

**Priority Habitat Definition Statement
Wet Woodland – v1.2**

1. Introduction

1.1 HAP woodland criteria

Please note: As outlined by the UK Native Woodland HAPs Definitions Working Group report¹⁴, woodland must fit into one of the following categories to qualify as being in the current area of broadleaved woodland HAPs.

- Ancient semi-natural woods (semi-natural stands on ancient sites).
- Other semi-natural woods (semi-natural stands on more recent woodland sites).
- Planted woods on ancient woodland sites where the composition is mainly site native species (over 50% of the canopy).
- Other planted woods of mainly native species (over 50% of the canopy is site-native species), where the agreed aim is to manage towards a more semi-natural structure and composition.
- New Native Woodlands created to mimic the natural composition of the woodlands on the site.

To qualify as HAP woodland, a site must have:

- 20% or more canopy cover, or the potential to achieve this in the case of newly planted stands.
- A canopy composed of 50% or more site-native species of trees or shrubs (or will be at canopy closure in the case of younger stands). Site native trees are those which are native to the locality and capable of growing naturally on the site, ie. they can successfully colonise and complete their life cycle. Peterken and Soutar (1989) 'Native trees and shrubs for wildlife'¹¹ can be used as a guide, but it gives a broad indication only. Local knowledge is more important.

When determining if a site is part of the wet woodland HAP, the above criteria should be met before the description of wet woodland that follows is applied.

1.2 General description of wet woodland

Alder, birch and willows are usually the predominant tree species, but sometimes ash, oak, pine and beech occur on the drier riparian areas. Succession from open herbaceous wetlands results in a wide range of structures and compositions, determined by the composition of the original vegetation, the climate and the nutrient status. There is frequently a mixture of 'dry-land' species, for example around the base of large alders or willow. ^{1,7}

Willow woods are often scrubby in appearance, with irregular, dense canopies usually no more than 2-8 metres high. Less commonly, stands of tall trees may occur. The taxonomy of willows is notoriously difficult and there are districts where hybrids are common. Whilst willows are dominant, birch and alder are usually present, occasionally accompanied by oak, hawthorn, hazel and guelder rose *Viburnum opulus*. Ground conditions are almost invariably wet, and the associated flora includes many species more characteristic of fens and marshes, such as marsh marigold *Caltha palustris*, angelica *Angelica sylvestris*, marsh valerian *Valeriana dioica*, meadowsweet *Filipendula ulmaria*, water avens *Geum rivale*, yellow flag *Iris pseudacorus*, purple loosestrife *Lythrum salicaria*, water mint *Mentha aquatica*, marsh cinquefoil *Potentilla palustris* and marsh horsetail *Equisetum palustre*. Tall sedges or reed occur on swampy ground. However, the ground conditions in willow woods often include mineral soil and other drier knolls which support a varied flora with, for example, bramble *Rubus fruticosus*, dog rose *Rosa canina*, and marsh hawksbeard *Crepis paludosa*. Nettles may be common on the richer soils, but on the heavily shaded sites the ground cover may be reduced to mosses and liverworts. ⁵

Common alder (*Alnus glutinosa*) is both a pioneer species on wet soils and a species which regenerates in disturbed wet sites within established woods. On the wetter ground alder is often completely dominant, but on drier sites other species appear, notably downy birch, ash, pedunculate oak and hawthorn. Whilst shrubs and small trees are generally infrequent, northern examples on mineral soils often include bird cherry, rowan, elder and blackthorn. Alderwoods can take the form of poorly grown scrub, but frequently they are well grown, dense stands reaching to 10-15 metres. Ground conditions vary from treacherously wet to almost dry in W6 and W7. In alder dominated woods, marsh plants such as yellow flag *Iris pseudacorus*, marsh valerian *Valeriana dioica*, marsh violet *Viola palustris*, marsh pennywort *Hydrocotyle vulgaris*, marsh marigold *Caltha palustris*, several large sedges and many species of fern are characteristic of the wetter ground. On the most fertile soils nettle is likely to be dominant. On the less fertile, drier sites a greater variety of woodland herbs is found, including ground ivy *Glechoma hederacea*, marsh bedstraw *Galium palustre*, remote-flowered sedge *Carex remota*, enchanter's nightshade *Circaea lutetiana* and dog's mercury *Mercurialis perennis*, as the alder-ash-yellow pimpernel woodland (W7) grades into lowland mixed broadleaves or upland mixed ashwoods. Nitrophilous species are a feature particularly of W6 and W7(a) woodlands. ⁵

In birch dominated woodlands on wet peaty soils downy birch (*Betula pubescens*) usually dominates, but there can be many alder, grey willow and goat willow and occasionally silver birch included in the mixture. The canopy is generally quite open, with widely spaced and often multi-stemmed trees, which are rarely more than 6-8 metres tall. On acid, peaty soils purple moor grass *Molinia caerulea* is usually common, forming tussocks around which *Sphagnum* and other mosses form a low carpet. Other birchwoods on dryer ground do not fall into this HAP. ⁵

1.3 Summary of existing information

1.3.1 Information sources

The UK Native Woodland Habitat Action Plans – Report of the Definitions Working Group (unpublished) provided general guidance on defining the native woodland HAPs.

Three key documents were identified as the main sources of guidance for defining wet woodland, and in many cases they are quoted from directly in this statement:

- BAP Wet Woodland Habitat Action Plan
- JNCC Report No. 288 - The Relationship between Biodiversity Action Plan Priority and Broad Woodland Habitat Types, and other woodland classifications.
- Forestry Authority Forestry Practice Guide 8 - Wet Woodlands.

These and other documents used to develop this definition statement are listed in **Appendix 1**.

1.3.2 Existing inventories

National-scale woodland inventories do exist, principally the National Inventory of Woodland and Trees (Forestry Commission) and Ancient Woodland Inventory (English Nature), however these do not spatially represent the distribution of woodland priority habitat types.

1.4 Key issues with mapping and discriminating from other habitats

- Please refer to Section 1.1 as a guide to woodland that qualifies as belonging to one of the woodland HAPs. Based on this guidance, any planted woodland that is not on an ancient woodland site, where management is not known, should be included in the “maybe” rather than “definitely” or “definitely not” categories.
- The minimum mappable unit (MMU) for this habitat is 0.25ha, and the minimum width is 15m. Please refer to Section 11 for further details.
- Areas of open ground within woods (e.g. glades, rides) should only be included as part of the woodland resource if they do not qualify to be mapped as a polygon belonging to one of the other priority habitats and are not greater than 0.25 ha in area. (Note that they will however usually be included as part of the “woodland” for management scheme purposes).
- Scrub of 0.25ha or over and 20% or greater cover should be included as part of the appropriate woodland HAP.
- Except for lowland wood pasture and parkland, woodland priority habitats are mutually exclusive of each other and there should be no overlap between polygons belonging to different woodland priority habitats. Please refer to Section 9 for further details.
- Please refer to Section 4 for resolution of classification types that may be allocated to this habitat as well as to other woodland priority habitats.
- In distinguishing this habitat from other non-woodland habitats, any site of over 0.25ha with 20% or greater canopy cover will be a woodland rather than a non-woodland habitat. For further rules on dealing with relationships with non-woodland habitats, see Section 9.

2. Physiographical description

2.1 Structural/physical components

Normally found in valley bottoms, hollows or along stream lines, but can occur on plateaux with very impeded drainage and on flushed slopes.

2.2 Applicability of aerial photos and other remote sensing technologies

Dependant on factors such as the time of year the photographs were taken, their scale, and the experience of the interpreter, it is possible to distinguish broadleaved from coniferous species from aerial photographs, and sometimes certain individual species types. It is however unlikely that aerial photography alone would provide enough information to identify individual woodland priority habitat types.

Unknown as to the value of using airborne remote sensing instrumentation such as 'LIDAR' (Light Detection and Ranging), and 'CASI' (Compact Airborne Spectrographic Imagery). May have some use for distinguishing woodland types at a fairly crude scale.

3. Altitudinal limits

No specific upper and lower limits.

Palaeartic (date?)					
CORINE (1991)	44.A1 44.31 44.13 44.92		Sphagnum birch woods Ash – alder woods of rivulets and springs White willow gallery forests Mire willow scrubs	< < < <	
Habitats Directive Annex 1 (1997)	44.A1 to 44.A4 44.3	WB342 WB341	'Bog woodland' 'Residual alluvial forests'	< <	'Bog woodland' that is not part of a mosaic with native pine woodlands falls into this category. Most 'Residual alluvial forests' are likely to be considered here, although if there are no alders or willows present, and depending on the size of the stands, such woodland could be considered under the lowland mixed deciduous woodland habitat type.
Habitats Directive Annex 1 (date?)	91D0 91E0	WB342 WB341	'Bog woodland' Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	< <	'Bog woodland' that is not part of a mosaic with native pine woodlands falls into this category.

* relationship of classification type to priority habitat:
= equal, < narrower, > wider, # overlap, ? not determined

5. Species composition

Section 1.2 gives a description of the characteristic tree, shrub, and ground flora species for this habitat.

Please see **Appendix 2a** for a list of vascular plant species that may be associated with wet woodlands. Please note that this list is not intended to be an 'indicator list' for wet woodland: very few plants are found in wet woodlands only and never in other habitats.

Other species that may be associated with this habitat but cannot be used to define it are described in **Appendix 2b**.

A list of priority species associated with this habitat, from 'Biodiversity - Making the Links'³, is included as **Appendix 2c**.

6. Geographical restrictions

6.1 Geographical coverage and restrictions in the UK

Wet woodland typically occurs on floodplains, river valleys, along streams and hill-side flushes, in peaty hollows, as a successional habitat on fens, mires and bogs, and on the transition zones between open water and drier ground. It can also occur on flushed slopes well above valley bottoms and on plateaux where a high water table is maintained throughout the year.^{1, 5}

Notable concentrations of wet woodland on fens occur in East Anglia, Shropshire and Cheshire, while hill-side and plateau alder woods are more restricted to Wales, Cumbria and western Scotland. Fragments of ancient floodplain forest are rare, and the best examples are probably in the New Forest and northern Scotland. Bog woodlands of pine on bog are confined to Scotland, but fragments of birch bog woodland occur more widely in scattered stands across the UK.¹

6.2 Climate requirements

No apparent climate correlation.

7. Geology and soils

No geological links obvious enough to help target potential sites.

Wet woodland is generally associated with poorly drained or seasonally wet soils but occurs on a wide range of soil types, including nutrient-rich mineral and acid and nutrient-poor organic ones.¹

Willow dominated wet woodland is usually found on wet mineral soils at lake edges and in damp pastures. In alder woods ground conditions vary from treacherously wet in alder-tussock sedge woodland (W5) to almost dry. Downy birch is most likely to be dominant on acid, peaty soils. In nutrient-poor situations, such as peat-filled hollows, birch and pine may develop over bog-type vegetation.^{5,7}

8. Hydrology

The critical issue determining presence of wet woodland is water supply and movement, and whether water can accumulate.

9. Relationship with other habitats

	Wet woodland
Ancient and/or species rich hedgerows	Separate by width and area protocols. Hedgerows by definition must be under a width of 5m by definition. Strips of woodland below a width of 5m will be mapped as a linear feature and will therefore not contribute to the area of the woodland HAP.
Coastal and floodplain grazing marsh	Wet woodland occurring in coastal and floodplain grazing marsh should be mapped as wet woodland if meets the minimum mappable unit size. Smaller areas of wet woodland may be included within CFPGM polygons.
Coastal sand dunes	Allowable overlap. Area may be mapped as part of both inventories.
Fens	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Lowland beech and yew woodland	Separate by NVC and other vegetation criteria.
Lowland heathland	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Lowland mixed deciduous woodland	Separate by NVC and other vegetation criteria.
Lowland raised bog	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Lowland wood-pasture and parkland	Allowable overlap – sites can be recorded as part of both HAPs.
Maritime cliffs and slopes	Allowable overlap. Area may be mapped as part of both inventories.
Native pine woodlands	Native pine woodlands are restricted to Scotland so no guidance on this relationship is needed for the SW Pilot Project. Ian Strachan is producing the NBN mappable definition for this habitat and will provide guidance on relationships with other habitats.
Purple moor-grass and rush pasture	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Reedbeds	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Upland birchwoods	Separate by NVC and other vegetation criteria.
Upland heathland	Separate by broad habitat guidance, and specifically 20% or greater canopy cover.
Upland mixed ashwoods	Separate by NVC and other vegetation criteria.
Upland oakwood	Separate by NVC and other vegetation criteria.

10. Management

Many wet woodlands, particularly alder, are ancient and have a long history of coppice management which has determined their structure. In some situations it appears that this practice has maintained alder as the dominant species and impeded succession to drier woodland communities. Although wet woodlands are a characteristic feature of stream-sides in wood-pastures, many have in practice been treated as strips of coppice. In lowland England, wet woodlands have often been reduced to a line of old, pollarded willows on riverbanks. Coppiced woods have often been neglected or used as pasture. Where wet

woodlands are part of an ancient wood with a clearly defined boundary and identity, the wet woodland has usually been managed in much the same way as the rest of the wood. Thus, these wetter parts of larger woods have been coppiced or grazed along with the associated woodland types. ^{1,5}

Other wet woods may have developed through natural succession on open wetlands (sometimes following cessation of active management), and structurally are little influenced by direct forestry treatments. Alder, willows and birches are all species which respond rapidly to natural environmental change and to changes in land use. They are characteristic pioneers on mires, shifting river beds and moist soils in established woodlands. ^{1,5}

Many wet woods are even-aged. They either owe their origin to a single event, which permitted natural regeneration (e.g. a change of land use), or they were cut and allowed to regenerate without any attempt at systematic silviculture. ⁵

11. Size of mappable units

Minimum mappable unit (MMU): 0.25 ha

Minimum width: 15 m

The UK Native Woodland HAPs Definitions Working Group report ¹⁴ states that although all national inventory and reporting should distinguish between woods over and under 2ha, smaller units should be distinguished if possible. Experience from mapping work (SERC, EN Wetland Inventory Project) has show that is not significantly more time consuming to map small blocks of woodland. (Areas below 2ha may however be treated as part of the surrounding woodland type for management planning purposes).

12. Regional differences

In the South, W4a, b and c will almost always be Wet Woodland. In Scotland W4a and b are provisionally regarded as contributing to the Northern Birchwoods priority habitat. ¹

Appendix 1

Information Sources

- ¹ Anon. (1998). UK Biodiversity group: Tranche 2 Action Plans. Volume II – terrestrial and freshwater habitats
- ² Castle, G. and Mileto, R. (Eco Tech)(1999). UKBAP Native Woods Inventory and Reporting: A needs assessment and review of current resources and future opportunities (undertaken on behalf of the Forestry Commission). Unpublished
- ³ English Nature (1999) Biodiversity : making the links. English Nature
- ⁴ Forestry Commission Native Woodland Habitat Action Plans Information Note (draft). Unpublished.
- ⁵ Forestry Practice Guide 8 - Wet Woodlands. Forestry Authority, Edinburgh..
- ⁶ Gibson, C.W.D. (1998). Harmonisation of Habitat Classifications. JNCC Report, No. 279
- ⁷ Hall, J.E. and Kirby, K.J. (1998). The relationship between Biodiversity Action Plan Priority and Broad Woodland Habitat Types, and other woodland classifications. JNCC Report, No. 288
- ⁸ Jackson, D.L. (2000). Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications. JNCC Report, No. 307..
- ⁹ NCC (1990). Handbook for Phase 1 habitat survey: a technique for environmental audit field manual NCC, Peterborough.
- ¹⁰ Martin Drake. Definitions of Wetland Habitats for Inventory (English Nature internal, unpublished document).
- ¹¹ Peterken, P. and Soutar, R. (1989). Native Trees and Shrubs for Wildlife. In Forestry Commission (1990) Forest Nature Conservation Guidelines, HMSO.
- ¹² Rodwell, J.S.(ed) (1991). British Plant Communities. Vol. 1: Woodlands and scrub. Cambridge University Press, Cambridge
- ¹³ SERC (2001) The Integrated Habitat System..
- ¹⁴ UK Native Woodland Habitat Action Plans – Report of the Definitions Working Group (unpublished)
- ¹⁵ Wheeler, B.D, Shaw, S.C. and Latham, J (2001). Ecological relationships of wet woodlands, fens and associated wetland habitats in Wales. CCW Contract Science Report, No. 446.
- ¹⁶ Whitbread, A.M. and Kirby, K.J (1992). Summary of National Vegetation Classification woodland descriptions. UK Nature Conservation 4 JNCC

Appendix 2

Species

The presence of some or all of these species does not indicate that the habitat is definitely wet woodland. These species are included as additional information only.

2a Vascular plant species that may be associated with wet woodland

Compiled by Liz Biron, Somerset Environmental Record Centre, from a variety of sources. Based on constant, preferential and differential vascular plants from NVC communities W1 - W7, with most bryophytes excluded and some additions of scarce plants in Britain which can be associated with wet and shady places. NB. Not intended to be anything of an 'indicator list' for wet woodland. Designed to enable analysis of vascular plant data sets to help point the way to where wet woodland might occur.

Trees/Canopy	
<i>Salix cinerea</i>	Grey willow
<i>Betula pubescens</i>	Downy birch
<i>Alnus glutinosa</i>	Alder
<i>Salix pentandra</i>	Bay Willow
<i>Fraxinus excelsior</i>	Ash
Ground flora	
<i>Galium palustre</i>	Marsh Bedstraw
<i>Phragmites australis</i>	Common Reed
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Spaghnum spp.</i>	Bog Mosses
<i>Cardamine pratensis</i>	Lady's Smock
<i>Caltha palustris</i>	Marsh Marigold
<i>Angelica sylvestris</i>	Angelica
<i>Valeriana dioica</i>	Marsh Valerian
<i>Carex rostrata</i>	Bottle sedge
<i>Geum rivale</i>	Water Avens
<i>Valeriana officinalis</i>	Common Valerian
<i>Mentha aquatica</i>	Water Mint
<i>Molinia caerulea</i>	Purple Moor-grass
<i>Dryopteris dilatata</i>	Broad Buckler-fern
<i>Juncus effusus</i>	Soft Rush
<i>Deschampsia cespitosa</i>	Tufted Hairgrass
<i>Solanum dulcamara</i>	Bittersweet
<i>Lysimachia vulgaris</i>	Yellow Loosestrife
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden Saxifrage
<i>Chrysosplenium alternifolium</i>	Alternate-leaved Golden Saxifrage
<i>Lysimachia nemorum</i>	Yellow pimpernel
Rare species	
<i>Salix nigricans</i>	Dark-leaved Willow
<i>Carex appropinquata</i>	Fibrous Tussock-sedge
<i>Carex diandra</i>	Lesser Tussock-sedge
<i>Corallorhiza trifida</i>	Coralroot Orchid
<i>Lysimachia thyrsofolia</i>	Tufted Loosestrife
<i>Carex elongata</i>	Elongated sedge
<i>Cicuta virosa</i>	Cowbane
<i>Thelypteris palustris</i>	Marsh Fern

<i>Dryopteris cristata</i>	Crested Buckler Fern
<i>D.x uliginosa</i>	A Buckler Fern
<i>Peucedanum palustre</i>	Milk Parsley
<i>Pyrola rotundifolia</i>	Round-leaved wintergreen

2b Other characteristic species

Wet woodlands combine elements of many other ecosystems and as such are important for many taxa. Because wet woodlands may occur on a range of soil types, plant species composition is also very variable. Composition may also be complicated because many wet woodlands are secondary successional developments, and owe much of their composition to whatever was in the preceding open vegetation and whatever has had the chance to colonise. The high humidity of wet woodlands favours bryophyte growth. ¹

A high number of invertebrates are associated with alder, birch and willows, although some are confined to just a few sites, for example the beetles *Melanapion minimum* and *Rhynchaenus testaceus*. Craneflies are one of the most conspicuous insect groups in this habitat. Even quite small seepages may support craneflies such as *Lipsothrix errans* and the endemic *Lipsothrix nervosa*. Dead wood within the sites can be frequent, and its association with water provides specialised habitats not found in dry woodland types – the fly *Lipsothrix nigristigma* for example is associated with log jams in rivers. Other insects include the hoverfly *Chalcosyrphus eunotus*, and the beetles *Cyanostolus aeneus* (*Rhizophagidae*) and *Pomatinus substriatus* (*Dryopidae*). Wet woodland provides habitat for birds including willow tit (*Parus montanus*) and marsh tit (*Parus palustris*), and cover and breeding sites for otters *Lutra lutra*. ¹

2c BAP priority species associated with wet woodland

(From "Biodiversity - Making the Links" ³ - 28 June 2000 version)

Scientific name	Common name	Taxon	Priority list	Importance of habitat to the species *
<i>Triturus cristatus</i>	Great crested newt	Amphibian	SAP	x
<i>Cryptocephalus decemmaculatus</i>	a leaf beetle	Beetle	SS	P
<i>Melanapion minimum</i>	a weevil	Beetle	SAP	?P
<i>Rhynchaenus testaceus</i>	a jumping weevil	Beetle	SAP	?P
<i>Byctiscus populi</i>	a leaf-rolling weevil	Beetle	SAP	x
<i>Oberea oculata</i>	a longhorn beetle	Beetle	SAP	?
<i>Muscicapa striata</i>	Spotted flycatcher	Bird	SAP	S
<i>Turdus philomelos</i>	Song thrush	Bird	SAP	S
<i>Lophopus crystallinus</i>	a freshwater bryozoan	Bryozoa	SAP	x
<i>Hammerschmidtia ferruginea</i>	a hoverfly	Fly	SAP	P
<i>Lipsothrix ecucullata</i>	a crane fly	Fly	SAP	P
<i>Lipsothrix errans</i>	a crane fly	Fly	SS	P
<i>Lipsothrix nervosa</i>	a crane fly	Fly	SAP	P
<i>Lipsothrix nigristigma</i>	a crane fly	Fly	SAP	P
<i>Graphina pauciloculata</i>	a lichen	Lichen	SAP	x
<i>Pseudocyphellaria norvegica</i>	a lichen	Lichen	SAP	x
<i>Pallavicinia lyellii</i>	Veilwort	Liverwort	SAP	x
<i>Myotis myotis</i>	Greater mouse-eared bat	Mammal	SAP	S
<i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat	Mammal	SAP	S
<i>Rhinolophus hipposideros</i>	Lesser horseshoe bat	Mammal	SAP	S
<i>Barbastella barbastellus</i>	Barbastelle bat	Mammal	SAP	x
<i>Lutra lutra</i>	Otter	Mammal	SAP	x
<i>Myotis bechsteini</i>	Bechstein's bat	Mammal	SAP	x
<i>Pipistrellus pipistrellus</i>	Pipistrelle bat	Mammal	SAP	x
<i>Epione paralellaria</i>	Dark bordered beauty	Moth	SAP	P
<i>Eustroma reticulata</i>	Netted carpet	Moth	SAP	P
<i>Schrankia taenialis</i>	White-line snout	Moth	SS	P

* (P) primary, (S) secondary or (x) less