National Survey of Native Woodlands 2003-2008



Volume II: Woodland classification

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Cover photo: Willow carr woodland dominated by *Salix cinerea* with a field layer of *Phalaris arundinacea* and *Filipendula ulmaria*, Hazelwood Demesne, Sligo (Philip Perrin, May 2006)

The National Survey of Native Woodlands 2003-2008

Volume II: Woodland Classification

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Background

This document presents a national classification scheme for native woodlands in Ireland based on the data recorded during the National Survey of Native Woodlands 2003-2008 (NSNW). A total of 1667 woodland vegetation samples were recorded in the form of 10 m x 10 m relevés, with samples being recorded from native woodlands sites in every county in the country. Environmental data and stand structure data relating to each of these samples was also recorded. From these data the classification was produced using a suite of multivariate statistical techniques. Full details of the survey and analysis methods are presented in Volume I. The classification scheme initially identifies four major ***woodland groups.*** Each of the woodland groups is then divided into a number of ***vegetation types***. A total of 22 vegetation types are described.

Woodland groups

For each woodland group, a list of ten key indicator species is presented together with distribution maps on pages 6 and 7. These ***group indicators*** help distinguish stand samples between the groups. The figures indicate the value of the species as indicators in percent, where 100% would represent the perfect indicator that was only ever found within that group, within all its samples and at maximum abundance. It will be noted that each of these groups has been named using the best indicator species from the trees and the best indicator species from amongst the other vascular plants. By using the indicators in combination, most samples of woodland vegetation can be successfully allocated to a group. Note that is certainly possible that samples may lack either or both of the title species of the most appropriate group

Vegetation type accounts

Vegetation types were named using the two best vascular indicators species for that type. For each vegetation type a description is given of the typical floristic composition and the edaphic and topographic situations in which it occurs. A small number of example sites which contain the vegetation type are then listed together with their site codes. These have been selected to represent the range of variation within the vegetation type, but emphasis has been placed on providing some useful points of reference to the group rather than listing sites which are strictly the most typical of the vegetation. Therefore, the examples tend to consist of sites that already have some conservation designation or to which public access is possible.

The affinities that each of the vegetation types has to previously described classifications are detailed. Under ***Fossitt***, comparisons are made to the habitat categories from the *Heritage Council's Guide to Habitats in Ireland* (Fossitt 2000). The percentage of relevés of that vegetation type ascribed to each woodland habitat category is given. Under ***Annex I***, categories from Annex I of the EU Habitats Directive are listed where more than 10% of relevés for that vegetation type have been deemed relevant. Under ***CEP***, subjective comparisons are made with the groupings of the Central European phytosociology tradition. The list of associations and subassociations described in Ireland presented by Kelly (2005)

was used as the reference. Under ***NVC***, comparisons are made with the woodlands section of the British National Vegetation Classification (Rodwell 1991). This was achieved using the Tablefit v1.0 software utility (Institute of Terrestrial Ecology, Huntingdon). This utility defines a measure of goodness-of-fit between samples of vegetation and the expected species composition of each NVC community. For each vegetation type, percentage cover and frequency data were used for all species with 5% or greater frequency within that vegetation type, with the exception of a small number of hybrids, epiphytes, and recent taxonomic changes which could not be inputted. The NVC community or subcommunity with the best match is given with the goodness-of-fit in percent. Tablefit also cross-references NVC communities with the Corine Biotopes system (Devillers *et al.* 1991) upon which the Palaearctic Habitat classification used in the EU Habitats Directive is based. The relevant biotope is given under the heading ***Corine.***

A distribution map is given for each vegetation type indicating its occurrence in Ireland as recorded during the NSNW. These records are indicated on a hectad (10 km x 10 km square) basis. An example photograph and a stratigraphy diagram are also presented to illustrate the main features of the vegetation and structure. Note that vegetation types may contain far more variation than it is possible to show in just two pictures and they should be used in conjunction with the description and the synoptic table. Similarly, the diagrams do not seek to illustrate the variations in the field layer which may well differentiate stands with similar stratigraphy. The codes used in the stratigraphy diagrams to identify different tree species are as follows:

Code	Species	Code	Species
Ag	*Alnus glutinosa*	Rc	*Rhamnus cathartica*
Ap	*Acer pseudoplatanus*	Saria	*Sorbus aria* agg.
Bp	*Betula pubescens*	Sauc	*Sorbus aucuparia*
Cm	*Crataegus monogyna*	Saur	*Salix aurita*
Co	*Corylus avellana*	Scin	*Salix cinerea*
Ee	*Euonymus europaeus*	Sf	*Salix fragilis*
Fg	*Fagus sylvatica*	Snig	*Sambucus nigra*
Fx	*Fraxinus excelsior*	Stri	*Salix triandra*
Ix	*Ilex aquifolium*	Svim	*Salix viminalis*
Ps	*Prunus spinosa*	Sxm	*Salix* x *multinervis*
Qp	*Quercus petraea*	Tb	*Taxus baccata*
Qr	*Quercus robur*	Ug	*Ulmus glabra*

Synoptic tables

A synoptic table is presented for each woodland group displaying a summary of the floristic and environmental data. Data for each vegetation type within the group is presented in a separate column identified by lower case letter with summary data for the group as a whole presented in the final column. Species are included in the table which have 5% or greater frequency in one or more of the vegetation types (and, in the case of the rarer vegetation types,

which occur in more than one relevé). Frequency and abundance data are given for each species in each vegetation type. Frequency here refers to the percentage of relevés in which that species occurs irrespective of how much is present and is indicated by Roman numerals, where I = 0.1 – 20.0%, II = 20.1 – 40.0%, III = 40.1 – 60.0%, IV = 60.1 – 80.0% and V = 80.1 – 100%. Abundance refers to the mean cover that species provides within the samples irrespective of frequency and is in percent. Some species have been identified as good indicators for a particular vegetation type and are marked by a number of dots. These ***type indicators*** help differentiate only between the vegetation types within that group and should not be used to make comparisons with vegetation types from other groups. The number of dots denotes the value of the species as an indicator such that: • = 10 – 20.0%, •• = 20.1 – 40.0%, ••• = 40.1 – 60.0%, •••• = 60.1 – 80.0% and ••••• = 80.1 – 100%.

Species are ordered within the table as follows. The first section contains the constant species, which in phytosociological terminology are those with an overall frequency in the group of IV or V. Within this section species are ordered by their indicator status for each of the vegetation types. The subsequent sections contain the indicator species for each of the vegetation types in turn. Within these sections species are ordered by their value as indicators. After the indicator species the remaining species which do not have any significant affinity for one of the vegetation types are shown. These companion species have been divided in sections according to whether they are woody species, herbs or ferns, or bryophytes, and within these sections they are ordered by frequency within the woodland group.

In the final sections of the synoptic table environmental data is presented for each vegetation type and the woodland group. Species richness simply indicates the mean number of species per relevé. For soil pH, soil total P, soil organic content, altitude and slope, median values are given. Soil type is presented by percentage of relevés for each of five broad categories: well-drained mineral soils, podzolised soils, gleyed soils, basin peats and other soils. Ellenberg indicator values are proxy measures of environmental factors based on the floristic data. The values presented are the mean of mean values for each relevé weighted by abundance. The calibrations for British conditions of Hill *et al.* (1999) were used, which defines the scales as follows:

Factor	Minimum	Maximum
Light	1 (deep shade)	9 (full light)
Moisture	1 (extreme dryness)	12 (submerged)
Reaction	1 (extreme acidity)	9 (basic conditions)
Nitrogen	1 (extremely infertile)	9 (extremely fertile)
Salinity	1 (non-tolerant)	9 (tolerant)

Finally, summary stand structure data is given from the tree structure plots associated with each relevé. Canopy height is the mean height of measured trees for which the crown position was

deemed as dominant or co-dominant. Native basal area indicates the percentage of the total basal area for the stand which is comprised of native tree species.

Considerations

When using the classification it is important to take several considerations into account. Firstly, this is a vegetation classification, *not* a habitat classification. The groupings have been arrived at using floristic data only. Environmental data such as edaphic conditions, geography, topography, flooding regime and management have been used to interpret the groupings but not to define them. Secondly, no special weighting was given to tree species forming the canopy compared with species in the understorey or field layer. Thirdly, species from the same genus were not regarded as any more similar than species from different genera. Hence *Quercus petraea* were not regarded as more similar to *Quercus robur* than it was to, for example, *Alnus glutinosa*. Finally, and perhaps most importantly, it should be remembered that the scheme presented here is inherently artificial and its aim is to simplify a highly complex dataset for applied and research purposes. It is not seeking to identify real divisions in nature between definite stand types. Thus, it should always be borne in mind that many woodland stands which are successional, modified, or otherwise transitional may well be referable to more than one vegetation type.

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Woodland groups: indicator species and maps

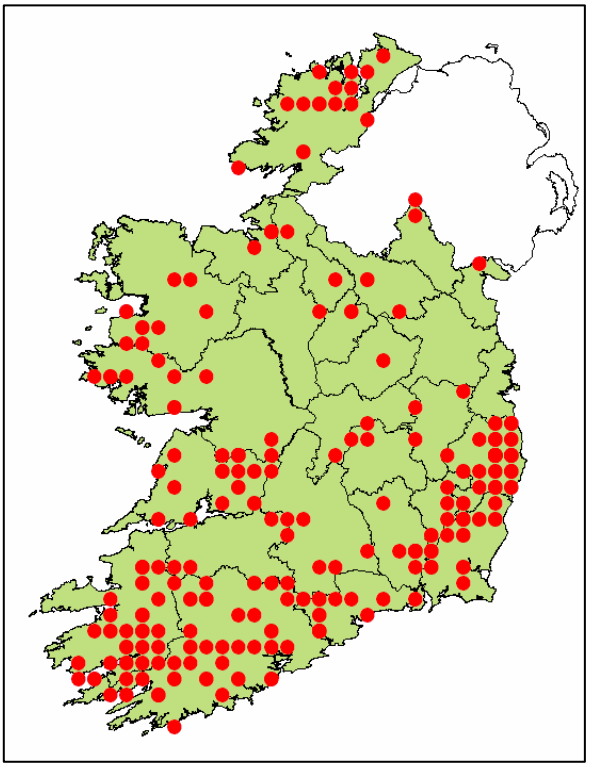
The top ten indicator species are listed for each group. Percentage figures indicate value of each species as indicator for that group.

***Quercus petraea – Luzula sylvatica* woodland group**

260 relevés, 3 vegetation types

Quercus petraea	93%
Luzula sylvatica	48%
Isothecium myosuroides	46%
Ilex aquifolium	46%
Blechnum spicant	41%
Vaccinium myrtillus	36%
Lonicera periclymenum	33%
Polypodium vulgare	27%
Mnium hornum	26%
Rhytidiadelphus loreus	25%

Acidophilous sessile oak and holly woodland of the uplands and lowlands

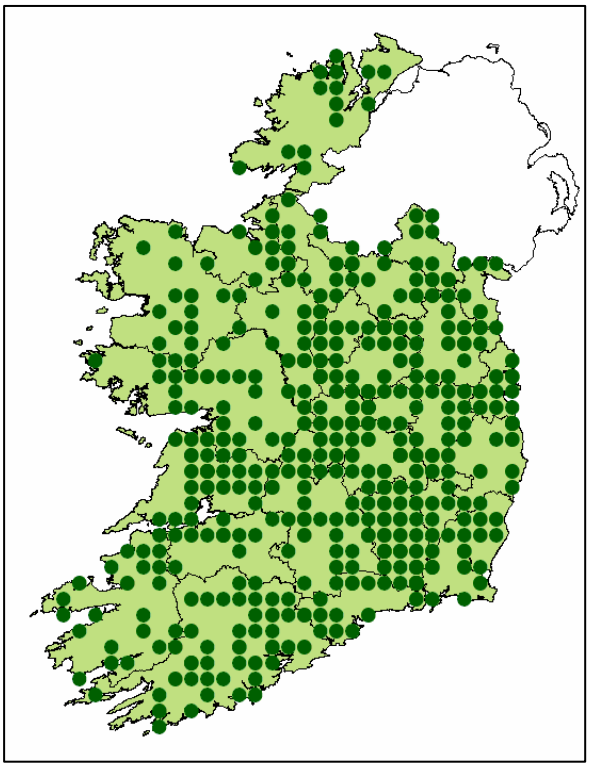


***Fraxinus excelsior – Hedera helix* woodland group**

740 relevés, 8 vegetation types

Fraxinus excelsior	46%
Hedera helix	45%
Thamnobryum alopecurum	39%
Corylus avellana	38%
Quercus robur	38%
Eurhynchium striatum	32%
Crataegus monogyna	30%
Neckera complanata	28%
Geum urbanum	27%
Arum maculatum	36%

Ash, hazel and modified woodlands of relatively dry, mostly base-rich, mineral soils in the lowlands

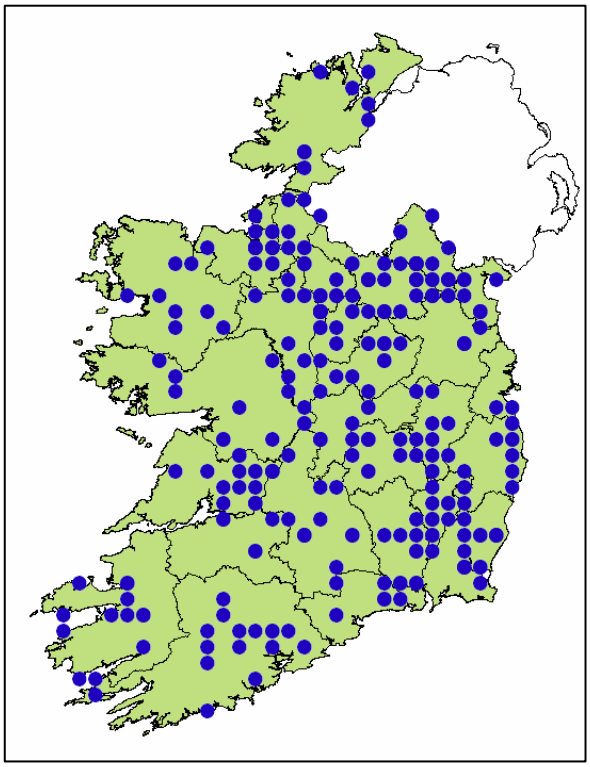


Alnus glutinosa - Filipendula ulmaria woodland group

296 relevés, 5 vegetation types

Alnus glutinosa	69%
Filipendula ulmaria	65%
Salix cinerea	56%
Carex remota	40%
Galium palustre	39%
Angelica sylvestris	35%
Ranunculus repens	35%
Mentha aquatica	34%
Iris pseudacorus	34%
Calliergonella cuspidata	32%

Species-rich wet woodland stands of alder, willow and ash, typical of lakeshores and waterlogged hollows

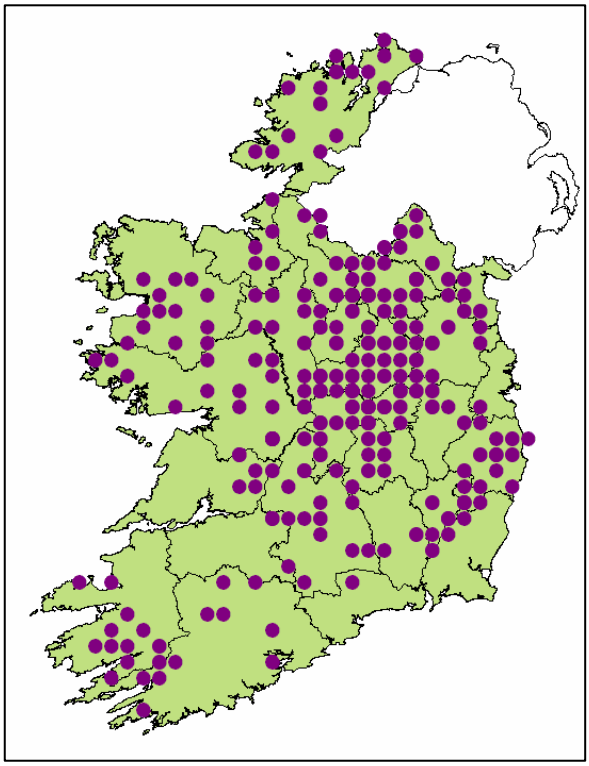


Betula pubescens – Molinia caerulea woodland group

371 relevés, 6 vegetation types

Betula pubescens	75%
Pseudoscleropodium purum	42%
Molinia caerulea	41%
Rubus fruticosus	36%
Thuidium tamariscinum	35%
Lophocolea bidentata	32%
Kindbergia praelonga	30%
Dryopteris dilatata	28%
Hypnum jutlandicum	27%
Ulota bruchii / U. crispa	18%

Birch woodlands of degraded or intact raised bogs and peaty hollows and locally on mineral soils



1. *Quercus petraea – Luzula sylvatica group*

a. *Rubus fruticosus – Corylus avellana* vegetation type

Description

These high oak forest stands occur on acidic well-drained mineral soils and podzols often on hillsides and valleysides. These sites are rather more fertile and base-rich than those of the other vegetation types in this group. Hence, the flora also contains several species characteristic of woodland on calcareous soils. The canopy is dominated by *Quercus petraea* with *Fraxinus excelsior* and *Fagus sylvatica* being frequent components. *Acer pseudoplatanus*, *Betula pubescens* and *Sorbus aucuparia* are occasional. The understorey is typically quite dense, being dominated by *Corlyus avellana* with *Ilex aquifolium* often plentiful; *Crataegus monogyna* is occasional. In the field layer *Rubus fruticosus* is abundant and may form extensive, tangled patches. *Hedera helix* is also typically abundant and *Dryopteris dilatata*, *Oxalis acetosella* and *Lonicera periclymenum* are very frequent. The presence of several broadleaf herbs distinguishes this vegetation type from the other acidophilous oak stands. They include *Hyacinthoides non-scripta, Viola riviniana / V. reichenbachiana, Circaea lutetiana, Geranium robertianum, Potentilla sterilis* and *Geum urbanum. Luzula sylvatica* is frequent but typically not plentiful, whilst *Vaccinium myrtillus* is significantly rare. *Polypodium vulgare* is a frequent epiphyte. Amongst the bryophytes the principal species are *Thuidium tamariscinum, Hypnum cupressiforme, Isothecium myosuroides, Kindbergia praelonga, Mnium hornum* and *Eurhynchium striatum*. *Thamnnobryum alopecurum* and *Hookeria lucens* are occasional.

Example sites

Cleanderry, Cork, Site 1328; Derryclare, Galway, Site 1601; Ballynabarney, Wexford, Site 1; Inchinsquillib, Tipperary, Site 1898; Feddyglass, Donegal, Site 1449.

Affinities

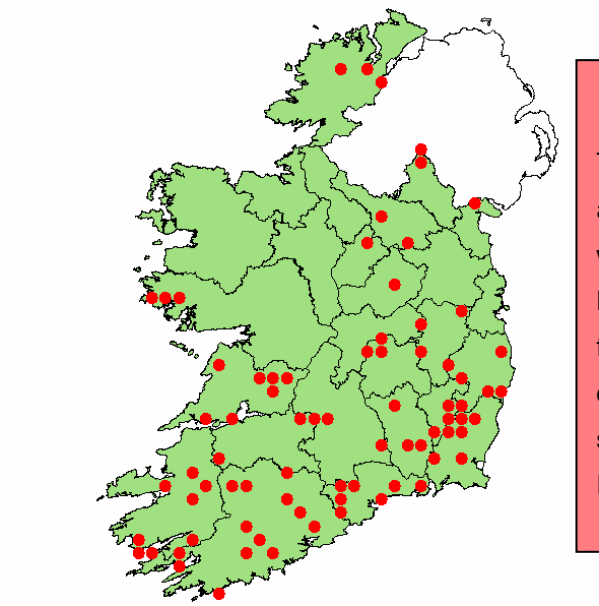
Fossitt: WN1 54%; WD1 23%; WN2 21%; WN4 1%; WD2 1%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (98%)

CEP: Blechno-Quercetum coryletosum (high)

NVC: W11a *Quercus petraea – Betula pubescens – Oxalis acetosella woodland*
Dryopteris dilatata sub-community (49%)

Corine: C41.532 British sessile oakwoods

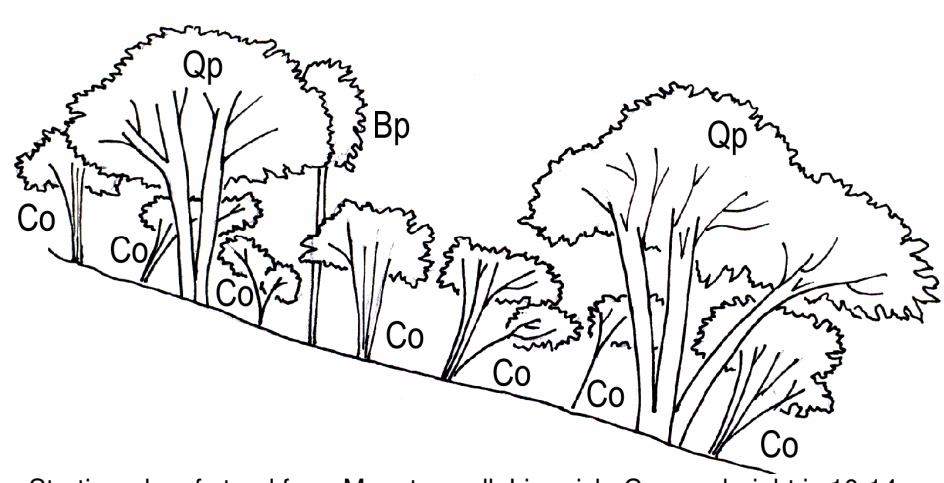


Distribution

This stand type occurs scattered across much of southern Ireland with a few sites in the north Midlands. It is however absent from most of the northwest of the country with the exception of some outlying stands in northern Donegal.



Stand dominated by *Quercus petraea, Corylus avellana* and *Rubus fruticosus*, Templeglentan West, Limerick.



Startigraphy of stand from Mountrussell, Limerick. Canopy height is 10-14m.

b. *Vaccinium myrtillus – Ilex aquifolium* vegetation type

Description

These are high oak forest stands typical of podzolised, strongly acidic soils on sloping ground. The canopy is dominated by *Quercus petraea* with *Ilex aquifolium* abundant in the understorey. *Betula pubescens* and *Sorbus aucuparia* are also frequent canopy components. Other tree species, such as *Fraxinus excelsior*, *Corylus avellana* and *Fagus sylvativa* are only occasional. In the field layer *Vaccinium myrtillus* characteristically forms large shrubby patches. *Rubus fruticosus, Hedera helix* and *Luzula sylvatica* are frequent, but none of these species should be abundant (*c.f.* other vegetation types in this group). Other frequent field layer species are *Blechnum spicant, Dryopteris dilatata, Lonicera periclymenum, Oxalis acetosella* and *Pteridium aquilinum*. *Polypodium vulgare* is a frequent epiphyte on the branches of mature oaks. Typically, however, the number of vascular species is low with much of the species richness being contributed by the bryophytes which can be abundant in their cover. The chief species are *Thuidium tamariscinum, Hypnum cupressiforme, H. andoi, Isothecium myosuroides, Kindbergia praelonga, Rhytidiadelphus loreus, Polytrichastrum formosum, Mnium hornum, Plagiothecium undulatum, Dicranum scoparium* and *Lophocolea bidentata.*

Example sites

Tomies, Killarney National Park, Kerry, Site 1289; Glengarrif Nature Reserve, Cork, Site 1316; Slishwood, Sligo, Site 1411; Shannawoneen, Galway, Site 1600; Derrybawn, Wicklow Mountains National Park, Site 775.

Affinities

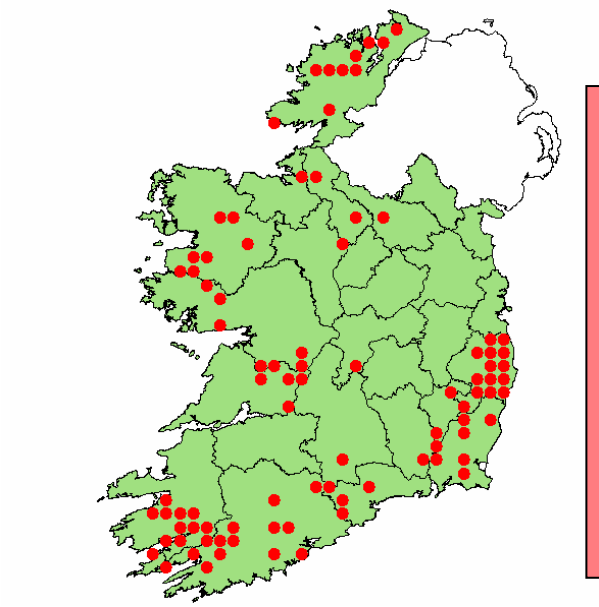
Fossitt: WN1 90%; WN7 3%; WN2 2%; WD1 2%; WD2 2%; WN4 1%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (98%)

CEP: Blechno-Quercetum scapietosum / typicum (high)

NVC: W17a *Quercus petraea – Betula pubescens – Dicranum majus* woodland
Isothecium myosuroides – Diplophyllum albicans sub-community (49%)

Corine: C41.532 British sessile oakwoods

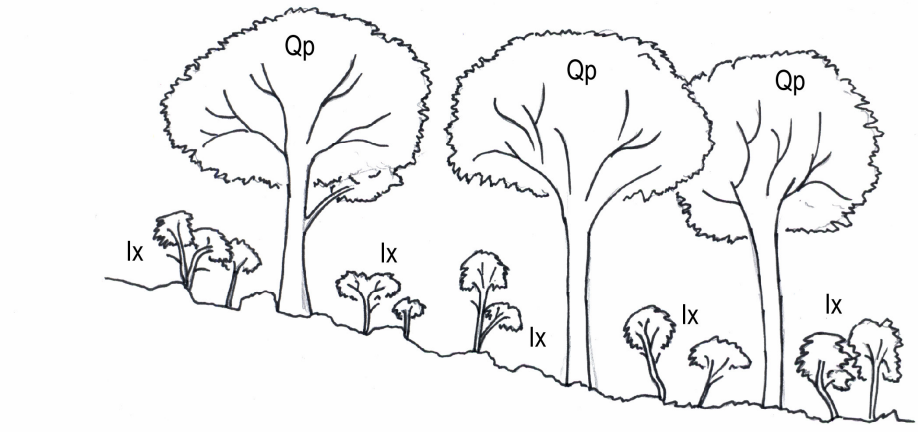


Distribution

This stand type is frequent in the Wicklow Mountains and down into the parts of Wexford and Carlow. It is also abundant in western Cork / southern Kerry, with further sites in eastern Clare, western Galway and Mayo and northern Donegal. It is absent from most of the midlands and the northeast of the country.



Stand of high oak forest dominated by *Quercus petraea* with a field layer of *Vaccinium myrtillus* and *Pteridium aquilinum*, Derrybawn, Wicklow Mountains National Park.



Stratigraphy of stand from Derrycunihy, Killarney National Park, Kerry. Canopy height is 25m.

c. *Luzula sylvatica – Dryopteris dilatata* vegetation type

Description

These are high oak forest stands of the uplands typically occurring on podzolised, acidic soils of steep slopes. The canopy is strongly dominated by *Quercus petraea*, with *Betula pubescens* and *Sorbus aucuparia* occurring only occasionally. The understorey is composed of *Ilex aquifolium* and / or *Corylus avellana* but neither species is typically abundant. The key characteristic of these stands is the carpet of *Luzula sylvatica* which may occupy more than half of the woodland floor. *Rubus fruticosus* and *Hedera helix* are frequent but should not dominate, whilst *Dryopteris dilatata* and *Lonicera periclymenum* are relatively plentiful in these stands. *Vaccinium myrtillus* is frequently present but typically only as scattered plants or small patches (*c.f. Vaccinium myrtillus – Ilex aquifolium* vegetation type). The only other frequent vascular plants are *Blechnum spicant, Dryopteris affinis, Oxalis acetosella* and *Polypodium vulgare*. The last species is very frequent as an epiphyte on oak. The principal mosses are *Isothecium myosuroides, Kindbergia praelonga, Thuidium tamariscinum and Hypnum cupressiforme*. Other frequent bryophytes are *Isothecium alopecuroides, Lophocolea bidentata, Hypnum resupinatum, Mnium hornum* and *Polytrichastrum formosum*.

Example sites

Union Wood, Sligo, Site 1401; Ardnamona Nature Reserve, Donegal, Site 1427; Coolaphuca, Carlow, Site 310; Devil's Glen, Wicklow, Site 781; Magherbaun, Clare, Site 1527.

Affinities

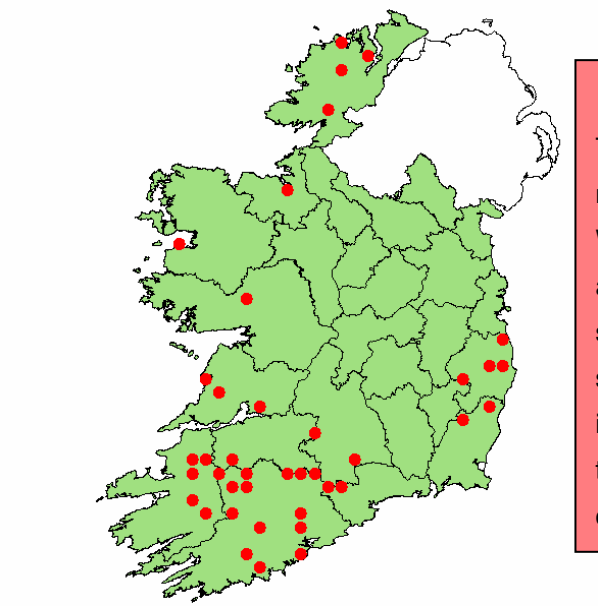
Fossitt: WN1 91%; WN2 4%; WD1 4%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (100%)

CEP: Blechno-Quercetum scapietosum / typicum (high)

NVC: W11a *Quercus petraea – Betula pubescens – Oxalis acetosella* woodland
Dryopteris dilatata sub-community (48%)

Corine: C41.532 British sessile oakwoods

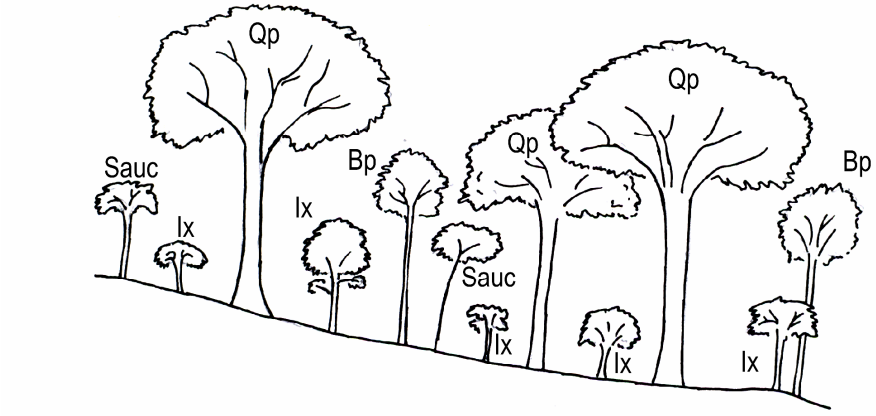


Distribution

This stand type is largely restricted to the upland of Wicklow and northern Wexford and the counties of the southwest (Cork and Kerry) with scattered sites up the west coast into Donegal. It is absent from the midlands and the northeast of the country.



Stand of *Quercus petraea* dominated woodland with a carpet of *Luzula sylvatica*. Union Wood, Sligo.



Stratigraphy of stand from Ardnamona Nature Reserve, Donegal. Canopy height is 23-26m.

1. *Quercus petraea – Luzula sylvatica* woodland group

Constants	a			b			c			Group
Rubus fruticosus	V	21.0	●●●●	IV	3.8		V	7.4		IV	10.2
Hedera helix	V	13.9	●●●	IV	4.0		V	4.8		V	7.4
Thuidium tamariscinum	IV	4.2		V	9.6	●●●	V	2.6		V	6.6
Ilex aquifolium	IV	12.7		V	21.5	●●●	IV	8.4		IV	16.2
Hypnum cupressiforme	III	0.7		IV	1.4	●●	IV	0.8		IV	1.1
Blechnum spicant	IV	2.4		IV	2.3	●●	IV	2.3		IV	2.4
Luzula sylvatica	III	3.9		III	5.3		V	54.0	●●●●	IV	13.4
Dryopteris dilatata	V	5.1		IV	2.9		V	7.1	●●●	V	4.4
Quercus petraea	V	48.6		V	54.8		V	58.9	●●	V	53.4
Lonicera periclymenum	V	4.2		IV	3.0		V	4.2	●●	V	3.6
Isothecium myosuroides	V	2.2		V	3.4		V	3.3	●●	V	3.0
Kindbergia praelonga	IV	1.8		III	1.5		V	1.6	●●	IV	1.6
a) *Rubus - Corylus* vegetation type indicators											
Corylus avellana	IV	20.7	●●●	II	2.9		IV	5.4		III	9.3
Fraxinus excelsior	III	6.1	●●●	II	0.6		I	1.3		II	2.6
Eurhynchium striatum	IV	3.5	●●	II	0.9		III	1.5		III	1.9
Fagus sylvatica	III	11.5	●●	II	2.4		I	1.6		II	5.3
Hyacinthoides non-scripta	III	3.4	●●	I	0.3		II	1.1		II	1.5
Crataegus monogyna	II	1.5	●●	I	0.5		I	0.2		II	0.8
Athyrium filix-femina	III	0.8	●●	I	0.1		II	0.4		II	0.4
Dryopteris affinis	III	1.7	●●	II	0.3		III	1.8		II	1.1
Viola riviniana / V. reichenbachiana	II	0.7	●●	I	0.2		I	0.3		II	0.4
Metzgeria furcata	III	0.3	●●	II	0.2		III	0.1		III	0.2
Circaea lutetiana	II	0.6	●●	I	0.1		I	0.1		I	0.2
Thamnopbryum alopecurum	II	1.5	●●	I	0.2		I	0.3		I	0.7
Neckera complanata	II	0.2	●	I	<0.05		II	0.1		II	0.1
Acer pseudoplatanus	II	2.0	●	I	0.1		I	0.8		I	0.9
Geranium robertianum	II	0.5	●	I	<0.05		I	0.1		I	0.2
Potentilla sterilis	I	0.3	●	I	<0.05		I	<0.05		I	0.1
Geum urbanum	I	0.1	●	I	<0.05					I	<0.05
Sanicula europaea	I	0.2	●	I	<0.05					I	0.1
Carex sylvatica	II	0.2	●	I	<0.05		I	0.1		I	0.1
Hookeria lucens	II	0.3	●	I	0.2		II	0.2		II	0.2
Polystichum setiferum	I	1.0	●	I	0.2		I	0.2		I	0.5
Veronica chamaedrys	I	0.2	●				I	<0.05		I	0.1
Atrichum undulatum	I	0.2	●	I	0.1		I	0.1		I	0.1
Brachypodium sylvaticum	I	0.2	●	I	<0.05		I	0.1		I	0.1
Veronica montana	I	0.2	●	I	<0.05		I	<0.05		I	0.1
b) *Ilex – Vaccinium* vegetation type indicators											
Vaccinium myrtillus	I	0.7		IV	13.8	●●●	III	2.7		III	7.4
Betula pubescens	II	4.3		IV	9.1	●●	II	2.3		III	6.3
Sorbus aucuparia	II	1.2		IV	4.9	●●	III	3.2		III	3.4
Rhytidiadelphus loreus	I	0.8		III	3.9	●●	I	0.6		II	2.3
Hypnum andoi	II	0.3		III	0.8	●●	II	0.2		III	0.5
Polytrichastrum formosum	II	0.6		IV	1.1	●●	III	0.5		III	0.8
Mnium hornum	III	0.6		III	0.9	●●	III	0.3		III	0.7
Plagiothecium undulatum	I	<0.05		III	0.4	●●	I	0.1		II	0.2
Oxalis acetosella	IV	2.6		IV	3.1	●●	III	0.9		III	2.5
Frullania tamarisci	I	0.1		III	0.3	●●	III	0.1		II	0.2
Dicranum majus	I	<0.05		II	0.3	●●	I	<0.05		I	0.1
Rhytidiadelphus triquetrus	I	0.4		II	1.4	●●	I	0.4		II	0.9
Pteridium aquilinum	II	1.1		III	2.6	●	II	2.3		III	2.0
Dicranum scoparium	I	0.2		III	0.3	●●	II	0.2		II	0.2
Loeskeobryum brevirostre	I	0.3		II	1.7	●	II	0.2		I	1.0
Scapania gracilis				I	0.2	●	I	<0.05		I	0.1

	a		b		c		Group	
Ulota bruchii / U.crispa	II	0.1	II	0.2	●	II	0.1	II	0.2
Agrostis canina / A. vinealis	I	0.2	II	0.6	●	I	<0.05	I	0.4
Pseudoscleropodium purum	I	<0.05	I	0.2	●	I	<0.05	I	0.1
Anthoxanthum odoratum	I	0.1	I	0.5	●	I	<0.05	I	0.3
Agrostis capillaris	I	0.6	II	1.2	●	I	0.1	I	0.8
Calypogeia muelleriana	I	<0.05	I	<0.05	●	I	<0.05	I	<0.05
Frullania dilatata	II	0.1	II	0.1	●	II	0.1	II	0.1
Molinia caerulea	I	<0.05	I	1.1	●			I	0.5
Dryopteris aemula	I	0.2	II	1.0	●	I	0.9	I	0.7
Potentilla erecta	I	<0.05	I	0.2	●	I	<0.05	I	0.1
Diplophyllum albicans	I	<0.05	I	0.2	●	I	<0.05	I	0.1
Hylocomium splendens	I	<0.05	I	0.3	●	I	<0.05	I	0.2

c) *Luzula - Dryopteris* vegetation type indicators

Polypodium vulgare	III	0.9	III	0.7		IV	1.1	●●	III	0.8
Lophocolea bidentata	II	<0.05	III	0.1		III	0.2	●●	II	0.1
Hypnum resupinatum	II	0.1	I	<0.05		III	0.1	●●	II	0.1
Isothecium alopecuroides	I	0.1	I	0.2		III	0.2	●	II	0.2
Pseudotaxiphyllum elegans	II	0.1	II	0.2		II	0.2	●	II	0.2
Teucrium scorodonia	I	0.1	I	0.1		I	0.3	●	I	0.2
Radula complanata	I	<0.05	I	<0.05		II	<0.05	●	I	<0.05
Calypogeia fissa	I	<0.05	I	<0.05		I	<0.05	●	I	<0.05
Dicranella heteromalla	I	<0.05	I	<0.05		I	0.1	●	I	<0.05

Other woody species

Rhododendron ponticum	I	0.2	I	0.6		I	<0.05		I	0.4
Hypericum androsaemum	I	<0.05	I	<0.05		I	<0.05		I	<0.05
Calluna vulgaris			I	0.1		I	<0.05		I	0.1
Salix cinerea	I	0.2	I	0.6		I	<0.05		I	0.4
Picea sitchensis	I	0.2	I	0.3					I	0.2

Other herbs & ferns

Agrostis stolonifera	I	0.9	I	1.5		I	0.2		I	1.1
Deschampsia flexuosa	I	<0.05	I	0.6		I	0.4		I	0.4
Solidago virgaurea	I	0.1	I	0.1		I	<0.05		I	0.1
Stellaria holostea	I	0.2	I	0.1		I	0.2		I	0.1
Carex remota	I	0.2	I	0.5		I	0.1		I	0.3
Holcus lanatus	I	0.1	I	0.1		I	<0.05		I	0.1
Lysimachia nemorum	I	0.2	I	0.1		I	<0.05		I	0.1
Ajuga reptans	I	0.2	I	0.1		I	0.1		I	0.1
Anemone nemorosa	I	0.1	I	<0.05		I	<0.05		I	0.1
Deschampsia cespitosa	I	0.1	I	0.2		I	0.1		I	0.2
Conopodium majus	I	0.1	I	<0.05		I	<0.05		I	0.1
Dactylis glomerata	I	0.2	I	<0.05		I	0.1		I	0.1
Luzula pilosa	I	<0.05	I	0.1		I	0.1		I	<0.05
Galium saxatile	I	<0.05	I	0.2					I	0.1
Melampyrum pratense	I	0.1	I	0.3		I	<0.05		I	0.2
Dryopteris filix-mas	I	0.3	I	<0.05		I	0.2		I	0.1
Carex pilulifera	I	<0.05	I	<0.05					I	<0.05
Ranunculus ficaria	I	0.2	I	<0.05					I	0.1
Phyllitis scolopendrium	I	0.2	I	<0.05		I	0.1		I	0.1
Luzula multiflora	I	<0.05	I	<0.05		I	<0.05		I	<0.05
Juncus effusus	I	0.1	I	<0.05		I	<0.05		I	<0.05
Hypericum pulchrum	I	<0.05	I	<0.05		I	<0.05		I	<0.05
Chrysosplenium oppositifolium	I	0.2	I	<0.05		I	<0.05		I	0.1
Filipendula ulmaria	I	0.1				I	<0.05		I	<0.05

	a	b	c	Group
Primula vulgaris	I 0.1	I 0.1		I 0.1
Hymenophyllum tunbridgense		I 0.1		I 0.1
Allium ursinum	I 1.1	I 0.1		I 0.4
Arum maculatum	I <0.05			I <0.05
Other bryophytes				
Hypnum jutlandicum	I 0.1	I 0.4	II 0.2	I 0.3
Pellia epiphylla	I 0.1	I 0.1	I 0.1	I 0.1
Ulota phyllantha	I <0.05	I <0.05	I <0.05	I <0.05
Saccogyna viticulosa	I <0.05	I 0.1	I <0.05	I 0.1
Brachythecium rutabulum	I 0.1	I 0.1	I 0.1	I 0.1
Plagiomnium undulatum	I 0.1	I 0.1		I 0.1
Microlejeunea ulicina	I <0.05	I <0.05	I <0.05	I <0.05
Lepidozia reptans	I <0.05	I 0.1	I <0.05	I <0.05
Polytrichum commune	I <0.05	I 0.4	I <0.05	I 0.2
Fissidens taxifolius	I 0.1	I <0.05	I <0.05	I 0.1
Rhizomnium punctatum	I <0.05	I <0.05	I <0.05	I <0.05
Plagiochila asplenioides	I <0.05	I <0.05	I <0.05	I <0.05
Leucobryum glaucum	I 0.1	I 0.1		I 0.1
Plagiochila spinulosa	I <0.05	I 0.1	I <0.05	I 0.1
Frullania teneriffae	I <0.05	I <0.05	I <0.05	I <0.05
Plagiochila porelloides	I <0.05	I <0.05	I <0.05	I <0.05
Scapania nemorea	I <0.05	I 0.1		I 0.1
Homalothecium sericeum	I <0.05	I <0.05	I <0.05	I <0.05
Heterocladium heteropterum	I <0.05	I <0.05		I <0.05
Sphagnum palustre		I 1.2	I <0.05	I 0.6
Plagiothecium denticulatum	I <0.05	I <0.05	I <0.05	I <0.05
Pleurozium schreberi		I <0.05		I <0.05
Campylopus flexuosus		I <0.05		I <0.05
Plagiothecium succulentum	I <0.05	I <0.05	I <0.05	I <0.05
Number of relevés	87	127	46	260
Species richness				
Vascular	18	15	15	16
Bryophyte	11	14	13	13
Total	29	29	28	29
Soil pH	4.9	4.3	4.4	4.5
Soil total p (mg/g)	0.70	0.58	0.61	0.62
Soil % organic content	20	31	26	24.2
Soil type (%)				
Well-drained mineral soils	63.2	26.0	28.3	38.8
Podzolised soils	26.4	66.9	66.9	53.1
Gleyed soils	9.2	3.1	6.5	5.8
Basin peats	1.1	3.9	0.0	2.3
Other soils	0.0	0.0	0.0	0.0
Altitude (m)	75	75	103	80
Slope (°)	13	12	24	15
Ellenberg Indicator Values				
Light	5.2	5.7	5.4	5.4
Moisture	5.6	5.8	5.6	5.7
Reaction	4.8	3.8	4.0	4.2
Nitrogen	5.0	4.1	4.3	4.5
Salinity	0.0	0.0	0.0	0.0
Basal area density (m^2/ha)	42.8	43.9	43.2	94.1
Stand density (trees/ha)	809	1041	836	929
Canopy height (m)	17.2	15.9	15.7	16.3
Native basal area (%)	89.9	96.0	96.4	94.1

Woodland Vernal Flowers

Lesser celandine (*Ranunculus ficaria*)



Wild garlic (*Allium ursinum*)





Bluebell (*Hyacinthoides non-scripta*)



Wood anemone (*Anemone nemorosa*)



Primrose (*Primula vulgaris*)

2. *Fraxinus excelsior – Hedera helix* group

a. *Geum urbanum - Veronica montana* vegetation type

Description

This is a fairly broad category consisting primarily of ash-dominated stands of base-rich, often rather moist and fertile mineral soils. They are relatively species-rich compared to the other vegetation types in this group. The canopy is strongly dominated by *Fraxinus excelsior. Acer pseudoplatanus* is frequent but not plentiful (*c.f. Acer pseudoplatanus – Crataegus monogyna* vegetation type) and *Fagus sylvatica* is only occasional, hence these stands typically have a high native status. *Quercus robur* and *Betula pubescens* occasionally accompany ash in the canopy. In the understorey *Corylus avellana* is frequent but should not dominate. *Crataegus monogyna* is also frequent, whilst *Ilex aquifolium* is occasional. *Hedera helix* and *Rubus fruticosus* are typically major elements of the field layer and may dominate in areas. Characteristic field layer herbs includes *Geum urbanum, Circaea lutetiana, Arum maculatum, Viola riviniana / V. reichenbachiana* and *Geranium robertianum.* The ferns *Dryopteris dilatata* and *Polystichum setiferum* are also common. *Chrysosplenium oppositifolium* is occasionally present on more humid soils. The main moss species are *Thamnobryum alopecurum, Kindbergia praelonga, Brachythecium rutabulum, Thuidium tamariscinum, Eurhynchium striatum, Hypnum cupressiforme, Isothecium myosuroides* and *Neckera complanata*.

Example sites

Knocksink Nature Reserve, Wicklow, Site 789; Horse Shoe Wood, Galway, Site 1622; Charleville Brookfield, Offaly, Site 576; Whinning Wood, Westmeath, 1088; Hazel Wood, Monaghan, Site 840.

Affinities

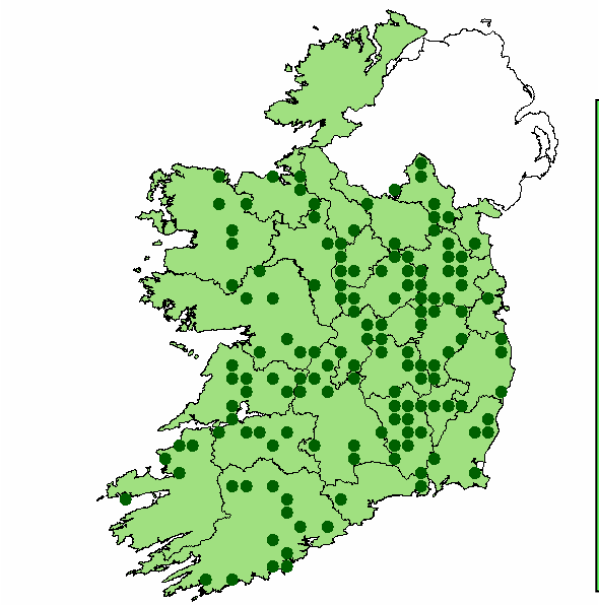
Fossitt: WN2 52%; WD1 23%; WN4 11%; WN6 7%; WD2 4%; WN1 1%; WN5 1%; WN7 1%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*): 10%

CEP: Corylo – Fraxinetum veronicetosum (high)

NVC: W8e *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland *Geranium robertianum* sub-community (47%)

Corine: C41.41 Mixed moist ashwood

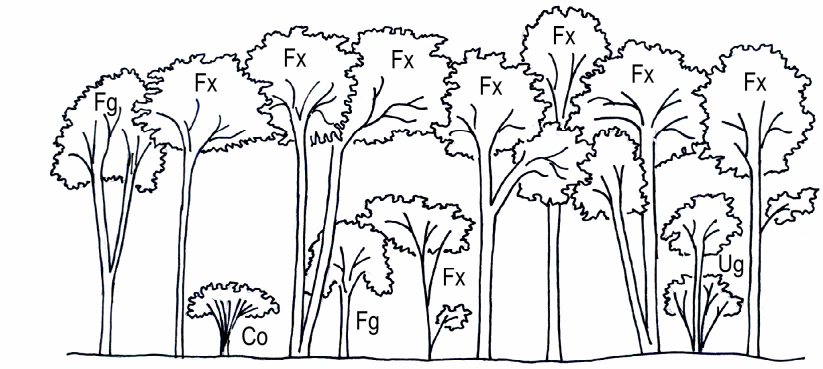


Distribution

This is a very common and widely distributed stand type found across the country, but being rather less frequent in the west and noticeably absent from Donegal and southern Kerry / western Cork.



Stand dominated by *Fraxinus excelsior* with *Corylus avellana* in the understorey and *Hyacinthoides non-scripta* in the field layer, Whinning Wood, Westmeath.



Stratigraphy of stand from Knocksink Nature Reserve, Wicklow. Canopy height is 17-20m.

b. *Acer pseudoplatanus – Crataegus monogyna* vegetation type

Description

These are stands of well-drained, deep, fertile and base-rich soils in the lowlands. The canopy is dominated by *Fraxinus excelsior* and *Acer pseudoplatanus*. *Fagus sylvatica* and *Quercus robur* are only occasional. The understorey is typically well developed and comprises *Crataegus monogyna*, *Corylus avellana* and *Sambucus nigra*, sometimes with *Ilex aquifolium* or *Ulmus glabra*. The field layer is dominated by *Hedera helix* which can carpet large areas. *Rubus fruticosus* is frequent but tends not to be abundant. Ferns are a characteristic component of the shaded field layer with *Dryopteris dilatata*, *Polystichum setiferum* and *Phyllitis scolopendrium* all being frequent. The other main species are *Geum urbanum, Circaea lutetiana, Lonicera periclymenum*, and *Viola riviniana / V. reichenbachiana*. *Heracleum sphondylium* is locally frequent on fertile soils. Bryophyte diversity is rather poor with the chief species being *Thamnobryum alopecurum, Kindbergia praelonga* and *Eurhynchium striatum*. *Thuidium tamariscinum* is unusually scarce.

Example sites

Courtown Dunes/Glen, Wexford, Site 3; Glenmore Fox Covert, Meath, Site 703; St. Catherine's Wood, Dublin, Site 1237; Blarney Castle Wood, Cork, Site 1344; White Well Wood, Waterford, Site 1818.

Affinities

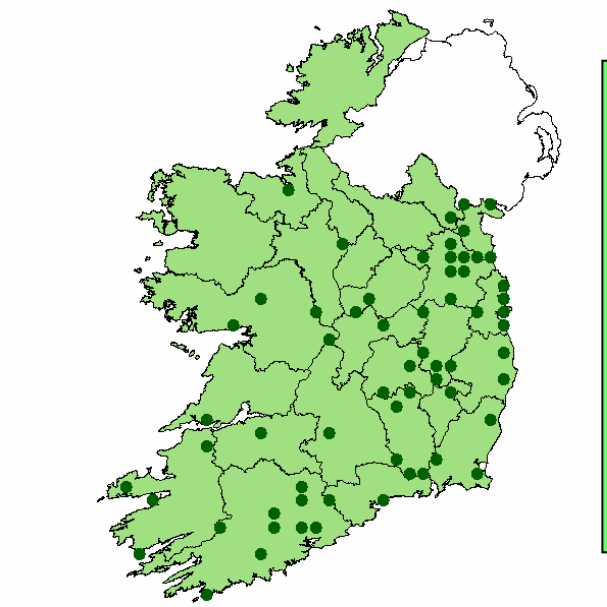
Fossitt: WD1 56%; WN2 35%; WD2 6%; WN1 2%; WN6 2%

Annex I: No major correspondence

CEP: Corylo – Fraxinetum typicum (medium)

NVC: W8e *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland *Geranium robertianum* sub-community (59%)

Corine: C41.41 Mixed moist ashwood

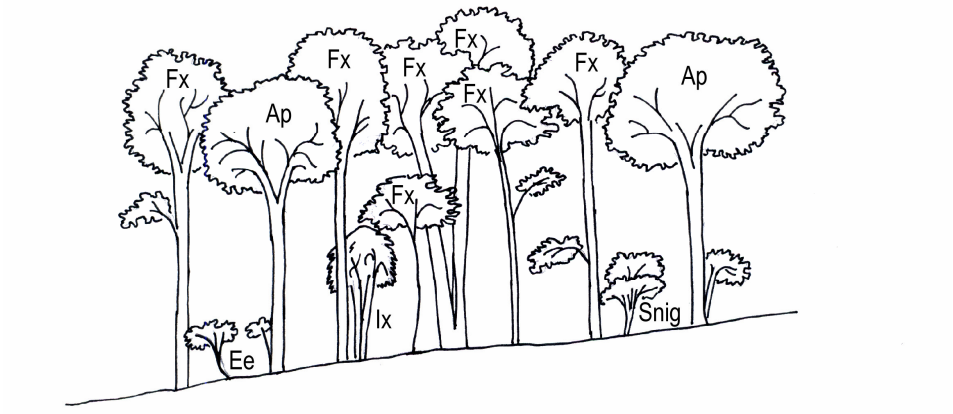


Distribution

This stand type occurs predominantly on the more fertile soils of the east of the country. It is frequent in Dublin and Meath, but absent from much of the north and west.



Stand dominated by *Fraxinus excelsior* and *Acer pseudoplatanus*, with *Hedera helix* carpeting the woodland floor, Blackcastle Demesne, Meath.



Stratigraphy of stand from White Well Wood, Waterford. Canopy height is 17-22m.

c. *Quercus robur – Rubus fruticosus* vegetation type

Description

These are oak high forest stands on well-drained mineral soils, which range from base-poor to mildly base-rich in nature. They are often associated with old demesnes. *Quercus robur* dominates the canopy with *Fraxinus excelsior* a highly frequent companion. *Betula pubescens* and the non-natives *Fagus sylvatica* and *Acer pseudoplatanus* are only occasional. The understorey frequently includes *Corlyus avellana, Crataegus monogyna*, and *Ilex aquifolium.* The field layer is variable but is typically rather species poor as *Rubus fruticosus* is often dominant and may form extensive tangles. *Hedera helix, Dryopteris dilatata* and *Lonicera periclymenum* are also very frequent. Occasional ferns include *Dryopteris affinis, D. filix-mas* and *Athyrium filix-femina*. At some sites *Hyacinthoides non-scripta* may form large drifts in the spring. On more acidic or podzolised soils, the field layer may take on the character of stands from the *Quercus petraea – Luzula sylvatica* group (q.v) with *Luzula sylvatica* carpeting the woodland floor. *Pteridium aquilinum* may occur in areas with a lighter canopy or little in the way of an understorey. The main bryophytes are *Kindbergia praelonga, Thuidium tamariscinum, Eurhynchium striatum, Hypnum cupressiforme* and *Isothecium myosuroides.*

Example sites

Borris, Carlow, Site 15; Derrycarne Demesne, Leitrim, Site 388; Charleville North, Offaly, Site 575; Park Hill, Abbeyleix Demesne, Laois, Site 608; Clare Glen, Limerick, Site 1286.

Affinities

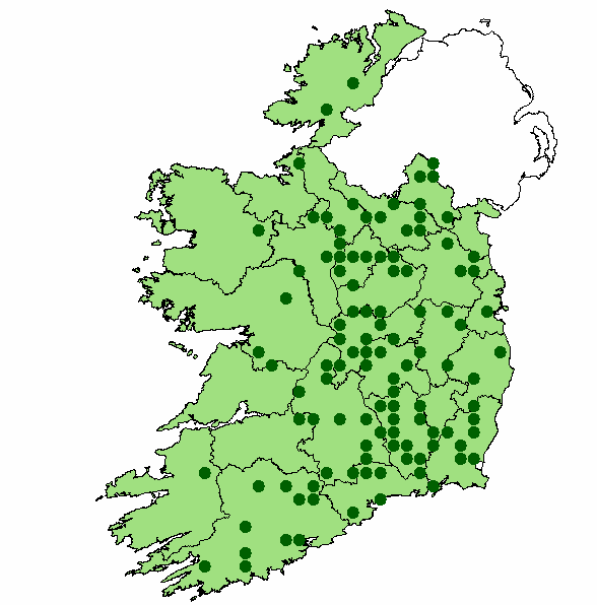
Fossitt: WN2 55%; WN1 20%; WD1 11%; WD2 7%; WN4 3%; WN7 3%; WN6 1%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (26%)

CEP: Corylo – Fraxinetum typicum (low); Blechno-Quercetum typicum (low)

NVC: W10 *Quercus robur – Pteridium aquilinum – Rubus fruticosus* woodland (54%)

Corine: C41.21 Atlantic oakwood with bluebells.

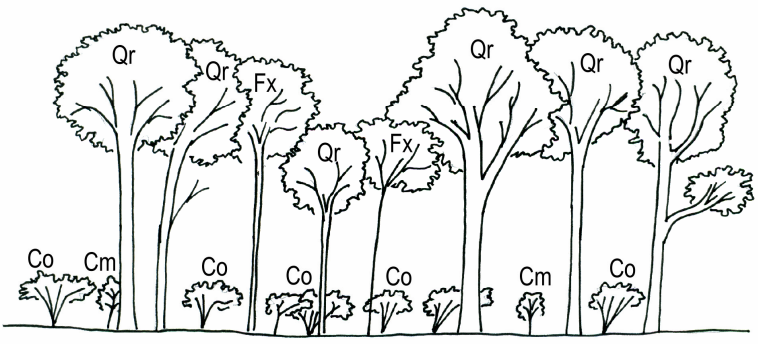


Distribution

This is a very common stand type occurring across the country which the exception of the counties of the Atlantic coast where it is rare or absent.



Stand dominated by *Quercus robur* with *Acer psedoplatanus and Corlyus avellana* in the understorey and a field layer dominated by *Rubus fruticosus, Lonicera periclymenum, Dryopteris dilatata* and *Hyacinthoides non-scripta*. Borris, Carlow.



Stratigraphy of stand from Kyleadohir Nature Reserve, Kilkenny. Canopy height is 18-21m.

d. *Ilex aquifolium – Sorbus aucuparia* vegetation type

Description

These are stands with a dense holly understorey which typically occur on acidic mineral soils of low fertility. The canopy is rather variable. *Betula pubescens* is the most frequent tree, often accompanied by *Sorbus aucuparia. Fraxinus excelsior* is common whilst *Quercus robur* and *Quercus petraea* are occasional but may dominate. Rarely, *Alnus glutinosa* may form the canopy on wetter ground. In the understorey *Corlyus avellana* and *Crataegus monogyna* are occasional, but *Ilex aquifolium* is always the dominant species. As a result of the evergreen shade the field layer tends to be sparse and species poor. *Rubus fruticosus, Hedera helix*, *Dryopteris dilatata* and *Lonicera periclymenum* are, not surprisingly, the most frequent and abundant species. *Blechnum spicant* is also fairly common. The main bryophytes are *Kindbergia praelonga, Thuidium tamariscinum, Eurhynchium striatum, Isothecium myosuroides, Hypnum andoi* and *H. cupressiforme*. It is unlikely that whole woodlands would be referable to this vegetation type. Rather, these stands may be seen as localised variants, and hence at a site level will tend to occur in a mosaic with other vegetation types.

Example sites

Kilgarvan Wood, Kerry, Site 1275; Poulaphuca, Sligo, Site 1496; Lismore Woods, Waterford, Site 1626; Dreenwanish Wood, Cork, Site 1391; Aughnaglanny Valley, Tipperary, Site 1858.

Affinities

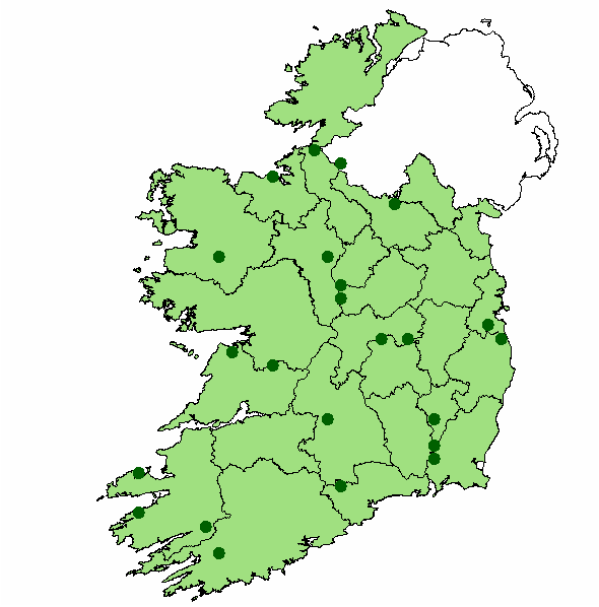
Fossitt: WN1 64%; WN2 16%; WD1 8%; WN4 4%; WN5 4%; WN7 4%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (24%)

CEP: Blechno-Quercetum typicum / coryletosum (low)

NVC: W10e *Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland*
Acer pseudoplatanus-Oxalis acetosella sub-community (33%)

Corine: C41.21 Atlantic oakwood with bluebells

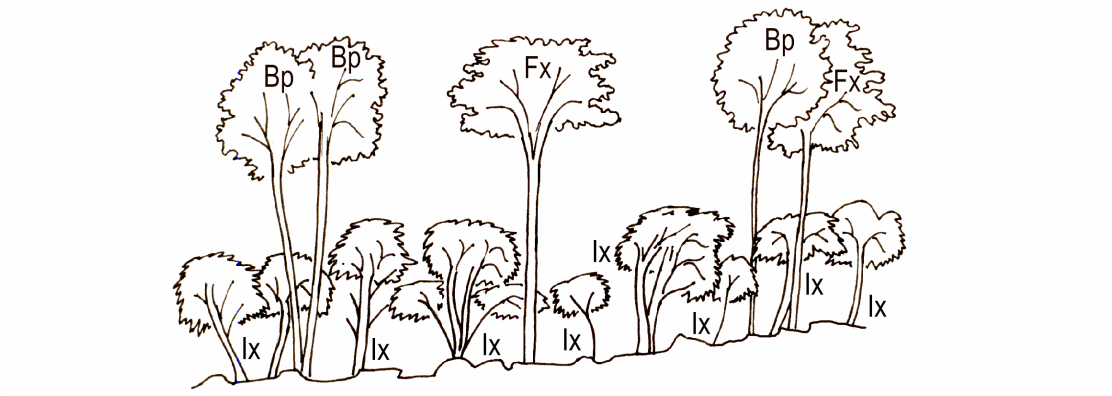


Distribution

Occurring as it does in mosaic with a variety of vegetation types, these holly-dominated stands are found scattered across most of the country, with no distinct pattern of distribution.



Stand with a dense *Ilex aquifolium* understorey beneath a canopy of *Betula pubescens* and *Quercus petraea*. Note the paucity of the field layer. Dreenwanish Wood, Cork.



Stratigraphy of stand from Derrymore, Mayo. Canopy height is 16m.

e. *Corylus avellana – Oxalis acetosella* vegetation type

Description

These are species-rich hazel-ash stands of well-drained mineral soils. Included here are hazel scrub-woodland stands on limestone pavement or shallow, rocky soils, where the canopy is typically low (5-8m) and dominated by *Corylus avellana* with *Fraxinus excelsior* occurring as scattered emergents. Also included here are some stands of species-rich high forest where *Fraxinus excelsior* forms a high canopy above a subcanopy of *Corlyus avellana*. *Quercus robur*, *Betula pubescens, Sorbus aucuparia* and *Acer pseudoplatanus* are occasional. In the understorey (or sometimes in the low canopy) *Ilex aquifolium* and *Crataegus monogyna* are frequent with *Prunus spinosa* and *Euonymus europaeus* occasional. *Rubus fruticosus, Hedera helix* and *Dryopteris dilatata* are abundant in the field layer which is typically rich in broadleaf herbs including *Geum urbanum, Oxalis acetosella, Hyacinthoides non-scripta, Viola riviniana / V. reichenbachiana, Potentilla sterilis, Geranium robertianum, Sanicula europaea* and *Circaea lutetiana*. The bryophyte layer is often extensive with the chief species being *Eurhynchium striatum, Thiudium tamariscinum, Kindbergia praelonga, Isothecium myosuroides, I. alopecuroides, Rhytidiadelphus triquetrus* and *Plagiomnium undulatum.* Native stands on esker ridges and some hazel-dominated stands on more acidic soils may be referable to this type.

Example sites

St. John's Wood Nature Reserve, Roscommon, Site 467; Dromore Nature Reserve, Clare, Site 1500; Cullentra, Sligo, Site 1400; Slieve Carran Nature Reserve, Clare, Site 1537, Kiltober Esker, Westmeath, Site 1103

Affinities

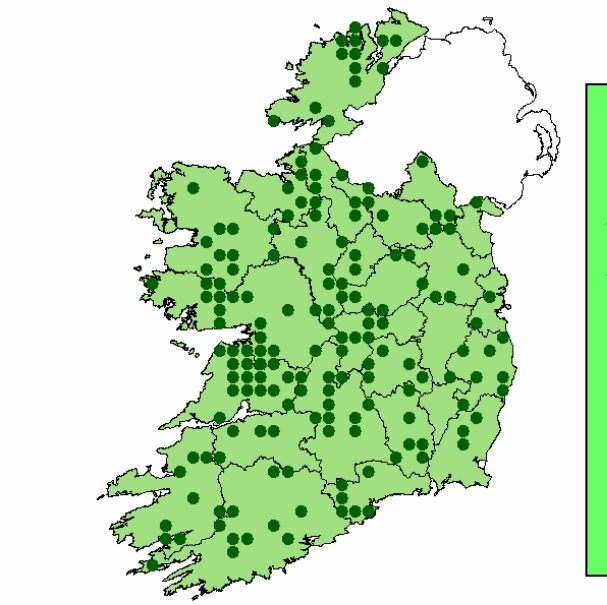
Fossitt: WN2 78%; WN1 7%; WN4 7%; WD1 4%; WN5 1%; WN6 2%; WD2 2%

Annex I: No major correspondence

CEP: Corylo-Fraxinetum coryletosum / veronicestosum (high)

NVC: W9a *Fraxinus excelsior – Sorbus aucuparia – Mercurialis perennis* woodland typical sub-community (52%)

Corine: C41.31 Ash-rowan-mercury woods

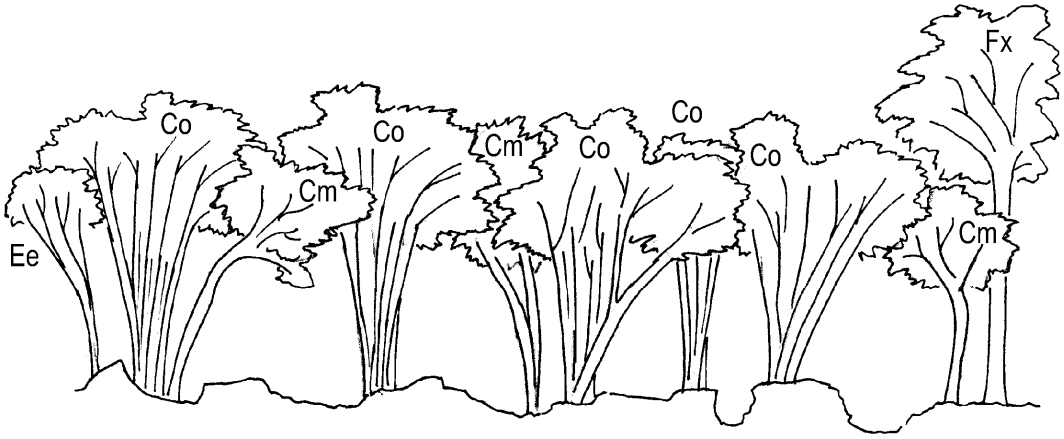


Distribution

This very abundant vegetation type occurs across the country. It is particularly frequent in the Burren of north and central Clare.



Stand of hazel-dominated woodland on outcropping limestone, Bealnalicka, Clare.



Stratigraphy of stand from Tullyodea, Clare. Height of hazel canopy is 7m.

2. *Fraxinus excelsior – Hedera helix* group

f. *Fagus sylvatica – Prunus laurocerasus* vegetation type

Description

These are species-poor stands of well-drained, base-rich mineral soils with a high component of beech in the canopy or sub-canopy. These modified woods are often associated with old demesnes and estates. The main canopy species is *Fagus sylvatica*, but *Fraxinus excelsior* and *Quercus robur* may also be very frequent. *Acer pseudoplatanus* is commonly present but should not be abundant (*c.f. Acer pseudoplatanus – Crataegus monogyna* vegetation type). The understorey is rather sparse being comprised of a few scattered hollies and hawthorns, and the occasional hazel. The dense shade and heavy beech litter mean that the field layer is often also rather scanty. *Hedera helix* and *Rubus fruticosus* are the most abundant species, accompanied by *Dryopteris dilatata* and *Lonicera periclymenum*. Other species are only occasional, but include *Geum urbanum, Veronica montana, Circaea lutetiana, Arum maculatum, Polystichum setiferum, Hyacinthoides non-scripta, Viola riviniana / V. reichenbachiana, Primula vulgaris* and *Geranium robertianum.* The main bryophyte species are *Kindbergia praelonga, Thuidium tamariscinum, Eurhynchium striatum* and *Isothecium myosuroides*. These stands are highly modified variants of other vegetation types, particularly the *Geum urbanum – Veronica montana* and *Quercus robur – Rubus fruticosus* vegetation types of this group.

Example sites

Ravensdale Park, Louth, Site 639; Annagh, Meath, Site 685; Hollywood Demesne, Wicklow, Site 833; Crooksling Glen, Dublin, Site 925; Donadea Forest Park, Kildare, Site 927.

Affinities

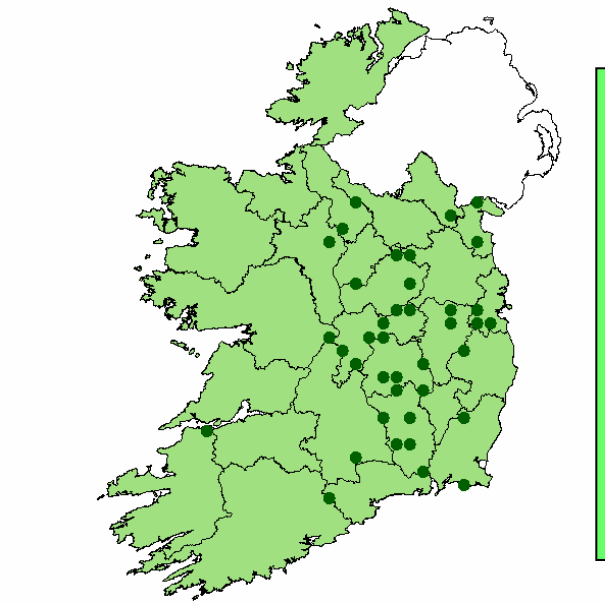
Fossitt: WD1 72%; WN2 15%; WN4 4%; WD2 4%; WN1 2%; WN7 2%

Annex I: No significant correspondence

CEP: Not adequately described by Braun-Blanquet system in Ireland

NVC: W12a *Fagus sylvatica Mercurialis perennis* woodland *Mercurialis perennis* subcommunity (58%)

Corine: C41.1311 Calcicline Galio odorati Fagenion

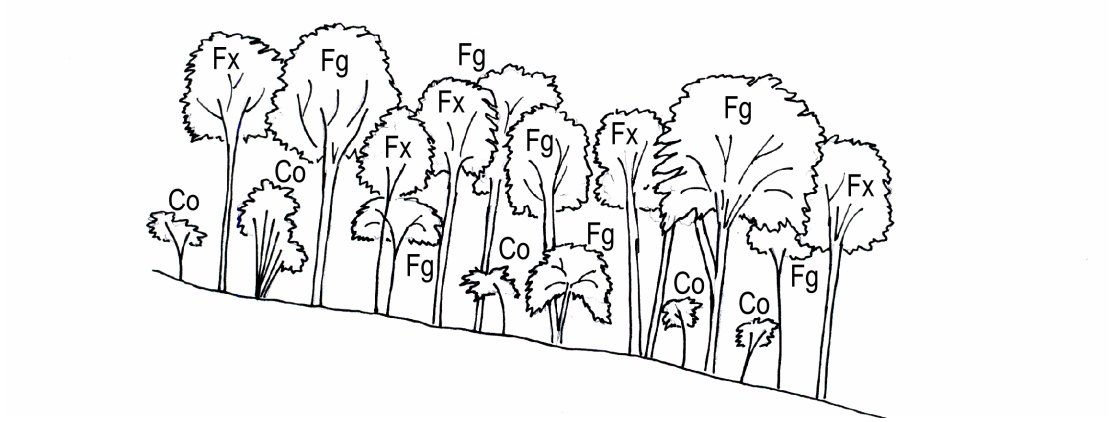


Distribution

This stand type is strongly associated with the old demesne lands of the east of the country. It is, however, likely that these beech stands are under recorded in the west of the country and future surveying will expand their range.



Stand dominated by *Quercus robur* and *Fagus sylvatica* with remains of *Hyacinthides non-scripta* amongst the deep litter layer, Ravensdale Park, Louth.



Stratigraphy of stand from Annagh, Meath. Canopy height is 14-18m.

g. *Taxus baccata – Carex flacca* vegetation type

Description

This is an exceptionally rare stand type occurring on outcropping limestone or limestone pavement and which is strongly dominated by *Taxus baccata*. *Fraxinus excelsior* and *Corylus avellana* are commonly present but *Ilex aquifolium* is the most frequent species in the understorey. *Sorbus aucuparia, Fagus sylvatica* and *Quercus petraea* are occasional. The very dense shade cast by the evergreen canopy means that the field layer is typically scanty in the extreme. The chief species is the shade tolerant *Hedera helix* which is occasionally joined by *Rubus fruticosus, Lonicera periclymenum, Phyllitis scolopendrium, Viola riviniana / V. reichenbachiana, Potentilla sterilis, Carex flacca* and *Brachypodium sylvaticum*. Much of the diversity resides in the bryophyte cover which is often luxuriant and typically comprises *Thamnobryum alopecurum, Kindbergia praelonga, Isothecium myosuroides, Thuidium tamariscinum* and *Eurhynchium striatum*. Other frequent species are *Fissidens dubius* and *Metzgeria furcata*. The peeling bark of the yew trees means there is generally little in the way of epiphytes.

Example sites

Reenadinna, Killarney National Park, Kerry, Site 1291 ; Garryland Wood Nature Reserve, Galway, Site 1594; Cornalack, Tipperary, Site 1963; Curraghchase Forest Park, Limerick, Site 1986.

Affinities

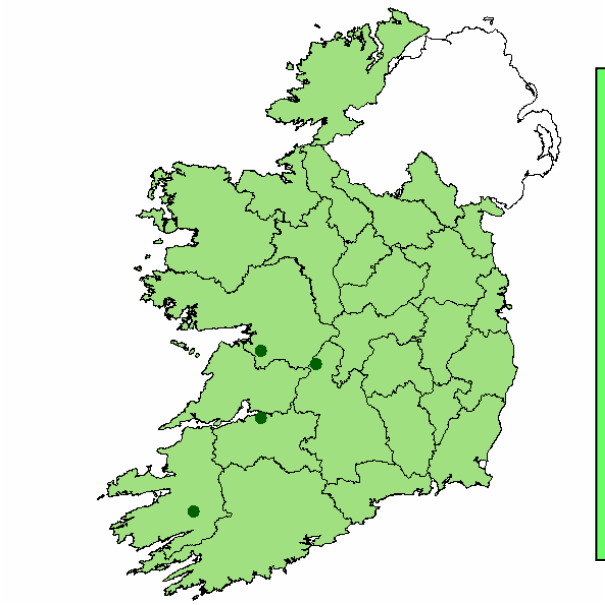
Fossitt: WN3 100%

Annex I: 91J0 * *Taxus baccata* woods of the British Isles (100%)

CEP: Corylo – Fraxinetum neckeretosum (low)

NVC: W13a *Taxus baccata* woodland *Sorbus aria* sub-community (22%)

Corine: C42.A71 Yew woods of the British Isles

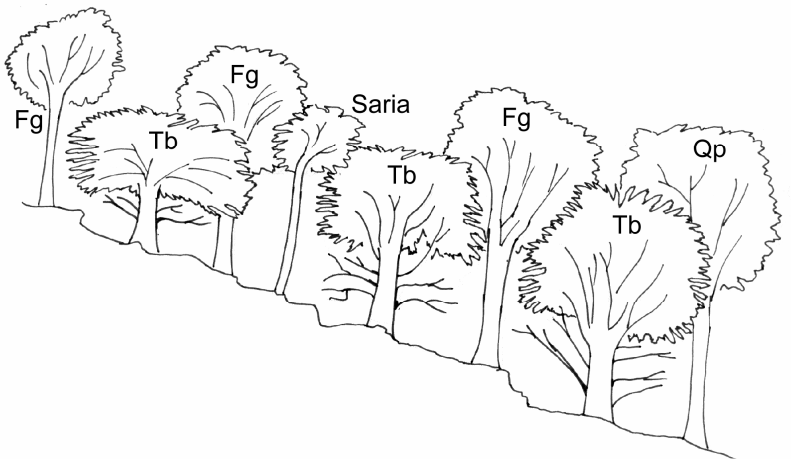


Distribution

This rare stand types occurs on outcropping limestone at only a handful of sites in the west and southwest of the country. By far the largest of these is Reenadinna Wood in the Killarney National Park, Kerry.



Stand on outcropping limestone, dominated by *Taxus baccata*, Reenadinna Wood, Killarney National Park, Kerry.



Stratigraphy of stand from Curraghchase Forest Park, Limerick. Canopy height is 14-15m.

2. *Fraxinus excelsior – Hedera helix* group

h. *Salix triandra – Urtica dioica* vegetation type

Description

This stand type occurs predominantly on islands and banksides of lowland rivers. The soils are often gleyed and are typically base-rich and highly fertile due to alluvial deposition. The canopy is dominated by a mixture of non-native willow species: *Salix triandra, S. viminalis, S. alba* and *S. fragilis*. Whilst these stands may be regarded as wet woodland, they differ significantly from those of the *Alnus glutinosa – Filipendula ulmaria* group in the rarity or absence of both *Alnus glutinosa* and *Salix cinerea*. *Acer pseudoplatanus, Aesculus hippocastanum* and *Fagus sylvatica* are occasional in the canopy, underlining the strong non-native element to these stands. The field layer is characteristically a dense tangle of species including *Urticia dioica, Calystegia sepium, Phalaris arundinacea, Oenanthe crocata, Angelica sylvestris* and *Filipendula ulmaria, Hedera helix, Solanum dulcamara, Valeriana officinalis, Iris pseudacorus and Galium aparine.* Beneath this undergrowth, smaller species such as *Mentha aquatica, Rumex sanguineus, Carex remota, Ranunculus repens, Phyllitis scolopendrium* and *Cardamine pratensis* are frequent. Bryophyte cover is sparse; the chief species are *Kindbergia praelonga, Rhizomnium punctatum* and *Brachythecium rutabulum*.

Example sites

Grove Island, Meath, Site 688; Yellow Island, Meath, Site 752; Mountbolton, Waterford, Site 1823; Dromana, Waterford, Site 1824; Newbridge School, Kildare, Site 981.

Affinities

Fossitt: WN5 78%; WD1 22%

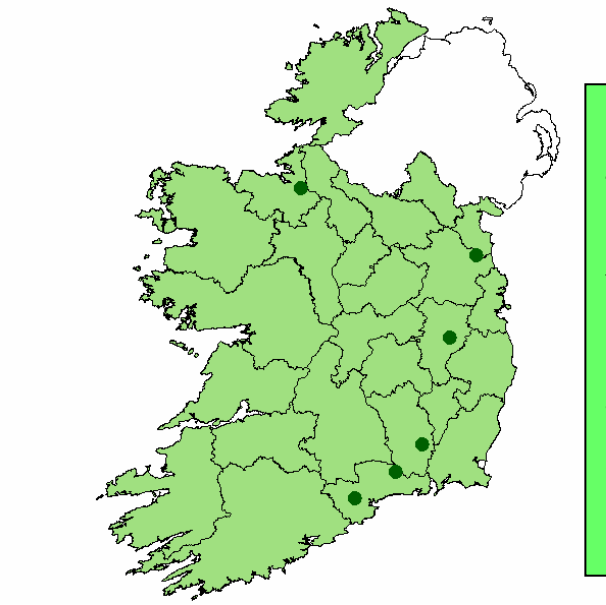
Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) (89%)

CEP: Salicetum albae (high)

NVC: W6b *Alnus glutinosa – Urtica dioica* woodland *Salix fragilis* sub-community (17%)
W6c *Alnus glutinosa – Urtica dioica* woodland *Salix viminalis / triandra* sub-community (†)

Corine: C44.121 Bushy riparian willow woods

† not systematically sampled for the NVC therefore no data available for comparisons.

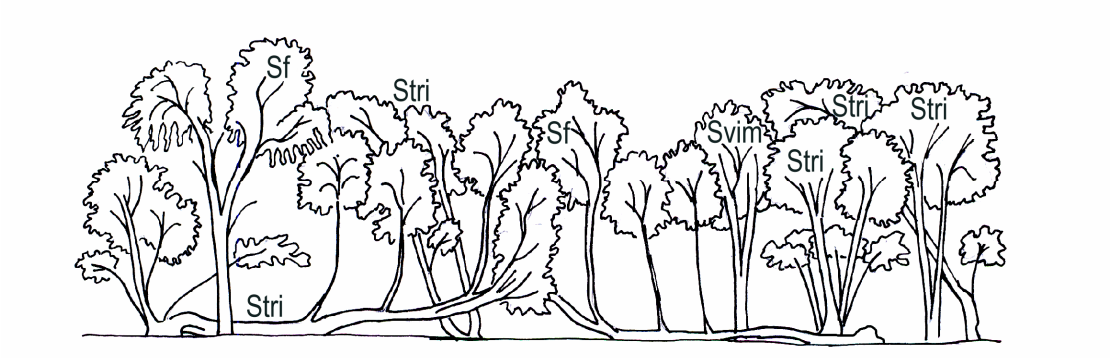


Distribution

This very rare stand type is largely restricted to the east of the country, occurring on the river Boyne in Meath, the Blackwater and Suir in Waterford, the Nore in Kilkenny and the Liffey in Kildare.



Stand dominated by *Salix cinerea, S. triandra, S. fragilis* and *S. viminalis* on Grove Island, River Boyne, Meath. The dense field layer is composed primarily of *Calystegia sepium*, *Phalaris arundinacea* and *Urtica dioica*.



Stratigraphy of stand from Grove Island, River Boyne, Meath. Canopy height is 8-10m.

2. *Fraxinus excelsior – Hedera helix* woodland group

Constants	a		b		c		d	e	f	g	h	Group
Fraxinus excelsior	V 51.3	●●	V 36.7		IV 11.1		III 5.9	V 20.2	V 16.4	IV 5.3	I 0.5	IV 27.1
Kindbergia praelonga	IV 4.3	●	IV 4.2		IV 3.3		IV 2.8	IV 2.9	IV 1.5	III 1.5	III 2.0	IV 3.4
Hedera helix	V 16.2		V 50.9	●●	V 9.2		V 6.1	V 17.2	V 21.0	V 6.6	IV 1.9	V 18.8
Crataegus monogyna	IV 7.3		IV 9.0	●●	III 3.3		II 3.0	IV 6.2	III 2.0	I 0.1	I 0.5	IV 5.7
Rubus fruticosus	V 17.6		V 7.7		V 20.7	●	IV 5.1	V 6.6	V 7.8	II 1.2	II 2.0	V 12.3
Dryopteris dilatata	IV 2.0		III 1.8		IV 3.8	●	IV 2.9	IV 1.7	III 1.3	I 0.9		IV 2.2
Thuidium tamariscinum	IV 5.7		II 1.9		IV 5.0		IV 4.8	V 7.9	III 1.5	IV 19.9	II 0.6	IV 5.5
Eurhynchium striatum	IV 6.6		III 3.2		III 3.0		III 1.9	V 9.1	III 2.0	III 3.0		IV 5.7
Corylus avellana	III 6.2		III 6.2		III 10.4		II 6.8	V 56.0	II 3.0	III 2.2	I 1.0	IV 22.2
a) *Geum – Veronica* vegetation type indicators												
Geum urbanum	IV 1.8	●●	III 0.8		II 0.6			IV 1.2	II 0.4			III 1.1
Veronica montana	II 1.0	●	II 0.4		I 0.3		I 0.2	II 0.5	II 0.4		I 0.2	II 0.6
Chrysosplenium oppositifolium	II 2.4	●	I 0.2		I 0.3		I 0.2	II 1.3	I 0.2		II 0.8	I 1.1
Circaea lutetiana	III 3.2	●	III 1.5		III 1.7			III 2.3	II 1.1		I 6.2	III 2.2
Arum maculatum	III 0.5	●	II 0.4		I 0.1		I <0.05	II 0.5	II 0.3		I <0.05	II 0.4
b) *Acer – Crataegus* vegetation type indicators												
Acer pseudoplatanus	III 3.7		IV 23.1	●●	II 2.6		II 2.0	II 1.7	III 4.2		II 6.2	II 5.1
Sambucus nigra	II 1.7		III 4.5	●●	I 0.4		I 0.1	I 0.3	I 1.8		II 0.3	I 1.3
Heracleum sphondylium	I 0.3		II 1.6	●	I <0.05			I 0.1	I 0.3		I <0.05	I 0.3
Polystichum setiferum	III 3.1		III 3.3	●	I 1.3		I 0.4	II 2.0	II 1.3		II 0.1	II 2.1
Phyllitis scolopendrium	II 0.7		III 0.9	●	I <0.05		I 0.1	II 0.3	I 0.3	II 0.1	III 0.2	II 0.4
Ulmus glabra	I 1.7		II 4.7	●	I 0.3			I 0.3	I 2.6		I <0.05	I 1.3
c) *Quercus - Rubus* vegetation type indicators												
Quercus robur	II 3.0		II 9.0		V 50.7	●●	II 7.9	II 5.0	IV 19.3	I 7.9		III 15.2
Lonicera periclymenum	III 1.9		III 2.0		IV 4.0	●●	IV 1.8	IV 2.2	III 1.4	II 0.6		III 2.4
Pteridium aquilinum	I 0.1		I 0.2		II 1.7	●	I 0.3	I 0.2	I 0.1			I 0.5
Hyacinthoides non-scripta	II 3.7		II 2.6		II 6.0	●	II 1.2	III 2.9	II 1.3		I <0.05	II 3.5

	a		b		c		d		e		f		g		h		Group
d) *Ilex - Sorbus* vegetation type indicators																	
Ilex aquifolium	II	2.6	II	5.0	III	6.3	V	54.8	●●●	IV	5.2	III	4.4	V	4.2	I	<0.05	III	6.3
Sorbus aucuparia	I	0.2	I	0.1	I	1.1	III	5.5	●●	II	1.1	I	0.4	II	0.3			I	0.8
Betula pubescens	II	3.7	I	0.3	II	4.0	IV	22.0	●●	II	5.8	II	1.9					II	4.5
Hypnum andoi	II	0.4	I	0.1	II	0.5	III	1.3	●●	II	0.4	II	0.2			I	<0.05	II	0.4
Blechnum spicant	I	0.1	I	0.1	I	0.5	III	1.2	●	II	0.9	I	0.1					I	0.5
Mnium hornum	I	0.1	I	0.1	II	0.3	II	1.7	●	II	0.3	I	0.1	II	0.6	I	1.0	I	0.3
Pseudoscleropodium purum	I	<0.05			I	<0.05	I	0.5	●	I	0.1							I	0.1
Quercus petraea	I	1.3	I	1.4	I	0.9	II	3.6	●	I	1.3	I	0.7	II	<0.05			I	1.2
Rhytidiadelphus loreus	I	0.1	I	<0.05	I	0.1	II	0.9	●	I	0.5	I	0.1					I	0.2
Pellia epiphylla	I	0.1	I	<0.05	I	<0.05	I	0.6	●	II	0.4	I	<0.05					I	0.2
e) *Corylus - Oxalis* vegetation type indicators																	
Oxalis acetosella	I	0.8	I	0.3	II	2.2	II	1.3		III	5.5	●●	I	1.2	I	0.3			II	2.5
Viola riviniana / V. reichenbachiana	III	1.0	III	0.7	II	0.5	II	0.6		IV	2.0	●●	II	0.7	II	0.6			III	1.1
Loeskeobryum brevirostre	I	0.2			I	<0.05				II	2.2	●●			I	<0.05			I	0.7
Potentilla sterilis	II	0.3	I	0.2	I	0.2	I	0.1		III	0.8	●●	I	0.1	II	0.4			II	0.4
Isothecium alopecuroides	II	0.3	I	0.3	I	0.2	I	0.2		III	0.8	●	II	0.2	II	0.4			II	0.4
Geranium robertianum	III	1.7	II	1.0	II	0.9	II	0.3		III	2.1	●	II	0.6			I	0.2	III	1.4
Sanicula europaea	I	0.4	I	0.3	I	0.1	I	0.1		III	1.3	●	I	0.3	I	0.9	I	0.2	II	0.6
Hypnum cupressiforme	III	1.0	II	0.3	III	0.6	III	0.8		III	1.0	●	II	0.2	I	0.1	II	<0.05	III	0.8
Plagiomnium undulatum	II	0.5	II	0.3	I	0.1	I	0.1		III	0.7	●	II	0.1	II	0.6	II	0.5	II	0.4
Frullania dilatata	III	0.2	II	<0.05	II	0.1	III	0.1		III	0.2	●	I	<0.05	I	<0.05	II	<0.05	II	0.2
Rhytidiadelphus triquetrus	II	4.0	I	0.2	II	1.4				III	3.1	●	I	0.3	II	1.2			II	2.3
Primula vulgaris	II	0.6	I	0.2	I	0.1	I	0.5		III	0.9	●	II	0.5					II	0.5
Anemone nemorosa	I	0.4	I	0.1	I	<0.05	I	<0.05		I	1.5	●							I	0.6
Conopodium majus	I	0.2	I	0.1	I	0.2				II	0.4	●	I	0.2					I	0.3
Veronica chamaedrys	II	0.5	I	0.4	I	0.1	I	0.1		II	0.5	●	I	0.1					II	0.4
Lysimachia nemorum	I	0.3	I	0.3	I	0.1	I	0.2		II	0.4	●	I	0.1					I	0.3
f) *Fagus – Prunus* vegetation type indicators																	
Fagus sylvatica	II	4.7	II	5.5	II	3.0	II	5.8		I	0.9		V	48.3	●●●	II	7.9	II	5.6	II	6.1
Prunus laurocerasus	I	0.1	I	0.3	I	<0.05							I	1.9	●					I	0.2

	a		b		c		d		e		f		g		h		Group
g) *Taxus - Carex* vegetation type indicators																	
Taxus baccata	I	0.2	I	1.1	I	0.1			I	<0.05	I	<0.05	V	56.4	●●●●●		I 0.6
Metzgeria furcata	II	0.1	II	0.1	I	0.1	II	0.2	III	0.2	II	0.1	V	1.3	●●●●		II 0.1
Fissidens dubius	I	<0.05							I	<0.05			III	0.4	●●●		I <0.05
Isothecium myosuroides	III	0.8	II	0.6	III	1.1	III	1.3	IV	1.5	III	0.7	IV	6.9	●●●		III 1.1
Neckera crispa	I	<0.05	I	<0.05	I	<0.05			I	0.1	I	<0.05	II	1.2	●●		I 0.1
Carex flacca	I	0.1			I	<0.05	I	0.2	I	0.1			II	1.2	●●		I 0.1
Neckera complanata	III	0.7	II	0.3	II	0.3	I	0.1	IV	0.7	II	0.3	IV	1.5	●●	II <0.05	III 0.5
Thamnobryum alopecurum	IV	8.1	IV	6.0	II	1.5	II	1.9	IV	7.6	II	0.9	IV	12.1	●●	II 0.2	III 5.6
Frullania tamariscinum	I	<0.05	I	<0.05	I	<0.05	I	0.1	II	0.2			II	0.4	●		I 0.1
Brachypodium sylvaticum	II	0.7	I	0.4	I	0.7	I	0.2	II	0.9	I	0.3	III	1.2	●		II 0.7
Ctenidium molluscum	I	<0.05					I	0.1	I	0.3	I	0.2	I	0.9	●		I 0.1
Hypericum pulchrum	I	<0.05			I	<0.05	I	0.2	I	<0.05			I	0.3	●		I <0.05
h) *Salix - Urtica* vegetation type indicators																	
Urtica dioica	II	0.8	II	0.8	I	0.7			I	0.2	I	0.4			V	7.1 ●●●●	I 0.6
Rumex sanguineus	II	0.3	II	0.3	I	0.3	I	<0.05	I	0.2	I	0.2			IV	3.6 ●●●	I 0.3
Salix triandra															III	15.5 ●●●	I 0.2
Salix fragilis									I	<0.05					III	12.1 ●●●	I 0.2
Calystegia sepium	I	<0.05							I	<0.05					III	4.5 ●●●	I 0.1
Phalaris arundinacea	I	<0.05							I	<0.05					III	2.0 ●●●	I <0.05
Oenanthe crocata	I	<0.05							I	0.1					III	4.2 ●●●	I 0.1
Angelica sylvestris	I	0.2	I	0.7	I	<0.05	I	0.1	I	0.1					IV	4.1 ●●●	I 0.2
Filipendula ulmaria	II	1.8	I	0.5	I	0.8	I	0.1	II	1.1	I	0.3			IV	8.4 ●●●	II 1.2
Salix alba															III	18.2 ●●●	I 0.2
Cardamine pratensis	I	<0.05			I	<0.05			I	<0.05					III	7.0 ●●●	I 0.1
Solanum dulcamara	I	<0.05									I	<0.05			III	1.2 ●●●	I <0.05
Valeriana officinalis	I	<0.05			I	<0.05	I	<0.05	I	0.1					III	1.0 ●●●	I <0.05
Iris pseudacorus	I	0.1							I	<0.05					III	0.5 ●●	I <0.05
Salix viminalis															II	11.6 ●●	I 0.1
Myosotis scorpiodes															II	3.6 ●●	I <0.05
Carex riparia															II	1.9 ●●	I <0.05
Mentha aquatica	I	<0.05	I	0.1	I	<0.05			I	<0.05					III	0.4 ●●	I <0.05
Galium palustre	I	0.1			I	0.1	I	0.1	I	<0.05	I	<0.05			II	6.4 ●●	I 0.1
Galium aparine	I	0.6	II	0.7	I	0.3			I	0.3	I	0.1			III	0.4 ●●	I 0.4
Rhizomnium punctatum	I	0.1	I	<0.05	I	<0.05	I	0.1	I	0.1	I	<0.05			II	1.1 ●●	I 0.1

	a	b	c	d	e	f	g	h		Group
Anthriscus sylvestris	I 0.4	I <0.05	I <0.05	I <0.05	I 0.1			II 2.0	●●	I 0.2
Myosotis laxa								II 0.2	●●	I <0.05
Rorippa nasturtium-aquaticum								II 1.5	●●	I <0.05
Impatiens glandulifera	I <0.05							II 12.4	●●	I 0.2
Lythrum salicaria	I <0.05				I <0.05			II 0.5	●●	I <0.05
Aesculus hippocastanum	I 0.2	I 0.2	I 0.1		I <0.05	I <0.05		II 14.6	●●	I 0.3
Lysimachia nummularia	I 0.1							II 1.5	●●	I <0.05
Brachythecium rutabulum	III 1.0	II 0.9	II 0.5	I 0.1	II 0.5	II 0.3		III 2.0	●●	II 0.7
Equisetum arvensis		I <0.05	I <0.05		I <0.05			II 0.3	●●	I <0.05
Orthotrichum affine	I <0.05	I <0.05	I <0.05		I <0.05	I <0.05		II 0.1	●	I <0.05
Cryphaea heteromalla	I 0.1	I 0.1			I <0.05			II 0.2	●	I <0.05
Ulota phyllantha	I <0.05	I <0.05	I <0.05	I <0.05	I <0.05			II 0.2	●	I <0.05
Epilobium hirsutum		I <0.05	I <0.05		I <0.05			II 0.2	●	I <0.05
Polypodium vulgare	I 0.2	I 0.1	II 0.4	I 0.1	II 0.4	I <0.05		II 0.7	●	II 0.3
Amblystegium serpens	I <0.05	I <0.05	I <0.05		I <0.05	I <0.05		II <0.05	●	I <0.05

Other woody species

Prunus spinosa	II 1.8	I 0.4	I 0.5	I 0.4	II 1.4	I <0.05	I 0.9			II 1.1
Euonymus europaeus	I 0.8	I 1.2	I 0.2		II 0.8	I 0.2	I <0.05			I 0.6
Salix cinerea	I 1.7	I 1.0	I 0.6	I 0.4	II 2.1	I 0.6		I 1.8		I 1.4
Alnus glutinosa	I 2.8	I 0.6	I 0.2	I 4.2	I 1.5	I 0.1		I 1.8		I 1.4
Rosa canina	I 0.2	I 0.2	I 0.6		I 0.2	I <0.05				I 0.3
Viburnum opulus	I 0.5	I 0.1	I 0.2	I 0.1	I 0.2	I 0.1				I 0.2
Rosa arvensis	I 0.1	I 0.1	I <0.05	I 0.1	I 0.2	I 0.1		I 1.8		I 0.1
Salix caprea	I 1.0	I 0.4	I 0.4		I 0.9	I 0.2				I 0.7
Vaccinium myrtillus			I 0.6	I 0.7	I 0.1					I 0.2
Ligustrum vulgare	I 0.4	I 0.4	I <0.05		I 0.1	I 0.2				I 0.2
Rubus idaeus	I 0.2	I 0.1	I 0.1		I <0.05	I 0.1				I 0.1
Prunus avium	I <0.05	I 0.3	I <0.05		I 0.3	I <0.05				I 0.1
Malus sylvestris	I 0.1	I 0.4	I 0.3		I <0.05	I 0.1				I 0.1
Rhododendron ponticum	I 0.1		I 1.1		I 0.2	I 0.1				I 0.3
Picea abies		I 0.5	I 0.3		I <0.05	I 0.3				I 0.1

Other herbs & ferns	a		b		c		d		e		f		g		h		Group	
Dryopteris affinis	II	1.4	II	1.2	II	1.0	II	0.3	III	1.2	II	0.4	I	0.1			II	1.1
Athyrium filix-femina	II	0.6	I	0.6	II	0.5	II	0.8	II	1.0	I	0.2					II	0.7
Carex sylvatica	II	0.5	I	0.3	I	0.3			III	0.9	I	0.3					II	0.5
Dryopteris filix-mas	II	0.6	II	0.5	II	0.6	I	0.1	II	0.5	II	0.4			I	<0.05	II	0.5
Agrostis stolonifera	I	1.4	I	0.2	II	1.6	I	<0.05	II	1.1	I	0.3	I	0.1	II	2.8	I	1.1
Carex remota	I	0.7	I	0.4	I	0.8	I	0.4	I	0.5	I	0.5			III	0.4	I	0.6
Ajuga reptans	I	0.4	I	0.2	I	0.3	I	0.1	II	0.7	I	0.2			I	<0.05	I	0.4
Ranunculus repens	II	0.6	I	0.1	I	0.2	I	<0.05	I	0.2	I	<0.05			III	1.3	I	0.3
Taraxacum agg.	I	0.1	I	0.1	I	<0.05	I	<0.05	II	0.1	I	<0.05					I	0.1
Deschampsia cespitosa	I	0.3	I	<0.05	I	0.6			I	0.7	I	0.3					I	0.5
Luzula sylvatica	I	0.2	I	0.4	I	4.8	II	0.4	I	2.5	I	<0.05					I	1.8
Ranunculus ficaria	I	2.0	I	1.8	I	0.3	I	0.1	I	1.2	I	0.9			I	1.0	I	1.2
Fragaria vesca	I	0.2	I	<0.05	I	0.1	I	0.1	II	0.4	I	<0.05					I	0.2
Agrostis capillaris	I	0.7	I	<0.05	I	1.1	I	0.5	I	0.5							I	0.6
Cardamine flexuosa	I	0.2	I	<0.05	I	<0.05	I	<0.05	I	0.1					I	0.2	I	0.1
Glechoma hederacea	I	0.5	I	1.2	I	0.2	I	0.1	I	0.1	I	0.1					I	0.4
Vicia sepium	I	0.1	I	<0.05	I	0.1			I	0.1	I	0.1					I	0.1
Dactylis glomerata	I	0.1	I	0.5	I	0.2	I	<0.05	I	0.3	I	<0.05					I	0.2
Poa trivialis	I	0.3	I	<0.05	I	<0.05			I	0.2	I	0.2					I	0.1
Holcus lanatus	I	0.3	I	0.3	I	1.5	I	<0.05	I	0.1	I	0.1					I	0.4
Epilobium montanum	I	0.1	I	<0.05	I	0.1			I	<0.05							I	0.1
Allium ursinum	I	1.5	I	1.2	I	<0.05	I	3.0	I	0.7	I	0.2					I	0.8
Juncus effusus	I	<0.05	I	<0.05	I	0.2	I	0.2	I	<0.05	I	<0.05					I	0.1
Stellaria holostea	I	0.1			I	0.5			I	0.6	I	0.1					I	0.3
Lapsana communis	I	0.1	I	<0.05	I	<0.05	I	<0.05	I	0.1	I	<0.05			I	<0.05	I	0.1
Prunella vulgaris	I	0.1			I	<0.05	I	0.1	I	0.1	I	<0.05					I	0.1
Agrostis canina / A. vinealis	I	0.5			I	0.3	I	0.2	I	0.2			I	0.1			I	0.2
Dryopteris aemula	I	<0.05	I	<0.05	I	0.1	I	0.1	I	0.2	I	<0.05					I	0.1
Listera ovata	I	<0.05	I	<0.05	I	0.1			I	<0.05	I	<0.05					I	<0.05
Anthoxanthum odoratum	I	<0.05	I	<0.05	I	<0.05			I	0.1							I	0.1
Epipactis helleborine					I	<0.05			I	<0.05							I	<0.05
Senecio aquatica	I	<0.05			I	<0.05			I	<0.05					II	2.1	I	<0.05
Solidago virgaurea	I	<0.05			I	<0.05	I	0.1	I	<0.05							I	<0.05
Molinia caerulea	I	<0.05			I	0.3	I	<0.05	I	<0.05							I	0.1
Deschampsia flexuosa			I	<0.05	I	<0.05	I	0.2	I	<0.05							I	<0.05

	a		b		c		d		e		f		g		h		Group
Other bryophytes																	
Radula complanata	II	0.1	I	<0.05	I	0.1	I	<0.05	III	0.1	II	<0.05			I	<0.05	II 0.1
Ulota bruchii / U. crispa	II	0.1	I	<0.05	I	0.1	II	0.2	II	0.1	I	0.1	II	0.1	I	0.2	II 0.1
Hypnum resupinatum	I	0.1	II	0.1	I	0.1	I	<0.05	II	0.2	I	0.1	I	0.1	II	<0.05	II 0.1
Lophocolea bidentata	II	0.1	I	<0.05	I	0.1	I	0.1	II	0.1	I	<0.05	I	0.1	II	<0.05	II 0.1
Fissidens taxifolius	II	0.3	I	0.1	I	0.1	I	0.4	II	0.3	I	0.1	I	0.3	I	<0.05	I 0.2
Atrichum undulatum	I	0.2	I	0.1	I	0.2	I	0.2	II	0.4	I	0.1					I 0.2
Polytrichastrum formosum	I	<0.05	I	<0.05	II	0.3	II	0.3	II	0.2	I	0.2					I 0.2
Homalothecium sericeum	I	0.1	I	<0.05	I	0.1	I	<0.05	I	0.1	I	<0.05			II	<0.05	I 0.1
Plagiochila asplenioides	I	0.5	I	<0.05	I	<0.05	I	<0.05	II	0.1	I	<0.05	I	0.3			I 0.2
Hookeria lucens	I	0.1	I	<0.05	I	0.1	I	0.1	I	0.1	I	<0.05	I	<0.05			I 0.1
Hypnum jutlandicum	I	0.1	I	<0.05	I	0.2	I	<0.05	I	0.1	II	0.1	I	0.3			I 0.1
Dicranum scoparium	I	<0.05	I	<0.05	I	<0.05	I	0.1	I	0.1	I	0.1					I <0.05
Plagiochila porelloides	I	<0.05	I	<0.05	I	<0.05			I	0.1	I	<0.05	I	0.1			I <0.05
Calliergonella cuspidata	I	0.3	I	0.1	I	<0.05			I	0.1					II	0.1	I 0.1
Cirriphyllum piliferum	I	<0.05	I	0.1	I	0.1			I	0.1	I	0.2					I 0.1
Oxyrrhynchium hians	I	0.1	I	0.1	I	<0.05	I	<0.05	I	<0.05	I	<0.05			I	<0.05	I <0.05
Metzgeria furcata	I	<0.05	I	<0.05	I	<0.05			I	<0.05			I	0.1	III	0.2	I <0.05
Neckera pumila	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05			I	<0.05			I <0.05
Microlejeunea ulicina	I	<0.05			I	<0.05	I	<0.05	I	<0.05							I <0.05
Pseudotaxiphyllum elegans	I	<0.05			I	<0.05	I	0.1	I	<0.05	I	<0.05					I <0.05
Hylocomium splendens	I	0.1	I	<0.05	I	<0.05	I	0.8	I	0.2							I 0.1
Fissidens bryoides	I	<0.05	I	<0.05	I	<0.05			I	<0.05	I	<0.05					I <0.05
Rhytidiadelphus squarrosus	I	<0.05	I	0.1	I	<0.05	I	<0.05	I	<0.05							I <0.05
Calypogeia fissa	I	<0.05	I	<0.05	I	<0.05			I	<0.05							I <0.05
Lejeunea patens	I	<0.05			I	<0.05			I	<0.05							I <0.05
Plagiothecium undulatum	I	<0.05			I	<0.05			I	0.1	I	<0.05	I	0.9			I <0.05
Saccogyna viticulosa	I	<0.05			I	<0.05			I	0.1							I <0.05
Diplophyllum albicans	I	<0.05	I	<0.05	I	<0.05			I	<0.05	I	<0.05					I <0.05
Dicranella heteromalla	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05							I <0.05
Dicranum majus	I	<0.05			I	<0.05			I	<0.05							I <0.05
Brachythecium rivulare	I	<0.05	I	<0.05					I	<0.05					I	<0.05	I <0.05
Conocephalum conicum	I	<0.05							I	<0.05					II	<0.05	I <0.05
Brachythecium velutinum									I	<0.05	I	<0.05					I <0.05
Leucobryum glaucum							I	0.1	I	<0.05							I <0.05

	a	b	c	d	e	f	g	h	Group
Number of relevés	189	85	151	25	229	47	5	9	740
Species richness									
Vascular	21	18	18	15	25	16	13	21	21
Bryophyte	11	7	7	9	15	7	13	8	10
Total	32	25	25	24	40	23	26	29	31
Soil pH	6.1	6.2	5.0	4.5	6.1	5.8	6.2	7.2	5.9
Soil total p (mg/g)	0.84	0.87	0.69	0.53	0.72	0.74	0.70	1.54	0.77
Soil % organic content	15.0	15.0	16.0	22.0	16.8	14.5	42.3	22.0	16.0
Soil type (%)									
Well-drained mineral soils	68.8	95.3	66.9	52.0	72.1	72.3	60.0	22.2	71.5
Podzolised soils	6.3	2.4	17.2	32.0	11.4	12.8	0.0	0.0	10.8
Gleyed soils	15.3	2.4	9.9	0.0	10.9	12.8	0.0	55.6	11.1
Basin peats	8.5	0.0	5.3	12.0	0.9	2.1	0.0	11.1	4.2
Other soils	1.1	0.0	0.7	4.0	4.8	0.0	40.0	11.1	2.4
Altitude (m)	65	45	70	60	60	87	30	5	65
Slope (°)	2	5	5	6	8	5	3	0	5
Ellenberg Indicator Values									
Light	5.1	4.8	5.8	5.4	4.8	4.6	4.5	6.0	5.1
Moisture	5.8	5.4	5.5	5.6	5.5	5.3	4.6	7.1	5.6
Reaction	6.3	6.4	5.4	5.0	5.9	5.6	6.4	6.6	5.9
Nitrogen	5.7	5.8	5.0	4.9	5.6	5.3	4.9	6.2	5.5
Salinity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Basal area density (m^2/ha)	39.3	48.0	43.3	51.3	33.8	44.4	63.6	20.5	40.0
Stand density (trees/ha)	1275	1017	923	1709	1268	1009	915	792	1170
Canopy height (m)	17.4	18.4	19.2	15.0	12.0	19.2	11.7	8.9	16.0
Native basal area (%)	85.6	73.9	92.3	95.3	95.1	57.4	94.2	14.4	96.3

Woodland Fungi

Bay bolete (*Boletus badius*)



Fly agaric (*Amanita muscaria*)

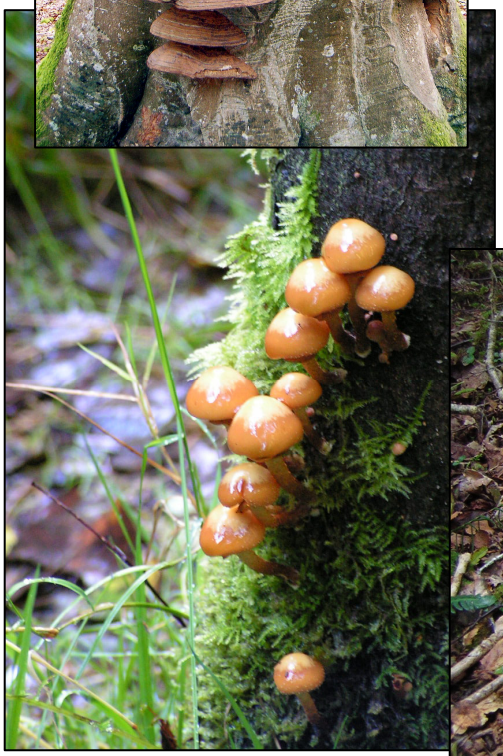


Artist's bracket (*Ganoderma applanatum*)





Yellow stagshorn fungus (*Calocera viscosa*)



Sheathed woodtuft (*Kuehneromyces mutabilis*)



Iodine bolete (*Boletus impolitus*)

3. *Alnus glutinosa – Filipendula ulmaria* group

a. *Fraxinus excelsior – Carex remota* vegetation type

Description

These are ash-alder wet woodland stands, occurring on base-rich, fertile and often gleyed soils, which may be waterlogged but tend not to be inundated. Included here are stands of flushed hillsides, stream and river margins, narrow lakeshore woodlands, waterlogged hollows and poorly draining mineral soils elsewhere. Like all vegetation types in this group these stands are species-rich. The canopy is dominated by *Fraxinus excelsior* and *Alnus glutinosa*. *Salix cinerea* is frequent but typically not abundant, whilst *Quercus robur* is occasional. The understorey is commonly composed of *Crataegus monogyna* with some *Ilex aquifolium* or *Corlyus avellana*. The mainstays of the field layer are *Rubus fruticosus* and *Filipendula ulmaria* which can each be abundant. *Hedera helix* and *Lonicera periclymenum* are frequent climbers. The field layer is often diverse and may include *Carex remota, Athyrium filix-femina, Ranunculus repens, Geranium robertianum, Circaea lutetiana, Geum urbanum, Viola riviniana / V. reichenbachiana, Galium palustre.* The chief moss species are *Thuidium tamariscinum, Thamnnobryum alopecurum, Eurhynchium striatum, Kindbergia praelonga, Plagiomnium undulatum* and *Isothecium myosuroides.*

Example sites

The Gearagh, Cork, Site 1317; Mountain Wood, Sligo, Site 1403; Templemore Demesne, Tipperary, Site 1967; Srabragan, Roscommon, Site 374; Flemingstown East, Meath, Site 699

Affinities

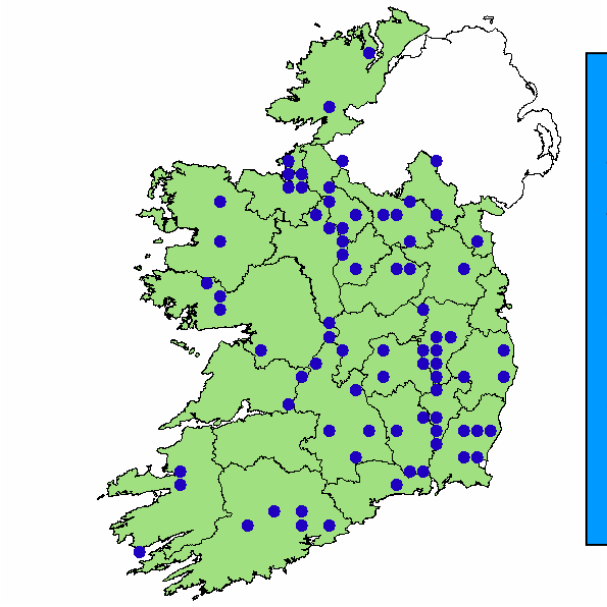
Fossitt: WN6 62%; WN4 21%; WN2 8%; WD1 4%; WN5 3%; WN7 1%; WD2 1%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*) (43%)

CEP: Carici remotae – Fraxinetum (high); Corylo –Fraxinetum deschampsietosum (low)

NVC: W7 *Alnus glutinosa-Fraxinus excelsor-Lysimachia nemorum* woodland (54%)

Corine: C44.31 Ash-alder woods of rivulets and springs

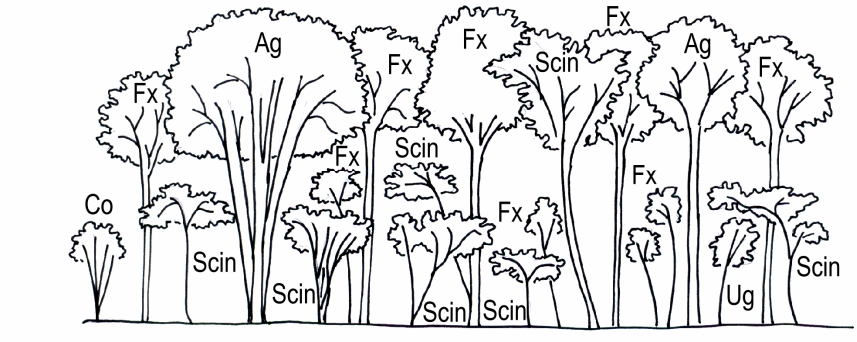


Distribution

This stand type occurs across the country but is more frequent in the east. Clusters of sites occur in Sligo, the Leitrim / Roscommon border, and southern Kildare / eastern Laois.



Stand with a canopy of *Fraxinus excelsior, Alnus glutinosa* and *Quercus robur* and a field layer comprising *Carex remota, Rubus fruticosus*, *Ajuga reptans* and *Deschampsia cespitosa.* Mountain Wood, Sligo.



Stratigraphy of stand from Flemingstown East, Meath. Canopy height is 10-13m.

b. *Alnus glutinosa – Rubus fruticosus* vegetation type

Description

These are alder-willow wet woodland stands of base-rich, fertile gleys or fen peats which are waterlogged or periodically inundated. Included here are alder carr stands associated with lakes and alder stands of wet hollows and river flood plains. The canopy is dominated by *Alnus glutinosa* with *Salix cinerea* a frequent associate, but this latter species should not dominate (*c.f. Salix cinerea – Equisetum fluviatile* vegetation type). *Fraxinus excelsior* is also commonly present but is not a major component. *Crataegus monogyna* is the main understorey species whilst *Rubus fruticosus* dominates the field layer. The other main species are *Agrostis stolonifera, Hedera helix, Filipendula ulmaria, Carex remota, Chrysosplenium oppositifolium, Angelica sylvestris, Athyrium filix-femina, Dryopteris dilatata, Ranunculus repens, Juncus effusus, Geranium robertianum, Mentha aquatica* and *Galium palustre*. Less frequent but characteristic species include *Iris pseudacorus, Glyceria fluitans* and *Holcus lanatus*. The bryophytes consist mainly of *Kindbergia praelonga, Isothecium myosuroides, Calliergonella cuspidata, Thuidium tamariscinum* and *Hypnum cupressiforme*.

Example sites

Glen Bog, Limerick, Site 1293; Pollnaknockaun Nature Reserve, Galway, Site 1610; Ballyseedy Wood, Kerry, Site 1771; Breakey, Meath, Site 747; Lough Slevin's Wood, Westmeath, Site 1111.

Affinities

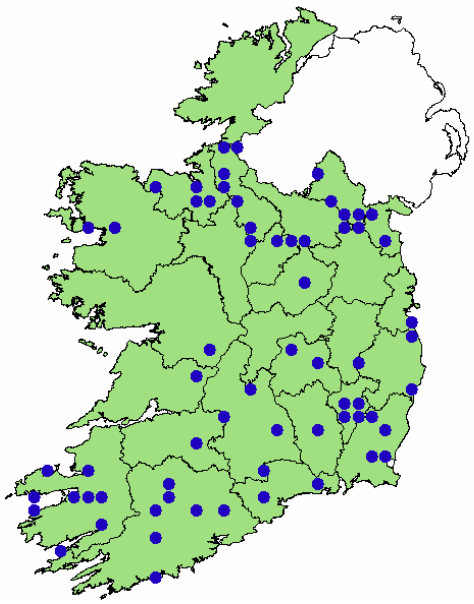
Fossitt: WN6 88%; WN5 8%; WN4 3%; WN2 1%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*) (56%)

CEP: Osmundo-Salicetum (medium); *Alnus glutinosa – Carex paniculata* coenon (low)

NVC: W7b *Alnus glutinosa-Fraxinus excelsior- Lysimachia nemorum* woodland *Carex-remota-Cirsium palustre* sub-community (53%)
W5b *Alnus glutinosa-Carex paniculata* woodland *Lysimachia vulgaris* sub-community (53%)

Corine: C44.31 Ash-alder woods of rivulets and springs
C44.911 Meso-eutrophic swamp alder woods

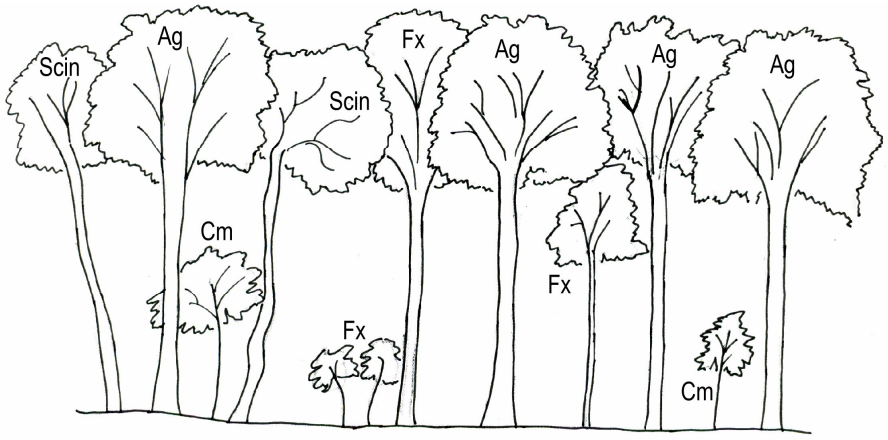


Distribution

This stand type occurs scattered across much of the south of the country, but is absent or rare in the midlands from Meath and Dublin in the east to Clare, Galway and Mayo in the west. It occurs in the north from Louth across to Sligo, but is again absent from Donegal.



Stand dominated by *Alnus glutinosa* with a field layer including *Carex remota* and *Iris pseudacorus*. Ballyseedy Wood, Kerry.



Stratigraphy of stand from Glen Bog, Limerick. Canopy height is 10-12m.

3. *Alnus glutinosa – Filipendula ulmaria* group

c. *Salix cinerea – Equisetum fluviatile* vegetation type

Description

This vegetation type comprises willow-dominated wet woodland stands of waterlogged, regularly inundated or permanently submerged ground. Soils are typically base-rich, organic and highly fertile and included here are lakeside willow carr on fen peats, stands on degraded bog margins and gleyed soils elsewhere. These stands are strongly dominated by *Salix cinerea* which at mature sites typically occurs as sprawling, collapsed trees, with horizontal, often partially submerged trunks sending up numerous vertical stems into the low canopy. *Fraxinus excelsior* and *Alnus glutinosa* are frequent but typically provide little cover. The field layer is dominated by *Rubus fruticosus*, *Hedera helix* and *Filipendula ulmaria*. Other frequent field layer species are *Carex remota, Dryopteris dilatata, Agrostis stolonifera, Mentha aquatica, Phalaris arundinacea, Galium palustre* and *Angelica sylvestris*. *Equisetum fluviatile* and *Cardamine pratensis* are occasional indicators. Bryophyte cover is typically low with the most frequent species being *Calliergonella cuspidata, Kindbergia praelonga, Isothecium myosuroides* and *Brachythecium rutabulum*. *Calliergon cordifolium* occurs occasionally around small pools.

Example sites

Hazelwood Demesne, Sligo, Site 1409; Fiddown, Kilkenny, Site 22; Derrycarne Demesne, Leitrim, Site 388; Curraghchase Forest Park, Limerick, Site 1986; Cregg, Clare, Site 1559.

Affinities

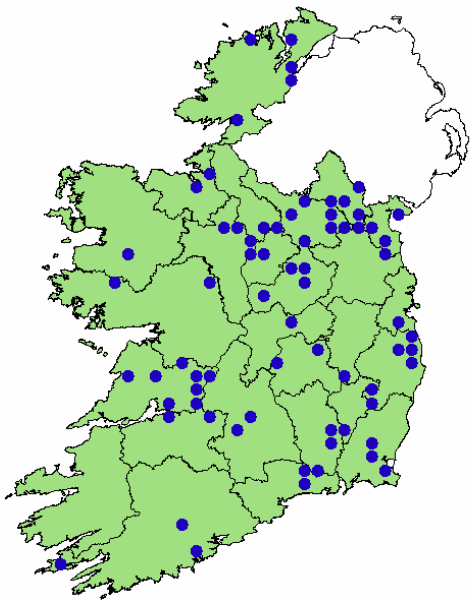
Fossitt: WN6 74%; WN5 11%; WN2 5%; WN7 5%; WN4 4%; WD1 2%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*): 48%

CEP: Osmundo-Salicetum (high)

NVC: W5b *Alnus glutinosa – Carex paniculata* woodland *Lysimachia vulgaris* sub-community (38%)

Corine: C44.911 Meso-eutrophic swamp alder woods

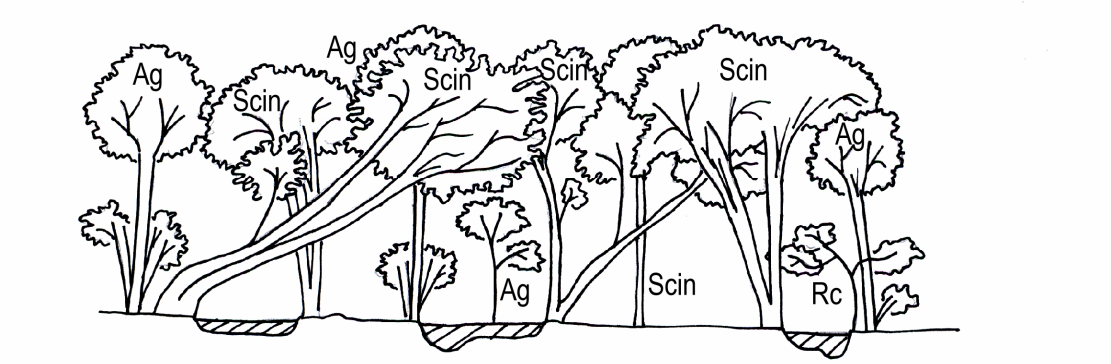


Distribution

This stand type is rare in the west of the country with the exception of Clare. In the east it has a scattered distribution being frequent in the lakelands of the north midlands and noticeably absent from most of Kildare and Meath.



Stand of Salix cinerea dominated woodland with a field layer of *Phalaris arundinacea* and *Filipendula ulmaria*, Hazelwood Demesne, Sligo



Stratigraphy of stand from Derrycarne Demesne, Longford. Hatching denotes surface water. Canopy height is 10-12m.

d. *Crataegus monogyna – Geranium robertianum* vegetation type

Description

This rather diverse vegetation type consists of stands with a strong component of *Crataegus monogyna*. Included in this vegetation type is a variant in which hawthorn forms a dense understorey on wet, gleyed soils, typically beneath *Alnus glutinosa*. Here, *Filipendula ulmaria, Agrostis stolonifera, Chrysosplenium oppositifolium, Juncus effusus* and *Ranunculus repens* may occur in the field layer. Also included here are scrubby stands on relatively well-drained, base-rich mineral soils where *Fraxinus excelsior* is an abundant component. Hawthorn essentially replaces hazel as the main understorey component, or forms a low canopy itself. *Prunus spinosa* may also be frequent in the shrub layer. The field layer here may contain *Rubus fruticosus, Hedera helix, Dryopteris dilatata, Arum maculatum, Geranium robertianum, Viola riviniana / V. reichenbachiana, Geum urbanum, Circaea lutetiana* and *Primula vulgaris.* A third but very rare type of stand is a variant of low scrub woodland found on the upper margins of turlough basins and dominated by *Crataegus monogyna* and *Rhamnus cathartica.* The main bryophytes for this vegetation type are *Thamnobryum alopecurum*, *Eurhynchium striatum*, *Kindbergia praelonga, Thuidium tamariscinum* and *Isothecium alopecuroides,* with *Pellia epiphylla* on wetter soils. It is the wetter variant which links this vegetation type to the other stands within this group. The relative scarcity of *Corylus avellana* in the drier variant helps differentiate those stands from closely related stands in the *Fraxinus excelsior – Hedera helix* group.

Example sites

Camcor, Offaly, Site 33; Charleville Killeska, Offaly, Site 577; Annahaia, Monaghan, Site 862; Longhill Esker, Westmeath, Site 1103; Garryland Wood Nature Reserve, Site 1594.

Affinities

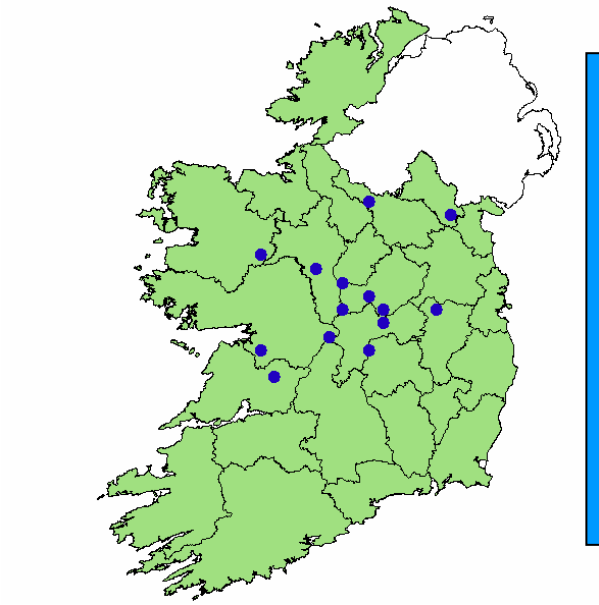
Fossitt: WN2 57%; WN6 28%; WN4 14%

Annex I: No major correspondence

CEP: Corylo-Fraxinetum veronicetosum (low)

NVC: W9a *Fraxinus excelsior – Sorbus aucuparia – Mercurialis* perennis woodland typical sub-community(38%)

Corine: C41.31 Ash-rowan-mercury wood

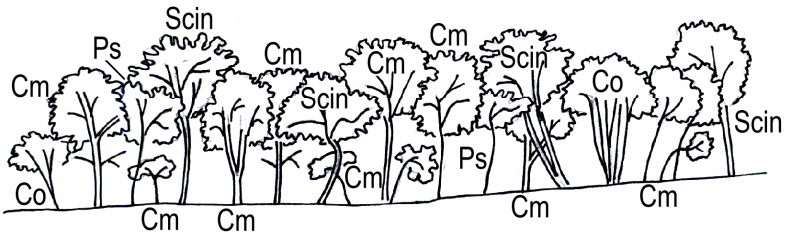


Distribution

This is a rather rare stand type restricted largely to the midlands and the mid-west, with outlying occurrences in Cavan and Monaghan.



Wet woodland stand dominated by *Fraxinus excelsior* and *Alnus glutinosa* with an understorey of *Crataegus monogyna*. Carrowroe, Roscommon.



Stratigraphy of stand from foot of Longhill Esker, Westmeath. Canopy height is 6-8m.

e. *Betula pubescens – Mentha aquatica* vegetation type

Description

These are wet woodland stands with a mixed broadleaf canopy typically occurring on fairly organic, rather infertile, base-rich soils which are waterlogged or periodically inundated. They occur along lakeshores, on fen peats and in waterlogged hollows. The canopy is a combination of *Alnus glutinosa*, *Salix cinerea*, *Fraxinus excelsior* and *Betula pubescens*. The abundance of birch serves to distinguish these stands from others in this group, whilst the abundance of alder and ash differentiate this vegetation type from the *Salix cinerea – Galium palustre* vegetation type of the *Betula pubescens – Molinia caerulea* group. *Crataegus monogyna* and *Viburnum opulus* are frequent but provide sparse cover in the understorey. In the field layer, *Filipendula ulmaria* and *Phalaris arundinacea* are usually dominant, often covering large areas. Other frequent field layer species are *Mentha aquatica*, *Iris pseudacorus, Valeriana officinalis, Lythrum salicaria, Lysimachia vulgaris, Galium palustre, Angelica sylvestris, Deschampsia cespitosa, Carex remota, Agrostis stolonifera* and *Caltha palustris*. Bryophyte cover is rather scanty with the only frequent species being *Climacium dendroides, Kindbergia praelonga* and *Hypnum cupressiforme*.

Example sites

Ballyconnell Demesne, Cavan, Site 345; St. John's Wood Nature Reserve, Roscommon, Site 467; Game Wood, Killarney National Park, Kerry, Site 1288; Marl Bog, Tipperary, Site 1932; Clogher, Sligo, Site 1404.

Affinities

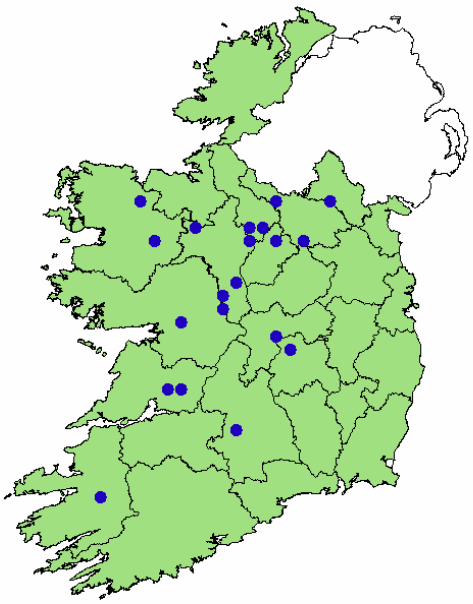
Fossitt: WN6 95%; WN5 5%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*) (55%)

CEP: Osmundo – Salicetum (medium)

NVC: W5b *Alnus glutinosa – Carex paniculata* woodland *Lysimachia vulgaris* sub-community (62%)

Corine: C44.911 Meso-eutrophic swamp alder woods

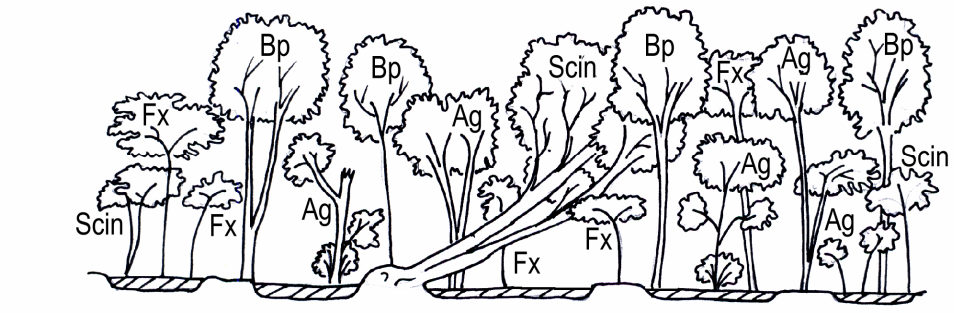


Distribution

This rather rare stand type occurs through the midlands and in eastern parts of Clare, Galway and Mayo, with an outlying site in Kerry. It is unrecorded from Donegal and the counties of the east and south of the country.



Stand dominated by *Alnus glutinosa, Betula pubescens* and *Salix cinerea* with a field layer of *Filipendula ulmaria, Phalaris arundinacea, Carex paniculata* and *Agrostis stolonifera*. Clogher, Sligo.



Stratigraphy of stand from Marl Bog, Tipperary. Hatching denotes surface water. Canopy height is 9-11m.

3. *Alnus glutinosa – Filipendula ulmaria* woodland group

Constants	a			b			c			d			e			Group
Fraxinus excelsior	V	34.4	●●●●●	IV	5.1		IV	7.1		V	19.4		V	13.0		IV	16.8
Alnus glutinosa	V	24.1		V	53.9	●●●●●	III	7.7		III	10.5		V	29.8		IV	26.2
Rubus fruticosus	IV	9.4		V	15.9	●●●●●	IV	6.2		V	4.6		IV	1.9		IV	9.2
Salix cinerea	IV	9.6		IV	15.1		V	51.3	●●●●●	II	0.7		V	25.2		IV	24.2
Hedera helix	V	7.0		IV	3.2		IV	5.7		V	7.2	●●●●●	IV	1.4		IV	5.3
Kindbergia praelonga	IV	4.4		IV	3.8		IV	3.5		V	5.3	●●●●●	IV	2.6		IV	3.9
Filipendula ulmaria	V	13.1		IV	3.5		IV	6.0		III	2.5		V	25.9	●●●●●	V	9.1
a) *Fraxinus - Carex* vegetation type indicators																	
Carex remota	III	7.2	●●	III	5.9		III	3.5		I	0.3		III	1.8		III	5.0
Ilex aquifolium	II	2.5	●	I	0.8		I	0.6		II	0.3		I	0.1		II	1.2
Urtica dioica	II	3.9	●	II	1.4		II	1.6		II	0.9		I	0.1		II	2.2
Plagiomnium undulatum	III	0.9	●	II	0.3		II	0.9		II	0.4		II	0.2		II	0.7
Quercus robur	II	3.2	●	I	0.9		I	0.4		I	0.7		I	0.6		I	1.5
Isothecium myosuroides	III	1.1	●	III	0.8		III	1.0		II	0.7		II	0.3		III	0.9
Chrysosplenium oppositifolium	II	3.8	●	III	3.0		II	1.4		II	2.2		I	0.3		II	2.5
Athyrium filix-femina	III	1.3	●	III	1.1		II	1.2		II	0.3		I	0.3		II	1.1
Lonicera periclymenum	III	1.4	●	II	0.9		II	1.2		II	0.9		II	0.2		II	1.1
Acer pseudoplatanus	II	2.0	●	I	0.5		II	1.2		II	1.4		I	0.8		II	1.3
Rumex sanguineus	II	0.4	●	II	0.3		II	0.3		I	0.1		I	0.1		II	0.3
Corylus avellana	II	4.4	●	I	2.4		II	3.2		II	1.3		I	0.4		II	3.1
Oenanthe crocata	I	2.7	●	I	0.5		I	0.6					I	0.2		I	1.2
b) *Rubus - Agrostis* vegetation type indicators																	
Dryopteris dilatata	IV	2.5		IV	5.3	●●	III	1.5		III	1.7		II	0.1		III	2.7
Agrostis stolonifera	II	2.9		IV	8.1	●●	III	3.1		III	1.3		III	3.2		III	4.2
Ranunculus repens	III	1.8		III	3.1	●●	II	1.0		II	1.5		II	0.3		III	1.7
Juncus effusus	II	1.4		III	1.7	●	II	1.1		II	0.5		I	0.3		II	1.2

	a		b		c		d		e		Group	
Thuidium tamariscinum	III	5.6	III	6.0	●	II	4.4	III	4.7	II	1.0	III	4.9
Hookeria lucens	II	0.1	II	0.5	●	I	0.1	I	<0.05	I	<0.05	I	0.2
Iris pseudacorus	II	1.5	II	3.0	●	II	2.0	I	0.1	IV	1.7	II	2.0
Ranunculus acris	I	0.1	I	2.1	●	I	0.1			I	0.1	I	0.6
Ranunculus flammula	I	0.1	II	0.7	●	I	0.2			I	0.2	I	0.3
Holcus lanatus	I	0.3	II	2.1	●	I	1.1	I	<0.05	I	0.3	I	0.9
Mnium hornum	I	0.1	II	0.4	●	I	0.2	II	0.1	I	0.1	I	0.2
Glyceria fluitans	I	0.3	II	2.8	●	I	1.0	I	<0.05	I	2.5	I	1.2
Senecio aquaticus	I	0.2	II	0.7	●	I	0.3	I	<0.05	II	0.5	I	0.4
Prunella vulgaris	I	0.1	I	0.6	●	I	<0.05	I	<0.05	I	0.1	I	0.2

c) *Salix - Equisetum* vegetation type indicators

Hypnum cupressiforme	III	0.8	IV	1.0		IV	1.2	●	II	0.9		III	0.3	III	1.0
Brachythecium rutabulum	II	1.2	II	0.5		III	1.0	●	II	0.2		II	0.2	III	0.8
Equisetum fluviatile	I	0.1	II	0.5		II	0.6	●				II	0.2	II	0.4
Calliergon cordifolium	I	<0.05	I	0.3		II	1.5	●				I	0.3	I	0.6
Cardamine pratensis	I	0.3	II	0.5		II	0.5	●				II	0.3	II	0.4
Lophocolea bidentata	II	0.2	II	0.2		III	0.2	●	III	0.2		II	0.1	II	0.2
Potentilla palustris	I	<0.05	I	0.1		I	0.5	●				I	0.1	I	0.2
Frullania dilatata	III	0.2	II	0.2		III	0.2	●	II	0.1		II	0.1	III	0.2
Frullania tamarisci	I	0.1	I	0.1		II	0.2	●	I	<0.05		I	<0.05	I	0.1
Sanionia uncinata			I	<0.05		I	0.1	●						I	<0.05
Polypodium vulgare	II	0.4	II	0.3		III	0.5	●	II	0.4		II	0.3	II	0.4
Menyanthes trifoliata	I	<0.05	I	0.1		I	0.6	●						I	0.2

d) *Crataegus - Geranium* vegetation type indicators

Crataegus monogyna	IV	4.2	III	1.5		III	2.1		V	45.5	●●●●●	IV	2.9	III	4.8
Thamnobryum alopecurum	III	2.6	II	0.3		II	0.4		IV	5.1	●●●	II	0.5	II	1.4
Eurhynchium striatum	III	2.3	II	1.0		II	1.0		IV	6.7	●●●	I	0.7	II	1.7
Geranium robertianum	III	0.9	III	1.0		II	0.7		III	5.0	●●	I	0.2	II	1.0

	a		b		c		d		e		Group
Isothecium alopecuroides	I	0.1	I	0.1	I	0.1	III	1.0	●●	I <0.05	I 0.2
Viola riviniana / V. reichenbachiana	III	1.0	II	0.3	II	0.4	V	1.2	●●	II 0.4	II 0.6
Arum maculatum	I	<0.05	I	<0.05	I	0.1	III	0.3	●●		I <0.05
Potentilla sterilis	I	0.2	I	0.1	I	<0.05	II	0.9	●●	I 0.1	I 0.1
Geum urbanum	III	1.0	II	0.6	II	0.6	IV	1.5	●●	I 0.2	II 0.7
Pellia epiphylla	II	0.3	II	0.5	I	0.2	III	1.6	●●	I 0.3	II 0.4
Circaea lutetiana	III	3.8	II	0.5	II	0.9	III	3.6	●●	I 0.2	II 1.9
Prunus spinosa	I	0.9	I	0.4	I	0.3	III	1.8	●●	I 0.1	I 0.6
Primula vulgaris	I	0.3	I	<0.05	I	0.1	III	0.4	●●	I 0.1	I 0.2
Dryopteris filix-mas	I	0.1	I	<0.05	I	<0.05	II	0.3	●●		I 0.1
Fissidens taxifolius	I	0.1	I	0.1	I	0.1	II	0.6	●●	I 0.2	I 0.1
Plagiochila asplenioides	I	<0.05	I	<0.05	I	<0.05	II	0.3	●	I 0.1	I <0.05
Euonymus europaeus	I	0.8	I	0.1	I	0.1	II	1.5	●	I 0.3	I 0.5
Sambucus nigra	I	0.2	I	0.1	I	0.2	II	3.5	●		I 0.3
Veronica chamaedrys	I	0.2	I	0.1	I	<0.05	II	0.4	●		I 0.1
Phyllitis scolopendrium	I	0.1	I	<0.05	I	<0.05	II	0.5	●		I 0.1
Neckera complanata	II	0.2	I	0.1	II	0.2	III	0.4	●	II 0.2	II 0.2
Taraxacum agg.	I	0.1	I	<0.05	I	<0.05	III	0.2	●	II 0.2	I 0.1
Ranunculus ficaria	I	0.6	I	0.4	I	0.1	II	2.3	●	I 0.1	I 0.4
Conopodium majus	I	<0.05			I	<0.05	I	0.2	●		I <0.05
Radula complanata	II	0.1	II	<0.05	II	0.1	III	0.1	●	III 0.1	II 0.1
Viburnum opulus	II	0.8	I	0.2	I	0.4	II	1.9	●	III 0.9	I 0.6
Hypnum andoi	I	0.2	II	0.4	II	0.3	II	0.6	●	II 0.2	II 0.3
Leskea polycarpa	I	<0.05	I	<0.05	I	<0.05	I	0.1	●		I <0.05
Rhamnus cathartica	I	0.3			I	0.2	I	3.1	●	I 0.3	I 0.3
Metzgeria furcata	II	0.1	II	0.1	II	0.2	II	0.2	●	I <0.05	II 0.1
Fagus sylvatica	I	1.4	I	0.1	I	0.2	II	2.1	●	I 0.5	I 0.7
Loeskeobryum brevirostre	I	0.3	I	<0.05	I	0.1	I	1.3	●	I 0.1	I 0.2
Hyacinthoides non-scripta	I	0.2	I	<0.05	I	<0.05	I	0.7	●		I 0.1

	a		b		c		d		e			Group	
e) *Betula - Mentha* vegetation type indicators													
Betula pubescens	II	5.3	II	1.4	III	4.6	I	5.6	IV	19.5	●●	II	5.2
Mentha aquatica	II	0.5	III	1.5	III	1.1			IV	3.1	●●	II	1.1
Phalaris arundinacea	I	1.3	II	3.2	III	6.2			IV	10.4	●●	II	3.8
Valeriana officinalis	I	0.3	II	0.3	II	0.4			III	2.4	●●	II	0.5
Calliergonella cuspidata	II	2.3	III	2.1	III	4.5	II	0.2	IV	5.5	●●	III	3.1
Lythrum salicaria	I	0.1	II	0.3	II	1.1			III	1.6	●●	II	0.6
Lysimachia vulgaris	I	0.1	I	<0.05	I	0.4	I	0.1	III	1.1	●●	I	0.2
Galium palustre	III	0.7	IV	1.1	IV	1.4	II	0.1	IV	1.5	●●	III	1.0
Rhizomnium punctatum	II	0.5	II	0.9	II	1.2	II	<0.05	II	4.0	●●	II	1.1
Climacium dendroides	I	1.0	I	0.3	II	0.4	I	<0.05	III	1.7	●●	I	0.7
Scutellaria galericulata			I	<0.05	I	0.1			II	0.6	●	I	0.1
Angelica sylvestris	II	1.5	III	1.1	III	1.3	I	0.1	IV	1.4	●	III	1.2
Thalictrum flavum					I	<0.05			I	0.2	●	I	<0.05
Hypnum resupinatum	II	0.1	I	<0.05	II	0.2	II	0.2	II	0.6	●	II	0.2
Ulota bruchii / U. crispa	II	0.1	III	0.2	III	0.3	II	0.1	IV	0.3	●	III	0.2
Caltha palustris	I	1.0	I	0.5	II	1.1			III	0.9	●	II	0.9
Succisa pratensis	I	<0.05	I	<0.05	I	<0.05			I	0.4	●	I	0.1
Deschampisa cespitosa	II	1.3	II	1.0	I	0.7	II	0.9	III	1.5	●	II	1.1
Rosa arvensis			I	<0.05	I	<0.05			I	0.2	●	I	<0.05
Plagiomnium elatum	I	<0.05	I	<0.05	I	0.3			I	1.5	●	I	0.2
Molinia caerulea	I	0.2	I	0.5	I	0.4	I	0.3	II	0.8	●	I	0.4
Rhytidiadelphus squarrosus	I	0.1	I	0.2	I	0.2			I	1.3	●	I	0.2
Other woody species													
Sorbus aucuparia	I	0.5	I	0.6	I	0.2	I	1.2	I	<0.05		I	0.4
Rosa canina	I	0.2	I	0.1	I	0.2	I	0.2	I	0.1		I	0.2
Solanum dulcamara	I	0.2	I	0.2	I	0.3	I	0.1	I	0.2		I	0.2
Rubus idaeus	I	0.2	I	0.1	I	0.4	I	0.1				I	0.2
Salix x *multinervis*	I	0.1	I	0.7	I	0.8			I	0.6		I	0.5
Quercus petraea	I	0.9	I	0.1	I	0.2			I	<0.05		I	0.4
Aesculus hippocastanum	I	0.6			I	0.2						I	0.2

	a		b		c		d		e		Group
Salix aurita	I	0.1	I	0.1	I	0.2	I	2.8			I	0.3
Malus sylvestris	I	0.1	I	<0.05					I	0.3	I	0.1
Other herbs & ferns												
Cardamine flexuosa	II	0.5	II	0.5	II	0.5	II	0.1	I	<0.05	II	0.5
Dryopteris affinis	II	0.6	I	0.3	I	0.2	I	0.8	I	0.2	I	0.4
Blechnum spicant	II	0.6	II	0.5	I	0.3	I	0.2	I	<0.05	I	0.4
Oxalis acetosella	II	0.9	I	0.6	I	0.7	II	1.6			I	0.7
Galium aparine	I	0.4	II	0.7	I	0.2	I	0.7	I	0.2	I	0.4
Veronica montana	II	0.4	I	0.3	I	0.2	II	0.2			I	0.3
Poa trivialis	II	2.1	I	1.3	I	0.9	I	0.1	I	0.6	I	1.3
Carex sylvatica	II	0.5	I	0.2	I	0.3	II	0.5	I	<0.05	I	0.3
Ajuga reptans	I	0.9	I	0.5	I	0.4	II	0.5	I	0.1	I	0.6
Lysimachia nemorum	I	0.3	I	0.3	I	0.4	I	<0.05	I	<0.05	I	0.3
Brachypodium sylvaticum	I	0.7	I	0.2	I	0.2	II	0.5	I	0.2	I	0.4
Poystichum setiferum	I	0.4	I	0.2	I	0.3	I	0.7			I	0.3
Vicia sepium	I	0.1	I	0.2	I	0.1	II	0.1	I	<0.05	I	0.1
Equisetum arvense	I	0.1	I	0.2	I	0.2	I	<0.05	I	0.2	I	0.1
Lycopus europaeus	I	0.2	I	0.3	I	0.3			I	0.2	I	0.2
Myosotis scorpioides	I	<0.05	I	0.4	II	0.3			I	0.2	I	0.2
Phragmites australis	I	0.1	I	1.6	II	2.7			I	1.8	I	1.3
Arrhenatherum elatius	I	0.1	I	0.5	I	0.1	I	0.3			I	0.2
Sanicula europaea	I	0.2	I	0.1	I	0.3	I	0.3	I	0.1	I	0.2
Carex paniculata	I	0.3	I	1.2	I	1.1			I	0.8	I	0.8
Agrostis canina / A. vinealis	I	0.5	I	0.6	I	0.3	II	0.4	I	<0.05	I	0.4
Cirsium palustre	I	<0.05	I	0.1	I	0.1			I	<0.05	I	0.1
Rumex acetosa	I	0.2	I	0.2	I	0.1			I	0.1	I	0.1
Carex flacca	I	0.4	I	0.1	I	0.2	II	0.2	I	<0.05	I	0.2
Epilobium montanum	I	<0.05	I	0.1	I	0.2	I	0.1			I	0.1
Viola palustris	I	0.1	I	0.2	I	0.1			I	0.1	I	0.1
Carex nigra	I	0.1	I	0.3	I	0.5	I	1.2	II	0.8	I	0.4
Glechoma hederacea	I	0.4	I	<0.05	I	0.4	I	1.5			I	0.3

	a	b	c	d	e	Group
Agrostis capillaris	0.5	1.0	0.5		0.1	0.6
Carex vesicaria	<0.05	0.7	1.8		0.1	0.7
Anthoxanthum odoratum	0.1	0.2	0.2		0.1	0.2
Carex elata	<0.05	0.1	1.5		1.0	0.6
Geum rivale	0.4	<0.05	0.1	0.8	0.1	0.2
Crepis paludosa	0.6	0.1	0.1	<0.05		0.3
Carex pendula	0.7	<0.05	0.6		0.7	0.5
Potentilla erecta	<0.05	0.2	<0.05		0.1	0.1
Anthriscus sylvestris	0.4	<0.05	0.3	0.1	0.1	0.2
Calystegium sepium	0.1	0.2	0.3			0.2
Rorippa nasturtium-aquaticum	0.1	0.9	0.5		<0.05	0.4
Anemone nemorosa	0.3		<0.05	<0.05	0.2	0.1
Dactylis glomerata	0.1	0.1	0.1		<0.05	0.1
Dactylorhiza fuschii	<0.05	<0.05	<0.05	<0.05		<0.05
Epilobium palustre	<0.05	<0.05	0.1		0.4	0.1
Stachys palustris	<0.05	<0.05	<0.05		<0.05	<0.05
Luzula sylvatica	0.1	0.1	0.4	0.3		0.2
Carex echinata	<0.05	0.3	0.1		0.2	0.2
Lychnis flos-cuculi	<0.05	<0.05	0.1		0.1	<0.05
Equisetum telmateia	0.5	0.1	0.1			0.3
Fragaria vesca	0.1	<0.05	<0.05	0.1		<0.05
Equisetum sylvaticum	0.1	<0.05	0.3	<0.05	0.2	0.1
Lysimachia nummularia	0.1	<0.05	0.1		0.1	0.1
Lapsana communis	<0.05	0.1	<0.05	<0.05	0.1	<0.05
Apium nodiflorum	0.1	0.2	0.2			0.1
Carex rostrata	<0.05	0.1	1.0		0.2	0.4
Heracleum sphondylium	0.2	0.1	0.1	<0.05		0.1
Epilobium obscurum		0.1	<0.05	<0.05	<0.05	<0.05
Juncus bulbosus	0.1	<0.05	0.1			0.1
Carex riparia		0.9	1.7		3.4	1.0
Dryopteris aemula	0.1	<0.05	<0.05			<0.05
Digitalis purpurea	<0.05	<0.05	<0.05	<0.05		<0.05
Myosotis laxa	<0.05	0.1	<0.05		0.1	<0.05
Hydrocotyle vulgaris		0.3	0.1		0.1	0.1

	a	b	c	d	e	Group
Osmunda regalis		I 0.1	I 0.4		I 0.2	I 0.1
Listera ovata	I <0.05		I <0.05	I 0.1	I 0.1	I <0.05
Pteridium aquilinum	I 0.1	I 0.1	I <0.05	I 0.1		I 0.1
Eupatorium cannabinum	I <0.05	I 0.1	I 0.2		I 0.4	I 0.1
Rumex conglomeratus	I <0.05	I <0.05	I <0.05			I <0.05
Equisetum palustre	I <0.05	I <0.05	I 0.1		I 0.1	I <0.05
Lemna minor		I 0.1	I 0.1			I <0.05
Stellaria uliginosa		I 0.1	I <0.05			I <0.05
Carex diandra		I <0.05			I 0.4	I <0.05
Milium effusum					I 0.5	I <0.05
Other bryophytes						
Ulota phyllantha	I <0.05	I <0.05	II 0.1	I 0.1	I <0.05	I <0.05
Atrichum undulatum	I 0.2	I 0.1	I 0.1	II 0.2		I 0.1
Rhytidiadelphus triquetrus	II 1.0	I 0.1	I 1.3	II 0.5	I 0.7	I 0.8
Homalothecium sericeum	I 0.1	I 0.6	I 0.1	I <0.05	I <0.05	I 0.2
Dicranum scoparium	I <0.05	I 0.1	I 0.1		I <0.05	I 0.1
Chiloscyphus pallescens	I 0.1	I 0.1	I 0.1	I <0.05	I 0.1	I 0.1
Polytrichastrum formosum	I 0.1	I 0.3	I <0.05	II 0.1		I 0.1
Oxyrrhynchium hians	I 0.1	I 0.1	I <0.05		I 0.1	I 0.1
Microlejeunea ulicina	I <0.05	I <0.05	I <0.05	I <0.05	I <0.05	I <0.05
Hypnum jutlandicum	I <0.05	I 0.1	I 0.2	I 0.3	I 0.1	I 0.1
Brachythecium rivulare	I 0.3	I 0.1	I 0.3	I 0.7		I 0.2
Leptodictyum riparium	I <0.05	I <0.05	I <0.05			I <0.05
Metzgeria fruticulosa	I <0.05	I <0.05	I <0.05	I <0.05	I 0.1	I <0.05
Conocephalum conicum	I 0.1	I 0.2	I <0.05		I 0.4	I 0.1
Pseudoscleropodium purum	I 0.5	I 0.1	I 0.2			I 0.2
Plagiochila porelloides	I <0.05	I <0.05	I 0.1			I <0.05
Neckera pumila	I <0.05	I <0.05	I <0.05		I <0.05	I <0.05
Cirriphyllum piliferum	I <0.05	I 0.2	I <0.05	I <0.05		I 0.1
Rhytidiadelphus loreus	I 0.1	I 0.1		I <0.05	I <0.05	I <0.05
Plagiothecium succulentum	I <0.05	I <0.05	I <0.05			I <0.05
Fissidens adianthoides	I 0.1	I <0.05	I <0.05		I <0.05	I <0.05

	a	b	c	d	e	Group
Cryphaea heteromalla	<0.05	<0.05	<0.05	0.3		<0.05
Trichocolea tomentella	<0.05	0.1	<0.05			<0.05
Fontinalis antipyretica		0.1	0.4		<0.05	0.1
Polytrichum commune	<0.05	<0.05	<0.05	<0.05		<0.05
Plagiomnium rostratum		0.1	<0.05	<0.05	0.8	0.1
Number of relevés	99	72	89	14	22	296
Species richness						
Vascular	26	26	25	24	26	26
Bryophyte	11	11	13	13	11	26
Total	37	37	38	37	37	37
Soil pH	6.4	5.9	6.3	6.6	6.4	6.2
Soil total P (mg/g)	0.88	0.93	1.12	0.68	0.60	0.93
Soil % organic content	27	34	51	15	43	34
Soil type (%)						
Well-drained mineral soils	30.3	15.3	10.1	57.1	13.6	20.6
Podzolised soils	2.0	0.0	3.4	7.1	0.0	2.0
Gleyed soils	52.5	47.2	42.7	28.6	40.9	46.3
Basin peats	11.1	26.4	40.4	7.1	45.5	26.0
Other soils	4.0	11.1	3.4	0.0	0.0	5.1
Altitude (m)	50	56	48	68	42	50
Slope (°)	0	0	0	2	0	0
Ellenberg Indicator Values						
Light	5.6	5.8	6.4	5.6	6.3	5.9
Moisture	6.7	7.3	7.5	5.8	7.5	7.1
Reaction	6.1	5.9	6.0	6.3	6.0	6.0
Nitrogen	5.6	5.6	5.3	5.7	5.3	5.5
Salinity	0.0	0.1	0.1	0.0	0.1	0.1
Basal area density (m^2/ha)	40.3	38.9	31.6	34.1	30.6	36.4
Stand density (trees/ha)	1371	1255	1072	1523	1856	1291
Canopy height (m)	14.4	12.0	9.5	12.0	10.7	12.0
Native basal area (%)	96.6	97.9	96.1	91.3	99.4	96.7

4. *Betula pubescens – Molinia caerulea* group

a. *Rubus fruticosus – Dryopteris dilatata* vegetation type

Description

These are markedly species-poor stands dominated by *Betula pubsecens* that occur predominantly on dry, degraded basin peats. *Salix cinerea* may be frequent in the canopy whilst *Ilex aquifolium* forms a rather sparse understorey. *Sorbus aucuparia* is occasional. *Rubus fruticosus* is typically dominant in the field layer and may form dense tangles covering extensive areas. *Pteridium aquilinum* is prevalent where the canopy is thinner but *Dryopteris dilatata* is the most abundant fern. *Rubus idaeus* occurs occasionally and is indicative of the low fertility of the soil. Cover by other vascular plants is sparse with the most frequent species being *Hedera helix, Blechnum spicant, Lonicera periclymenum* and *Molinia caerulea. The ground layer is dominated by Thuidium tamariscinum* and *Kindbergia praelonga* with *Polytrichastrum formosum, Pseudoscleropodium purum,* and *Lophocolea bidentata* all frequent.

Example sites

Garryricken South, Kilkenny, Site 605; Ballyconnell Demesne, Cavan, Site 345; Ballyoughter, Tipperary, Site 1964; Ballindoolin Bog, Kildare, Site 1216; Derrynanamph, Monaghan, Site 842.

Affinities

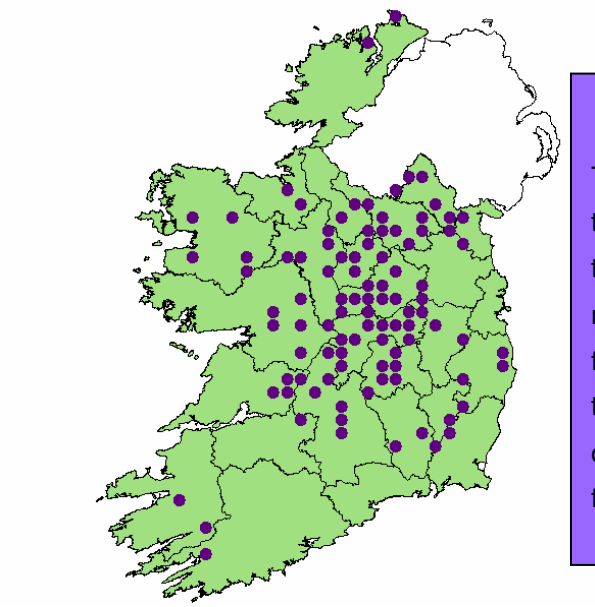
Fossitt: WN7 76%; WN1 7%; WN6 5%; WD1 4%; WN5 3%; WN4 2%; WN2 1%; WD2 1%

Annex I: No significant correspondence

CEP: Vaccinio uliginosi – Betuletum (high)

NVC: W4a *Betula pubescens – Molinia caerulea* woodland
Dryopteris dilatata – Rubus fruticosus sub-community (58%)

Corine: C44.A1 Pubescent birch wood

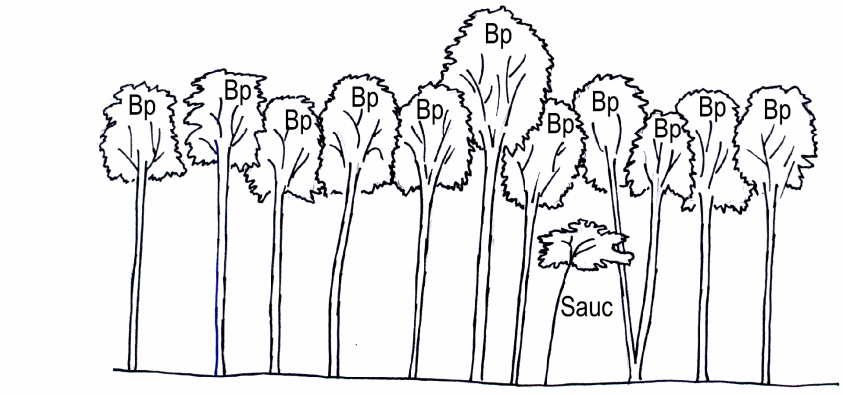


Distribution

This is a very common stand type frequently found throughout the peatlands of the Irish midlands. It is largely absent from Donegal and the south of the country, with a few occurrences outlying site in the far southwest.



Stand dominated by *Betula pubescens, Rubus fruticosus* and *Pteridium aquilinum* at Ballyoughter, Tipperary.



Stratigraphy of stand from Ballindoolin Bog, Kildare. Main canopy height is 13-14m.

b. *Vaccinium myrtillus – Luzula sylvatica* vegetation type

Description

These are birch-dominated stands on acidic soils with high organic content which have several elements of acidophilous oak forest (c.f. *Quercus petraea – Luzula sylvatica* group). These stands occur in two main situations: on dry, degraded basin peats in the lowlands and on acidic podzols in the uplands. In the latter case these stands may be viewed as a seral stage in succession towards acidic high oak forest. The main canopy species is *Betula pubsecens. Quercus petraea, Sorbus aucuparia* and *Ilex aquifolium* are frequent associates but should not be too abundant. *Salix cinerea* occurs occasionally. The field layer is characterised by *Vaccinium myrtillus*, *Luzula sylvatica*, *Rubus fruticosus* and *Dryopteris dilatata*. *Oxalis acetosella*, *Blechnum spicant* and *Lonicera periclymenum* are also fairly frequent. The ground layer is dominated by *Thuidium tamariscinum*, with other frequent species including *Kindbergia praelonga*, *Hypnum cupressiforme*, *Dicranum scoparium*, *Isothecium myosuriodes*, *Rhytidiadelphus triquetrus*, *Lophocolea bidentata*, *Polytrichastrum formosum* and *Pseudoscleropodium purum*.

Example sites

Clogher, Sligo, Site 1404; Mullangore, Glenveagh National Park, Donegal, Site 1423; Pollnaknockaun Nature Reserve, Galway, Site 1423; Bog Woods, Meath, Site 704; Ballynafid, Westmeath, Site 1079.

Affinities

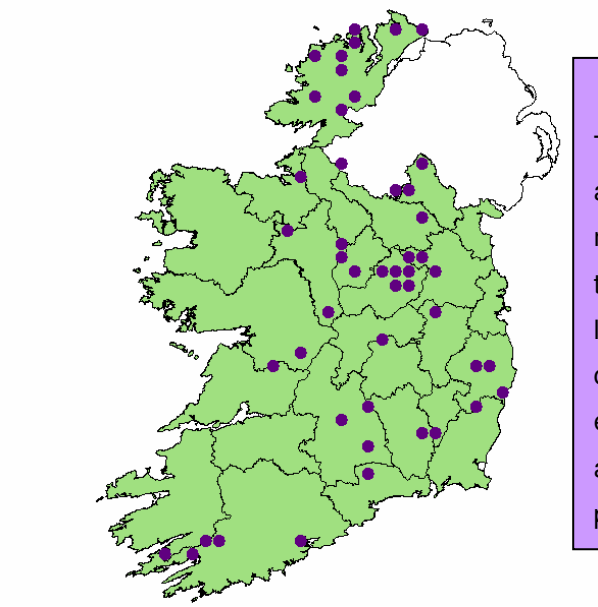
Fossitt: WN1 57%; WN7 39%; WN2 2%; WD1 2%

Annex I: 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (11%)

CEP: Vaccinio uliginosi – Betuletum (high); Blechno-Quercetum (medium)

NVC: W11a *Quercus petraea – Betula pubescens – Oxalis acetosella* woodland *Dryopteris dilatata* sub-community (33%)

Corine: C41.532 British sessile oakwoods

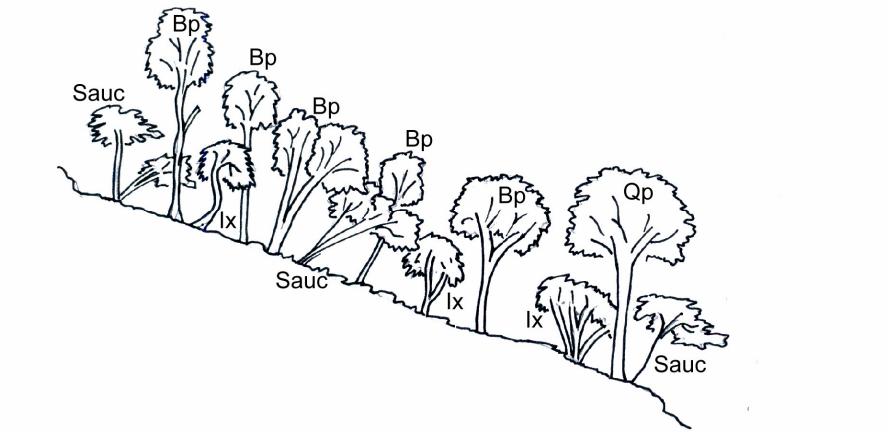


Distribution

This stand type occurs scattered across much of the Irish midlands with concentrations on the peatlands of Westmeath. It is largely absent from the other coastal counties with the exceptions of Donegal, Wicklow and a few sites near the Beara peninsula.



Stand dominated by *Betula pubescens* and *Vaccinium myrtillus*, Bog Woods, Meath.



Stratigraphy of stand from upper slopes of Mullangore, Glenveagh National Park, Donegal. Oak is 10m high.

c. *Salix cinerea – Galium palustre* vegetation type

Description

This species-rich vegetation type includes essentially wet woodland stands on peaty soils. It includes a range of stands from damp, degraded raised bogs to much wetter stands on floating fen peats. The stands all differ from the wet woodlands of the *Alnus glutinosa – Filipendula ulmaria* group (*q.v.*) in that the canopy is dominated by a mixture of *Betula pubescens* and *Salix cinerea* with *Fraxinus excelsior* being frequent but providing only sparse cover and *Alnus glutinosa* being significantly rare. *Ilex aquifolium* and *Crataegus monogyna* are frequent in the understorey. *Rubus fruticosus* may be a strong component in the field layer but is less abundant than in the drier *Rubus fruticosus – Dryopteris dilatata* vegetation type. *Hedera helix* and *Dryopteris dilatata* are also constant species. The field layer is however characterised by a suite of wet ground herbs which may include *Mentha aquatica*, *Filipendula ulmaria*, *Equisetum fluviatile*, *Potentilla palustris*, *Glyceria fluitans*, *Agrostis canina*, *A. stolonifera*, *Juncus effusus*, *Holcus lanatus* and *Deschampsia cespitosa*. *Galium palustre* is a particularly good indicator. *Molinia caerulea* is frequently present but should not be abundant. The ground layer is dominated by *Calliergonella cuspidata, Thuidium tamariscinum* and *Kindbergia praelonga. Hypnum cupressiforme* often forms large patches on fallen trees. Other frequent species are *Pseudoscleropodium purum, Hypnum jutlandicum, Lophocolea bidentata* and *Brachythecium rutabulum*, whilst *Polytrichum commune*, *Rhytidiadelphus squarrosus* and *Calliergon cordifolium* are occasional.

Example sites

Derrycassan, Cavan, Site 1161; Cregg, Clare, Site 1559; Derryclare Nature Reserve, Galway, Site 1601; Cappanahanaagh, Limerick, Site 1856; Graffagh, Monaghan, Site 858.

Affinities

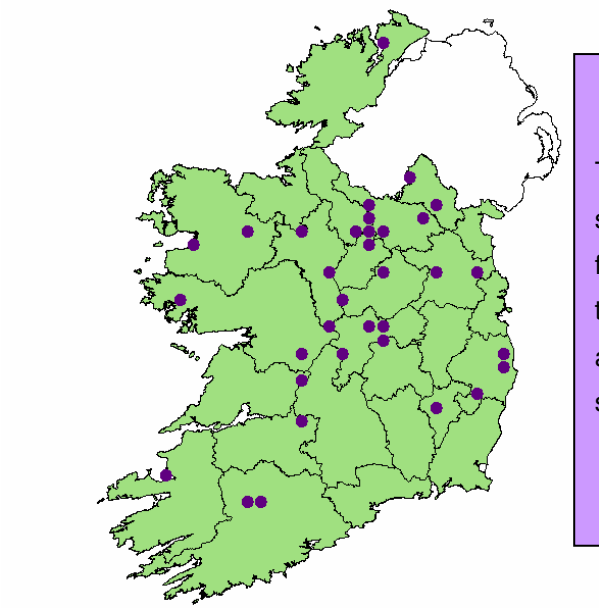
Fossitt: WN7 66%; WN6 21%; WN5 8%; WN1 5%

Annex I: 91E0 * Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*) (11%)
91D0 * Bog woodland (21%)

CEP: Osmundo – Salicetum (medium); *Sphagnum palustre – Betula pubescens* coenon (low)

NVC: W4a *Betula pubsescens – Molinia caerulea* woodland
Dryopteris dilatata – Rubus fruticosus subcommunity (35%)
W2 *Salix cinerea – Betula pubescens – Phragmites australis* woodland (35%)

Corine: C44.A1 Pubescent birch wood
C44.921 Sallow scrub

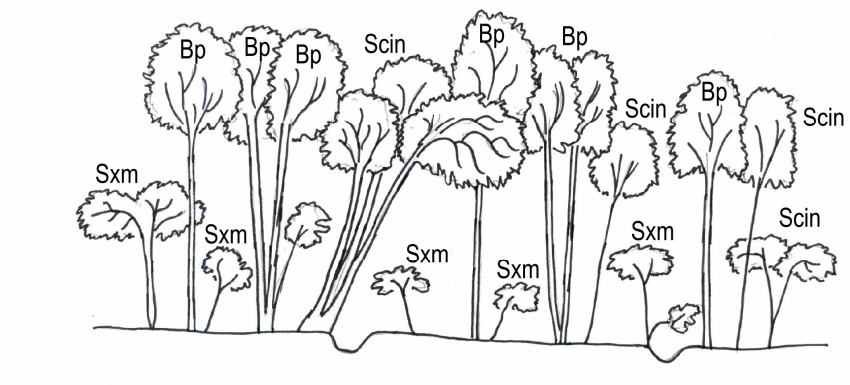


Distribution

This stand type has a rather scattered distribution, but is most frequent across the peatlands of the north midlands and is largely absent from the far north and south of the country.



Stand of *Betula pubescens* and *Salix cinerea* dominated woodland on floating peat with a field layer rich in *Equisetum fluviatile* and *Filipendula ulmaria*, Cappanahanaagh, Limerick.



Stratigraphy of stand at Derrycassan, Cavan. Canopy height is 10-12m.

d. *Molinia caerulea – Potentilla erecta* vegetation type

Description

These are open stands of birch woodland typically occurring on areas of basin peat with fairly high water tables. Included here are rare birch stands from the high bog of intact raised bog systems, stands from peaty hollows in the uplands and stands from partially degraded bogs. The light canopy is dominated by *Betula pubescens* with *Salix cinerea* also frequent. *Alnus glutinosa* is occasional at best whilst *Salix* x *multinervis* is occasional in the shrub layer. The other most important features are the striking dominance of the field layer by *Molinia caerulea* and the abundance of *Sphagnum* spp. in the ground layer. Chief among these is *Sphagnum palustre* with other species including *S. recurvum* agg., *S. capillifolium, S. subnitens* and *S. cuspidatum*. Amongst the *Molinia* tussocks *Potentilla erecta* and *Juncus effusus* are frequent. *Rubus fruticosus* is a constant species but it seldom achieves much abundance and *Dryopteris dilatata*, whilst frequent, provides little in the way of cover. Other indicative species includes *Myrica gale*, *Valeriana officinalis*, *Aulacomnium palustre*, *Erica tetralix* and *Pleurozium schreberi*.

Example sites

Baltynanima, Wicklow, Site 746; Uragh Wood Nature Reserve, Kerry, Site 1273; Gortnacarnaun, Galway, Site 1597; Skeagh, Co. Cavan, Site 621; All Saints Bog, Offaly, Site 605.

Affinities

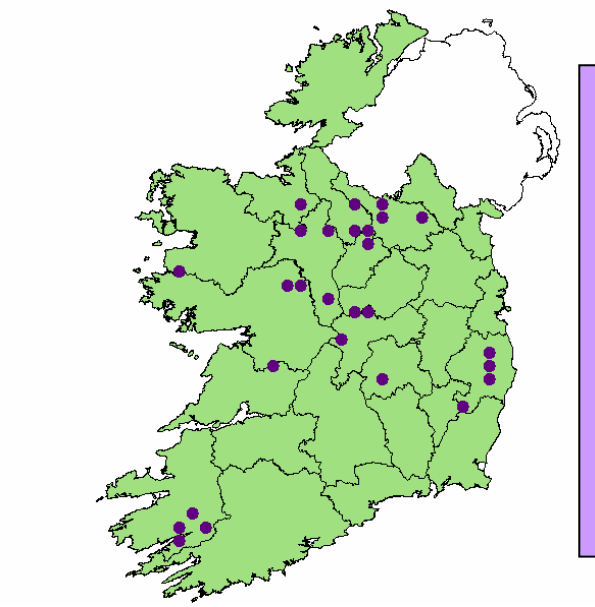
Fossitt: WN7 79%; WN6 18%; WN5 3%

Annex I: 91D0 * Bog woodland (44%)

CEP: *Sphagnum palustre – Betula pubescens* coenon (medium); Salicetum auritae (low)

NVC: W4 *Betula pubescens – Molinia caerulea* woodland (48%)

Corine: C44.A1 Pubescent birch wood

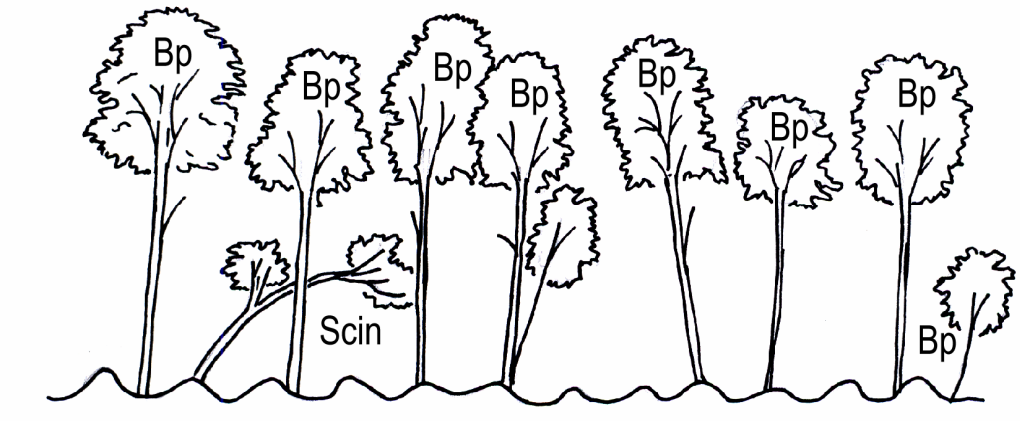


Distribution

This vegetation type, like the others in the *Betula – Molinia* group is found across the peatlands of the north midlands. Clusters of sites also occur in the Wicklow uplands and the south of Kerry.



Stand dominated by *Betula pubescens* and *Molinia caerulea* at Gortnacarnaun, Co. Galway.



Stratigraphy of stand from Baltynanima, Wicklow. Note tussocky ground. Canopy height is 11-14m.

e. *Hedera helix – Fraxinus excelsior* vegetation type

Description

These are birch-dominated stands which differ from the other vegetation types in this group in that they frequently occur on relatively well-drained mineral soils in additions to basin peats. They contain several elements of calcareous ash-hazel woodland (*q.v. Fraxinus excelsior – Hedera helix* group) and some stands may be seral stages developing towards this. Some of these stands are associated with degraded basin peats but several occur in disturbed or successional woodland in other contexts. The canopy is dominated by *Betula pubescens* but *Fraxinus excelsior* is very frequent. *Salix cinerea* regularly occurs but provides little cover. *Quercus robur* and *Q. petraea* are occasional and *Fagus sylvatica* and *Acer pseudoplatanus*, whilst not frequent, are more common than elsewhere in this group. In the understorey, *Crataegus monogyna*, *Corylus avellana*, *Ilex aquifolium* and *Sorbus aucuparia* are all frequent. The field layer comprises species found in more shaded conditions and more typical of mineral soils than those found in the other types of birch stands. *Hedera helix* in particular may be very abundant, carpeting large areas of the woodland floor. *Viola riviniana / reichenbachiana, Geranium robertianum, Geum urbanum* and *Circaea lutetiana* are all indicative of this type of birch stand, and several fern species *(Dryopteris filix-mas, D. affinis, Polystichum setiferum)* are at their most frequent here. *Hyacinthoides non-scripta* may form large patches. *Rubus fruticosus* and *Dryopteris dilatata* are again fairly abundant. Chief species amongst the bryophytes are *Kindbergia praelonga, Thuidium tamariscinum, Eurhynchium striatum, Isothecium myosuroides* and *Thamobryum alopecurum*.

Example sites

Collon North, Louth, Site 1150; Killinure, Westmeath, Site 1235; Ardglass, Cork, Site 1327; Kilbrattan, Sligo, Site 1405; Bahana, Carlow, Site 9.

Affinities

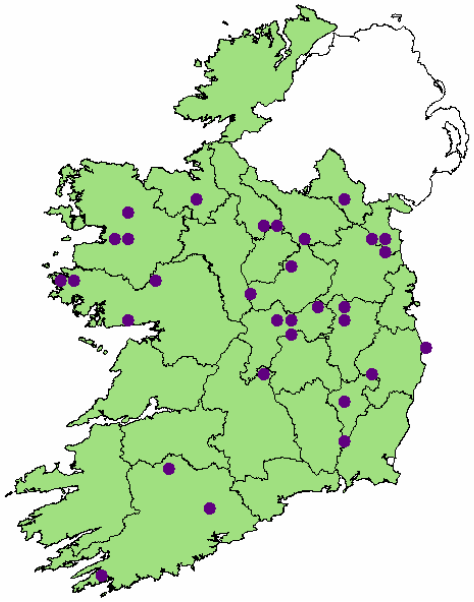
Fossitt: WN7 33%; WN2 24%; WN1 18%; WN4 9%; WD1 9%; WN5 3%; WN6 3%

Annex I: No significant correspondence

CEP: Corylo-Fraxinetum (medium)

NVC: W9a *Fraxinus excelsior – Sorbus aucuparia – Mercurialis perennis* woodland
typical subcommunity (40%)

Corine: C41.31 Ash-rowan-mercury woods

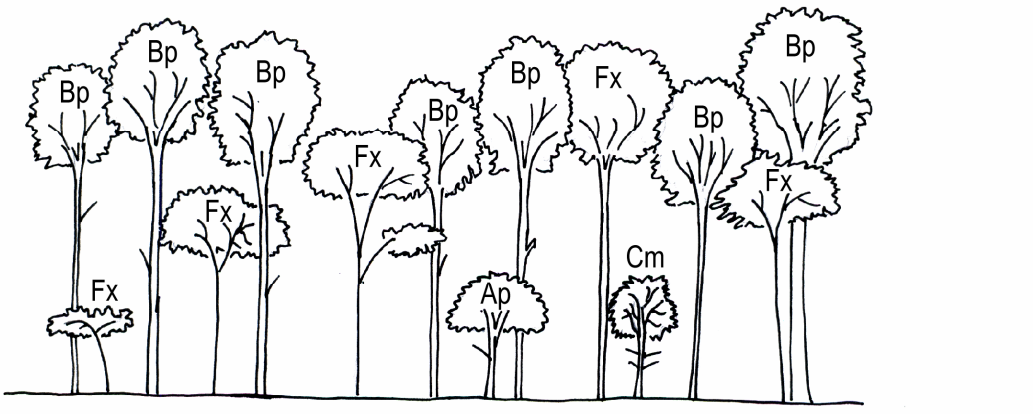


Distribution

This stand type occurs scattered across much of Ireland, but is unrecorded in Donegal and largely absent from the southwest of the country.



Stand dominated by *Betula pubescens, Corylus avellana* and *Fraxinus excelsior*. Reduff, Monaghan.



Stratigraphy of stand from Collon North, Louth. Canopy height is 13-18m.

f. *Holcus lanatus – Agrostis capillaris* vegetation type

Description

This is a rather variable group containing birch-dominated stands lacking in the key field layer species of the other vegetation types in this group. Although predominantly associated with degraded basin peats, they are found on a range of soils types. Typically, however, these are birch stands of moist, acidic soils with a grassy element to the field layer due to heavy grazing. The canopy is strongly dominated by *Betula pubescens*, with *Salix cinerea* frequent and *Sorbus aucuparia* occasional. *Ilex aquifolium* is frequent in the understorey where *Corylus avellana* may also occur. In the field layer *Hedera helix* provides scarce cover compared with other birch stands on mineral soils (*q.v. Hedera helix – Fraxinus excelsior* vegetation type). *Rubus fruticosus* and *Dryopteris dilatata* are very frequent but do not typically dominate. The grassy aspect to the field layer consists of some combination of *Holcus lanatus, Molinia caerulea, Agrostis capillaris, A. stolonifera, A. canina / A. vinealis* and *Anthoxanthum odoratum. Juncus effusus* and *Lonicera periclymenum* are frequent components, whilst *Pteridium aquilinum, Vaccinium myrtillus, Ranunculus repens* and *Potentilla erecta* are occasional. The chief bryophyte species are *Thuidium tamariscinum, Kindbergia praelonga, Polytichastrum formosum, Lophocolea bidentata, Dicranum scoparium, Isothecium myosuroides, Pseudoscleropodium purum* and *Polytrichum commune.*

Example sites

Ballymacmorris, Westmeath, Site 1104; Mountrussell, Limerick, Site 1297; Drumfad, Sligo, Site 1413; Glenineeny, Donegal, Site 1433; Derryvunlarn, Galway, Site 1619.

Affinities

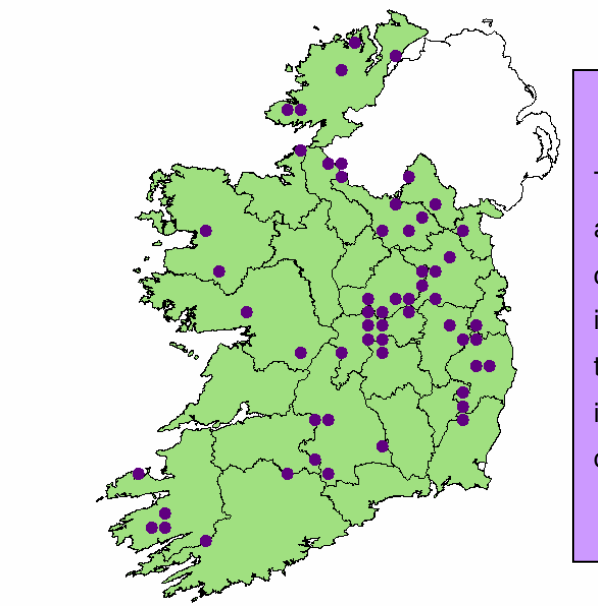
Fossitt: WN7 57%; WN1 27%; WN6 9%; WN2 2%; WN5 2%; WD1 2%; WD2 2%

Annex I:91D0 * Bog woodland (14%)

CEP: Not adequately described by Braun-Blanquet system in Ireland

NVC: W4a *Betula pubsecens – Molinia caerulea* woodland
Dryopteris dilatata- Rubus fruticosus sub-community (38%)

Corine: C44.A1 Pubescent birch wood

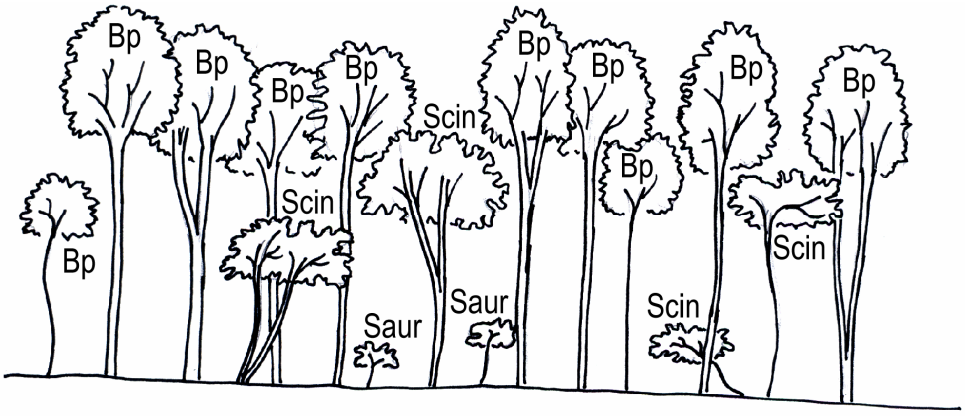


Distribution

This stand type occurs scattered across the country with the main concentration of sites occurring in the midlands, from Offaly up to Monaghan. It occurs rather infrequently in the west of the country.



Heavily grazed stand dominated by *Betula pubescens* with grassy field chiefly composed of *Holcus lanatus* and *Agrostis stolonifera*, Drumfad, Sligo.



Stratigraphy of stand from Ballymacmorris, Westmeath. Canopy height is 14-16m.

4. *Betula pubescens – Molinia caerulea* woodland group

Constants	a			b			c			d			e			f			Group
Rubus fruticosus	V	36.1	●●●	V	5.5		V	11.6		V	6.5		V	8.8		V	7.0		V	19.0
Dryopteris dilatata	V	7.8	●●	V	4.9		IV	3.0		III	1.5		V	5.2		IV	2.2		IV	5.1
Kindbergia praelonga	V	8.0	●●	IV	2.7		V	6.3		IV	2.2		V	5.4		IV	2.5		IV	5.5
Thuidium tamariscinum	V	14.0		V	21.5	●●	IV	6.6		V	4.4		IV	6.5		V	5.4		IV	11.3
Hypnum cupressiforme	IV	1.2		III	0.8		IV	1.3		IV	1.5	●	III	0.7		IV	0.9		IV	1.1
Hedera helix	V	6.8		IV	3.5		IV	6.5		II	1.5		V	24.2	●●●	III	1.4		IV	6.4
Betula pubsecens	V	51.6		V	52.3		V	36.6		V	45.9		V	36.0		V	56.1	●●	V	49.1
a) *Rubus - Dryopteris* vegetation type indicators																				
Pteridium aquilinum	III	2.8	●	II	0.7		I	1.1		I	0.1		II	1.0		II	1.6		II	1.7
Rubus idaeus	II	0.6	●	I	0.1		I	0.2					I	0.2		I	0.2		I	0.3
b) *Vaccinium - Luzula* vegetation type indicators																				
Vaccinium myrtillus	I	0.6		IV	10.9	●●●	I	0.5		I	1.3		I	0.5		II	1.3		II	2.3
Luzula sylvatica	I	0.3		III	10.8	●●	I	0.7		I	0.3		I	2.4		I	0.4		I	2.1
Quercus petraea	I	1.5		III	7.8	●●	I	0.2		I	0.5		II	1.7		I	1.5		I	2.2
Sorbus aucuparia	II	3.7		IV	8.4	●●	II	0.9		I	0.8		III	4.4		II	1.6		II	3.5
Dryopteris aemula	I	<0.05		II	0.8	●●				I	<0.05					I	0.1		I	0.1
Rhytidiadelphus loreus	I	0.1		II	2.2	●●	I	0.2		I	0.2		I	0.3		II	0.8		I	0.6
Dicranum scoparium	I	0.1		III	0.6	●●	I	0.1		II	0.4		I	0.1		III	0.3		II	0.2
Isothecium myosuroides	II	0.4		IV	1.6	●●	II	0.9		II	0.2		IV	1.1		III	0.8		III	0.7
Plagiothecium undulatum	I	<0.05		II	0.3	●	I	<0.05		I	0.1		I	<0.05		I	0.1		I	0.1
Ilex aquifolium	III	5.4		IV	5.8	●	III	2.0		II	0.8		III	7.2		III	2.4		III	4.3
Blechnum spicant	II	0.5		III	1.6	●	II	0.5		II	0.7		II	0.9		II	0.8		II	0.7
Dicranum majus	I	<0.05		II	0.3	●				I	<0.05					I	0.1		I	0.1
Scapania gracilis	I	<0.05		I	0.5	●				I	<0.05					I	<0.05		I	0.1
Lophocolea bidentata	IV	0.5		IV	0.7	●	III	0.6		III	1.9		II	0.1		III	0.3		III	0.5
Rhytidiadelphus triquetrus	I	0.7		III	3.7	●	I	1.5		I	<0.05		II	5.4		II	0.9		II	1.6
Polypodium vulgare	I	0.1		II	0.4	●	I	0.1		II	0.3		I	0.1		I	0.1		I	0.2

	a		b		c		d		e		f		Group	
Polytrichastrum formosum	II	1.4	III	1.0	●	II	0.2	I	0.3	I	0.2	III	1.0	II	1.0
Saccogyna viticulosa	I	<0.05	I	0.1	●	I	<0.05					I	<0.05	I	<0.05
Oxalis acetosella	I	0.8	III	2.1	●	II	0.5	I	0.1	II	1.5	II	2.7	II	1.3
Hylocomium splendens	I	0.1	II	0.9	●	I	0.3	II	0.6			I	0.4	I	0.3
Mnium hornum	I	0.1	II	0.4	●	II	0.2	I	0.1	II	0.1	II	0.3	II	0.2
Lepidozia reptans	I	<0.05	I	0.1	●	I	<0.05					I	<0.05	I	<0.05
Scapania nemorea	I	<0.05	I	0.3	●	I	<0.05	I	0.1			I	<0.05	I	0.1
Campylopus flexuosus	I	<0.05	I	0.1	●	I	<0.05					I	<0.05	I	<0.05

c) *Salix - Galium* vegetation type indicators

Salix cinerea	IV	6.7	II	2.6	V	25.5	●●●	IV	13.8	III	3.5	III	3.2	III	7.7
Calliergonella cuspidata	I	0.6	I	0.3	IV	5.3	●●	III	3.3	I	0.4	I	0.1	II	1.2
Galium palustre	I	0.2	I	<0.05	IV	1.3	●●	II	0.8	I	0.2	II	0.3	II	0.3
Mentha aquatica	I	<0.05			II	0.7	●●	I	0.1	I	<0.05	I	0.1	I	0.1
Filipendula ulmaria	I	0.1	I	0.3	III	4.9	●●	II	2.3	I	1.2	I	0.6	I	1.0
Equisetum fluviatile	I	<0.05	I	<0.05	II	1.2	●●	I	0.1			I	<0.05	I	0.1
Brachythecium rutabulum	II	0.3	I	0.1	III	0.7	●	I	0.1	II	0.2	II	0.1	II	0.2
Calliergon cordifolium	I	<0.05	I	<0.05	II	1.5	●	I	0.1			I	<0.05	I	0.2
Potentilla palustris	I	<0.05	I	0.2	II	0.6	●	I	0.1	I	<0.05	I	<0.05	I	0.1
Ulota bruchii / U. crispa	III	0.3	III	0.3	IV	0.3	●	IV	0.3	II	0.1	III	0.2	III	0.3
Plagiomnium undulatum	I	0.1	I	<0.05	II	0.5	●	I	0.1	II	<0.05	I	0.2	I	0.1
Glyceria fluitans	I	0.2			II	3.5	●	I	0.1	I	<0.05	I	0.9	I	0.6
Radula complanata	II	0.1	I	<0.05	II	0.1	●	I	0.1	II	<0.05	I	<0.05	II	0.1
Dactylorhiza fuschii					I	0.1	●							I	<0.05
Pseudoscleropodium purum	III	1.9	IV	1.3	III	2.5	●	III	1.9	II	0.1	III	1.6	III	1.6
Viola palustre	I	<0.05	I	<0.05	I	0.6	●	I	0.2	I	<0.05	I	0.1	I	0.1
Agrostis canina / A. vinealis	I	0.2	II	1.0	II	2.1	●	II	1.2	I	<0.05	II	2.4	II	1.0
Ranunculus flammula	I	<0.05			II	0.5	●	I	0.3	I	<0.05	I	0.1	I	0.1
Succisa pratensis	I	<0.05	I	0.1	II	0.6	●	II	0.4			I	0.1	I	0.1
Carex rostrata	I	<0.05	I	0.1	I	1.2	●	I	0.4			I	0.3	I	0.2
Deschampsia cespitosa	I	0.7	I	0.3	II	2.1	●	II	1.0	I	1.0	I	0.6	I	0.8
Urtica dioica	I	<0.05	I	<0.05	I	0.4	●	I	0.1	I	0.2			I	0.1

	a		b		c		d		e		f		Group	
d) *Molinia - Potentilla* vegetation type indicators														
Molinia caerulea	II	2.0	II	2.6	III	4.3	V	54.4	●●●●●	I	0.5	III	2.9	III	7.0
Potentilla erecta	I	0.1	II	0.4	II	0.4	IV	1.1	●●	I	0.1	II	0.5	II	0.3
Sphagnum palustre	I	0.6	I	0.9	I	2.3	III	9.6	●●	I	0.2	I	2.1	I	1.8
Juncus effusus	I	0.4	I	0.1	III	2.0	IV	2.2	●●	I	0.1	III	1.3	II	0.8
Myrica gale			I	0.1	I	0.1	II	3.8	●●			I	0.1	I	0.4
Aulacomnium palustre	I	<0.05			I	<0.05	I	1.7	●			I	<0.05	I	0.2
Erica tetralix	I	<0.05	I	<0.05			I	0.3	●			I	<0.05	I	<0.05
Eriophorum vaginatum							I	0.9	●			I	0.2	I	0.1
Valeriana officinalis	I	<0.05			I	0.5	II	0.8	●	I	<0.05	I	0.1	I	0.2
Pleurozium schreberi	I	<0.05	I	<0.05			I	1.4	●			I	<0.05	I	0.1
Sphagnum cuspidatum	I	0.1	I	<0.05	I	<0.05	I	0.7	●			I	<0.05	I	0.1
Sphagnum recurvum agg.			I	<0.05	I	0.5	II	2.4	●			I	1.1	I	0.5
Hypnum jutlandicum	II	0.9	III	1.2	III	0.9	III	1.7	●	II	0.1	III	0.7	III	0.9
Sphagnum capillifolium	I	<0.05	I	0.1	I	0.4	II	1.6	●			I	0.6	I	0.3
Rhytidiadelphus squarrosus	I	0.2	I	0.1	II	0.8	II	1.2	●			II	1.0	I	0.4
Calluna vulgaris	I	0.1	I	0.5			II	1.3	●			I	0.5	I	0.3
Alnus glutinosa	I	2.1	I	0.2	I	1.8	II	5.2	●	II	2.5	I	1.3	I	1.9
Hypnum andoi	II	0.5	III	0.5	II	0.4	III	0.6	●	II	0.3	II	0.4	II	0.5
e) *Hedera - Fraxinus* vegetation type indicators														
Fraxinus excelsior	II	2.1	I	0.2	III	3.7	II	0.6		IV	9.7	●●	II	0.9	II	2.3
Eurhynchium striatum	III	4.0	II	0.6	II	1.2	II	0.3		IV	5.4	●●	III	1.0	III	2.5
Acer pseudoplatanus	I	0.7	I	0.3	II	0.1				II	3.4	●●	I	<0.05	I	0.7
Thamnobryum alopecurum	I	0.3	I	<0.05	I	0.1				II	3.1	●●	I	0.2	I	0.4
Corylus avellana	I	0.7	II	1.4	I	0.8	I	0.1		III	6.1	●●	II	3.8	I	1.8
Crataegus monogyna	II	2.2	I	0.1	III	3.7	I	0.2		IV	3.6	●●	II	0.3	II	1.7
Lonicera periclymenum	III	2.9	III	1.4	III	1.4	I	0.2		IV	2.8	●●	III	1.2	III	2.0
Fagus sylvatica	I	0.4	I	0.3	I	1.0	I	0.1		II	3.5	●●	I	0.4	I	0.7
Hyacinthoides non-scripta	I	<0.05	I	0.1						II	9.0	●●	I	0.1	I	0.9

	a		b		c		d		e		f		Group
Viola riviniana / V. reichenbachiana	I 0.2		I 0.3		II 0.3		I 0.1		III 1.0	●	II 0.4		II 0.3
Geranium robertianum	I 0.3		I 0.1		II 0.4		I 0.1		II 0.9	●	II 0.3		I 0.3
Quercus robur	I 1.4		I 1.0		I 0.8		I 0.2		II 3.3	●	I 0.6		I 1.2
Geum urbanum	I 0.1		I <0.05		II 0.2		I <0.05		II 0.5	●	I 0.1		I 0.1
Dryopteris filix-mas	I 0.1		I <0.05		I <0.05				I 0.4	●	I <0.05		I 0.1
Dryopteris affinis	I 0.3		I 0.4		I 0.3		I 0.1		II 0.8	●	I 0.2		I 0.3
Circaea lutetiana	I 0.3				I 0.1				II 0.7	●	I 0.8		I 0.3
Polystichum setiferum	I 0.1								I 0.5	●	I <0.05		I 0.1
f) *Holcus - Agrositis* vegetation type indicators													
Holcus lanatus	I 0.3		I 0.4		III 2.5		II 0.9		I 0.7		III 5.1	●●	II 1.5
Agrostis capillaris	I 0.4		II 1.6		I 0.5		I 0.2		I 0.3		II 5.4	●●	I 1.4
Polytrichum commune	I 0.4		I 0.4		II 1.0		III 3.3				II 3.4	●	II 1.1
Agrostis stolonifera	I 0.8		I 0.5		III 3.0		II 1.7		II 0.6		II 4.7	●	II 1.8
Ranunculus repens	I 0.1				II 0.5		I <0.05		I 0.2		II 0.8	●	I 0.3
Anthoxanthum odoratum	I 0.3		II 1.7		II 0.5		II 0.5		I 0.1		II 1.9	●	I 0.8
Plagiochila asplenioides	I <0.05		I <0.05						I <0.05		I 0.1	●	I <0.05
Other woody species													
Salix x *multinervis*	I 0.9		I 0.4		I 1.4		II 2.7		I 2.3		I 2.8		I 1.5
Pinus sylvestris	I 0.7		I 0.8		I 0.4		I 1.7		I 0.9		I 0.3		I 0.7
Ulex europaeus	I 0.6		I 0.2		I 0.3		I 0.2		I 0.2		I <0.05		I 0.3
Picea sitchensis	I 0.4		I 0.5		I 0.8		I 0.1				I 0.6		I 0.4
Rhododendron ponticum	I 2.2		I 0.8				I 0.1		I 0.1		I 0.1		I 1.0
Salix aurita	I 0.2				I 0.2		I 3.8		I <0.05		I 0.3		I 0.5
Viburnum opulus	I <0.05		I <0.05		I 0.4		I 0.1		I 0.9				I 0.1
Prunus spinosa	I 0.1		I <0.05		I 1.1		I <0.05		I 0.3		I 0.1		I 0.2
Rosa canina	I 0.1		I <0.05		I <0.05				I 0.1		I <0.05		I 0.1
Rosa arvensis	I <0.05				I <0.05						I <0.05		I <0.05
Sambucus nigra	I 0.1		I <0.05		I 0.7				I 0.3				I 0.2

	a	b	c	d	e	f	Group
Solanum dulcamara	I <0.05		I 0.2			I 0.1	I 0.1
Frangula alnus			I 0.4			I 0.1	I <0.05
Betula pendula	I 0.1		I 0.1		I 1.7		I 0.2
Rhamnus cathartica			I 1.5	I 0.8			I 0.2
Erica cinerea		I <0.05					I <0.05
Euonymus europaeus					I 0.1		I <0.05

Other herbs & ferns

Athyrium filix-femina	I 0.1	I 0.1	II 0.4	I 0.4	II 0.6	II 0.4	I 0.3
Dryopteris carthusiana	I 0.3		II 0.3	I 0.2		I 0.2	I 0.2
Angelica sylvestris	I 0.1	I <0.05	II 0.4	I 0.5	I 0.1	I 0.1	I 0.1
Carex echinata	I 0.1	I 0.3	I 0.3	I 0.5		I 0.3	I 0.2
Luzula multiflora	I <0.05	I <0.05	I <0.05	I <0.05	I <0.05	I 0.1	I <0.05
Cardamine flexuosa	I <0.05	I <0.05	I 0.2	I <0.05	I 0.1	I 0.1	I 0.1
Carex flacca	I 0.1	I 0.2	I <0.05	I <0.05	I 0.2	I 0.9	I 0.2
Lysimachia nemorum	I 0.1	I 0.1	I 0.2	I 0.1	I <0.05	I 0.2	I 0.1
Chrysosplenium oppositifolium	I 0.1	I 0.1	I 0.2	I 0.1	I 0.6	I 0.3	I 0.2
Carex remota	I 0.2	I <0.05	II 1.0	II 1.9	I 0.1	I 0.7	I 0.5
Iris pseudacorus			I 0.1	I 0.3	I <0.05		I <0.05
Veronica chamaedrys	I <0.05	I <0.05	I 0.1		I 0.1	I 0.1	I <0.05
Carex sylvatica	I <0.05	I 0.1	I 0.1	I <0.05	I 0.1	I 0.1	I 0.1
Cirsium palustre	I <0.05	I <0.05	I 0.1	I <0.05		I 0.1	I <0.05
Carex nigra	I <0.05	I 0.1	I 0.4	I 0.1	I 0.1	I 0.4	I 0.2
Juncus bulbosus	I <0.05	I 0.1	I 0.4	I 0.2		I 0.5	I 0.2
Galium saxatile	I <0.05	I 0.2	I <0.05			I 0.2	I 0.1
Poa trivialis	I <0.05		I 0.1		I 0.3	I 1.2	I 0.3
Lythrum salicaria	I <0.05	I <0.05	I 0.2	I 0.2	I <0.05	I <0.05	I 0.1
Rumex acetosa	I <0.05	I <0.05	I 0.1	I <0.05	I 0.1	I 0.1	I 0.1
Cardamine pratensis	I <0.05		II 0.2	I 0.1	I 0.1	I <0.05	I 0.1
Osmunda regalis	I 0.1		I 0.9	I 0.3	I 0.8	I <0.05	I 0.2
Dactylis glomerata		I 0.2	I <0.05	I <0.05	I <0.05	I 0.4	I 0.1
Hypericum pulchrum	I 0.5	I <0.05	I <0.05	I <0.05	I <0.05	I 0.1	I 0.2

	a	b	c	d	e	f	Group
Deschampisa flexuosa		1.0	0.1	0.1	<0.05	0.1	0.2
Epilobium montanum	<0.05		<0.05		<0.05	0.1	<0.05
Taraxacum agg.	<0.05	<0.05	0.1	<0.05	0.1	<0.05	<0.05
Veronica montana	<0.05				0.1	0.1	<0.05
Brachypodium sylvaticum	0.1	<0.05	<0.05		0.1	0.6	0.2
Festuca rubra	<0.05		0.2	0.1	<0.05	0.1	0.1
Vicia sepium	0.1	<0.05	<0.05	<0.05	<0.05	0.1	<0.05
Carex paniculata	0.1	0.1	0.7	<0.05	0.1	0.1	0.2
Senecio aquaticus			0.3	0.1		0.1	<0.05
Sanicula europaea	<0.05	<0.05	<0.05	<0.05	0.4	<0.05	<0.05
Epilobium obscurum	<0.05		0.1	0.1	<0.05	<0.05	<0.05
Rumex sanguineus	<0.05		<0.05		<0.05	<0.05	<0.05
Prunella vulgaris	0.1		0.1	<0.05		0.1	<0.05
Ajuga reptans	<0.05	<0.05	<0.05		<0.05	0.2	0.1
Equisetum arvense	<0.05		0.1			0.1	<0.05
Phragmites australis	<0.05	0.1	0.5		<0.05	<0.05	0.1
Ranunculus ficaria	<0.05		<0.05	<0.05	0.1	<0.05	<0.05
Digitalis purpurea		<0.05	<0.05	<0.05	<0.05	0.2	<0.05
Lychnis flos-cuculi	<0.05		0.1	<0.05		<0.05	<0.05
Ranunculus acris		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Caltha palustris	<0.05		0.1	0.1		<0.05	<0.05
Phalaris arundinacea			0.8	0.5	<0.05		0.1
Juncus acutiflorus	<0.05	<0.05	0.1	<0.05	<0.05		<0.05
Festuca ovina		<0.05	<0.05			0.2	<0.05
Stellaria holostea	<0.05	0.2			<0.05	<0.05	<0.05
Primula vulgaris	<0.05	<0.05			0.1	<0.05	<0.05
Galium aparine	<0.05		0.1		<0.05	<0.05	<0.05
Menyanthes trifoliata	<0.05	0.1	0.2	0.1		<0.05	<0.05
Stellaria uliginosa			<0.05			0.1	<0.05
Lapsana communis	<0.05			<0.05	0.1	<0.05	<0.05
Luzula pilosa	<0.05	0.1				<0.05	<0.05
Potentilla reptans	<0.05		<0.05	<0.05			<0.05
Phyllitis scolopendrium			<0.05		0.1	<0.05	<0.05
Carex binervis		<0.05			<0.05	<0.05	<0.05

	a		b		c		d		e		f		Group	
Hypochaeris radicata					I	<0.05	I	<0.05			I	<0.05	I	<0.05
Equisetum sylvaticum	I	<0.05					I	0.1			I	0.2	I	<0.05
Solidago virgaurea			I	<0.05	I	<0.05					I	<0.05	I	<0.05
Anemone nemorosa							I	<0.05	I	<0.05	I	0.1	I	<0.05
Epilobium palustre					I	0.2			I	0.1	I	<0.05	I	<0.05
Hymenophyllum wilsonii			I	0.1							I	<0.05	I	<0.05
Juncus articulatus					I	<0.05	I	<0.05	I	<0.05			I	<0.05
Potentilla sterilis			I	<0.05					I	<0.05			I	<0.05
Carex pilulifera			I	<0.05					I	<0.05			I	<0.05
Vicia cracca	I	<0.05			I	<0.05	I	0.3					I	<0.05
Callitriche stagnalis	I	0.1					I	<0.05					I	<0.05
Veronica scutellata					I	<0.05							I	<0.05

Other bryophytes

Frullania dilatata	III	0.2	II	0.1	III	0.1	II	0.1	III	0.1	II	0.1	III	0.1
Neckera complanata	I	0.1	I	0.1	II	0.2	I	0.1	II	0.1	I	0.1	I	0.1
Frullania tamarisci	I	0.1	II	0.2	I	0.1	II	0.3	I	0.1	II	0.2	I	0.1
Metzgeria furcata	I	0.1	I	0.1	II	0.1	I	<0.05	II	0.1	I	0.1	I	0.1
Hypnum resupinatum	II	0.2	I	0.1	I	0.1	I	0.1	II	0.1	I	<0.05	I	0.1
Microlejeunea ulicina	I	<0.05	II	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05
Ulota phyllantha	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05
Isothecium alopecuroides	I	0.2	I	0.1	I	0.1	I	0.1	II	0.3	I	0.1	I	0.1
Pellia epiphylla	I	<0.05	I	<0.05	I	0.1	I	0.4	I	<0.05	II	0.3	I	0.1
Loeskeobryum brevirostre	I	0.3	II	0.8	I	0.2	I	0.1	I	<0.05	I	0.5	I	0.3
Rhizomnium punctatum	I	0.2	I	<0.05	I	0.8	II	0.2	I	<0.05	I	0.1	I	0.2
Calypogeia muelleriana	I	<0.05	I	<0.05			I	<0.05	I	0.1	I	<0.05	I	<0.05
Hookeria lucens	I	<0.05	I	0.1	I	<0.05	I	0.1	I	0.1	I	0.1	I	0.1
Sphagnum subnitens	I	0.2	I	0.1	I	0.8	I	1.6	I	0.1	I	0.6	I	0.4
Campylopus introflexus	I	<0.05	I	0.1	I	<0.05	I	<0.05	I	<0.05	I	0.1	I	<0.05
Atrichum undulatum	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	<0.05	I	0.1	I	<0.05
Sphagnum squarrosum	I	0.2	I	0.1	I	1.2	I	0.5			I	0.3	I	0.3
Calypogeia fissa	I	<0.05	I	<0.05	I	<0.05			I	<0.05	I	<0.05	I	<0.05

	a	b	c	d	e	f	Group
Metzgeria fruticulosa	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Diplophyllum albicans	<0.05	0.1	<0.05	<0.05		<0.05	<0.05
Homalothecium sericeum	<0.05	<0.05	0.1	0.1	<0.05	<0.05	<0.05
Pseudotaxiphyllum elegans	<0.05	0.2	<0.05		<0.05	0.1	0.1
Dicranoweisia cirrata	<0.05				<0.05	<0.05	<0.05
Neckera pumila	<0.05		<0.05	<0.05	<0.05		<0.05
Dicranella heteromalla	<0.05	0.1	<0.05		<0.05	<0.05	<0.05
Sphagnum fimbriatum	<0.05		0.4	0.8		0.7	0.3
Climacium dendroides	<0.05	0.1	0.7	0.9		<0.05	0.2
Brachythecium rivulare	<0.05		<0.05		<0.05	<0.05	<0.05
Frullania teneriffae		<0.05			<0.05	<0.05	<0.05
Plagiochila spinulosa		0.4			<0.05	<0.05	0.1
Sphagnum denticulatum		0.1		<0.05		<0.05	<0.05
Oxyrrhynchium hians	0.1				<0.05	<0.05	0.1
Hyocomium armoricum	<0.05	<0.05	<0.05			<0.05	<0.05
Sphagnum inundatum		0.2		0.5		<0.05	0.1
Saniona uncinata			<0.05	<0.05			<0.05
Fontinalis antipyretica			0.2				<0.05
Number of relevés	148	54	38	33	33	65	371
Species richness							
Vascular	14	17	25	19	19	20	18
Bryophyte	10	14	13	11	10	12	11
Total	24	31	38	30	29	32	29
Soil pH	4.3	4.3	5.2	5.2	4.7	4.9	4.6
Soil total p (mg/g)	0.69	0.65	0.82	0.79	0.69	0.63	0.69
Soil % organic content	91	74	81	91	57	58	86

	a	b	c	d	e	f	Group
Soil type (%)							
Well-drained mineral soils	7.4	9.3	0.0	3.0	36.4	13.8	10.2
Podsolized soils	4.7	44.4	0.0	0.0	12.1	15.4	12.1
Gleyed soils	6.1	3.7	18.2	18.2	12.1	18.5	10.5
Basin peats	81.1	42.6	81.6	78.8	39.4	52.3	66.6
Other soils	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Altitude (m)	75	90	56	65	65	80	75
Slope (°)	0	4	0	0	0	0	0
Ellenberg Indicator Values							
Light	6.2	6.2	6.4	6.8	5.5	6.5	5.6
Moisture	6.4	6.3	7.0	7.4	6.0	6.6	6.5
Reaction	4.9	4.0	5.2	4.0	5.3	4.5	4.7
Nitrogen	4.8	4.0	4.7	3.5	5.0	4.3	4.5
Salinity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basal area density (m^2/ha)	32.1	31.5	30.0	28.0	38.6	30.6	31.7
Stand density (trees/ha)	1492	1541	1434	1537	1464	1586	1511
Canopy height (m)	13.5	12.5	11.7	10.9	14.4	12.1	12.8
Native basal area (%)	96.3	97.3	98.6	96.5	90.1	96.7	96.3