dictamnus albus*, *Euonymus verrucosa*, *Euphorbia epithymoides*, *Filipendula vulgaris*, *Geranium sanguineum*, *Hepatica nobilis*, *Inula ensifolia*, *Iris graminea*, *Iris variegata*, *Lathyrus niger*, *Lembotropis nigricans*, *Lonicera caprifolium*, *Melampyrum nemorosum*, *Melittis carpatica*, *Mercurialis ovata*, *Muscari botryoides*, *Neottia nidus-avis*, *Orchis purpurea*, *Peucedanum cervaria*, *Poa pratensis*, *Pulmonaria mollis*, *Quercus pubescens*, *Rhamnus catharticus*, *Serratula tinctoria*, *Silene nutans*, *Sorbus domestica*, *Sorbus torminalis*, *Teucrium chamaedrys*, *Viburnum lantana*, etc. (Table 6).

From the turkey oak forests (*Potentillo micranthae-Quercetum dalechampii*) it is separated by a large number (33) of differential species: *Alliaria petiolata*, *Anemone ranunculoides*, *Anthriscus cerefolium*, *Arabis turrata*, *Arum maculatum*, *Brachypodium pinnatum*, *Carex pairae*, *Cornus mas*, *Coronilla varia*, *Corydalis cava*, *Epipactis helleborine* agg., *Euonymus europaea*, *Euphorbia cyparissias*, *Galeopsis pubescens*, *Galium aparine*, *Geranium robertianum*, *Hesperis sylvestris*, *Inula conyza*, *Lamium maculatum*, *Lapsana communis*, *Laser trilobum*, *Laserpitium latifolium*, *Muscari botryoides*, *Paeonia banatica*, *Sedum maximum*, *Silene vulgaris*, *Stellaria media*, *Teucrium chamaedrys*, *Urtica dioica*, *Verbascum austriacum*, *Vicia hirsuta*, *Viola arvensis*, *Viola odorata*, etc. The turkey oak forests also harbor 25 differential species: *Carex divulsa*, *Carex pilosa*, *Carex sylvatica*, *Cerasus avium*, *Dentaria bulbifera*, *Euphorbia amygdaloides*, *Festuca drymeia*, *Festuca heterophylla*, *Galium odoratum*, *Galium schultesii*, *Genista ovata*, *Hedera helix*, *Hepatica nobilis*, *Hieracium sabaudum*, *Lathyrus niger*, *Lathyrus venetus*, *Lathyrus vernus*, *Luzula forsteri*, *Mycelis muralis*, *Rubus hirtus*, *Ruscus aculeatus*, *Ruscus hypoglossum*, *Sanicula europaea*, *Sorbus torminalis*, *Viola sylvestris*, etc. (Table 6).

The studied forest type has 48 differential species as compared to the mesophilous linden-ash forests on rubble (*Tilio tomentosae-Fraxinetum ornii*): *Anthericum ramosum*, *Anthriscus cerefolium*, *Astragalus glycyphyllos*, *Brachypodium pinnatum*, *Bromus ramosus*, *Campanula persicifolia*, *Carex pairae*, *Chrysanthemum*

corymbosum, *Clematis vitalba*, *Clinopodium vulgare*, *Colutea arborescens*, *Convallaria majalis*, *Coronilla varia*, *Epipactis helleborine* agg., *Erysimum odoratum*, *Euphorbia cyparissias*, *Festuca heterophylla*, *Fragaria vesca*, *Galeopsis pubescens*, *Galium aparine*, *Galium mollugo*, *Hesperis sylvestris*, *Inula conyza*, *Laser trilobum*, *Laserpitium latifolium*, *Lathyrus niger*, *Ligustrum vulgare*, *Lithospermum purpureo-coeruleum*, *Lysimachia punctata*, *Melittis carpatica*, *Muscari botryoides*, *Paeonia banatica*, *Polygonatum odoratum*, *Prunus spinosa*, *Quercus cerris*, *Rosa canina*, *Rubus fruticosus* agg., *Sedum maximum*, *Silene viridiflora*, *Silene vulgaris*, *Tamus communis*, *Teucrium chamaedrys*, *Verbascum austriacum*, *Veronica chamaedrys*, *Vincetoxicum hirundinaria*, *Vicia hirsuta*, *Vicia pisiformis*, *Viola arvensis*, etc. Conversely, the latter forest type differs from the former in 47 differential species: *Acer platanoides*, *Acer pseudo-platanus*, *Aconitum vulparia*, *Anemone ranunculoides*, *Arabis turrata*, *Asarum europaeum*, *Asperula taurina*, *Cardamine impatiens*, *Carex divulsa*, *Carex pilosa*, *Cerasus avium*, *Chelidonium majus*, *Corydalis cava*, *Corydalis pumila*, *Corylus avellana*, *Cystopteris fragilis*, *Dentaria bulbifera*, *Dentaria enneaphyllos*, *Dryopteris filix-mas*, *Euphorbia amygdaloides*, *Fagus sylvatica*, *Fraxinus excelsior*, *Gagea lutea*, *Galanthus nivalis*, *Galeobdolon luteum*, *Galium odoratum*, *Hedera helix*, *Helleborus dumetorum*, *Hepatica nobilis*, *Isopyrum thalictroides*, *Lathraea squamaria*, *Lathyrus vernus*, *Mercurialis perennis*, *Moehringia trinervia*, *Mycelis muralis*, *Omphalodes scorpioides*, *Ruscus aculeatus*, *Ruscus hypoglossum*, *Sambucus nigra*, *Sanicula europaea*, *Scrophularia vernalis*, *Smyrniium perfoliatum*, *Staphylea pinnata*, *Tilia platyphyllos*, *Ulmus glabra*, *Viola odorata*, *Viola sylvestris*, etc. (Table 6).

3.5 Results of statistical analyses

The percentage of species (Table 7) characteristic of the *Festuco-Brometea* s.l. is the highest (9.4 %) in *Tamo-Quercetum*, and next highest (5.6 %) in the studied forest type (Fig.4). A similar rank order was found with respect to species characteristic of *Quercetea pubescentis-petraeae*: *Tamo-Quercetum*: 48.5 %, the studied forest type: 36.3 %. In contrast, *Fagetalia* species are most abundant in *Tilio tomentosae-Fraxinetum* (30.9 %). In the studied forest type this value is 10.7 %, which is intermediate between the two other associations, *Potentillo-Quercetum* (15.0 %) and *Tamo-Quercetum* (6.0 %) (Fig. 5).

In terms of the ecological indicator values, the studied forest type is characterized with usually intermediate values (Table 8). Although the values

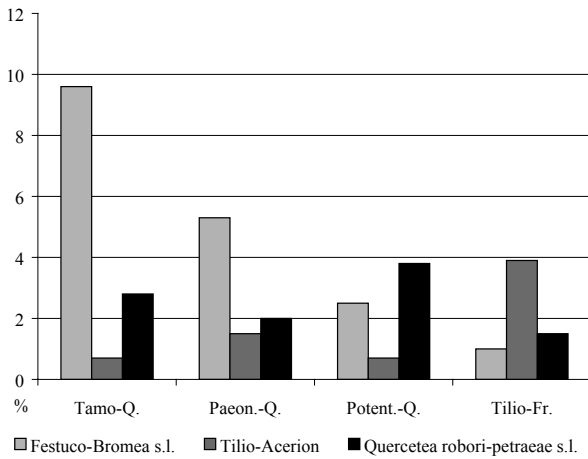


Figure 4: Percentage of characteristic species based on K % I.

Slika 4: Odstotek značilnih vrst na osnovi K % I.

Tamo-Q.: *Tamo-Quercetum virgilianae*
 Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*
 Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*
 Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

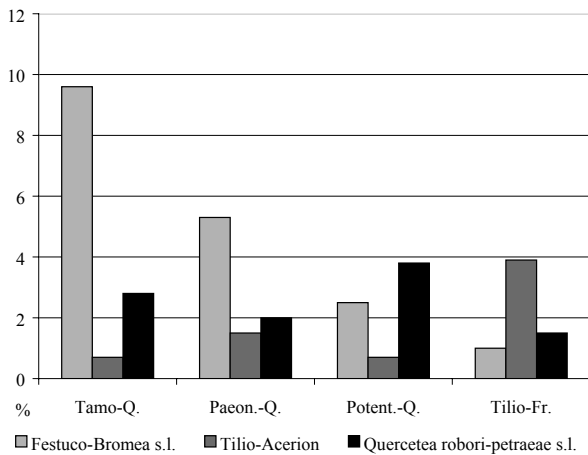


Figure 5: Percentage of characteristic species based on K % II.

Slika 5: Odstotek značilnih vrst na osnovi K % II.

Tamo-Q.: *Tamo-Quercetum virgilianae*
 Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*
 Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*
 Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

are the highest and the lowest in the N5 and L6 categories, respectively, for this forest type, the differences are not substantial.

In terms of social behavior types, the specialist species (S) are the most abundant in *Tilio tomentosae-Fraxinetum*, the competitors (C) in *Potentillo-*

Quercetum, the generalists (G) in *Tamo-Quercetum*, whereas the disturbance tolerant species (DT) are most frequent in the studied forest type (Table 9).

4. DISCUSSION

The great number of differential species and the results of the traditional comparative and multivariate statistical analyses indicate that the studied forest type is substantially different from all other associations studied. Its unique species combination and peculiar habitat requirements also support the view that the thermophilous dry oakwood on rubble in the Eastern Mecsek represents a new, yet undescribed association. Due to the occurrence of several species with submediterranean distribution and the presence of the Tertiary relic *Paeonia banatica* Rochel, it is likely to be a relic association. As a consequence of the unique habitat characteristics, stands of this association do not occur elsewhere in Hungary, not even in the neighbouring Western Mecsek Hills nor in the Villány Hills with otherwise similar vegetation.

Description of this forest type as a new association is given by following the phytosociological code of nomenclature (see Weber & al. 2000). The proposed name of the association is *Paeonio banaticae-Quercetum cerridis* Kevey ass. nova. The *holotypus* – nomenclatural type – of this association is relevé No. 12 in Table 1. Because of its apparent relatedness to turkey oak forests (*Potentillo micranthae-Quercetum dalechampii*) it is placed into the *Quercion farnetto* I. Horvat 1954 alliance, and the *Quercenion farnetto* Kevey into the Kevey & Borhidi 2005 suballiance.

To my knowledge, associations with identical characteristics and species composition have not been mentioned in the literature. It is possible that similar forests occur in the Fruška Gora in Serbia, and in Munii Codru-Moma, Romania, where *Paeonia banatica* also occurs. In the latter, wild paeony occurs in the zonal turkey oak forest (*Cytiso nigricantis-Quercetum cerridis* Bo caiu & al. 1966) with many southerly distributed species that do not occur in Hungary: *Aristolochia pallida*, *Carex bullockiana*, *Lathyrus hallersteinii*, *Potentilla thuringiaca*, and *Silene italica* (see Marossy 1977). The scree forest named *Paeonio officinalis-Tilietum platyphylli* Košir & Surina 2005 described from the Čičarija Mts. in Slovenia also is somewhat similar to *Paeonio banaticae-Quercetum cerridis* by its submediterranean character and stony soil characteristics. However,

this association is classified into the order *Fagetalia* and alliance *Fraxino-Acerion* Fukarek 1969 because of the mesophilic habitat and distinct species combination (for example, *Acer monspessulanum*, *Anthriscus fumarioides*, *Aristolochia lutea*, *Corydalis ochroleuca*, *Crocus neapolitanus*, *Cyclamen purpurascens*, *Delphinium fissum*, *Digitalis laevigata*, *Helleborus multifidus*, *Lamium orvala*, *Lilium carnioolicum*, *Melittis melissophyllum*, *Ostrya carpinifolia*, *Paeonia officinalis*, *Sesleria autumnalis*) (Košir & Surina 2005).

The syntaxonomic position of this and the other three associations discussed in this paper is as follows:

Divisio: **QUERCO-FAGEA** Jakucs 1967

Classis: **QUERCO-FAGETEA** Br.-Bl. & Vlieger in Vlieger 1937 em. Borhidi in Borhidi & Kevey 1996

Ordo: **FAGETALIA SYLVATICAE** Pawłowski in Pawłowski & al. 1928

Alliance: **Aremonio-Fagion** (I. Horvat 1938) Borhidi in Török & al. 1989

Suballiance: **Polysticho setiferi-Acerenion pseudoplatani** Borhidi & Kevey 1996

Associatio: *Tilio tomentosae-Fraxinetum ornii* (A. O. Horvát 1958) Soó & Borhidi in Soó 1962

Classis: **QUERCETEA PUBESCENTIS-PETRAEAE** (Oberd. 1948) Jakucs 1960

Ordo: **ORNO-COTINETALIA** Jakucs 1960

Alliance: **Orno-Cotinion** Soó 1960

Associatio: *Tamo-Quercetum virgilianae* Borhidi & Morschhauser in Borhidi & Kevey 1996

Alliance: **Quercion farnetto** I. Horvat 1954

Suballiance: **Quercenion farnetto** Kevey in Kevey & Borhidi 2005

Associatio: *Potentillo micranthae-Quercetum dalechampii* Horvát A. O. 1981

Associatio: *Paeonio banaticae-Quercetum cerridis* Kevey ass. nova

Suballiance: **Luzulo forsteri-Quercenion polycarpae** Kevey in Kevey & Borhidi 2005.

The thermophilous dry oak wood on rubble (*Paeonio banaticae-Quercetum cerridis*) – as a local association with relic character – represents one of the most significant natural treasures of the Mecsek Hills. It is the primary habitat of the strictly protected *Paeonia banatica*, an endemic species of the Carpathian Basin. In addition to wild paeony, many other rare and threatened plant species oc-

cur in this association: *Aconitum vulparia*, *Asperula taurina*, *Cephalanthera damasonium*, *Cephalanthera rubra*, *Doronicum hungaricum*, *Epipactis helleborine* agg., *Erysimum odoratum*, *Hepatica nobilis*, *Hesperis matronalis* subsp. *candida*, *Iris graminea*, *Lathyrus venetus*, *Lilium martagon*, *Lunaria annua*, *Muscari botryoides*, *Orchis simia*, *Platanthera bifolia*, *Primula vulgaris*, *Ruscus aculeatus*, *Scrophularia vernalis*, *Sorbus domestica*, *Stachys alpina*, *Tamus communis*. Most of these species are relics of the warmer periods of the postglacial, while others, such as *Orchis simia* and *Paeonia banatica* are likely to be tertiary relics (see Soó 1964).

ACKNOWLEDGEMENTS

I thank Róbert Pál for his help in preparing the electronic version of the vegetation profile figures, István Zsolt Tóth for sharing his field experience with me, Gábor Lendvai for translating the original text into English, and the two reviewers for improving the earlier version of the paper.

ABBREVIATIONS

A1: upper canopy layer, A2: lower canopy layer, AbP: *Abieti-Piceea*, AF: *Aremonio-Fagion*, AFe: *Asplenio-Festucion pallentis*, Agi: *Alnenion glutinosae-incanae*, Ai: *Alnion incanae*, Alo: *Alopecurion pratensis*, AQ: *Aceri tatarico-Quercion*, Ar: *Artemisietea*, Ara:, *Arrhenatheretea*, Arn: *Arrhenatherion elatioris*, Ate: *Alnetea glutinosae*, B1: shrub layer, B2: seedlings, Bia: *Bidentetea*, Bra: *Brometalia erecti*, BrF: *Bromo-Festucion pallentis*, C: herbaceous layer, Cal: *Calystegion sepium*, Cau: *Caucalidion platycarpus*, Che: *Chenopodietea*, ChS: *Chenopodio-Scleranthea*, Cp: *Carpinenion betuli*, CU: *Calluno-Ulicetea*, CyF: *Cynodonto-Festucenion*, ECp: *Erythronio-Carpinenion betuli*, EP: *Erico-Pinetea*, Epa: *Epilobietea angustifolii*, Epn: *Epilobion angustifolii*, EuF: *Eu-Fagenion*, F: *Fagetalia sylvaticae*, FB: *Festuco-Bromea*, FBt: *Festuco-Brometea*, FiC: *Filipendulo-Cirsion oleracei*, FPe: *Festuco-Puccinellietea*, Fru: *Festucion rupicolae*, Fvg: *Festucetea vaginatae*, Fvl: *Festucetalia valesiacae*, GA: *Galio-Alliarion*, GU: *Galio-Urticetea*, ined.: ineditum (unpublished), Mag: *Magnocaricetalia*, Moa: *Molinietalia coeruleae*, MoA: *Molinio-Arrhenatheretea*, MoJ: *Molinio-Juncetea*, NC: *Nardo-Callunetea*, OCa: *Orno-Cotinetalia*, OCn: *Orno-Cotinion*, Pa: *Populion albae*, Pla: *Plantaginetea*, PP: *Pulsatillo-Pinetea*, PQ: *Pino-Quercetalia*, Pru: *Prunetalia spinosae*, Pte: *Phragmitetea*, Qc: *Quercetalia*

cerris, QF: *Quercus-Fagetea*, Qfa: *Quercion farnetto*, Qp: *Quercion petraeae*, Qpp: *Quercetea pubescentis-petraeae*, Qr: *Quercetalia roboris*, Qrp: *Quercion robori-petraeae*, S: summa (total), Sal: *Salicion albae*, Sea: *Secalietea*, Spu: *Salicetea purpureae*, TA: *Tilio platyphyllae-Acerenion pseudoplatani*, Ulm: *Ulmion*, US: *Urtico-Sambucetea*, VP: *Vaccinio-Piceetea*.

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Recieved 22. 3. 2006

Revision recieved 11. 9. 2006

Accepted 16. 9. 2006

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A-D	K	%		
<i>Fallopia dumetorum</i> (Qpp, GA)	B2	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	1	1	1	1	1	+	+	+	+	+	+1	V	88	
<i>Quercus petraea</i> agg. (Cp, PQ, Qpp)	S	+	+	+	1	1	.	+	+	1	1	+	+	+	1	+	3	3	3	2	1	+	+	1	1	+	+3	V	96	
	C	1	+	1	1	2	2	+	1	2	+	+	+	1	2	2	+	+	+	+	1	1	.	.	.	+	+2	V	96	
	A1	1	1	+	1	.	.	3	1	2	3	2	1	3	2	2	4	3	4	4	3	3	2	1	1	+	+4	V	92	
	A2	1	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+1	I	16
	B1	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	B2	+	+	.	.	+	.	+	.	.	+	.	.	+	+	+	+	+	+	+	.	+	+	+	+	+	+	IV	68	
	S	2	1	+	1	+	.	3	1	2	3	2	1	3	2	2	4	3	4	4	3	3	2	1	1	+	+4	V	96	
	B1	1	1	1	3	2	2	1	1	1	.	+	2	2	.	+	+	2	2	1	1	1	1	1	1	+	+3	V	88	
	B2	+	+	+	+	+	+	.	.	.	.	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	IV	80
	S	1	1	1	3	2	2	1	1	1	.	+	2	2	+	+	+	2	2	1	1	1	1	1	1	+	+3	V	92	
	C	.	+	+	+	+	+	+	+	+	1	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	+	V	92
	C	+	+	.	2	+	+	1	1	+	+	+	+	+	+	+	1	1	2	2	+	+	+	+	+	+	+2	V	92	
	C	+	+	+	+	+	+	1	+	+	+	+	1	+	+	+	+	+	+	+	.	+	.	.	.	+	+1	V	92	
	C	+	+	+	+	+	+	+	+	1	+	.	+	1	+	1	1	+	+	.	+	+	+	+	+	.	+1	V	92	
	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	.	+1	V	92	
	C	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	.	+	+	+	+	+	.	+	V	88	
	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	.	+	V	88	
	A2	.	.	.	+	.	1	+	+1	I	12
	B1	.	.	.	1	+	+1	I	12
	B2	+	+	+	+	+	+	+	+	.	+	.	+	+	+	+	.	+	+	.	+	+	+	+	+	+	+	V	84	
	S	+	+	+	1	+	+	+	+	.	+	.	+	+	+	+	.	+	+	.	+	+	+	+	+	+	+1	V	84	
	C	.	.	.	+	+	+	+	+	1	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+1	V	84	
	C	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	IV	80	
	B1	1	+	+	+	+	.	+	+	+	+	+	1	1	+	+	.	1	+	+	.	.	.	.	.	2	+2	IV	72
	B2	1	+	+	+	+	.	.	+	+	.	+	+	1	+	+	+	+	+	+	.	.	.	.	.	1	+1	IV	72
	S	2	+	+	+	+	.	+	+	+	+	+	1	2	+	+	+	1	+	+	.	.	.	.	.	2	+2	IV	80
	C	+	+	+	+	+	1	.	+	+	+	.	.	.	+	+	+	+	+	+	1	1	+	.	.	.	+1	IV	76	
	C	+	+	+	+	+	.	+	+	.	+	+	+	+	.	+	+	.	.	+	.	+	+	+	+	+	+	IV	76	
	C	+	+	+	+	+	.	.	+	.	+	+	+	+	.	+	+	+	+	+	.	.	.	.	.	+	+	IV	68
	C	+	+	+	.	+	+	+	+	.	.	+	.	.	.	.	+	+	+	+	+	+	+	+	+	+	+	IV	64
	C	+	+	+	+	+	+	+	.	.	.	+	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	IV	64	
	C	+	+	+	+	+	+	+	.	.	.	+	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	IV	64	
	C	+	+	+	+	+	+	+	.	.	.	+	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	IV	64	
	C	.	+	+	.	+	+	+	.	+	+	+	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	IV	56	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A-D	K	%		
<i>Cornus sanguinea</i> (Qpp)	B2	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	S	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
	B1	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	I	4
	B2	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	S	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Fagettia sylvatica																														
<i>Arum maculatum</i>	C	.	.	+	+	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	V	84	
<i>Carpinus betulus</i> (Cp)	A2	+	1	+	+	+1	II	24
	B1	.	.	+	+	I	12
	B2	+	+	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	III	56
	S	+	+	+	+	+	.	+	.	.	.	.	.	.	.	.	1	+	+	+	+	+	+	+	+	+	+1	IV	68
	C	+	+	+	.	+	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	+2	IV	64
	C	.	.	.	.	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	III	56
	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+1	III	52
	A2	+	I	4
	B1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	B2	.	.	.	.	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	III	44
	S	.	.	.	.	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	III	44
	C	.	.	.	.	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	III	44
	C	+	.	.	+	+	1	1	1	+1	II	40
	C	+	+	+	II	36
	C	+	+	+	1	+	+1	II	32
	A2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	B1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	12
	B2	+	.	.	.	+	.	+	+	+	II	28
<i>Lathyrus vernus</i>	S	+	.	.	.	+	.	+	+	+	II	32
	C	+	+	+	+	+	II	32

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A-D	K	%		
<i>Festuca gigantea</i> (Cal,Epa)	C	4	
Ulmion																														
<i>Physalis alkekengi</i> (Qpp)	C	16	
Tilio platyphylae-Acerention pseudoplatani																														
<i>Hesperis matronalis</i> ssp. <i>candida</i> (Ai)	C	4	
Aremnio-Fagion																														
<i>Helleborus odorus</i> (QF,Qfa)	C	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	+	1	2	2	2	+	+	+2	V	100		
<i>Tamus communis</i> (Qfa)	BI	+	12	
	C	+	+	+	+	+	1	1	+	+	+	+	+	+	+	+	1	+	+	+	+	+	+	1	2	+2	V	100		
	S	+	+	+	+	+	1	1	+	+	+	+	+	+	+	+	1	+	+	+	+	+	+	1	2	+2	V	100		
<i>Rosa arvensis</i> (Cp,Qfa)	BI	12	
	B2	1	+	+	+	.	.	+	+	+	+	+	1	1	1	1	1	1	2	+	+	+	+	+	+	+2	V	92		
	S	1	+	+	+	.	.	+	+	+	+	+	1	1	1	1	1	1	2	+	+	+	+	+	+	+2	V	92		
<i>Scutellaria altissima</i> (AQ)	C	.	.	.	.	.	.	1	2	2	1	4	+	1	1	+	.	.	.	.	.	.	.	.	.	.	.	36
<i>Asperula taurina</i> (Cp)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	32
<i>Ruscus aculeatus</i> (Qfa)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	28
<i>Lathyrus venetus</i> (Cp)	C	1	+	1	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	16
<i>Luzula forsteri</i> (Qfa,ECp)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8
<i>Lunaria annua</i> (TA)	C	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Quercetalia roboris																														
<i>Veronica officinalis</i> (PQ,NC,PP,Epa)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	12
<i>Luzula luzuloides</i> (VP,CU)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Quercion robori-petraeae																														
<i>Lysimachia punctata</i> (Qp,Epa,Epa)	C	+	.	.	.	.	.	.	.	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	28
Quercetea pubescentis-petraeae																														
<i>Fraxinus ornus</i> (OCa)	A1	1	1	1	2	2	3	4	2	2	.	1	2	+	+	3	2	.	.	.	.	.	.	.	.	.	.	68
	A2	3	3	2	3	3	2	2	3	2	2	2	3	2	2	2	2	1	+	+	+	2	2	2	3	3	+3	V	100	
	BI	.	.	+	1	1	1	2	2	1	2	2	.	2	1	1	1	1	1	1	+	+	1	1	1	1	+2	V	84	
	B2	+	+	+	+	+	+	+	+	.	1	+	+	+	+	+	+	+	+	+	+	+	+	.	.	.	.	88
	S	3	3	3	4	5	3	4	2	3	3	3	4	4	3	2	1	1	1	1	2	2	2	4	5	1-5	V	100		
	C	1	1	2	1	1	1	2	+	2	+	+	2	2	1	2	+	2	1	+	+	+	+	1	1	+2	V	100		
	A1	3	3	4	3	1	1	1	3	4	2	3	4	3	2	3	1	2	2	1	2	2	3	2	2	1-4	V	100		
	A2	.	1	1	1	1	+	+	+	+1	II	36	
<i>Lithospermum purpureo-coeruleum</i> (OCn,AQ)	BI	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	8
<i>Quercus cerris</i> (Qr,PQ)	B2	.	+	+	.	+	+	.	+	+	+	.	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	76

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A-D	K	%		
<i>Hesperis sylvestris</i>	B2	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	I	16
<i>Quercus pubescens</i>	S	.	.	+	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	II	24
	C	+	1	.	1	+	+	II	24
	A1	.	.	.	.	1	1	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	1	1	I	20
	A2	1	2	1	1-2	I	12
	B2	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Trifolium alpestre</i> (Fvl)	S	.	.	.	.	1	2	.	.	.	.	.	.	.	2	2	.	.	.	.	.	.	.	.	1	1-2	I	20	
<i>Sorbus domestica</i>	C	.	+	+	.	.	.	.	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	I	20
	A2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	B2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	I	12
	S	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	I	12
<i>Campanula bononiensis</i> (Fvl)	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
<i>Carex michelii</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
<i>Malus sylvestris</i> (Ai, Cp)	B2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	I	8
<i>Origanum vulgare</i> (Pru)	C	+	I	8
<i>Piptatherum virescens</i> (OCh, AQ)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
<i>Rosa gallica</i> (Pru)	B2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	I	8
<i>Viola hirta</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
<i>Betonica officinalis</i> (MoA)	C	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Cephalanthera rubra</i> (F)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Doronicum hungaricum</i> (AQ)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Iris graminea</i> (Bra)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Solidago virga-aurea</i> (NC, Epa, Qrp, PQ)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Trifolium rubens</i> (Fvl)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Turritis glabra</i> (Fvl)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Vicia cassubica</i> (Qrp)	C	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Orno-Coition																														
<i>Orchis simia</i>	C	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
Quercion farnetto																														
<i>Paeonia banatica</i>	C	1	1	1	2	1	+	1	1	2	+	1	2	2	1	1	+	2	+	+	1	1	1	1	.	.	+	-2	V	92
<i>Tilia tomentosa</i> (AF)	A1	+	+	.	.	+	+	1	1	.	.	+	1	.	+	.	.	.	2	1	3	2	+	+3	III	56
	A2	+	+	1	1	1	1	1	1	1	1	1	+	2	1	1	1	.	+	-2	III	60
	B1	+	.	+	2	+	1	+	1	+	+	-2	II	36
	B2	+	+	+	.	.	.	.	.	+	+	+	.	.	.	+	+	+	+	+	+	+	+	.	.	+	+	IV	64
	S	1	1	+	+	+	+	1	.	1	2	2	.	.	.	+	2	1	2	1	+	3	2	3	2	+	+3	V	84	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A-D	K	%	
<i>Vicia grandiflora</i> ssp. <i>sordida</i> (Alo)	C	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Aperetalia (incl. Aphanion)																													
<i>Myosotis arvensis</i> (Arn, C _Y F)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	I	4
Chenopodietea																													
<i>Arctium minus</i> (Ar, Bia, Pla)	C	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	8
<i>Arctium lappa</i> (Ar, Pla, Spu)	C	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
<i>Ballota nigra</i> (Ar)	C	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Artemisietea (incl. Artemisietalia et Arcition lappae)																													
<i>Sambucus ebulus</i> (Epa)	C	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Gallo-Alliarion																													
<i>Alliaria petiolata</i> (Epa)	C	+	+	+	+	1	+	+	+	+	1	+	+	1	1	1	+	+	+	+	1	+	+	+	+	+	+1	V	96
<i>Chaerophyllum temulum</i>	C	+	.	.	.	+	+	+	1	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+1	IV	76
Calystegion sepium																													
<i>Lamium maculatum</i> (Pa, Agi, F, TA, Qpp)	C	.	.	.	+	+	+	+	1	1	+	1	+	+	+	+	+	+	+	+	2	1	1	+	+	+	+2	V	84
<i>Sisymbrium strictissimum</i> (Ar, Sal)	C	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Atropion bella-donnae																													
<i>Atropa bella-donna</i>	C	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
Indifferens																													
<i>Galium aparine</i> (Sea, Epa, QF)	C	+	+	.	+	+	+	+	1	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-1	V	92
<i>Euphorbia cyparissias</i> (FB, ChS, Epa, Qpp)	C	+	+	+	+	2	+	.	.	+	+	+	+	+	+	+	.	.	.	.	.	+	+	+	+	+	-2	IV	76
<i>Galium mollugo</i> (MoA, FBt, Qrp, Qpp)	C	+	+	+	+	+	+	.	.	.	+	+	+	+	+	+	+	.	.	.	+	+	+	+	+	+	+	IV	68
<i>Torilis japonica</i> (Ar, GA, Epa, QF)	C	+	+	+	+	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	+	+	+	+	+	+	IV	64
<i>Urtica dioica</i> (Ar, GA, Epa, Spu)	C	.	.	.	+	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	+	1	1	1	.	.	-1	III	60
<i>Coronilla varia</i> (Ara, FBt, Qpp)	C	+	.	.	.	+	+	.	.	.	.	.	.	+	+	+	+	.	.	.	.	+	+	+	+	+	+	III	52
<i>Vicia hirsuta</i> (MoA, FB, Sea, Qpp)	C	.	+	+	+	+	+	.	.	+	.	.	.	+	+	+	+	.	.	.	+	+	+	+	+	+	+	III	52
<i>Rubus fruticosus</i> agg. (QF, Epa, US)	B1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	4
	B2	.	.	.	+	+	.	.	.	+	+	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	+	III	44
	S	.	.	.	+	+	.	.	.	+	+	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	+	III	44
<i>Silene vulgaris</i> (Ara, FvI, Qpp)	C	+	+	+	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	III	44
<i>Anthriscus cerefolium</i> ssp. <i>trichosperma</i> (Ar, GA)	C	.	.	.	+	+	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	+	+	+	+	+	II	40
<i>Stellaria media</i> (ChS, QF, Spu)	C	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	II	28
<i>Chelidonium majus</i> (Che, Ar, GA, Epa)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	I	20
<i>Ajuga genevensis</i> (Ara, FBt, Qpp)	C	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	16
<i>Hypericum perforatum</i> (NC, FB, Qpp, PP)	C	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	16

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%
<i>Polygonatum multiflorum</i> (F)	C	.	.	.	.	.	+	+	.	+	+	.	+	.	.	.	.	+	.	.	.	+	II 35
<i>Quercus petraea</i> agg. (Cp, PQ, Qpp)	A1	.	.	.	.	.	.	.	.	+	.	.	.	.	I 1	I	.	.	I	.	.	+1	I 20
	B1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	I 10
	B2	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	+	.	.	+	I 20
	S	.	.	.	.	.	.	.	.	+	.	.	.	.	I 1	I	+	+	I	+	.	+1	II 35
<i>Ajuga reptans</i> (Qpp, MoA)	C	.	.	.	.	.	.	+	+	+	+	.	.	.	.	.	.	+	.	.	.	+	II 30
<i>Neottia nidus-avis</i> (F, Qpp)	C	+	.	.	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	.	+	II 30
<i>Ulmus minor</i> (Ai, Ulm, Qpp)	A1	.	.	.	I	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	I 5
	A2	.	.	.	I	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	I 5
	B1	.	.	.	+	.	+	.	.	.	.	.	.	.	+	.	+	.	+	.	.	+	II 25
	B2	.	.	.	+	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	I 15
	S	.	.	.	2	.	+	.	.	.	.	.	.	.	+	.	+	.	+	.	.	+2	II 30
<i>Viola cyanea</i> (Qpp)	C	+	2	.	.	.	+	.	.	.	.	.	+	.	+	.	.	.	.	.	.	+2	II 30
<i>Corylus avellana</i> (Qpp)	B1	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	II 25
<i>Crataegus oxyacantha</i>	B1	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	I 10
	B2	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 15
	S	.	+	+	+	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	+	II 25
<i>Staphylea pinnata</i> (Cp, TA)	B2	.	.	.	.	.	.	.	.	+	+	.	+	.	.	.	.	.	.	.	.	+	II 25
<i>Campanula trachelium</i> (Epa, Cp)	C	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	+	I 20
<i>Loranthus europaeus</i> (Cp, Qpp)	A1	.	.	.	.	.	.	.	.	+	.	.	.	+	.	+	.	.	.	.	.	+	I 20
<i>Polygonatum latifolium</i> (Qpp)	C	.	.	+	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	+	I 20
<i>Sedum maximum</i> (FB, TA, Qpp)	C	.	.	.	.	.	.	.	.	.	+	.	+	.	.	+	.	.	.	.	.	+	I 20
<i>Tilia cordata</i> (Cp, Qpp)	A1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
	A2	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	I 10
	B1	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	I 10
	B2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
	S	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	I 20
<i>Cruciata glabra</i>	C	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 15
<i>Geranium robertianum</i> (Epa, F)	C	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 15
<i>Fallopia dumetorum</i> (Qpp, GA)	C	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 10
<i>Mycelis muralis</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 10
<i>Carex divulsa</i>	C	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
<i>Ficaria verna</i> (Ai)	C	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
<i>Fraxinus excelsior</i> (Qpp, TA, Ai)	B1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
<i>Lactuca quercina</i> ssp. <i>quercina</i> (Qpp)	C	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 5
<i>Platanthera bifolia</i> (Qpp, PQ, NC, Moa)	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	I 5

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%		
<i>Lonicera caprifolium (OCa)</i>	B2	+	1	1	+	1	1	1	+	+	+	+	+	+	.	+	1	+	1	+	+	+1	V	95	
	S	+	1	1	1	1	1	1	+	+	+	+	+	+	.	+	1	+	1	+	+	+1	V	95	
	B1	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	15
	B2	.	.	.	2	1	+	2	.	.	+	+	+	1	.	.	.	+	+	.	.	.	+2	III	50
	S	.	.	.	2	1	+	2	.	.	+	+	+	1	.	.	.	+	+	.	.	.	+2	III	50
	C	+	.	.	.	.	.	.	.	.	+	+	+	.	.	.	+	.	.	.	.	.	+	II	25
	C	.	.	.	.	.	.	.	.	.	.	+	+	+	.	.	.	.	.	.	.	.	+	I	15
<i>Quercetea pubescentis-petraeae</i>																									
<i>Cornus mas (TA, OCn, Qc)</i>	B1	1	3	2	1	+	1	3	2	2	3	4	2	3	2	3	2	2	2	2	2	2	+4	V	100
	B2	.	+	1	+	+	+	1	+	1	+	+	1	+	+	+	+	+	+	+	+	+	+1	V	95
	S	1	3	2	1	+	1	3	2	2	3	4	2	3	2	3	2	2	2	2	2	2	+4	V	100
	C	+	1	1	1	1	+	+	+	+	+	+	1	+	+	+	+	+	+	+	+	+	+1	V	100
	A1	1	+	1	.	.	1	.	1	2	2	.	.	2	2	.	2	2	2	2	2	2	+2	IV	65
	A2	+	+	+	.	.	3	3	4	2	3	3	3	3	2	2	2	2	2	2	2	2	+4	V	85
	B1	1	+	1	2	1	+	2	3	1	2	2	2	2	2	2	3	3	2	2	2	+3	V	100	
	B2	+	.	.	+	+	1	1	.	+	1	+	+	1	2	1	1	1	1	1	1	1	+2	V	85
	S	2	1	2	2	1	+	4	5	4	4	4	4	4	5	3	4	4	3	3	2	3	+5	V	100
	C	3	2	1	1	3	+	2	1	+	+	+	2	+	1	1	2	2	2	2	2	1	+3	V	100
	A1	4	4	4	4	4	4	3	3	3	3	3	4	3	2	3	3	3	2	4	2	4	2-4	V	100
	A2	2	2	2	2	2	1	1	+	2	.	2	1	.	1	2	1	1	2	2	2	2	+2	V	90
	B1	.	.	.	.	.	.	.	+	+	.	.	.	+	1	1	+	+	+	+	+	.	+1	III	45
	B2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	V	95
	S	5	5	5	5	5	4	3	3	4	3	4	4	3	2	4	3	3	3	3	3	5	2-5	V	100
	B1	+	+	+	+	+	1	+	.	+	+	.	+	+	1	1	1	1	1	+	+	1	+1	V	90
	B2	+	+	1	+	+	1	+	+	+	+	+	+	+	1	1	+	+	+	+	+	+	+1	V	100
	S	+	+	1	+	+	2	+	+	+	+	+	+	+	2	2	1	1	1	+	+	1	+2	V	100
	A2	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	5
	B1	+	1	+	+	+	+	+	.	+	+	+	+	.	.	+	+	.	+	+	+	.	+1	IV	70
	B2	+	+	+	.	.	+	+	+	+	+	+	+	.	+	.	+	+	+	+	+	+	+	IV	80
	S	+	1	1	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+1	V	95
	A1	+	1	1	+	2	1	1	2	+	2	1	1	.	2	2	2	2	2	3	1	1	+3	V	90
	A2	.	.	.	.	+	.	.	.	.	.	+	.	.	.	+	1	.	.	.	.	.	+1	I	20
	B2	+	+	+	.	+	+	+	.	.	+	.	+	.	.	.	+	+	+	+	+	+	+	III	60
	S	+	1	1	+	2	1	1	2	+	2	1	1	.	2	2	2	2	2	3	1	1	+3	V	95
	A1	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	5
	A2	1	+	+	.	.	.	.	+	+	+	+	+	1	.	+	+	1	+	+	+	+	+1	IV	75
<i>Sorbus torminalis (QF)</i>																									

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%			
<i>Viola hirta</i>	C	.	.	+	.	+	.	.	.	.	.	.	.	.	.	+	.	+	+	+	+	+	II	35	
<i>Colutea arborescens (Qc)</i>	B1	.	.	.	.	.	.	.	+	.	.	.	.	.	+	+	+	.	.	.	.	+	I	20	
	B2	.	.	.	.	.	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	+	I	15
	S	.	.	.	.	.	.	.	+	+	.	.	.	+	+	+	+	.	.	.	.	+	II	30	
<i>Orchis purpurea (F, OCn)</i>	C	+	+	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II	30
<i>Campanula bononiensis (Fvl)</i>	C	.	.	.	.	.	.	.	+	.	.	.	.	.	+	+	+	.	.	.	.	+	+	II	25
<i>Lasier trilobum</i>	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	+	+	II	25
<i>Lembotropis nigricans (Qr, PQ, CU)</i>	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	+	+	II	25
<i>Solidago virga-aurea (NC, Epa, Qrp, PQ)</i>	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	.	+	+	II	25
<i>Malus sylvestris (Ai, Cp)</i>	B1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	+	+	I	10
	B2	.	+	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	+	+	I	15
	S	.	+	.	.	.	.	.	+	.	.	.	.	+	.	.	.	+	+	.	.	+	+	I	20
<i>Crepis praemorsa</i>	C	.	.	.	.	.	.	.	+	.	.	+	.	+	.	.	.	.	.	.	.	+	+	I	15
<i>Potentilla alba (Qp, PQ)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	+	I	15
<i>Chamaecytisus austriacus (Fvl)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	10
<i>Inula salicina (MoA, Fvg)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	+	+	I	10
<i>Silene viridiflora</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	+	I	10
<i>Genista tinctoria ssp. elatior (Qrp, PQ, NC, Fvl)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	+	I	5
<i>Melampyrum cristatum (Fvl)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	+	I	5
<i>Rosa gallica (Pru)</i>	B2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	2	I	5
<i>Thalictrum aquilegifolium</i>	C	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	5
<i>Trifolium alpestre (Fvl)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	5
<i>Vicia tenuifolia (FBt)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	5
Orno-Cotinella																										
<i>Limodorum abortivum (Qc)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	5
Orno-Cotinion																										
<i>Orchis simia</i>	C	.	.	.	.	.	.	+	.	.	.	.	.	+	+	.	.	.	.	+	.	+	+	II	25
<i>Coronilla coronata (Qc)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	+	+	I	10
Quercion farnetto																										
<i>Paeonia banatica</i>	C	I	+	+	+	+	I	I	+	+	+	+	I	+	+	+	+	+	+	+	+	+	+	V	100	
<i>Tilia tomentosa (AF)</i>	A1	+	I	+	2	I	+	+	+	II	35
	A2	I	+	+	+	+	I	.	+	+	+	II	35
	B1	+	+	+	+	+	+	.	.	+	.	+	+	+	.	+	+	+	+	+	+	+	+	IV	75	
	B2	.	+	+	.	.	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	IV	80	
	S	+	+	+	+	+	+	+	I	I	I	I	I	2	I	I	+	+	+	+	+	+	+	V	100	
<i>Genista ovata ssp. nervata (AF, Qrp, PQ)</i>	C	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	+	+	I	15

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%			
Galio-Alliarion																										
<i>Alliaria petiolata</i> (Epa)	C	.	.	+	.	+	+	.	.	.	+	.	.	.	.	.	+	.	.	.	.	+	II	35	
Calystegion septium																										
<i>Chaerophyllum bulbosum</i>	C	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	5
Indifferens																										
<i>Galium mollugo</i> (MoA, FBt, Qrp, Qpp)	C	+	+	.	+	+	+	+	+	+	+	+	+	+	I	I	+	+	+	+	+	+1	V	95		
<i>Euphorbia cyparissias</i> (FB, ChS, Epa, Qpp)	C	.	+	.	+	+	+	.	+	+	.	.	.	+	.	+	.	+	+	+	+	+	+	IV	65	
<i>Serratula tinctoria</i> (MoA, MoJ, Qrp, Qpp, PQ)	C	.	.	+	.	+	.	.	+	+	.	+	+	+	I	I	+	+	+	+	+	+1	IV	65		
<i>Silene vulgaris</i> (Ara, FvJ, Qpp)	C	.	.	.	+	.	.	.	.	+	.	+	.	+	.	+	.	.	.	.	.	+	+	II	35
<i>Galium aparine</i> (Sea, Epa, QF)	C	+	+	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II	30
<i>Carex flacca</i> (Mag, MoJ, Arn, FBt, Qpp)	C	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	+	+	+	I	20
<i>Coronilla varia</i> (Ara, FBt, Qpp)	C	.	.	.	.	+	+	.	.	.	.	.	.	+	+	+	.	.	.	.	.	+	+	I	20
<i>Juniperus communis</i> (NC, Fvg, Qpp, EP, PP)	B1	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	+	+	I	15
	B2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I	5
	S	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	+	+	I	15
<i>Agrimonia eupatoria</i> (FBt, Qpp)	C	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	I	10
<i>Ornithogalum umbellatum</i> (Ara, FBt, Sea)	C	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	10
<i>Rubus fruticosus</i> agg. (QF, Epa, US)	B2	+	+	I	10
<i>Ajuga genevensis</i> (Ara, FBt, Qpp)	C	+	+	I	5
<i>Anthriscus cerefolium</i> ssp. <i>trichosperma</i> (Ar, GA)	C	+	+	+	I	5
<i>Cruciata laevipes</i> (Arn, Fru, Ar, GU, Qpp)	C	+	+	+	I	5
<i>Galium verum</i> (MoJ, FB, Qpp)	C	+	+	+	+	I	5
<i>Sambucus nigra</i> (Epa, US, QF)	B2	+	+	I	5
<i>Taraxacum officinale</i> (MoA, FPe, CyF, ChS)	C	+	+	I	5
<i>Torilis japonica</i> (Ar, GA, Epa, QF)	C	+	+	I	5
Adventiva (incl. Culta, Subspontaneu et Indigena)																										
<i>Juglans regia</i>	B2	+	+	+	I	10

Location: 1–6: Pécsvárad „Pavojda”; 7–8: Pécsvárad „Óreg-Béke”; 9–14: Pécsvárad „Csiger Hill”; 15–20: Pécsvárad „Forest next to shooting range”.

Type of baseroc: 1–6: loess; 7–20: limestone.

Soil type: 1–20: brown forest soil.

Author: 1–20: Kevey (ined.).

For explanation of abbreviations see table 1.

Table 3 (Tabela 3): *Potentillo micranthae-Quercetum dalechampii*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number of sample plot	4380	4382	4383	4389	4390	4387	4388	4391	4392	3496	3497	3500	3498	3499	3494	3495	3493	3491	3492	4384
Year of first sampling	2001	2002	2002	2002	2002	2002	2002	1988	1988	2003	2003	2003	2003	2003	2003	2003	2003	2003	2003	2002
Month and day of first sampling	03.15	03.16	03.16	03.15	03.15	03.15	03.15	04.17	03.21	03.21	03.21	03.25	03.22	03.22	03.25	03.25	03.24	03.24	03.24	03.13
Year of second sampling	2001	2002	2002	2002	2002	2002	2002	1988	1988	2003	2003	2003	2003	2003	2003	2003	2003	2003	2003	2002
Month and day of second sampling	08.13	06.18	06.18	06.19	06.19	06.19	06.19	09.01	06.22	06.22	06.14	06.22	06.14	06.22	06.14	06.14	06.15	06.15	06.15	06.07
Altitude above sea level (m)	370	380	400	440	410	350	370	340	380	450	450	530	330	340	475	530	400	360	350	325
Exposition	S	SE	S	SW	SE	W	SW	W	SE	SW	S	S	SE	W	S	SW	SW	S	S	W
Slope inclination in degrees	5	10	5	5	5	5	5	10	10	3	3	5	10	5	3	10	15	3	3	3
Cover of upper canopy layer (%)	80	70	70	70	65	75	70	80	75	70	80	60	80	60	80	80	75	70	70	70
Cover of lower canopy layer (%)	30	5	25	25	20	20	20	25	20	5	5	25	15	30	25	20	30	12	25	5
Cover of shrub layer (%)	60	10	10	20	30	25	5	30	40	1	1	5	60	40	15	15	25	5	20	1
Cover of saplings (%)	25	31	10	15	15	10	5	1	25	10	10	10	30	30	10	5	10	20	30	10
Cover of understorey (%)	50	75	90	90	80	80	90	50	70	80	80	95	80	60	90	90	85	60	30	85
Height of upper canopy layer (m)	25	28	25	26	28	28	25	18	28	26	25	25	25	25	26	26	26	26	22	22
Height of lower canopy layer (m)	12	20	16	18	15	20	18	12	12	10	10	18	17	17	20	18	18	12	15	12
Height of shrub layer (m)	2,5	2	2	1,5	1,5	3	1,5	2,5	1	1	1	1,5	2	2	1,5	2	2	2	1,5	1
Mean trunk diameter (cm)	50	50	45	55	55	55	40	30	50	60	55	50	50	70	55	55	50	55	40	35
Area of sample plot (m ²)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
<i>Quercus-Fageteta</i>	A2	+	+	1	1	+	+	.	+	.	+	+	1	1	.	.	.	+	.	.
<i>Acer campestre</i> (Qpp)	B1	+	+	.	+	1	+	1	1	+	.	1	+	1	+	+	+	+	.	.
	B2	+	+	+	+	+	+	+	+	+	+	1	+	+	+	+	+	+	+	+
	S	1	1	1	1	1	1	1	1	+	+	2	1	2	+	+	+	1	+	+
	C	+	1	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	1	+
	B1	2	+	1	+	1	.	.	+	+	+	+	+	.	2	2	.	+	+	+
	B2	+	+	+	+	+	+	+	+	.	+	+	+	+	1	1	+	.	+	+
	S	2	+	1	+	1	+	+	+	+	+	+	+	+	2	2	+	+	+	+
	B1	2	+	+	+	.	1	1	+	+	+	+	3	2	.	.	+	+	2	.
	B2	1	1	1	+	1	+	+	+	+	+	1	2	2	+	+	+	+	2	+
	S	2	1	1	+	+	+	1	1	+	+	1	4	3	+	+	+	+	3	+
	C	2	3	4	3	2	3	4	3	3	3	4	4	3	4	4	+	+	+	3
	A1	4	2	1	4	3	1	2	1	4	5	4	1	3	2	1	4	3	2	4
	A2	1	.	.	.	.	1	+	.	.	.	.	.	+	+	.	.	.	.	1
																				II
																				30
<i>Brachypodium sylvaticum</i> (Qpp)																				
<i>Crataegus monogyna</i> (Qpp)																				
<i>Ligustrum vulgare</i> (Cp, Qpp)																				
<i>Melica uniflora</i> (Cp, Qpp)																				
<i>Quercus petraea</i> agg. (Cp, PQ, Qpp)																				

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%	
B1	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	.	+	I 10
B2	+	.	.	+	+	.	+	+	+	+	+	+	.	+	.	.	+	+	.	.	.	+	IV 65	
S	4	2	1	4	3	2	2	1	4	5	5	4	1	3	2	1	4	3	2	4	1-5	V 100		
C	2	2	2	2	2	2	+	1	+	+	1	1	+	1	+	.	+	2	2	1	+2	V 95		
C	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	V 95	
C	+	+	+	+	+	.	+	+	+	+	+	+	.	.	+	+	+	+	+	+	.	+	V 90	
C	+	+	+	1	2	+	+	+	+	2	+	+	.	+	+	+	1	1	+	.	+2	V 90		
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	.	+	.	.	+	V 85	
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	.	+	.	.	+	V 85	
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	V 85	
C	.	+	+	1	1	+	+	+	+	.	.	+	+	+	+	+	.	.	+	.	.	+	IV 80	
C	+	+	+	+	1	1	1	+	+	+	.	1	+	.	2	+	+	.	.	+	+2	IV 80		
C	+	+	+	1	.	.	+	+	.	2	+	+	+	1	+	.	+	2	+	+	+2	IV 80		
C	+	+	+	+	+	+	.	.	.	.	+	+	+	+	+	.	+	+	+	+	.	+	IV 75
B2	+	+	+	+	.	.	.	+	+	+	.	.	+	+	+	.	+	+	+	+	+	+	IV 75	
C	1	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	.	.	.	.	.	+	IV 75
C	+	+	1	1	.	+	+	1	1	+	+	+	.	+	+	+	.	.	.	1	+1	IV 75		
C	+	.	+	1	.	+	+	+	+	+	+	+	+	+	+	+	.	+	.	.	+	IV 75		
C	+	+	.	+	+	+	+	.	.	+	+	+	+	+	.	.	+	+	+	+	.	+	IV 70	
C	+	.	.	+	.	+	+	.	+	+	+	+	+	+	+	+	.	+	.	.	+	+	IV 70	
C	+	+	+	+	+	+	+	.	+	+	.	.	.	.	+	+	+	+	+	+	.	+	IV 65
C	+	.	.	.	.	+	+	+	.	+	.	.	.	+	+	+	+	+	+	+	.	+	III 60
C	.	+	.	+	+	+	+	.	+	.	.	+	+	+	.	.	+	+	+	+	.	+	III 55	
C	.	.	.	+	+	+	+	.	.	.	+	.	+	+	.	+	.	+	+	+	.	+	III 55	
C	+	+	+	.	.	+	.	+	+	.	+	+	+	.	.	.	+	+	+	+	.	+	III 55	
C	+	.	+	+	+	+	+	.	.	+	.	+	+	+	+	.	.	+	+	+	.	+	III 50	
C	.	.	+	+	+	+	+	+	.	.	.	.	.	.	+	.	.	+	+	+	.	+	III 45
B1	2	+	.	.	.	.	.	.	.	.	.	.	+	1	.	.	+	.	.	.	.	+	II 25
B2	+	+	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	+	.	+	II 25
S	2	+	.	.	.	.	.	.	.	.	.	.	+	1	.	.	+	.	+	+	.	+	II 30
C	.	.	+	+	.	+	.	.	+	.	.	.	.	.	+	+	.	.	.	.	.	+	II 30
C	.	.	.	+	.	.	+	.	.	+	.	+	+	+	.	.	.	.	.	.	.	+	II 30
A2	.	.	.	.	.	.	.	.	.	1	+	.	.	.	.	.	+	+	.	.	.	+	I 15
B1	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	+	+	.	.	.	+	I 20
B2	+	+	I 5
S	+	.	.	.	.	.	.	.	.	1	+	.	.	+	.	.	+	+	.	.	.	+	II 30

Dactylis polygama (Qpp, Cp)

Viola alba (Qpp)

Clinopodium vulgare (Qpp)

Galium schultesii (Cp, Qpp)

Fallopia dumetorum (Qpp, GA)

Geum urbanum (Epa, Cp, Qpp)

Symphlytum tuberosum sp. *angustifolium* (F, Cp, Qpp)

Bromus ramosus agg. (Qpp)

Campanula rapunculoides (Qpp, Epa)

Poa nemoralis (Qpp)

Campanula persicifolia (Qpp)

Clematis vitalba (Qpp)

Ficaria verna (Ai)

Stellaria holostea (F, Cp)

Veronica hederifolia (Sea)

Hieracium sabaudum agg. (Qr, Qpp, AbP)

Polygonatum multiflorum (F)

Fragaria vesca (Qpp, Epa)

Ajuga reptans (Qpp, MoA)

Melittis carpatica (Cp, Qpp, Qc)

Mycelis muralis

Veronica chamaedrys (Qpp, Ara)

Carex divulsa

Lapsana communis (GA, Epa)

Cornus sanguinea (Qpp)

Geranium robertianum (Epa, F)

Hypericum hirsutum (Qpp)

Tilia cordata (Cp, Qpp)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%	
Quercion robori-petraeae																								
<i>Lysimachia punctata</i> (Qp, Epa, Epa)																								
Quercetea pubescentis-petraeae																								
<i>Fraxinus ornus</i> (OCa)																								
<i>Pyrus pyraeaster</i> (Cp)																								
<i>Quercus cerris</i> (Qr; PQ)																								
<i>Lathyrus niger</i> (Qc)																								
<i>Sorbus torminalis</i> (QF)																								
<i>Prunus spinosa</i> (Pru, Pru)																								
<i>Festuca heterophylla</i> (Qrp, Qp)																								
<i>Astragalus glycyphyllos</i>																								
<i>Lithospermum purpureo-coeruleum</i> (OCn, AQ)																								
<i>Silene viridiflora</i>																								
<i>Vincetoxicum hirsutinaria</i> (Fvl)																								
<i>Cornus mas</i> (TA, OCn, Qc)																								
<i>Rosa canina</i> agg. (Pru, Pru)																								
<i>Calamitina menthifolia</i> ssp. <i>syriatica</i>																								
C	.	+	.	.	+	+	.	+	.	.	.	.	+	.	+	+	.	+	+	+	+	+	+	50
A2	2	1	2	2	.	2	.	1	+	.	1	2	1	2	2	2	2	1	2	.	+	+	+	80
B1	+	+	+	.	.	.	.	1	2	.	.	.	2	2	+	.	2	1	.	+	+	+	+	55
B2	1	1	+	1	1	1	+	.	+	+	+	+	1	1	+	+	1	2	1	2	+	+	+	95
S	2	2	2	2	1	2	+	2	+	+	1	2	2	3	2	2	3	2	2	2	2	+	+	100
A2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	5
B1	+	+	+	+	+	.	.	+	+	+	+	+	.	.	+	+	+	+	+	+	+	+	+	80
B2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	95
S	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	1	+	+	+	+	+	+	+	100
A1	2	4	4	2	3	4	3	3	2	1	+	1	4	3	4	4	1	3	4	1	+	+	+	100
A2	1	+	+	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	25
B1	.	.	.	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	10
B2	+	+	+	.	+	+	.	+	+	+	+	+	+	+	+	.	.	+	+	+	+	+	+	70
S	2	4	4	2	3	4	3	3	2	1	+	1	4	3	4	4	1	3	4	1	+	+	+	100
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	1	+	+	+	+	+	+	95
A2	.	+	+	1	1	+	.	+	+	.	+	1	1	1	1	+	2	.	1	+	+	+	+	80
B1	+	.	.	+	.	.	.	+	+	.	.	.	+	.	+	+	1	.	.	.	.	.	.	40
B2	+	+	.	+	+	.	.	+	+	+	.	.	1	+	+	.	+	+	+	+	+	+	+	70
S	+	+	+	1	1	+	.	1	+	+	+	1	2	1	1	+	2	+	1	+	+	+	+	95
B1	+	.	.	.	+	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	25
B2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	85
S	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	+	+	+	+	+	90
C	+	1	+	+	+	1	+	1	.	+	2	+	.	+	.	+	+	1	+	+	+	+	+	85
C	.	+	+	+	+	+	.	.	.	+	+	+	+	+	+	+	.	+	+	+	+	+	+	75
C	.	+	1	1	+	+	+	+	+	+	.	+	1	+	+	+	+	.	.	.	.	.	.	70
C	+	+	+	+	+	.	+	.	.	.	+	+	+	+	+	.	+	+	+	+	+	+	+	70
C	.	.	+	+	+	+	+	+	.	.	+	+	.	+	+	+	.	+	+	+	+	+	+	65
B1	+	2	1	2	1	2	1	2	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	50
B2	.	+	+	+	+	+	+	+	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	55
S	+	2	1	2	1	2	1	2	+	.	.	+	.	+	+	.	.	.	.	.	.	.	.	60
B1	.	.	.	+	+	.	+	.	.	+	.	.	+	+	+	.	.	+	+	.	.	.	.	40
B2	.	.	.	.	.	.	+	.	.	.	+	+	.	.	.	+	.	+	+	.	.	.	.	30
S	.	.	.	+	+	.	+	.	.	.	+	+	+	+	+	+	.	+	+	.	.	.	.	60
C	+	.	+	+	+	+	+	+	.	.	.	.	.	.	+	.	+	+	+	.	.	.	.	55

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%	
<i>Genista ovata</i> ssp. <i>nervata</i> (AF, Qrp, PQ)	B1	+	+	·	2	2	+	1	1	2	+	·	+	+	+	·	+	·	·	+	+2	IV	75	
<i>Paeonia banatica</i>	B2	·	+	+	1	1	+	1	·	2	+	·	1	+	+	·	·	+	+	+	+2	IV	80	
Quercetalia cerris	S	+	+	+	2	3	2	3	4	3	2	1	2	1	2	2	+	+	+	+	+4	V	95	
<i>Chrysanthemum corymbosum</i> (Fvl)	C	+	+	·	·	+	·	·	·	·	+	·	+	·	·	·	+	+	+	+	·	III	60	
<i>Chamaecytisus supinus</i> (Qrp, PQ)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Muscari botryoides</i> (Cp)	C	+	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Vicia pisiformis</i>	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Molinio-Arrhenathera	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
<i>Colchicum autumnale</i> (Moa)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
<i>Molinietalia coerulea</i>	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
<i>Valeriana officinalis</i> (Mag, FiC)	C	+	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Arrhenatheretea (incl. <i>Arrhenatheretalia</i>)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Arrhenatherum elatius</i> (Alo, Arn, Fvl, Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Festuco-Brometea	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Brachypodium pinnatum</i> (Bra, Qpp)	C	·	·	+	·	·	·	·	·	·	·	·	1	+	·	·	·	·	·	·	·	·	·	20
<i>Anthericum ramosum</i> (Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
Festucetalia valesiacae	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Erysimum odoratum</i> (Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Festucion rupicolae	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Allium oleraceum</i> (Qpp)	C	·	·	·	+	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
<i>Dorycnium herbaceum</i> (Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
Secalietea	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	10
<i>Vicia tetrasperma</i> (FBt)	C	·	·	·	·	·	+	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	20
Chenopodietea	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Arcium minus</i> (Ar, Bia, Pla)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Galio-Alliarion	C	+	·	+	+	+	+	+	+	+	·	·	·	·	·	·	·	·	·	·	·	·	·	55
<i>Alliaria petiolata</i> (Epa)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	45
<i>Chaerophyllum temulum</i>	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	45
<i>Melissa officinalis</i> (Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
Calystegion septium	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5
<i>Lamium maculatum</i> (Pa, Agi, F, TA, Qpp)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	20
<i>Sisymbrium strictissimum</i> (Ar, Sal)	C	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	5

Table 4 (Tabela 4): *Tilio tomentosae-Fraxinetum ornii*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Number of sample plot	7190	7181	7186	7185	7161	7176	7174	7172	7173	7191	7164	7167	7165	7169	7170	7171	7179	7178	7180	7160	
Year of first sampling	1988	1987	1983	1983	1983	1987	1986	1986	1986	1987	1985	1985	1986	1986	1986	1986	1987	1987	1987	1983	1984
Month and day of first sampling	04.04	08.24	04.11	04.14	04.14	07.05	09.01	04.16	04.16	08.25	07.01	07.01	04.16	04.16	04.16	04.16	07.09	07.09	04.10	06.21	
Year of second sampling	1988	1988	1983	1983	1988	1988	1987	1986	1986	1988	1986	1986	1986	1986	1986	1986	1988	1988	1984	1985	
Month and day of second sampling	09.01	04.04	09.02	06.01	06.01	04.09	09.01	09.21	09.21	04.04	04.16	04.16	09.01	09.01	09.01	09.01	04.11	04.11	09.14	04.05	
Altitude above sea level (m)	430	380	480	675	575	500	400	440	430	230	480	470	500	470	470	470	560	550	570	250	
Exposition	NW	N	NE	N	NW	E	NW	NW	NW	N	W	N	N	N	N	NW	NW	N	N	N	
Slope inclination in degrees	30	40	20	30	20	40	25	50	40	40	25	35	40	35	35	35	35	40	45	40	
Cover of upper canopy layer (%)	70	80	80	80	80	70	70	75	75	75	70	75	75	75	70	75	75	75	70	60	
Cover of lower canopy layer (%)	50	25	30	25	25	40	25	30	30	35	35	40	35	40	35	35	35	40	35	50	
Cover of shrub layer (%)	40	50	5	45	20	35	10	35	20	40	55	20	35	30	20	25	1	1	15	40	
Cover of saplings (%)	5	1	1	5	1	5	2	2	3	2	2	1	2	2	5	2	2	3	1	1	
Cover of understorey (%)	60	30	75	60	85	80	40	35	60	50	75	30	75	60	60	70	75	30	80	50	
Height of upper canopy layer (m)	18	22	22	28	25	22	25	25	25	22	20	25	23	25	22	25	22	26	25	22	
Height of lower canopy layer (m)	12	25	18	18	18	16	20	15	15	14	35	15	18	20	17	20	18	18	18	12	
Height of shrub layer (m)	2,5	3,5	1	2	1	4	1	2	1,5	2,5	3,5	2,5	3	3	2,5	3	2	1	1	2,5	
Mean trunk diameter (cm)	25	35	40	60	50	40	45	45	45	40	35	45	40	45	40	45	40	45	45	35	
Area of sample plot (m ²)	1600	1600	1600	1600	1200	1200	1200	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	

	A1	A2	B1	B2	S	C	C	C	C	C	C	C	C	C	A2	B1	A-D	K	%		
<i>Quercus-Fageteta</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Acer campestre (Qpp)</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
<i>Fallopia dumetorum (Qpp, GA)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Ficaria verna (Ai)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Geranium robertianum (Epa, F)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Melica uniflora (Cp, Qpp)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Stellaria holostea (F, Cp)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Campanula rapunculoides (Qpp, Epa)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Veronica hederifolia (Sea)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Crataegus monogyna (Qpp)</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	2	
	III	V	IV	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	II
	50	85	65	85	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	25	
	2	1	1	1	2	1	1	1	1	2	2	1	1	1	1	1	1	1	1	2	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%		
<i>Veronica chamaedrys</i> (Qpp, Ara)	C	+			+	+					+									+	+	+	II	35	
<i>Ajuga reptans</i> (Qpp, MoA)	C	+			+						+					+					+	+	II	30	
<i>Fragaria vesca</i> (Qpp, Epa)	C	+			+	+				+			+										+	II	30
<i>Sedum maximum</i> (FB, TA, Qpp)	C							+		+	+				+							+	+	II	30
<i>Campanula trachelium</i> (Epa, Cp)	C	+			+					+	+												+	II	25
<i>Clinopodium vulgare</i> (Qpp)	C	+			+	+																+	+	II	25
<i>Galium schultesii</i> (Cp, Qpp)	C	+						+									+						+	II	25
<i>Heracleum sphondylium</i> (Qpp, MoA)	C	+			+																	+	+	II	25
<i>Campanula persicifolia</i> (Qpp)	C	+									+											+	+	I	20
<i>Carex pairae</i> (Qpp, Epa)	C	+				+											+					+	+	I	20
<i>Ligustrum vulgare</i> (Cp, Qpp)	B1	+									+												+	I	20
	B2	I									+												+	I	10
	S	I									+		+										+	I	20
<i>Melittis carpatica</i> (Cp, Qpp, Qc)	C				+					+												+	+	I	20
<i>Scrophularia nodosa</i> (GA, Epa)	C				+												+						+	I	20
<i>Crataegus oxyacantha</i>	B1				+			+															+	I	15
<i>Galeopsis pubescens</i> (Qpp, Epa)	C				+																		+	I	15
<i>Melampyrum nemorosum</i> (Cp, Qpp)	C									+													+	I	15
<i>Cephalanthera damasonium</i> (Qpp)	C	+									+												+	I	10
<i>Hieracium sabaudum</i> agg. (Qr, Qpp, AbP)	C				+																		+	I	10
<i>Hypericum hirsutum</i> (Qpp)	C				+					+													+	I	10
<i>Tilia cordata</i> (Cp, Qpp)	A1																						+	I	5
	A2																						+	I	10
	B2				+																		+	I	5
	S				2																		+	I	10
<i>Cornus sanguinea</i> (Qpp)	B1									+													+	I	5
	B2									+													+	I	5
	S									+													+	I	5
	C															+							+	I	5
<i>Lactuca quercina</i> ssp. <i>sagittata</i> (Qpp)																									
Foetalia sylvatica																									
<i>Acer pseudo-platanus</i> (TA)	A1		+	2	2	1	2	1	1	+	+	+	1	2	2	+	+	1	1				+	V	90
	A2				1			1	+	+			1	1	1	+		1	+	+	+		+	III	55
	B1				+		+	+	+				+	+	+			+	+	+			+	III	45
	B2	+	+	+	+	+	+	+	+	+	+	+	+	+	+			+	+	+			+	V	90
	S	+	+	2	2	1	2	1	2	1	+	+	2	2	2	1	+	2	1	+	+	+	+	V	100
<i>Arum maculatum</i>	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			+	V	100

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%						
<i>Dentaria enneaphyllos (EuF)</i>	A2	.	1	+	.	.	.	+	1	.	+	+	1	1	1	+	1	1	.	.	.	+	+1	III 60					
<i>Hepatica nobilis</i>	B1	.	1	.	.	.	.	+	1	.	.	+	+	+	+	.	+	.	.	.	.	.	.	+	+1	III 45			
<i>Viola sylvestris</i>	B2	.	1	.	+	.	.	+	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+1	IV 70		
<i>Dryopteris filix-mas</i>	S	.	2	+	1	.	.	1	2	+	1	1	2	2	2	1	3	2	1	.	.	.	.	.	+	+3	IV 80		
<i>Galanthus nivalis</i>	C	.	3	2	.	.	2	+	+	.	+	2	+	2	2	1	4	2	3	1	.	.	.	.	+	+4	IV 75		
<i>Cerastium avium (Cp)</i>	C	+	+	.	+	+	+	.	.	+	+	+	+	.	+	+	+	.	+	+	.	.	.	.	+	+	IV 75		
	C	+	+	.	+	+	+	.	.	+	+	+	.	.	+	+	+	+	+	+	.	.	.	.	+	+	IV 75		
	C	.	+	+	.	.	+	+	+	+	.	+	+	+	+	.	+	+	+	+	.	.	.	.	+	+	IV 70		
	C	.	+	+	+	.	.	+	+	+	.	+	+	+	+	+	+	+	+	+	.	.	.	.	+	+	IV 70		
	A1	+	.	+	.	+	.	.	.	.	+	+	.	.	.	+	.	+	+	+	.	.	.	.	+	+	II 40		
	A2	.	.	.	+	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	+	+	II 25		
	B1	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	+	I 5		
	B2	.	+	+	.	+	+	.	.	.	+	+	.	+	.	+	.	+	.	.	.	.	.	.	+	+	III 50		
	S	+	+	+	+	+	+	.	.	.	+	1	.	1	.	+	.	+	+	+	.	.	.	.	+	+	+1	IV 65	
	C	.	+	.	+	+	+	.	.	+	.	+	.	+	+	+	+	+	+	+	.	.	.	.	+	+	IV 65		
	C	.	+	2	1	.	.	.	+	1	+	+	+	+	.	.	.	.	.	.	.	.	.	.	+	+	+2	III 60	
	C	+	.	+	+	.	+	+	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	+	+	III 60		
	C	1	.	.	+	+	+	+	+	+	+	.	.	.	+	+	+	.	.	.	.	.	.	.	1	+	+1	III 55	
	C	+	+	+	+	+	+	+	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	+	+	III 55	
	C	.	.	.	+	.	+	+	+	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	+	+	III 50	
	C	+	.	.	+	.	+	+	+	.	+	1	1	1	1	1	+	+	+	+	.	.	.	.	.	+	+1	III 50	
	C	+	.	.	+	.	.	+	+	.	+	+	.	.	.	+	+	+	+	+	.	.	.	.	.	+	+	III 45	
	C	.	.	.	+	1	.	1	1	.	.	1	1	1	1	+	.	.	.	.	.	.	.	.	.	.	+	+1	III 45
	C	.	+	.	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II 40	
	C	+	.	.	+	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II 35	
	B2	+	.	.	+	+	+	+	.	.	+	.	+	.	.	.	+	+	+	+	.	.	.	.	.	+	+	II 35	
	C	.	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II 30
	C	+	+	.	.	.	.	.	.	.	+	.	.	.	.	+	.	+	+	+	.	.	.	.	.	.	+	+	II 30
	C	.	+	.	.	.	1	.	.	.	.	+	.	+	+	+	.	.	.	.	.	.	.	.	.	.	+	+1	II 30
	C	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	+	II 25
	C	.	+	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II 20
	C	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	+	II 20
	C	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 15
	C	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 15
	C	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 10
	C	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 10
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 10
	C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	I 5

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%		
<i>Hieracium sylvaticum</i> agg. (PQ, QF, Qpp, Epa)	C	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	+	I	5
<i>Pteridium aquilinum</i> (PQ)	C	+	.	.	.	+	I	5
<i>Quercetea pubescentis-petraeae</i>																									
<i>Fraxinus ornus</i> (OCa)	A1	3	4	.	.	2	1	+	+	+	2	.	+	1	.	2	2	.	.	.	3	+4	IV	65	
	A2	3	2	.	.	2	+	2	2	1	2	2	1	2	1	2	2	1	.	.	3	+3	IV	80	
	B1	.	1	.	.	1	+	.	.	+	1	.	.	.	.	.	.	.	.	.	2	+2	II	30
	B2	+	+	.	.	1	+	+	+	+	+	+	+	+	.	+	1	+	.	.	+	+1	IV	75	
	S	5	5	.	.	3	1	2	2	1	3	2	1	2	1	3	3	1	.	.	5	1-5	IV	80	
<i>Cornus mas</i> (TA, OCn, Qc)	A2	.	+	.	.	+	.	.	.	.	+	+	.	.	.	+	.	.	.	.	.	+	II	25
	B1	3	3	.	+	3	+	2	1	.	3	2	2	2	2	2	.	+	.	.	.	+3	IV	75	
	B2	+	.	.	.	+	.	+	.	.	+	+	+	.	.	.	.	.	.	.	.	+	II	30
	S	3	3	.	+	3	+	2	1	.	3	2	2	2	2	2	.	+	.	.	.	+3	IV	75	
<i>Pyrus pyraister</i> (Cp)	A1	.	+	+	1	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	+	II	25
	A2	+	.	+	1	1	.	+	+	.	.	.	+	.	+	.	+	.	.	.	.	+	III	50
	B1	+	.	.	.	.	.	+	.	.	+	.	.	.	.	+	.	+	.	.	.	+	II	30
	B2	+	.	.	.	+	.	.	.	.	+	+	.	.	.	+	+	.	.	.	.	+	II	30
	S	1	+	+	2	1	.	+	+	.	1	+	+	.	+	+	+	+	.	.	+	+2	IV	75	
	C	+	+	.	.	.	.	+	+	+	+	+	+	+	+	+	+	.	.	.	+	IV	65	
<i>Arabis turrita</i> (TA)	A1	1	+	.	.	1	+	+	+	.	1	1	.	+	.	1	.	.	.	.	1	+1	III	60
<i>Quercus cerris</i> (Qr; PQ)	B1	+	+	I	5
	B2	+	+	.	.	.	.	.	+	.	+	+	.	.	.	.	.	.	.	.	.	+	II	25
<i>Lithospermum purpureo-coeruleum</i> (OCn, AQ)	S	1	+	.	1	+	+	+	+	.	1	1	.	+	.	1	.	.	.	.	1	+1	III	60
<i>Calamintha menthifolia</i> ssp. <i>sylvatica</i>	C	+	+	+	.	+	+	+	+	.	+	.	.	+	.	+	.	.	.	.	.	+	III	55
<i>Euonymus verrucosa</i> (Pru)	C	+	.	.	.	+	.	+	+	.	+	.	+	.	+	+	.	.	.	.	.	+	III	45
	B1	.	1	.	.	.	.	+	.	+	+	.	.	.	1	.	.	.	.	.	.	+	II	25
	B2	+	+	.	.	.	.	+	+	+	+	.	.	.	+	+	.	.	.	.	+	+	II	40
	S	+	1	.	.	.	.	+	+	+	+	.	.	.	1	+	.	.	.	.	+	+1	II	40
<i>Vincetoxicum hircundinaria</i> (Fvl)	C	+	.	.	.	+	.	.	+	+	+	.	.	.	+	+	.	.	.	.	+	+	II	40
<i>Sorbus torminalis</i> (QF)	A1	.	+	.	.	+	+	I	10
	A2	+	.	.	.	+	1	+	+	+1	II	25
	S	+	+	.	.	+	.	.	.	.	1	+	.	.	.	.	.	.	.	.	+	+1	II	30
<i>Prunus spinosa</i> (Pru, Pru)	B1	+	+	+	I	10
	B2	+	.	.	+	+	I	15
	S	.	.	.	.	+	.	.	.	.	+	.	.	+	.	+	+	.	.	.	.	+	II	25
<i>Festuca heterophylla</i> (Qrp, Qp)	C	+	+	+	I	15
<i>Inula conyza</i>	C	+	+	I	10

	I	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	A-D	K	%	
<i>Aethusa cynapium</i> (Che)	C	.	.	+	+	.	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	I 20
Calystegion septium																								
<i>Lamium maculatum</i> (Pa, Agi, F, TA, Qpp)	C	+	1	2	+	+	1	2	2	+	1	1	1	2	1	1	2	+	1	2	+	+2	V 100	
<i>Bryonia alba</i> (Ar, GA)	C	+	+	I 5
Atropion bella-donnae																								
<i>Atropa bella-donna</i>	C	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+	I 20
Indifferens																								
<i>Sambucus nigra</i> (Epa, US, QF)	A2	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I 10
B1	.	.	+	3	+	.	1	+	.	1	+	+	+	.	+	.	.	.	1	+	+	+3	III 60	
B2	+	.	+	+	+	+	+	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	IV 80	
S	+	.	1	3	+	+	1	+	.	1	+	+	+	+	+	+	+	+	1	+	+	+3	V 85	
C	.	.	.	.	.	+	+	+	+	1	.	+	+	+	+	+	+	+	+	.	.	+1	IV 70
<i>Torilis japonica</i> (Ar, GA, Epa, QF)	C	+	.	+	+	.	.	.	.	+	+	.	.	.	.	.	+	.	.	+	+	+	III 45
<i>Urtica dioica</i> (Ar, GA, Epa, Spu)	C	.	.	+	+	+	+	+	.	.	.	.	+	.	.	.	+	+	+	1	.	+1	III 45
<i>Galium aparine</i> (Sea, Epa, QF)	C	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	+	II 40
<i>Galium mollugo</i> (MoA, FBt, Qrp, Qpp)	C	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	.	.	+	II 25
<i>Euphorbia cyparissias</i> (FB, ChS, Epa, Qpp)	C	+	+	I 20
<i>Cruciata laevipes</i> (Arn, Fru, Ar, GU, Qpp)	C	+	+	I 10
<i>Hypericum perforatum</i> (NC, FB, Qpp, PP)	C	+	+	I 10
<i>Coronilla varia</i> (Ara, FBt, Qpp)	C	+	+	I 5
<i>Lythrum salicaria</i> (Pte, MoJ, Bia, Spu, Ate)	C	+	I 5
<i>Ornithogalum umbellatum</i> (Ara, FBt, Sea)	C	+	I 5
<i>Stellaria media</i> (ChS, QF, Spu)	C	+	+	I 5
<i>Verbascum phlomoides</i> (FBt, Sea, Che)	C	+	I 5
Adventiva (incl. Culta, Subspontanea et Indigena)																								
<i>Juglans regia</i>	A1	+	+	I 5

Location: 1: Hosszúhetény „Szürke meadow”; 2: Hosszúhetény „Csengő Hill”; 3: Hosszúhetény „Hármas Hill”; 4: Hosszúhetény „Zengő”; 5: Pécsvárad „Zengő”; 6: Pécsvárad „Somos Hill”; 7: Magyarereggy „Máré Castle”; 8–9: Magyarereggy „Köves Hill”; Káráz „Határ-oldal”; 11: Vékény „Kis-Somos”; 12: Vékény „Miklós Castle”; 13–16: Vékény „Somos”; 17–18: Szászvár „Somlyó”; 19: Váralfa „Dobogó”; 20: Mecseknádasd „Kopasz Hill”.

Type of baseroc: 1–2, 6–9, 11–16, 19: limestone; 3–5, 20: sandstone; 10: trachydolerite; 17–18: phonolite.

Soil type: 1–2, 6–9, 11–16, 19: rendzina; 3–5, 20: forest soil with rubble; 10, 17–18: erubase.

Author: 1–20: Kevey (ined.).

For explanation of abbreviations see table 1.

Table 5: Synthetic phytosociological table of the studied forest associations, only species with K>II are shown.**Tabela 5:** Sintetska fitocenološka tabela obravnavanih gozdnih asociacij, prikazane so vrste z K>II.

	<i>Paeon.-Q.</i>			<i>Tamo-Q.</i>			<i>Potent.-Q.</i>			<i>Tilio-Fr.</i>		
	A-D	K	%	A-D	K	%	A-D	K	%	A-D	K	%
<i>Quercus-Fagetea</i>												
<i>Acer campestre</i> (Qpp)	+3	V	96	+2	V	100	+2	V	100	+2	V	100
<i>Ajuga reptans</i> (Qpp, MoA)	+	II	32	+	II	30	+	III	60	+	II	30
<i>Brachypodium sylvaticum</i> (Qpp)	+1	V	88	+2	V	100	+1	V	100	+	IV	70
<i>Bromus ramosus</i> agg. (Qpp)	+	IV	64	+	III	60	+1	IV	80	+	II	40
<i>Campanula persicifolia</i> (Qpp)	+	IV	80	+1	IV	70	+	IV	75	+	I	20
<i>Campanula rapunculoides</i> (Qpp, Epa)	+2	V	100	+2	IV	80	+2	IV	80	+1	V	95
<i>Carex divulsa</i>	+	I	12	+	I	5	+	III	50	+	III	55
<i>Carex pairae</i> (Qpp, Epa)	+	V	88	+	III	50	+	II	25	+	I	20
<i>Clematis vitalba</i> (Qpp)	+1	V	84	+	IV	80	+	IV	75	+1	II	35
<i>Clinopodium vulgare</i> (Qpp)	+	V	88	+	IV	70	+	V	90	+	II	25
<i>Convallaria majalis</i> (Qpp)	+	II	24	+1	III	60	+	I	10	.	.	.
<i>Cornus sanguinea</i> (Qpp)	3	I	4	+3	III	55	+2	II	30	+	I	5
<i>Corylus avellana</i> (Qpp)	+	I	8	+	II	25	+	I	5	+1	III	50
<i>Crataegus monogyna</i> (Qpp)	+3	V	92	+2	V	100	+2	V	100	+2	V	90
<i>Dactylis polygama</i> (Qpp, Cp)	+2	V	100	+1	V	100	+2	V	95	+	IV	65
<i>Euonymus europaea</i> (Qpp)	+	III	48	+	II	40	+	I	15	+	III	55
<i>Fallopia dumetorum</i> (Qpp, GA)	+2	V	96	+	I	10	+	V	85	+1	V	100
<i>Ficaria verna</i> (Ai)	+1	IV	76	+	I	5	+1	IV	75	+2	V	100
<i>Fragaria vesca</i> (Qpp, Epa)	+	IV	64	+	IV	65	+	IV	65	+	II	30
<i>Fraxinus excelsior</i> (Qpp, TA, Ai)	+	I	12	+	I	5	.	.	.	+5	III	55
<i>Galeopsis pubescens</i> (Qpp, Epa)	+	III	56	.	.	.	+	I	5	+	I	15
<i>Galium schultesii</i> (Cp, Qpp)	+1	III	44	+	II	35	+2	V	90	+	II	25
<i>Geranium robertianum</i> (Epa, F)	+1	V	84	+	I	15	+	II	30	+1	V	100
<i>Geum urbanum</i> (Epa, Cp, Qpp)	+	V	100	+	III	55	+	V	85	+	V	85
<i>Hieracium sabaudum</i> agg. (Qr, Qpp, AbP)	+	II	28	+	III	45	+	IV	70	+	I	10
<i>Lapsana communis</i> (GA, Epa)	+1	V	92	.	.	.	+	III	45	+	IV	80
<i>Ligustrum vulgare</i> (Cp, Qpp)	+2	IV	80	+4	V	100	+4	V	100	+1	I	20
<i>Melampyrum nemorosum</i> (Cp, Qpp)	.	.	.	+2	III	60	+	I	10	+	I	15
<i>Melica uniflora</i> (Cp, Qpp)	+4	V	100	+2	III	60	+4	V	100	+2	V	100
<i>Melittis carpatica</i> (Cp, Qpp, Qc)	+	III	44	+	V	85	+	III	55	+	I	20
<i>Mycelis muralis</i>	+	I	8	+	I	10	+	III	55	+	IV	70
<i>Poa nemoralis</i> (Qpp)	+2	V	92	+	III	55	+2	IV	80	+	IV	65
<i>Polygonatum multiflorum</i> (F)	+	III	48	+	II	35	+	IV	70	+	IV	75
<i>Quercus petraea</i> agg. (Cp, PQ, Qpp)	+4	V	96	+1	II	35	1-5	V	100	+2	V	85
<i>Rhamnus catharticus</i> (Qpp, Pru)	+	I	8	+	V	90	+	I	15	.	.	.
<i>Sedum maximum</i> (FB, TA, Qpp)	+	IV	64	+	I	20	+	II	25	+	II	30
<i>Staphylea pinnata</i> (Cp, TA)	+1	I	20	+	II	25	+	I	5	+2	IV	80
<i>Stellaria holostea</i> (F, Cp)	+1	V	92	+1	III	55	+1	IV	75	+1	V	100
<i>Symphytum tuberosum</i> ssp. <i>angustifolium</i> (F, Cp, Qpp)	+	IV	68	+1	V	100	+	V	85	+	III	55
<i>Veronica chamaedrys</i> (Qpp, Ara)	+	IV	64	+	II	40	+	III	55	+	II	35
<i>Veronica hederifolia</i> (Sea)	+1	V	92	+	II	40	+1	IV	75	+1	V	95
<i>Viola alba</i> (Qpp)	+	IV	76	+2	V	100	+	V	95	+	III	45

	<i>Paeon.-Q.</i>			<i>Tamo.-Q.</i>			<i>Potent.-Q.</i>			<i>Tilio-Fr.</i>		
	A-D	K	%	A-D	K	%	A-D	K	%	A-D	K	%
<i>Viola odorata</i>	+2	II	36	.	.	.	.	.	.	+1	IV	70
Fagetalia sylvaticae												
<i>Acer platanoides (TA)</i>	+	III	44	+	I	20	+	II	35	+2	V	90
<i>Acer pseudo-platanus (TA)</i>	+	I	16	.	.	.	+	I	5	+2	V	100
<i>Aconitum vulparia</i>	+	I	4	.	.	.	.	.	.	+2	III	60
<i>Anemone ranunculoides</i>	+	III	56	.	.	.	+	I	10	+1	V	95
<i>Arum maculatum</i>	+	V	84	+	I	5	+	II	25	+	V	100
<i>Cardamine impatiens</i>	+1	II	32	.	.	.	+	I	20	+1	V	85
<i>Carex pilosa (Cp)</i>	+	I	4	.	.	.	+2	V	85	+	III	45
<i>Carpinus betulus (Cp)</i>	+1	IV	68	+1	III	60	+1	V	95	+4	V	100
<i>Cerasus avium (Cp)</i>	+	II	24	+	II	35	+	IV	65	+1	IV	65
<i>Corydalis cava</i>	+1	III	52	+	I	5	1	I	5	+3	V	100
<i>Corydalis pumila (Cp, Qpp)</i>	+1	I	16	.	.	.	1	I	5	+1	III	50
<i>Dentaria bulbifera (EuF)</i>	+1	II	40	+	I	5	+1	IV	75	+1	V	90
<i>Dentaria enneaphyllos (EuF)</i>	.	.	.	.	.	.	.	.	.	+4	IV	75
<i>Dryopteris filix-mas</i>	.	.	.	.	.	.	.	.	.	+	IV	70
<i>Euphorbia amygdaloides</i>	+	II	36	+	I	5	+1	IV	70	+	V	85
<i>Fagus sylvatica (EuF)</i>	+	II	24	.	.	.	+1	II	40	+4	V	100
<i>Festuca drymeia (PQ)</i>	+	I	8	+	I	5	+4	III	60	+	II	30
<i>Gagea lutea (Ai, Cp)</i>	+	I	16	.	.	.	+	I	5	+1	V	90
<i>Galanthus nivalis</i>	.	.	.	.	.	.	.	.	.	+	IV	70
<i>Galeobdolon luteum</i>	.	.	.	.	.	.	+	I	15	+3	V	95
<i>Galium odoratum</i>	+	I	20	+	I	5	+1	IV	80	+1	V	100
<i>Glechoma hirsuta (Cp)</i>	+2	IV	64	+1	III	50	+2	IV	75	+1	III	55
<i>Hedera helix</i>	+	II	32	+	III	45	+1	IV	65	+1	IV	80
<i>Hepatica nobilis</i>	+	I	20	+	IV	65	+	III	50	+	IV	75
<i>Isopyrum thalictroides</i>	.	.	.	.	.	.	.	.	.	+	IV	65
<i>Lathyrus vernus</i>	+	II	32	+	I	20	+1	IV	75	+	V	85
<i>Lilium martagon (QF, Qpp)</i>	+	II	24	+	I	15	+	I	10	+	III	55
<i>Mercurialis perennis</i>	+	III	44	+	I	10	+	II	30	+3	V	95
<i>Moehringia trinervia</i>	+	II	28	.	.	.	+	I	15	+1	V	90
<i>Omphalodes scorpioides (TA)</i>	.	.	.	.	.	.	.	.	.	+1	III	45
<i>Pulmonaria officinalis</i>	+	II	24	+1	I	10	+	II	25	+	III	60
<i>Rubus hirtus (Epa, US)</i>	+2	I	16	.	.	.	+1	III	55	+	II	35
<i>Scrophularia vernalis (GA)</i>	+	I	4	.	.	.	.	.	.	+2	V	85
<i>Tilia platyphyllos (TA, Qpp)</i>	.	.	.	.	.	.	2	I	5	+3	IV	80
<i>Ulmus glabra (TA)</i>	+1	II	32	+	I	5	+	I	10	+3	V	85
<i>Viola sylvestris</i>	+	I	12	+	I	15	+	III	55	+	IV	75
Tilio platyphyllae-Acerenion pseudoplatani												
<i>Hesperis matronalis ssp. candida (Ai)</i>	+	I	4	.	.	.	.	.	.	+1	I	10
Aremonio-Fagion												
<i>Asperula taurina (Cp)</i>	+	II	32	.	.	.	+	I	15	+1	IV	75
<i>Helleborus odoratus (QF, Qfa)</i>	+2	V	100	+1	V	100	+2	V	100	+2	V	100
<i>Lathyrus venetus (Cp)</i>	+1	I	16	.	.	.	+1	III	45	+	I	20
<i>Lonicera caprifolium (OCA)</i>	.	.	.	+2	III	50	.	.	.	.	.	.
<i>Luzula forsteri (Qfa, , ECP)</i>	+	I	8	+	II	25	+	III	60	.	.	.

	<i>Paeon.-Q.</i>			<i>Tamo-Q.</i>			<i>Potent.-Q.</i>			<i>Tilio-Fr.</i>		
	A-D	K	%	A-D	K	%	A-D	K	%	A-D	K	%
<i>Rosa arvensis</i> (Cp, Qfa)	+2	V	92	+1	V	95	+2	V	100	+	IV	80
<i>Ruscus aculeatus</i> (Qfa)	+	II	28	+	I	15	+1	IV	70	+2	IV	65
<i>Ruscus hypoglossum</i> (EuF)	.	.	.	.	.	.	+	II	25	+	III	60
<i>Tamus communis</i> (Qfa)	+2	V	100	+2	V	100	+	IV	75	+	III	55
Quercion robori-petraeae												
<i>Lysimachia punctata</i> (Qp, Epa, Epa)	+	II	28	.	.	.	+	III	50	.	.	.
Quercetea pubescentis-petraeae												
<i>Acer tataricum</i> (OCn, AQ)	.	.	.	+	V	90	1	I	5	.	.	.
<i>Arabis turrita</i> (TA)	+	II	32	.	.	.	.	.	.	+	IV	65
<i>Astragalus glycyphyllos</i>	+	IV	64	+	II	35	+	IV	75	+	I	5
<i>Betonica officinalis</i> (MoA)	+	I	4	+	III	45	+	I	5	.	.	.
<i>Calamintha menthifolia</i> ssp. <i>sylvatica</i>	+	IV	72	.	.	.	+	III	55	+	III	45
<i>Carex michelii</i>	+	I	8	+2	V	90	.	.	.	.	.	.
<i>Cornus mas</i> (TA, OCn, Qc)	+3	V	96	+4	V	100	+2	III	60	+3	IV	75
<i>Dictamnus albus</i> (Fvl)	.	.	.	+1	V	100	.	.	.	.	.	.
<i>Euonymus verrucosa</i> (Pru)	+	II	28	+1	V	90	+	I	5	+1	II	40
<i>Euphorbia epithymoides</i>	.	.	.	+	III	45	+	I	10	+	I	5
<i>Festuca heterophylla</i> (Qrp, Qp)	+1	III	48	+1	IV	70	+2	V	85	+	I	15
<i>Fraxinus ornus</i> (OCa)	1-5	V	100	+5	V	100	+3	V	100	1-5	IV	80
<i>Inula conyza</i>	+	III	60	+	II	40	+	I	15	+	I	10
<i>Iris graminea</i> (Bra)	+	I	4	+	IV	80	+	I	5	.	.	.
<i>Iris variegata</i> (Fvl)	.	.	.	+1	III	45	.	.	.	.	.	.
<i>Laser trilobum</i>	+2	III	56	+	II	25	+	I	5	+	I	5
<i>Laserpitium latifolium</i> (Fvl)	+	III	56	.	.	.	.	.	.	.	.	.
<i>Lathyrus niger</i> (Qc)	+	III	52	+1	V	85	+1	V	95	+	I	10
<i>Lithospermum purpureo-coeruleum</i> (OCn, AQ)	+2	V	100	+3	V	100	+1	IV	70	+	III	55
<i>Mercurialis ovata</i>	.	.	.	+1	III	50	.	.	.	+	I	5
<i>Peucedanum cervaria</i> (Fvl)	.	.	.	+	III	55	+	I	20	.	.	.
<i>Polygonatum odoratum</i> (Fvl)	+	II	36	+2	III	50	+	I	5	.	.	.
<i>Prunus spinosa</i> (Pru, Pru)	+	IV	64	+2	V	85	+	V	90	+	II	25
<i>Pulmonaria mollis</i>	.	.	.	+1	IV	75	.	.	.	.	.	.
<i>Pyrus pyraister</i> (Cp)	+2	V	96	+1	V	95	+1	V	100	+2	IV	75
<i>Quercus cerris</i> (Qr, PQ)	1-4	V	100	+3	V	95	+4	V	100	+1	III	60
<i>Quercus pubescens</i>	1-2	I	20	2-5	V	100	.	.	.	.	.	.
<i>Rosa canina</i> agg. (Pru, Pru)	+1	IV	64	+	IV	75	+	III	60	+	I	5
<i>Silene nutans</i>	.	.	.	+	III	45	+	I	5	.	.	.
<i>Silene viridiflora</i>	+	IV	68	+	I	10	+	IV	70	.	.	.
<i>Sorbus domestica</i>	+	I	12	+	III	50	+	I	15	.	.	.
<i>Sorbus torminalis</i> (QF)	+2	III	60	+1	V	95	+2	V	95	+1	II	30
<i>Teucrium chamaedrys</i> (FBt, EP)	+	III	44	+	V	85	.	.	.	.	.	.
<i>Verbascum austriacum</i> (Fvl)	+	IV	80	.	.	.	.	.	.	+	I	5
<i>Viburnum lantana</i> (QF)	.	.	.	+2	V	100	+2	I	10	.	.	.
<i>Vincetoxicum hirsutaria</i> (Fvl)	+3	V	84	+	V	95	+	IV	65	+	II	40
Quercion farnetto												
<i>Genista ovata</i> ssp. <i>nervata</i> (AF, Qrp, PQ)	+	I	16	+	I	15	+	III	60	.	.	.
<i>Paeonia banatica</i>	+2	V	92	+1	V	100	+	I	5	+	I	10

	<i>Paeon.-Q.</i>			<i>Tamo.-Q.</i>			<i>Potent.-Q.</i>			<i>Tilio-Fr.</i>		
	A-D	K	%	A-D	K	%	A-D	K	%	A-D	K	%
<i>Potentilla micrantha</i> (Qp)	+	IV	72	+	I	5	+	V	100	+	III	50
<i>Tilia tomentosa</i> (AF)	+3	V	84	+2	V	100	+4	V	95	+3	V	90
<i>Quercetalia cerris</i>												
<i>Chamaecytisus supinus</i> (Qrp, PQ)	+	I	8	+	III	60	+	II	25	.	.	.
<i>Chrysanthemum corymbosum</i> (Fvl)	+	V	88	+	V	90	+1	IV	70	+	I	5
<i>Muscari botryoides</i> (Cp)	+	III	48	+	V	85	+	I	5	.	.	.
<i>Molinio-Arrhenathera</i>												
<i>Poa pratensis</i> (Qpp)	+	I	12	+	III	45	.	.	.	.	.	.
<i>Festuco-Brometea</i>												
<i>Anthericum ramosum</i> (Qpp)	+	II	40	+1	III	55	+	I	10	.	.	.
<i>Brachypodium pinnatum</i> (Bra, Qpp)	+3	III	60	+4	V	95	+1	I	20	.	.	.
<i>Filipendula vulgaris</i> (Qpp)	.	.	.	+	III	55	.	.	.	.	.	.
<i>Geranium sanguineum</i> (Qpp)	+	I	4	+	III	50	.	.	.	.	.	.
<i>Festucetalia valesiaca</i>												
<i>Erysimum odoratum</i> (Qpp)	+	II	32	+	III	55	+	I	5	.	.	.
<i>Galio-Alliarion</i>												
<i>Alliaria petiolata</i> (Epa)	+1	V	96	+	II	35	+	III	55	+1	V	100
<i>Chaerophyllum temulum</i>	+1	IV	76	.	.	.	+	III	45	+1	IV	80
<i>Calystegion sepium</i>												
<i>Lamium maculatum</i> (Pa, Agi, F, TA, Qpp)	+2	V	84	.	.	.	+	I	20	+2	V	100
<i>Indifferens</i>												
<i>Chelidonium majus</i> (Che, Ar, GA, Epa)	+	I	20	.	.	.	.	.	.	+1	IV	70
<i>Coronilla varia</i> (Ara, FBt, Qpp)	+	III	52	+	I	20	+	I	15	+	I	5
<i>Euphorbia cyparissias</i> (FB, ChS, Epa, Qpp)	+2	IV	76	+	IV	65	+	II	30	+	I	20
<i>Galium aparine</i> (Sea, Epa, QF)	+1	V	92	+	II	30	+1	III	60	+	II	40
<i>Galium mollugo</i> (MoA, FBt, Qrp, Qpp)	+	IV	68	+1	V	95	+	IV	65	+	II	25
<i>Rubus fruticosus</i> agg. (QF, Epa, US)	+	III	44	+	I	10	+	II	25	.	.	.
<i>Sambucus nigra</i> (Epa, US, QF)	+	I	12	+	I	5	+	I	5	+3	V	85
<i>Serratula tinctoria</i> (MoA, MoJ, Qrp, Qpp, PQ)	+	I	4	+1	IV	65	+	I	5	.	.	.
<i>Silene vulgaris</i> (Ara, Fvl, Qpp)	+	III	44	+	II	35	+	I	5	.	.	.
<i>Torilis japonica</i> (Ar, GA, Epa, QF)	+	IV	64	+	I	5	+	III	55	+	III	45
<i>Urtica dioica</i> (Ar, GA, Epa, Spu)	+1	III	60	.	.	.	+	I	10	+1	III	45
<i>Vicia hirsuta</i> (MoA, FB, Sea, Qpp)	+	III	52	.	.	.	+	I	5	.	.	.

Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*

Tamo.-Q.: *Tamo-Quercetum virgilianae*

Potent.-Q.: *Potentillo micrantaе-Quercetum dalechampii*

Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

For explanation of abbreviations see table 1.

Table 6: Number of differential species in the studied associations.**Tabela 6:** Število razlikovalnih vrst v obravnavanih asociacijah.

	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
<i>Paeon.-Q.</i>	–	48	33	48
<i>Tamo-Q.</i>	38	–	44	75
<i>Potent.-Q.</i>	25	35	–	30
<i>Tilio-Fr.</i>	47	69	40	–

Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*

Tamo-Q.: *Tamo-Quercetum virgiliana*

Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*

Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

Table 7: Percentage of characteristic species of different syntaxa based on K %.**Tabela 7:** Odstotek značilnih vrst različnih sintaksonov na osnovi K %.

	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
QUERCO-FAGEA	0,0	0,0	0,0	0,0
SALICETEA PURPUREAE (incl. Salicetalia purpureae)	0,3	0,0	0,0	0,1
Salicion albae	0,1	0,0	0,1	0,1
Populion albae	0,2	0,0	0,0	0,2
SALICETEA PURPUREAE total	0,6	0,0	0,1	0,4
QUERCO-FAGETEA	16,7	15,3	18,6	15,4
Fagetalia sylvaticae	10,7	6,0	15,0	30,9
Alnion incanae	0,9	0,2	0,8	2,0
<i>Alnenion glutinosae-incanae</i>	0,2	0,0	0,0	0,4
<i>Ulmenion</i>	0,2	0,1	0,0	0,1
Alnion incanae total	1,3	0,3	0,8	2,5
Fagion sylvaticae	0,0	0,0	0,0	0,0
<i>Eu-Fagenion</i>	0,4	0,0	1,0	2,1
<i>Carpinenion betuli</i>	5,9	6,2	7,9	7,1
<i>Tilio platyphyllae-Acerenion pseudoplatani</i>	1,7	0,7	0,8	4,6
Fagion sylvaticae total	8,0	6,9	9,7	13,8
Aremonio-Fagion	2,9	2,9	4,0	3,4
<i>Erythronio-Carpinenion betuli</i>	0,0	0,1	0,2	0,0
Aremonio-Fagion total	2,9	3,0	4,2	3,4
Fagetalia sylvaticae total	22,9	16,2	29,7	50,6
Quercetalia roboris	0,6	0,7	0,9	0,5
Deschampsio flexuosae-Fagion	0,0	0,0	0,0	0,0
<i>Gentiano asclepiadeae-Fagenion</i>	0,0	0,1	0,2	0,0
Deschampsio flexuosae-Fagion total	0,0	0,1	0,2	0,0
Quercion robori-petraeae	0,6	1,2	1,3	0,1
Quercetalia roboris total	1,2	2,0	2,4	0,6
QUERCO-FAGETEA total	40,8	33,5	50,7	66,6
QUERCETEA PUBESCENTIS-PETRAEAE	25,7	35,4	23,3	13,2
Orno-Cotinetalia	0,6	1,0	0,7	0,5
Orno-Cotinion	0,9	1,7	0,6	0,5

	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
Quercion farnetto	3,9	3,7	4,1	2,6
Orno-Cotinetalia total	5,4	6,4	5,4	3,6
Quercetalia cerris	2,3	2,9	1,9	0,4
Quercion petraeae	0,8	0,5	1,3	0,4
Aceri tatarico-Quercion	0,7	0,9	0,4	0,3
Quercetalia cerris total	3,8	4,3	3,6	1,1
Prunetalia spinosae	1,4	2,4	1,7	0,5
QUERCETEA PUBESCENTIS-PETRAEAE total	36,3	48,5	34,0	18,4
QUERCO-FAGEA total	77,7	82,0	84,8	85,4
ABIETI-PICEEA	0,1	0,1	0,3	0,0
ERICO-PINETEA (incl. Erico-Pinetalia et Erico-Pinion)	0,2	0,4	0,0	0,0
PULSATILLO-PINETEA (incl. Pulsatillo-Pinetalia et Festuco vaginatae-Pinion)	0,1	0,1	0,1	0,0
VACCINIO-PICEETEA	0,0	0,0	0,1	0,1
Pino-Quercetalia (incl. Pino-Quercion)	0,9	1,4	1,8	0,8
VACCINIO-PICEETEA total	0,9	1,4	1,9	0,9
ABIETI-PICEEA total	1,3	2,0	2,3	0,9
CYPERO-PHRAGMITEA	0,0	0,0	0,0	0,0
PHRAGMITETEA	0,0	0,0	0,0	0,0
Magnocaricetalia (incl. Magnocaricion)	0,1	0,0	0,1	0,0
PHRAGMITETEA total	0,1	0,0	0,1	0,0
CYPERO-PHRAGMITEA total	0,1	0,0	0,1	0,0
MOLINIO-ARRHENATHEREA	0,7	1,3	0,6	0,3
MOLINIO-JUNCETEA	0,0	0,2	0,1	0,0
Molinietalia coeruleae	0,1	0,0	0,1	0,0
Filipendulo-Cirsion oleracei	0,1	0,0	0,0	0,0
MOLINIETALIA COERULEAE total	0,2	0,0	0,1	0,0
MOLINIO-JUNCETEA total	0,2	0,2	0,2	0,0
ARRHENATHERETEA (incl. Arrhenatheretalia)	0,7	0,4	0,4	0,2
Arrhenatherion elatioris	0,0	0,1	0,1	0,0
ARRHENATHERETEA total	0,7	0,5	0,5	0,2
NARDO-CALLUNETEA (incl. Nardetalia et Nardo-Agrostion tenuis)	0,1	0,1	0,1	0,0
CALLUNO-ULICETEA (incl. Vaccinio-Genistetalia et Calluno-Genistion)	0,0	0,1	0,1	0,1
MOLINIO-ARRHENATHEREA total	1,7	2,2	1,5	0,6
FESTUCO-BROMEAE	0,6	0,3	0,2	0,2
FESTUCETEA VAGINATAE (incl. Festucetalia vaginatae et Festucion vaginatae)	0,0	0,1	0,0	0,0
FESTUCO-BROMETEA	1,3	2,7	0,7	0,1
Festucetalia valesiacae	3,0	4,6	1,3	0,4
Bromo-Festucion pallentis	0,1	0,2	0,0	0,1
Asplenio-Festucion pallentis	0,1	0,0	0,0	0,4
Festucion rupicolae	0,2	0,5	0,2	0,0
Festucetalia valesiacae total	3,4	5,3	1,5	0,9
Brometalia erecti (incl. Cirsio-Brachypodion)	0,3	1,0	0,1	0,0
FESTUCO-BROMETEA total	5,0	9,0	2,3	1,0
FESTUCO-BROMEAE total	5,6	9,4	2,5	1,2
CHENOPODIO-SCLERANTHEA	0,7	0,2	0,1	0,2
SECALIETEA	1,5	0,5	0,9	0,8
CHENOPODIETEA	0,3	0,0	0,0	0,3

	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
ARTEMISIETEA (incl. Artemisietalia et Arction lappae)	0,7	0,0	0,2	0,5
GALIO-URTICETEA (incl. Calystegietalia sepium)	0,0	0,0	0,0	0,0
Galio-Alliarion	3,0	0,3	1,9	3,9
Calystegion sepium	0,2	0,1	0,1	0,3
GALIO-URTICETEA total	3,2	0,4	2,0	4,2
PLANTAGINETEA (incl. Plantaginetalia majoris)	0,1	0,0	0,0	0,0
EPILOBIETEA ANGUSTIFOLII (incl. Epilobietalia)	4,7	1,8	3,5	3,9
Atropion bella-donnae	0,1	0,0	0,0	0,3
EPILOBIETEA ANGUSTIFOLII total	4,8	1,8	3,5	4,2
URTICO-SAMBUCETEA (incl. Sambucetalia et Sambuco-Salicion capreae)	0,2	0,0	0,4	0,4
CHENOPODIO-SCLERANTHEA total	11,5	2,9	7,1	10,6
INDIFFERENS	2,1	1,1	1,0	1,1
ADVENTIVA (incl. Culta, Subspontanea et Indigena)	0,1	0,1	0,1	0,1

Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*

Tamo-Q.: *Tamo-Quercetum virgilianae*

Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*

Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

Table 8: Proportion of the ecological indicator values of Ellenberg et al. (1991) modified by Borhidi (1993, 1995).

Table 8: Delež ekoloških indikatorskih vrednosti po Ellenberg et al. (1991) modificirano po Borhidi (1993, 1995).

ecol. indicator		association			
category	value	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
T	1	0,0	0,0	0,0	0,0
T	2	0,0	0,0	0,0	0,0
T	3	0,0	0,0	0,0	0,0
T	4	1,1	0,7	0,3	0,3
T	5	36,1	29,2	37,9	46,7
T	6	37,6	33,7	38,5	35,1
T	7	14,5	22,3	12,4	9,8
T	8	10,3	13,8	9,5	6,1
T	9	0,4	0,2	1,4	2,1
T	ass.	6,0	6,2	6,0	5,8
W	1	0,0	0,0	0,0	0,0
W	2	0,9	2,4	0,5	0,1
W	3	11,8	16,9	6,6	4,2
W	4	18,9	30,0	19,0	10,1
W	5	49,3	42,9	57,3	45,5
W	6	12,8	6,3	12,9	31,3
W	7	6,1	1,4	3,6	8,7
W	8	0,2	0,0	0,1	0,0
W	9	0,0	0,0	0,0	0,1
W	10	0,0	0,0	0,0	0,0
W	11	0,0	0,0	0,0	0,0
W	12	0,0	0,0	0,0	0,0
W	ass.	4,8	4,4	4,9	5,3

ecol. indicator		association			
category	value	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
R	1	0,0	0,0	0,0	0,0
R	2	0,0	0,0	0,0	0,0
R	3	0,0	0,0	0,0	0,2
R	4	0,5	0,9	2,1	0,3
R	5	4,0	3,6	5,4	3,5
R	6	32,7	27,5	38,9	35,0
R	7	42,4	35,8	39,2	44,9
R	8	19,6	30,8	14,3	16,1
R	9	0,8	1,3	0,2	0,1
R	ass.	6,8	7,0	6,6	6,7
N	1	0,1	1,6	0,5	0,0
N	2	6,8	12,2	5,1	1,7
N	3	14,1	21,2	14,4	6,8
N	4	27,5	33,4	28,1	17,0
N	5	18,7	18,8	25,4	23,2
N	6	10,8	7,4	14,4	15,3
N	7	12,1	3,9	8,2	23,6
N	8	7,0	1,0	3,0	10,4
N	9	2,9	0,5	1,1	2,1
N	ass.	4,9	4,0	4,7	5,7
L	1	0,0	0,0	0,0	0,0
L	2	0,4	0,1	1,2	1,3
L	3	4,4	1,8	5,1	15,1
L	4	13,7	9,5	19,9	29,7
L	5	33,3	31,2	36,8	29,9
L	6	26,6	25,8	22,5	17,0
L	7	17,4	25,1	12,3	6,3
L	8	3,7	5,7	2,2	0,5
L	9	0,7	0,7	0,1	0,2
L	ass.	5,5	5,8	5,2	4,7
C	1	0,0	0,0	0,0	0,0
C	2	9,4	8,2	11,9	12,9
C	3	26,0	15,7	24,1	27,5
C	4	33,9	37,0	33,7	35,2
C	5	19,8	23,2	21,0	16,1
C	6	6,3	7,0	7,2	5,9
C	7	4,2	5,9	1,7	1,8
C	8	0,4	2,9	0,4	0,6
C	9	0,0	0,0	0,0	0,0
C	ass.	4,0	4,3	3,9	3,8

Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*

Tamo-Q.: *Tamo-Quercetum virgilianae*

Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*

Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

ass.: mean value of the respective association

Table 9: Percentages of the social behavior types of Borhidi (1993, 1995) based on K %.**Table 9:** Odstotek funkcionalnih tipov po Borhidi (1993, 1995) na osnovi K %.

SBT		association			
category	value	<i>Paeon.-Q.</i>	<i>Tamo-Q.</i>	<i>Potent.-Q.</i>	<i>Tilio-Fr.</i>
S	6	5,5	11,6	7,5	13,6
Su	10	1,2	1,3	0,1	0,1
Sr	8	0,5	0,6	0,9	1,8
C	5	15,3	13,6	19,4	18,7
Cu	9	0,0	0,0	0,0	0,0
Cr	7	0,0	0,0	0,0	0,0
G	4	49,9	61,8	53,7	44,2
Gu	8	0,1	0,0	0,0	0,0
Gr	6	0,1	0,0	0,1	0,3
NP	3	0,1	0,0	0,0	0,0
DT	2	23,0	9,8	16,3	18,1
W	1	4,2	1,1	2,0	3,0
I	-1	0,0	0,1	0,1	0,1
A	-1	0,0	0,0	0,0	0,0
RC	-2	0,2	0,1	0,0	0,0
AC	-3	0,1	0,0	0,0	0,0
association mean		3,7	4,2	4,0	4,1

Paeon.-Q.: *Paeonio banaticae-Quercetum cerridis*

Tamo-Q.: *Tamo-Quercetum virgilianae*

Potent.-Q.: *Potentillo micranthae-Quercetum dalechampii*

Tilio-Fr.: *Tilio tomentosae-Fraxinetum orni*

S: specialists
 Su: unique specialists
 Sr: rare specialists
 C: competitors
 Cu: unique competitors
 Cr: rare competitors
 G: generalists
 Gu: unique generalists
 Gr: rare generalists
 NP: natural pioneers
 DT: disturbance tolerants
 W: weeds
 I: introduced alien species
 A: adventives
 RC: ruderal competitors
 AC: alien competitors