

Symphytum officinale +, Tanacetum vulgare +, Taraxacum officinale +, Tussilago farfara +, Urtica dioica 4.

Characteristic species: Carduus crispus, Cucubalus baccifer, Lamium maculatum, Myosotis palustris, Myosoton aquaticum, Polygonum hydropiper, Populus nigra, Ribes nigrum, Salix alba, Scrophularia umbrosa, Stellaria nemorum.

Species of high constancy (K=V): Agrostis stolonifera, Angelica sylvestris, Calystegia sepium, Carduus crispus, Cirsium arvense, Cornus sanguinea, Galium aparine, Glechoma hederacea, Humulus lupulus, Lamium maculatum, Myosoton aquaticum, Phalaroides arundinacea, Poa palustris, P. trivialis, Populus nigra, Rubus caesius, Rumex obtusifolius, Salix alba, Scrophularia nodosa, Senecio sarracenicus, Solanum dulcamara, Symphytum officinale, Urtica dioica.

Ecology: The black poplar galleries are found on the higher level of the low floodplain. They develop mainly from the pioneering swallow bushes of the Rumici crispo-Salicetum purpureae stands while the primary sandbanks grow into small islands. Their crude alluvial soil is rather sandy, but there are also stands growing on medium bound soils approaching ecologically to the willow galleries (Leucojo aestivo-Salicetum albae). Their successional process is directing towards the white poplar galleries (Senecioni sarracenicus-Populetum).

Distribution: along the Hungarian Danube section, namely in Szigetköz, Csepel-Island, Gemenc, Mohács-Island, and the lower section of the Drava river.

3. Senecioni sarracenicus-Populetum albae Kevey 1996 ass. nova in Borhidi et Kevey hoc loco

Syn.: Salicetum mixtum Populus alba consoc. Soó 1934 p. maj. p. (Art. 3c, 3d), Salicetum mixtum Salix-Populus consoc. Soó 1934 p. p. (Art. 3c, 3d), Salicetum mixtum Salix-Populus-Alnus consoc. Soó 1934 p. p. (Art. 3c 3d; Saliceto-Populeto-Alnetum Alnus incana consoc. Zólyomi 1937 s. l., (Art. 2b, 3d, 10); Saliceto-Populeto-Alnetum Populus nigra-Populus alba consoc. Zólyomi 1937 p. p., (Art. 2b, 3d, 10); Saliceto-Populeto-Alnetum Populus-Alnus consoc. Zólyomi 1937 p. p., (Art. 2b, 3d, 10); Saliceto-Populeto-Alnetum Soó 1940 p. p., (Art. 10), Ujvárosi 1940 p. p., Zsolt 1943 p. p.; Salicetum mixtum Timár 1950a p. p. (Art. 3c, 36); Saliceto-Populetum albae Timár 1953 p. p., (Art. 31); Fraxino-Populetum Jurko 1958 p. p.; Saliceto-Populetum Jurko 1958 p. p., (Art. 31), Somsák 1960 p. p., Dovolilová-Novotná 1961 p. p.; Populeto-Salicetum Zólyomi 1955 p. p. (Art. 31), Tóth 1958 p. p.; Salicetum albae-fragilis Soó 1958 p. p., Simon 1957 p. p., Kárpáti I. 1958 p. p., Tallós 1960 p. p., Terpó 1962 p. p., Gondola 1965 p. p.; Salicetum albae-fragilis hungaricum Soó 1958 p. p. (Art. 34); Salicetum albae-fragilis danubiale Soó 1971 p. p. (Art. 34), non Saliceto-Populetum Meijer Drees 1936.

Nomenclatural type: Locality: Szigetköz, BW-Hungary, Dunasziget "Felső-Forgó". Datum: spring aspect: 27.04.1993, summer aspect: 17.07.1993. Altitude: 121 m.a.s.l. Declination: 0°. Bedrock: Fine sand. Soil type: crude alluvial sediment. Upper canopy, cover: 75 %; height: 28 m. Lower canopy, cover: 15 %; height: 17 m. Shrub layer cover: 60 %; height: 3m. Youngling, cover: 5 %; Herb layer, cover: 80 %; Plot size: 1600 m²; relevé made by B. KEVEY.

Upper canopy: Populus alba 4, Populus x canadensis 1, Salix alba +; Lower canopy: Alnus incana 1, Populus alba 2, Salix alba +, Salix elaeagnos +; Shrub layer: Cornus sanguinea 4, Crataegus monogyna +, Euonymus europaea +, Humulus lupulus +, Populus alba +, Ulmus minor +; Youngling: Acer negundo +, Cornus sanguinea 1, Crataegus monogyna +, Euonymus europaea +, Fraxinus excelsior +, Fraxinus pennsylvanica +, Pirus avium +, Populus alba +, Rubus caesius +, Sambucus nigra +, Ulmus minor +; Herb layer: Aegopodium podagraria +, Angelica sylvestris +, Arctium lappa +, Aster x salignus +, Calystegia sepium +, Cardamine pratensis +, Carex gracilis +, Carex remota 1, Circaea lutetiana +, Cirsium arvense +, Equisetum arvense +, Festuca gigantea +, Ficaria verna 4, Galeopsis bifida +, Galium aparine 1, Galium palustre +, Glechoma hederacea 1, Humulus lupulus +, Impatiens glandulifera +, Impatiens noli-tangere 2, Impatiens parviflora +, Lysimachia nummularia +, Lythrum salicaria +, Myosotis palustris +, Phalaroides arundinacea +, Phragmites australis +, Poa palustris +, Poa trivialis +, Ranunculus repens +, Rumex obtusifolius +, Rumex sanguineus +, Scilla vindobonensis +, Scrophularia nodosa +, Senecio fluviatilis +, Solanum dulcamara +, Stachys palustris +, Symphytum officinale +, Thalictrum flavum +, Urtica dioica 1;

Characteristic species: Agropyron caninum, Cucubalus baccifer, Ficaria verna, Galanthus nivalis, Galeopsis bifida, Populus alba, Quercus robur, Rumex sanguineus, Senecio sarracenicus, Ulmus minor.

Different species: Aegopodium podagraria, Alnus incana, Carduus crispus, Carex remota, Circaea lutetiana, Humulus lupulus, Impatiens noli-tangere, Salix alba; Scilla vindobonensis.

Species of high constancy (K=V): Angelica sylvestris, Cornus sanguinea, Crataegus monogyna, Euonymus europaea, Ficaria verna, Galeopsis bifida, Galium aparine, Glechoma hederacea, Impatiens noli-tangere, Phalaroides arundinacea, Poa palustris, P. trivialis, Populus alba, Rubus caesius, Salix alba, Senecio sarracenicus, Solanum dulcamara, Symphytum officinale, Urtica dioica.

Ecology: The white poplar woods occur on the highest level of the low floodplain. They originate partly from white willow forests (Leucojo aestivi-Salicetum albae), partly of black poplar galleries (Carduo crispus-Populetum nigrae). Their crude alluvial soil consists mainly of fine sand. They change during succession into alder galleries (Paridi quadrifoliae-Alnetum) or into elm-ash alluvial (Pimpinello majoris-Ulmetum) woods.

Distribution: Sparsely along the Danube and Drava rivers but typically only in the Szigetköz.

31. Class: Alnetea glutinosae Br.-Bl. & Tx. ex Westhoff et al. 1946

31.1. Order: Alnetalia glutinosae Tx. 1937

31.1.1 Alliance: Alnion glutinosae Malcuit 1929

Diagnostically important species:

Alnus glutinosa (L.) Gaertn., Calamagrostis canescens (Weber) Roth, Caltha palustris L., Carex acutiformis Ehrh., C. elata All., C. elongata L., C. gracilis Curt., C. pseudocyperus L., C. vesicaria L., Cicuta virosa L., Dryopteris cristata (L.) A. Gray, D. carthusiana (Vill.) H. P., D. dilatata (Hoffm.) A. Gray, Hottonia palustris L., Iris pseudacorus L., Myosoton aquaticum (L.) Moench, Peucedanum palustre (L.) Moench, Ribes nigrum L., Solanum dulcamara L., Symphytum officinale L., Thelypteris palustris Salisb., Urtica kioviensis Rogov.

Associations belonging to this unit:

1. Angelico sylvestri-Alnetum glutinosae Borhidi 1996 ass. nova in Borhidi et Kevey hoc loco

Basionym: Carici acutiformis-Alnetum Soó 1964 non Scamoni 1935 (Art. 31)

Nomenclatural type: Carici acutiformis-Alnetum pannonicum Borhidi 1984 p. 56-59. Tab. I. rel. 1. Holotype hoc loco

2. Carici elongatae-Alnetum Koch 1926

3. Fraxino pannonicae-Alnetum Soó & Járjai-Komlódi in Járjai-Komlódi 1958

4. Hottonio-Alnetum (Hueck 1929) Fukarek 1961

31.2. Order: Salicetalia auritae Doing 1962

31.2.1. Alliance: Salicion cinereae Th.Müll. & Görs ex Pass. 1961

Diagnostically important species:

Betula pubescens Ehrh., Calamagrostis canescens (Weber) Roth, Comarum palustre L., Carex gracilis L., C. rostrata Stokes, C. vesicaria L., Dryopteris carthusiana (Vill.) H. P., D. assimilis S. Walker, Equisetum fluviatile L., Frangula alnus Mill., Galium palustre L., Lycopodium europaeus L., Menyanthes trifoliata L., Molinia coerulea (L.) Moench, Peucedanum palustre (L.) Moench, Salix aurita L., S. cinerea L., S. pentandra L., Thelypteris palustris Salisb., Urtica kioviensis Rogov.

Associations belonging to this unit:

1. Calamagrosti-Salicetum cinereae Soó et Zólyomi in Soó 1955

(Syn.: Salix cinerea assz. Zólyomi 1931 p. min. p., Salicetum cinereae Zólyomi 1934 Art. 31, 36)

Annotation: The synoptic list published by ZÓLYOMI in 1931 contains relevés mixed of this association and of the next one. From the list is impossible to select the relevés of the two syntaxa. In 1934 ZÓLYOMI used the name *Salicetum cinereae* in sense of *Calamagrosti-Salicetum cinereae*, and not in the sense of his former publication. Therefore the name is to be rejected as *nomen ambiguum* (Art. 36). The first legitimate name accompanied by a synoptic list composed of a phytosociologically homogenous material was published in Soó 1955.

2. *Salici cinereae-Sphagnetum recurvi* (Zólyomi 1934) Soó 1955

(Syn.: *Salicetum cinereae* Zólyomi 1931 p. maj p., *Salicetum cinereae sphagnetosum* Zólyomi 1934)

3. *Salici pentandrae-Betuletum pubescentis* Soó (1934) 1955

32. Class: Querco-Fagetea Br.-Bl. & Vlieger in Vlieger 1937 em. Borhidi 1996 hoc loco

Annotation: The emendation due to the use of this name in a narrower sense, including only the mesophilous and acidophilous broadleaved deciduous forests of the atlantic and Middle-European part of temperate Europe. In this sense the name does not contain the associations of the thermo-xerophilous oak-forest belt, which starts with a narrow strip in the western sub-mediterranean and extends eastward broadening to the Pannonian-Carpathian-Balkan area and represented by a separate association class, *Quercetea pubescentis-petraeae*, with a very well defined set of characteristic species.

32.1..Order: Fagetalia sylvaticae Pawlowski in Pawlowski et al. 1928

32.1.1. Alliance: Alnion incanae Pawlowski in Pawlowski et

Wallisch 1928

Diagnostically important species:

Agropyron caninum (L.)P.B., *Alnus glutinosa* (L.)Gaertn., *Carex sylvatica* Huds., *C. strigosa* Huds., *Circaea lutetiana* L., *Deschampsia caespitosa* (L.)P.B., *Festuca gigantea* (L.)Vill., *Fraxinus angustifolia* Vahl ssp. *pannonica* Soó & Simon, *F. excelsior* L., *Impatiens noli-tangere* L., *Inula helenium* L., *Lamium maculatum* L., *Lysimachia nummularia* L., *Oenanthe banatica* Heuff., *Poa trivialis* L., *Prunus padus* L., *Ranunculus ficaria* L., *Rubus caesius* L., *Rumex sanguineus* L., *Stachys sylvatica* L., *Viburnum opulus* L.

32.1.1.1. Sub-Alliance: Alnenion glutinosae-incanae Oberd.

1953

Diagnostically important species:

Aconitum variegatum L., *Alnus incana* (L.)Moench, *Cardamine amara* L., *Carex brizoides* L., *C. remota* L., *Cerastium silvaticum* W. & K., *Chaerophyllum hirsutum* L., *Chrysosplenium alternifolium* L., *Circaea intermedia*, *Crepis paludosa* (L.)Moench, *Doronicum austriacum* Jacq., *Equisetum sylvaticum* L., *Matteuccia struthiopteris* (L.)Tod., *Petasites albus* Gaertn., *Poa remota* Fors., *Primula elatior* (L.)Hill, *Senecio fuchsii* C.Gmel.

Associations belonging to this unit:

1. *Aegopodio-Alnetum* V.Kárpáti, I.Kárpáti & Jurko 1961
2. *Caltho-Alnetum glutinosae* Somsák 1963
3. *Carici brizoidis-Alnetum* I.Horvat 1938 em. Oberd. 1953
4. *Carici remotae-Fraxinetum* Koch ex Faber 1936

5. *Carici pendulae-Alnetum* Borhidi et Kevey 1996 ass. nova in Borhidi et Kevey hoc loco

Basionym: *Aegopodio-Alnetum praeillyricum* Borhidi 1963 (Art. 2b) Borhidi 1984 (Art. 34)
Nomenclatural type: Upper canopy: *Alnus glutinosa* 4, *Quercus robur* +, *Ulmus laevis* +; Lower canopy: *Acer campestre* 1, *Alnus glutinosa* 2, *Quercus robur* +, *Ulmus laevis* 1; Shrub layer: *Acer campestre* 2, *Carpinus betulus* +, *Cornus sanguinea* 2, *Corylus avellana* +, *Crataegus monogyna* 1, *Euonymus europaeus* +, *Ligustrum vulgare* +, *Sambucus nigra* 1, *Ulmus laevis* +, *Ulmus minor* 1, *Viburnum opulus* +; Youngling: *Acer campestre* +, *Cornus sanguinea* +, *Sambucus nigra* +, *Ulmus minor* +, *Viburnum opulus* +; Herb layer: *Adoxa moschatellina* +, *Aegopodium podagraria* 2, *Alliaria petiolata* +, *Allium ursinum* 4, *Anemone nemorosa* +, *Anemone ranunculoides* +, *Angelica sylvestris* +, *Arum maculatum* s.str. +, *Asarum europaeum* +, *Brachypodium sylvaticum* +, *Caltha palustris* +, *Calystegia sepium* +, *Cardamine impatiens* +, *Carex pendula* 1, *Carex remota* +, *Carex riparia* +, *Carex strigosa* +, *Carex sylvatica* +, *Cerastium sylvaticum* 1, *Chrysosplenium alternifolium* +, *Circaea lutetiana* +, *Cirsium canum* +, *Cirsium oleraceum* +, *Corydalis solida* +, *Cucubalus baccifer* +, *Dactylis polygama* +, *Deschampsia caespitosa* +, *Epilobium hirsutum* +, *Equisetum arvense* +, *Equisetum telmateia* 2, *Eupatorium cannabinum* +, *Euphorbia dulcis* +, *Festuca gigantea* +, *Ficaria verna* 1, *Gagea lutea* +, *Galanthus nivalis* 1, *Galeobdolon luteum* 3, *Galeopsis speciosa* +, *Galium aparine* 1, *Geranium phaeum* +, *Geranium robertianum* +, *Glechoma hirsuta* +, *Helleborus dumetorum* +, *Humulus lupulus* +, *Knautia drymeia* +, *Lamium maculatum* 1, *Lapsana communis* +, *Lycopus europaeus* +, *Lysimachia vulgaris* +, *Lythrum salicaria* +, *Myosoton aquaticum* +, *Polygonum mite* +, *Pulmonaria officinalis* +, *Ranunculus repens* +, *Rumex sanguineus* +, *Scirpus sylvaticus* +, *Stachys palustris* +, *Stachys sylvatica* +, *Stellaria holostea* +, *Stellaria media* +, *Symphytum officinale* +, *Torilis japonica* +, *Urtica dioica* 1, *Veronica chamaedrys* +, *Viola sylvestris* +.

Locality: Zselic Hills S. of Kaposvár, Cserénfa "Tábor-völgy"; **Datum:** spring aspect: 01.04.1982, summer aspect: 30.07.1982. **Altitude:** 140 m.a.s.l.; **Declination:** 0°; **Bedrock:** loess alluvium. **Soil type:** alluvial forest soil. **Upper canopy, cover:** 70 %; **height:** 24 m. **Lower canopy, cover:** 25 %; **height:** 15 m. **Shrub layer, cover:** 40 %; **height:** 3m. **Youngling, cover:** 5 %; **Herb layer:** 90 %; **Plot size:** 1600 m²; **Type relevé made by:** B. KEVEY.

Characteristic species: *Aegopodium podagraria*, *Alnus glutinosa*, *Anemone nemorosa*, *Cardamine amara*, *Carex pendula*, *C. remota*, *C. strigosa*, *Chrysosplenium alternifolium*, *Cirsium oleraceum*, *Daphne mezereum*, *Doronicum austriacum*, *Dryopteris carthusiana*, *Dryopteris dilatata*, *Equisetum telmateia*, *Frangula alnus*, *Fraxinus angustifolia* ssp. *pannonica*, *Fraxinus excelsior*, *Inula helenium*, *Knautia drymeia*, *Leucojum vernum*, *Padus avium*, *Primula vulgaris*, *Senecio nemorensis*, *Scirpus sylvaticus*, *Scrophularia scopolii*, *S. umbrosa*, *Tamus communis*, *Ulmus laevis*, *U. minor*, *Viburnum opulus*.

Differential species: *Anemone trifolia*, *Asperula taurina*, *Cyclamen purpurascens*, *Dentaria trifolia*, *Erythronium dens-canis*, *Helleborus dumetorum*, *H. odoratus*, *Lamium orvala*, *Vicia oroboides*.

Species of higher constancy (K=V): *Aegopodium podagraria*, *Alnus glutinosa*, *Alliaria petiolata*, *Angelica sylvestris*, *Carex remota*, *Chrysosplenium alternifolium*, *Circaea lutetiana*, *Cirsium oleraceum*, *C. rivulare*, *Cucubalus baccifer*, *Deschampsia caespitosa*, *Dryopteris carthusiana*, *Equisetum telmateia*, *Festuca gigantea*, *Galeobdolon luteum*, *Galeopsis speciosa*, *Galium aparine*, *Geum urbanum*, *Glechoma hirsuta*, *Humulus lupulus*, *Knautia drymeia*, *Lamium maculatum*, *Myosoton aquaticum*, *Polygonum hydropiper*, *Pulmonaria officinalis*, *Ranunculus repens*, *Sambucus nigra*, *Scirpus sylvaticus*, *Stachys sylvatica*, *Stellaria holostea*, *Ulmus minor*, *Urtica dioica*.

Characterization: The alder galleries accompanying the smaller creeks and streams in the South Transdanubia are differentiated easily by the steady existence of many submediterranean, Balkanian species, not occurring in the Carpathian Basin North of the Lake Balaton. These differences seem to be sufficient for the separation of this community from the *Aegopodio-Alnetum* Kárpáti et Jurko which may be considered as a northern vicariant of this association.
Distribution: South-Transdanubia from the Zala Hills to the Tolna ranges.

6. Paridi quadrifoliae-Alnetum Kevey 1996 ass. nova in Borhidi et Kevey hoc loco

Syn.: *Quercus robur*-*Fraxinus excelsior*-*Ulmus glabra* ass. *Alnus*-*Fraxinus* consoc. Soó 1940 (Art.2b, 3d.); *Fraxineto*-*Ulmum alnosum* Soó 1943; *Ulmeto*-*Fraxinetum alnetosum* Jurko 1958; *Querceto*-*Ulmum hungaricum* *Alnus glutinosa* typ. Kárpáti I.-I.Tóth 1962 (Art.3d, 34); *Fraxino pannonicarum*-*Ulmum alnetosum* Soó 1964.

Nomenclatural type: Upper canopy: *Alnus glutinosa* 5, *Fraxinus excelsior* +; Lower canopy: *Alnus glutinosa* 2, *Alnus incana* +, *Fraxinus excelsior* 1, *Ulmus glabra* +; Shrub layer: *Acer campestre* +, *Acer pseudo-platanus* 1, *Alnus incana* +, *Cerasus avium* +, *Cornus sanguinea* 1, *Euonymus europaea* +, *Frangula alnus* +, *Fraxinus excelsior* 4, *Hedera helix* +, *Juglans regia* +, *Padus avium* +, *Quercus robur* +, *Salix cinerea* +, *Sambucus nigra* +, *Ulmus glabra* +, *Viburnum opulus* 1; Youngling: *Acer campestre* +, *Acer pseudo-platanus* +, *Cerasus avium* +, *Clematis vitalba* +, *Cornus sanguinea* +, *Euonymus europaea* +, *Fraxinus excelsior* 1, *Hedera helix* 1, *Ligustrum vulgare* +, *Padus avium* +, *Rubus caesius* 2, *Ulmus glabra* +, *Viburnum opulus* +; Herb layer: *Angelica sylvestris* +, *Arum alpinum* +, *Asarum europaeum* +, *Brachypodium sylvaticum* +, *Calystegia sepium* +, *Carex acutiformis* 1, *Carex remota* +, *Carex riparia* +, *Carex sylvatica* +, *Circaea lutetiana* 1, *Deschampsia caespitosa* +, *Equisetum arvense* +, *Equisetum palustre* +, *Festuca gigantea* +, *Ficaria verna* 1, *Filipendula ulmaria* 2, *Galanthus nivalis* +, *Galium aparine* +, *Galium odoratum* 1, *Geranium robertianum* +, *Geranium sibiricum* +, *Geum urbanum* +, *Humulus lupulus* +, *Impatiens noli-tangere* 1, *Impatiens parviflora* 1, *Iris pseudacorus* +, *Leucojum aestivum* 2, *Lysimachia vulgaris* +, *Lythrum salicaria* +, *Paris quadrifolia* +, *Phalaroides arundinacea* +, *Phragmites australis* +, *Pimpinella major* +, *Pulmonaria officinalis* +, *Scilla vindobonensis* +, *Scrophularia nodosa* +, *Stachys palustris* +, *Stachys sylvatica* +, *Symphytum officinale* +, *Urtica dioica* +, *Valeriana dioica* +, *Viola cyanea* +. Locality: Hédervár "Vadaskerti-erdő"; Datum: spring aspect: 1992.04.20, summer aspect: 1992.06.24; Altitude: 114 m.a.s.l. Declination: 0°; Bedrock: river ballast and sand. Soil type: alluvial forest soil. Upper canopy, cover: 80 %; height: 26 m. Lower canopy, cover: 10 %; height: 12 m. Shrub layer, cover: 70 %; height: 2.5 m. Youngling, cover: 20 %; Herb layer, cover: 60 %; Plot size: 1000 m²; Relevé made by B. KEVEY.

Characteristic species: *Acer pseudo-platanus*, *Alnus glutinosa*, *A. incana*, *Frangula alnus*, *Padus avium*, *Populus alba*, *Salix alba*, *Ulmus laevis*, *Viburnum opulus*; *Aegopodium podagraria*, *Allium ursinum*, *Angelica sylvestris*, *Arum alpinum*, *Asarum europaeum*, *Calystegia sepium*, *Carduus crispus*, *Carex acutiformis*, *C. remota*, *C. riparia*, *C. sylvatica*, *Circaea lutetiana*, *Cucubalus baccifer*, *Equisetum arvense*, *Galanthus nivalis*, *Galium odoratum*, *G. palustre*, *Hedera helix*, *Humulus lupulus*, *Impatiens noli-tangere*, *Iris pseudacorus*, *Leucojum aestivum*, *Lathraea squamaria*, *Lysimachia vulgaris*, *Moehringia trinervia*, *Paris quadrifolia*, *Pimpinella major*, *Pulmonaria officinalis*, *Scilla vindobonensis*, *Solanum dulcamara*, *Stachys sylvatica*; *Symphytum officinale*,

Species of high constancy (K=V): *Acer campestre*, *Alnus glutinosa*, *Brachypodium sylvaticum*, *Circaea lutetiana*, *Cornus sanguinea*, *Euonymus europaeus*, *Ficaria verna*, *Fraxinus excelsior*, *Galium aparine*, *Galium odoratum*, *Humulus lupulus*, *Iris pseudacorus*, *Padus avium*, *Paris quadrifolia*, *Polygonatum latifolium*, *Populus alba*, *Quercus robur*, *Rubus caesius*, *Sambucus nigra*, *Scilla vindobonensis*, *Stachys sylvatica*; *Ulmus minor*, *Viburnum opulus*, *Viola cyanea*;

Characterization: The alder galleries develop sparsely on the deepest parts and depressions of the higher alluvium. They may evolve from the alder swamp forests (*Angelico sylvestris*-*Alnetum*) or from the peaty alder brooks (*Thelypteridi*-*Alnetum*). In both cases their successional changes are directed toward the elm-ash galleries (*Pimpinello majoris*-*Ulmum*). Its soil is an intermediate one between the peaty moor soils and the alluvial soils. They may develop also from poplar galleries mainly along creeks, in these cases their soil has a transitional character between the crude alluvium and the alluvial forest soil.

Distribution: Szigetköz, Mezőföld, Drava-Plain, Nyírség, always sparsely.

32.1.1.2. Sub-Alliance: *Ulmenion Oberd.* 1953

Diagnostically important species:

Alliaria petiolata (M.B.)Cav. & Grande, *Allium scorodoprasum* L., *Allium ursinum* L., *Anemone ranunculoides* L., *Carex strigosa* Huds., *Corydalis cava* Schweig & Koerte, *Fraxinus angustifolia* Vahl, ssp. *pannonica* Soó & Simon, *Gagea lutea* (L.)Ker.-Gawl., *Polygonatum latifolium* (Jacq.)Desf., *Paris quadrifolia* L., *Quercus robur* L., *Scilla vindobonensis* Speta, *Stellaria holostea* L., *Ulmus laevis* Pall., *Ulmus minor* Mill. em. Richens, *Veronica hederifolia* L.

Associations belonging to this unit:

1. *Fraxino pannonicarum*-*Ulmum* Soó in Aszód 1935 corr. Soó 1963

Annotation: This community is described from the upper section of the Tisza river in the NE part of the Great Hungarian Plain. It is characterized by a continental character, rather poor in Carpinion and *Fagetalia* elements. Later on SOÓ extended the sense of this community for the whole tributary of the Danube Basin, without having sufficient materials for doing so. In our view a more comprehensive interpretation of the association is to maintain for the alluviums of the Tisza river system.

2. *Knautio drymeiae*-*Ulmum* Borhidi et Kevey 1996 ass. nova hoc loco

Syn.: *Querceto*-*Ulmum hungaricum ruscetosum* Soó 1958 (Art. 2b, 34); *Fraxino pannonicarum*-*Ulmum praeillyricum* Soó 1960 (Art. 2b, 34) Borhidi 1984 (Art. 34)
Nomenclatural type: (BORHIDI 1984: A Zselic erdei, p.127-129. Table 3 Relevé. no. 4. Holotype hoc loco.)

Characteristic species: *Aegopodium podagraria*, *Anemone nemorosa*, *Angelica sylvestris*, *Arum alpinum*, *Cardamine amara*, *Carex pendula*, *C. remota*, *C. strigosa*, *Carpesium cernuum*, *Cerastium sylvaticum*, *Chrysosplenium alternifolium*, *Circaea lutetiana*, *Cucubalus baccifer*, *Deschampsia caespitosa*, *Dryopteris carthusiana*, *Frangula alnus*, *Fraxinus angustifolia* ssp. *pannonica*, *Genista tinctoria* ssp. *elatior*, *Humulus lupulus*, *Inula helenium*, *Knautia drymeia*, *Malus sylvestris*, *Padus avium*, *Primula vulgaris*, *Quercus robur*, *Ribes rubrum*, *Sanicula europaea*, *Senecio nemorensis*, *Scrophularia scopolii*, *Tamus communis*, *Tilia tomentosa*, *Ulmus laevis*, *Ulmus minor*, *Viburnum opulus*,
Differential species: *Anemone trifolia*, *Aremonia agrimonoides*, *Asperula taurina*, *Cyclamen purpurascens*, *Daphne mezereum*, *Erythronium dens-canis*, *Helleborus dumetorum*, *H. odoratus*, *Lamium orvala*, *Leucojum vernum*, *Ruscus aculeatus*, *Vicia oroboides*.

Species of higher constancy (K=V): *Aegopodium podagraria*, *Alliaria petiolata*, *Angelica sylvestris*, *Brachypodium sylvaticum*, *Carex remota*, *C. sylvatica*, *Chaerophyllum temulum*, *Cornus sanguinea*, *Deschampsia caespitosa*, *Frullania dilatata*, *Galium aparine*, *Humulus lupulus*, *Inula helenium*, *Knautia drymeia*, *Lamium maculatum*, *Ligustrum vulgare*, *Lysimachia nummularia*, *Paris quadrifolia*, *Pulmonaria officinalis*, *Pylaea polyantha*, *Quercus robur*, *Radula complanata*, *Ranunculus repens*, *Salvia glutinosa*, *Stachys sylvatica*, *Tamus communis*, *Ulmus minor*, *Urtica dioica*.

The elm-ash gallery populating the flat section of the creek and stream valleys of the hilly region of the South Transdanubia, are significant by its montane and submediterranean-Balkanian elements common with the hornbeam and beech woods. This feature makes a sharp difference between them and the real lowland gallery forests, like the *Scillo vindobonensis*-*Ulmum* Borhidi et Kevey 1996 community of the Danube valley.

Distribution: South-Transdanubian hilly and middle ranges from the Zala Hills to the Mecsek Mts and Tolna Hills.

3. *Pimpinello majoris-Ulmetum* Kevey 1996 ass. nova in Borhidi et Kevey hoc loco

Syn.: *Querceto-Fraxinetum* Zólyomi 1931 s. str. (Art. 2b), 1934 s. str., (Art. 2b), Soó 1934 p. p. (Art. 2b); *Fraxinetum excelsioris Quercus-Fraxinus consoc.* Soó 1934 p. p. (Art. 3d); *Fraxinetum excelsioris Fraxinus-Ulmus consoc.* Soó 1934 p. p., (Art. 3d); *Fraxinus-Ulmus-Quercus* ass. Soó 1936 p. p. (Art. 10); *Ulmeto-Fraxineto-Roboretum* Zólyomi 1937 s. str., (Art. 2b, 10); non: *Fraxineto pannonicae-Ulmetum* Soó in Aszód 1935, corr. 1960 et synonyma.

Nomenclatural type: Locality: NW-Hungary, Rajka "Felső-erdő". Datum: spring aspect: 22.04.1982, summer aspect: 11.07.1982. Altitude: 128 m.a.s.l. Declination: 0°; Bedrock: river ballast and sand. Soil type: Alluvial forest soil. Upper canopy, cover: 80 %; height: 28 m. Lower canopy, cover: 25 %; height: 12m. Shrub layer, cover: 70 %; height: 4 m. Youngling, cover: 2 %. Herb layer, cover: 100 %; Plot size: 1600 m²; Relevé made by B. KEVEY.

Upper canopy: *Fraxinus excelsior* 4, *Populus alba* 1, *Quercus robur* 2, *Ulmus laevis* 1. Lower canopy: *Acer campestre* 1, *Ailanthus altissima* +, *Corylus avellana* +, *Fraxinus excelsior* 2, *Padus avium* 1, *Ulmus glabra* +, *Ulmus minor* +. Shrub layer: *Acer campestre* +, *Acer pseudo-platanus* +, *Ailanthus altissima* +, *Cornus sanguinea* 1, *Corylus avellana* 3, *Crataegus monogyna* +, *Euonymus europaea* +, *Frangula alnus* +, *Fraxinus excelsior* 1, *Juglans regia* +, *Ligustrum vulgare* +, *Padus avium* 2, *Populus alba* +, *Sambucus nigra* +, *Ulmus minor* +, *Viburnum opulus* +. Youngling: *Acer campestre* +, *Clematis vitalba* +, *Cornus sanguinea* +, *Corylus avellana* +, *Euonymus europaea* +, *Fraxinus excelsior* 1, *Ligustrum vulgare* +, *Padus avium* +, *Quercus robur* +, *Rhamnus catharticus* +, *Rubus caesius* +, *Sambucus nigra* +, *Ulmus laevis* +, *Ulmus minor* +. Herb layer: *Aegopodium podagraria* 1, *Allium ursinum* 5, *Anemone ranunculoides* 1, *Angelica sylvestris* +, *Arctium minus* +, *Arum alpinum* +, *Brachypodium sylvaticum* +, *Campanula trachelium* +, *Carduus crispus* +, *Carex sylvatica* +, *Convallaria majalis* +, *Epipactis helleborine* +, *Ficaria verna* +, *Gagea lutea* +, *Galanthus nivalis* 1, *Galium odoratum* 1, *Heracleum sphondylium* +, *Humulus lupulus* +, *Impatiens parviflora* +, *Lathraea squamaria* +, *Melica nutans* +, *Neottia nidus-avis* +, *Paris quadrifolia* +, *Physalis alkekengi* +, *Pimpinella major* +, *Polygonatum latifolium* 1, *Polygonatum multiflorum* +, *Scilla vindobonensis* 1, *Solidago gigantea* +, *Stachys sylvatica* +, *Symphylum tuberosum* ssp. *angustifolium* +, *Viola cyanea* 1, *Viola mirabilis* 1, *Viola sylvestris* +.

Characteristic species: *Acer pseudo-platanus*, *Aegopodium podagraria*, *Allium ursinum*, *Anemone ranunculoides*, *Campanula trachelium*, *Circaea lutetiana*, *Convallaria majalis*, *Frangula alnus*, *Fraxinus excelsior*, *Gagea lutea*, *Galanthus nivalis*, *Galium odoratum*, *Heracleum sphondylium*, *Humulus lupulus*, *Lathraea squamaria*, *Melica nutans*, *Padus avium*, *Paris quadrifolia*, *Physalis alkekengi*; *Pimpinella major*, *Polygonatum latifolium*, *P. multiflorum*, *Populus alba*, *Quercus robur*, *Scilla vindobonensis*, *Ulmus laevis*, *Viola mirabilis*

Differential species: *Berberis vulgaris*, *Cornus mas*, *Lithospermum purpureo-coeruleum*. *Viola cyanea*,

Species of high constancy (K=V): *Acer campestre*, *Aegopodium podagraria*, *Brachypodium sylvaticum*, *Convallaria majalis*, *Cornus sanguinea*, *Corylus avellana*, *Crataegus monogyna*, *Euonymus europaeus*, *Ficaria verna*, *Fraxinus excelsior*, *Galium odoratum*, *Heracleum sphondylium*, *Ligustrum vulgare*, *Melica nutans*, *Padus avium*; *Paris quadrifolia*, *Pimpinella major*, *Polygonatum latifolium*, *Quercus robur*, *Rubus caesius*, *Scilla vindobonensis*, *Stachys sylvatica*, *Ulmus minor*, *Viola cyanea*, *Viola mirabilis*.

Ecology: This association living in the Szigetköz represent a transitional community between the West-European *Quercus-Ulmetum* Issler 1926 and the Pannonian *Fraxino pannonicae-Ulmetum* Soó in Aszód 1935 corr. 1960 described from the Upper part of the Tisza river. It is found on the highest points of the alluvial belt and indicates a less moist ecotop as the alder galleries (*Paridi quadrifoliae-Alnetum*). Its moulded soil represent a transitional type toward the typical brown forest soil of the more elevated sites. Along the rivers it develops from poplar galleries (*Senecio saracenicus-Populetum*), or from alder galleries (*Paridi quadrifoliae-Alnetum*). On steady flooded places, it from the alder-fens (*Thelypteridi-Alnetum*), or swamp forests (*Carici acutiformis-Alnetum*) by mineral sedimentation

Distribution: Western Pannonian Lowland, mainly in the Szigetköz.

4. *Scillo vindobonensi-Ulmetum* Kevey 1996 ass. nova in Borhidi et Kevey hoc loco

Syn.: *Fraxinetum excelsioris* Soó 1936 p. p. (Art. 36); *Fraxinus-Ulmus-Quercus* ass. Soó 1936 p. p. (Art. 10); *Ulmeto-Fraxineto-Roboretum* Zsolt 1943 (Art. 10), Tóth 1958; *Quercus robur-Fraxinus excelsior-Ulmus glabra* ass. Soó 1940 p. p. (Art. 10); *Querceto-Fraxineto-Ulmetum* Soó 1941 p. p. (Art. 10); *Populeto-Salicetum brachypodietosum* Tóth 1953; *Querceto-Ulmetum* Járai-Komlódi 1958 non Issler 1926 (Art. 31); *Querceto-Ulmetum hungaricum* Soó 1960 p. p. (Art. 31, 34), Kárpáti I. 1958 p. p., Kárpáti I. - Kárpáti V. 1958 p. p., Kárpáti I. - Tóth 1962 p. p., Zólyomi 1958 p. p., Szujkó-Lacza 1960, Magyar 1961 p. p.; *Fraxineto oxycarpae-Ulmetum hungaricum* Soó 1957 (Art. 34, 43), 1958 p. p.; *Fraxino pannonicae-Ulmetum* Soó 1960 p. p., Kevey 1984, 1987; *Fraxino pannonicae-Ulmetum pannonicum* Soó 1963 p. p. (Art. 34), Kárpáti I. 1979, 1982, 1985 p. p.; *Fraxino pannonicae-Ulmetum submeckeseense* Horvát 1969. (Art. 34)

Nomenclatural type: Upper canopy: *Fraxinus angustifolia* ssp. *pannonica* 2, *Juglans nigra* 1, *Loranthus europaeus* +, *Quercus robur* 4, *Ulmus laevis* 1; Lower canopy: *Clematis vitalba* +, *Fraxinus pennsylvanica* 1, *Juglans nigra* 1, *Ulmus laevis* 2, *Ulmus minor* 2; Shrub layer: *Acer campestre* +, *Acer negundo* +, *Cornus sanguinea* 2, *Crataegus monogyna* +, *Fraxinus pennsylvanica* +, *Juglans nigra* +, *Ligustrum vulgare* +, *Lonicera caprifolium* +, *Ulmus laevis* +, *Ulmus minor* 1, *Viburnum opulus* +; Youngling: *Acer campestre* +, *Clematis vitalba* 1, *Cornus sanguinea* +, *Crataegus monogyna* +, *Fraxinus angustifolia* ssp. *pannonica* +, *Fraxinus pennsylvanica* +, *Ligustrum vulgare* +, *Lonicera caprifolium* +, *Morus alba* +, *Rubus caesius* +, *Ulmus minor* +, *Viburnum opulus* +; Herb layer: *Ajuga reptans* +, *Allium scorodoprasum* +, *Brachypodium sylvaticum* 4, *Calystegia sepium* +, *Carex divulsa* +, *Carex sylvatica* 1, *Carpesium abrotanoides* +, *Cephalaria pilosa* +, *Chelidonium majus* +, *Circaea lutetiana* +, *Cirsium vulgare* +, *Cucubalus baccifer* +, *Dactylis polygama* 2, *Festuca gigantea* +, *Ficaria verna* 2, *Gagea lutea* +, *Geum urbanum* +, *Glechoma hederacea* +, *Helleborus odoratus* +, *Lapsana communis* +, *Physalis alkekengi* +, *Poa trivialis* +, *Rumex sanguineus* +, *Scilla vindobonensis* 1, *Solidago gigantea* +, *Stachys sylvatica* 1, *Symphylum officinale* +, *Torilis japonica* +, *Urtica dioica* +, *Veronica chamaedrys* +, *Viola cyanea* 1, *Viola sylvestris* +.

Locality: Hercegszántó "Sziget-erdő" near Mohács; Datum: spring aspect: 05.04.1993. summer aspect: 14.07.1994. Altitude: 85 m.a.s.l.; Declination: 0°; Bedrock: sandy alluvial soil. Soil type: alluvial forest soil. Upper canopy, cover: 80 %; height: 28 m. Lower canopy, cover: 25 %; height: 15 m; Shrub layer, cover: 20 %; height: 3 m. Youngling, cover: 5 %; Herb layer, cover: 95 %. Plot size: 400 m²; Relevé made by B. KEVEY.

Characteristic species: *Carex remota*, *C. strigosa*, *Carpesium abrotanoides*, *C. cernuum*, *Crataegus degenii*, *C. nigra*, *Euphorbia amygdaloides*, *Fraxinus angustifolia* ssp. *pannonica*, *F. excelsior*, *Fritillaria meleagris*, *Galeopsis bifida*, *Milium effusum*, *Primula vulgaris*, *Quercus robur*, *Ophioglossum vulgatum*, *Sanicula europaea*, *Scilla vindobonensis*, *Stachys sylvatica*, *Ulmus laevis*, *U. minor*, *Veronica montana*, *Vitis sylvestris*.

Differential species: *Helleborus odoratus*, *Lonicera caprifolium*, *Scutellaria altissima*, *Tamus communis*, *Tilia tomentosa*,

Species of higher constancy (K=V): *Acer campestre*, *Brachypodium sylvaticum*, *Carex sylvatica*, *Circaea lutetiana*, *Cornus sanguinea*, *Crataegus monogyna*, *Euonymus europaeus*, *Ficaria verna*, *Galium aparine*, *Geranium robertianum*, *Geum urbanum*, *Hedera helix*, *Moehringia trinervia*, *Populus alba*, *Quercus robur*, *Rubus caesius*, *Rumex sanguineus*, *Sambucus nigra*, *Symphylum officinale*, *Ulmus laevis*, *U. minor*, *Urtica dioica*, *Viola cyanea*.

Characterization: This association is characteristic of the middle section of the Danube river starting southwards from the Szentendre Island, where the endemic *Crataegus nigra* with his hybrids and a number of submediterranean elements appears in the composition especially of the elm-ash galleries. Its stands differs notably from the vicariant hardwood gallery forests of the Little Hungarian Plain and of the Tisza River. Therefore its considering as a separate community seems justified.

Distribution: The Danube valley from the Szentendre Island to Mohács less typically in the Mezőföld and the Drava Plain, and on the Duna-Tisza Middle range.