Chapter 9: Sub-Component Data

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9.0 Sub-Component Data

9.1 Treed Components

Double click on the Component (highlighted in the figure opposite), or single click on the + sign next to the Component, to add sub-component data.

Fill out the sub-components.
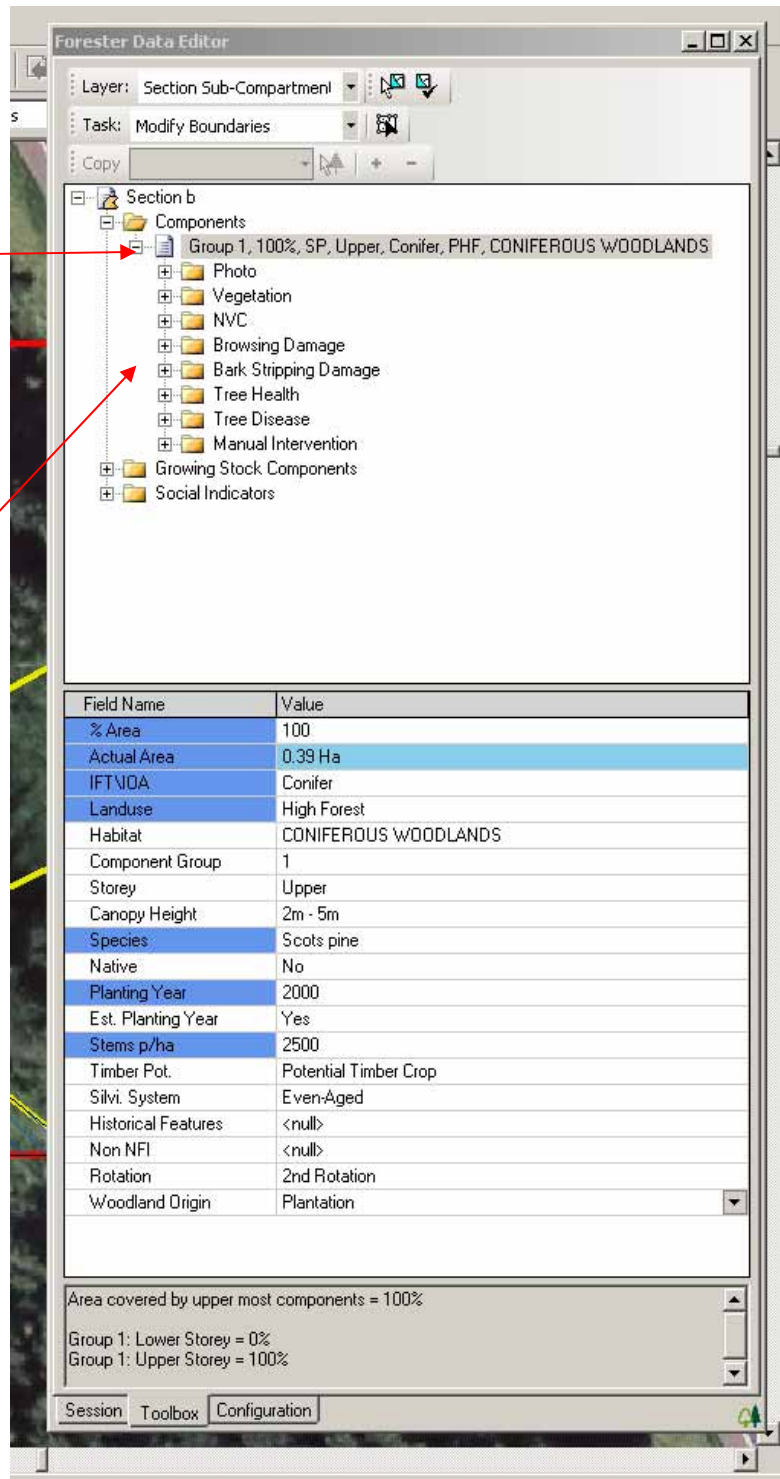
9.2 Non-treed Components

Note the fewer data Fields that need to be filled in for a non-tree area.

9.3 Photo

Photos are very useful to describe or highlight issues.

Mandatory: any Pest & Disease or Tree Health issue within the Component must have a photo taken with an appropriate comment, e.g. Chalara, to highlight the issue.

Optional: Photos of interest within the Component

Right click on the Photo sub-component to Add New Photo.
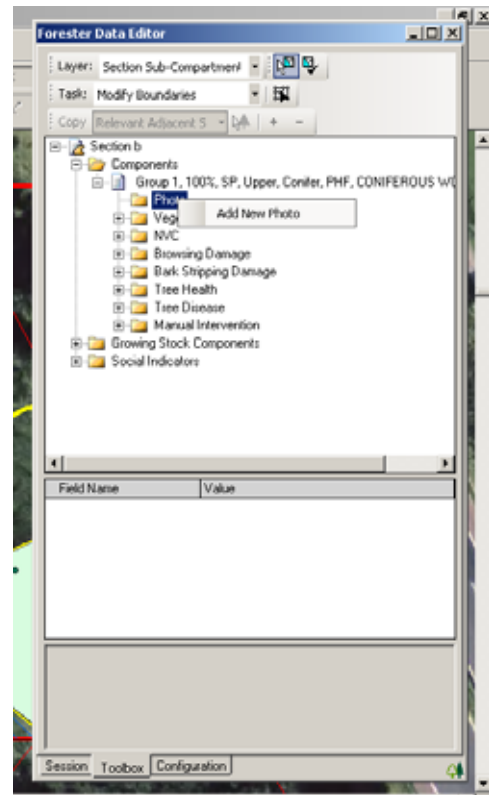
Browse to the folder holding the photo file.
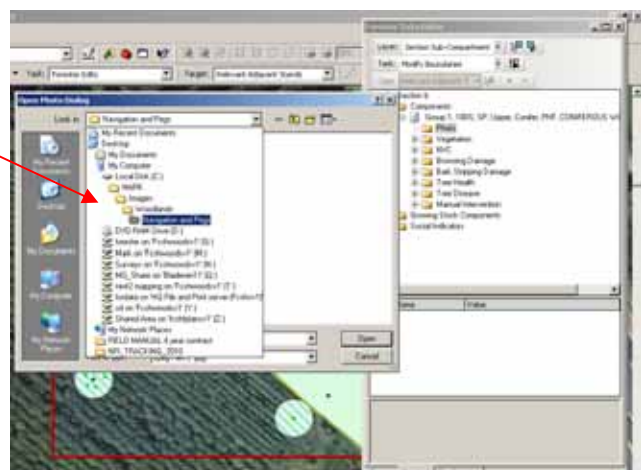
Locate the photograph and Open it. The photo will appear in the Forester Data Editor screen.

Fill in the following Fields:

Table 9 - 1: Sub-component Data Fields

Field Name	Value	Comments
Photo Date	Blank until the Value box is clicked on then the current date is automatically filled in.	Edit the date as required.
Comment	Blank	Add in any useful comments
Include in Checkout	No Yes	To include the photo in the Checkout so that the FC gets the photo click on 'Yes'.
Photo file	filename	Filename for the photo
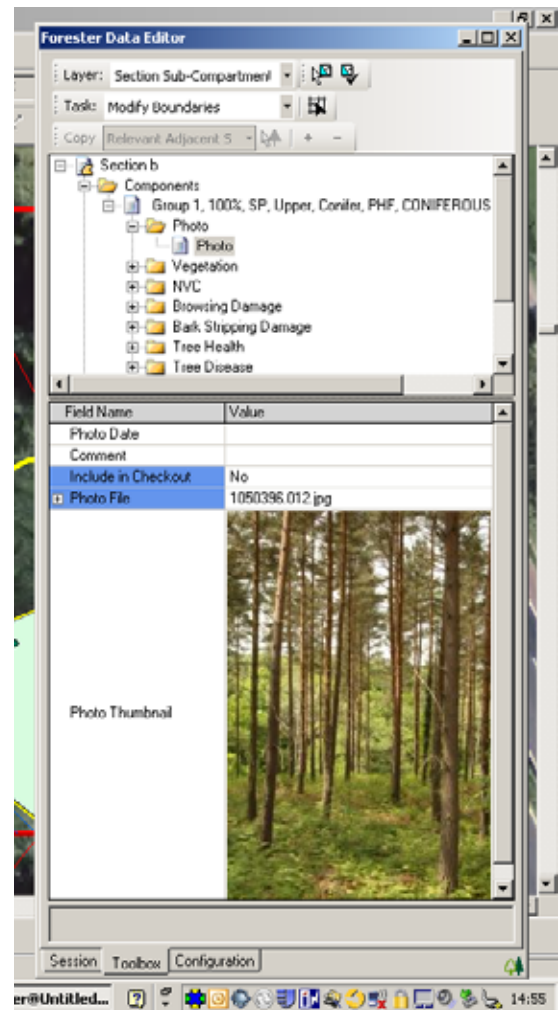
9.4 Vegetation

Vegetation data is always assessed for each individual Component Group within all Sections regardless of whether the Component Group is open, treed, NFI or non-NFI. The data is recorded against all the Components within the lowest storey of the Component Group. If there is a Young Trees storey then it is recorded against all the components within this storey. If there is only an Upper storey then the vegetation is recorded against the Components in this Storey.

For all Storeys above the lowest Storey delete the red vegetation record by right clicking on it and choosing Delete. Failure to do this will result in a validation error.
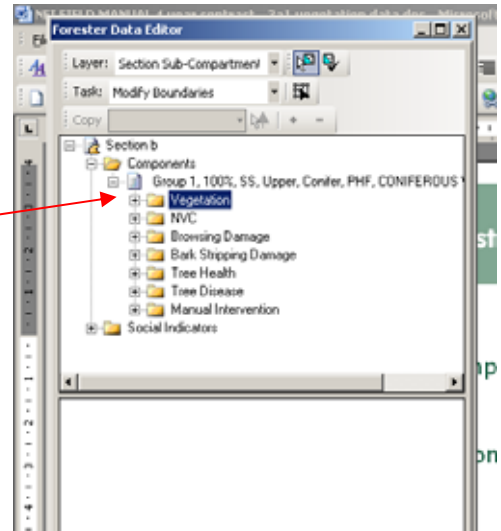
Double click on the Vegetation folder to get the red Vegetation field.
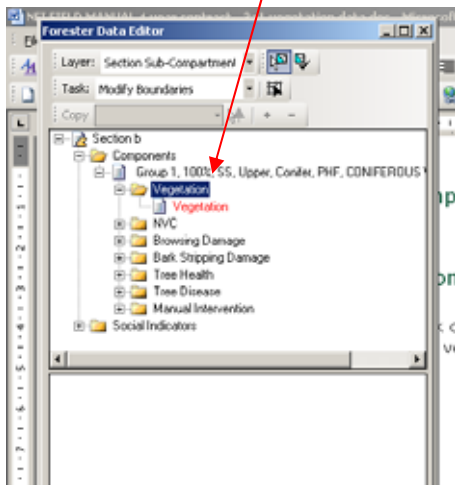
Click on the red Vegetation field to get the Layer Data Field.
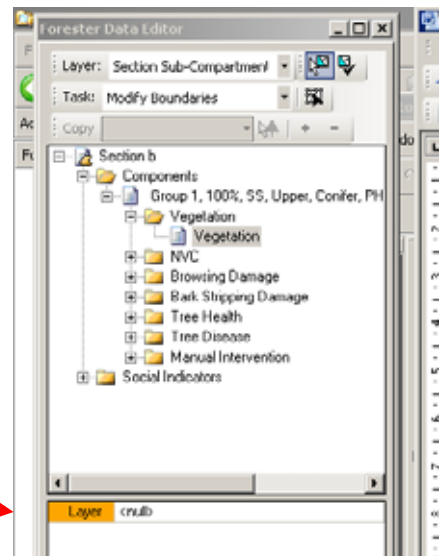
Table 9 - 2: Vegetation Layer field drop down menu:

Data Field	Options	Comments
Layer	Not Applicable (not assessable)	For use where vegetation cannot be assessed (e.g. due to snow cover, flooding etc.
	None	None; means no vegetation at all within 0-5m due to artificial substrates e.g. a road, caravan standings
	Ground with Shrub Cover	To qualify as a ground layer category it must be: A non-plant category at ground level (e.g. soil, water) or,
	Ground without Shrub Cover	A plant category ≤10 cm high estimated for the middle of the growing season.
		The surveyor is not expected to search every square centimetre of ground to ensure all plants have been accounted for although categories located near to mensuration assessment areas are expected to be recorded. Plants/plant groups intimately mixed with a taller field layer do not qualify.
	Field Layer	Herbaceous vegetation, woody perennials and sapling trees, over 10 cm tall and <2 m, including woody perennials such as honeysuckle, bramble, raspberry etc. It may also include tree seedlings, saplings and suckers and shrub species which do not exceed the surrounding vegetation by 50 cm in height.
	Shrub Layer	Shrub Layer (≈2 - 5m) – the majority of the 'canopy' of the plant/group needs to be within the height band to qualify as Shrub layer. Includes woody plants which are less than 5m tall or, if taller, has at least 50% of their crown volume below 5m, and must exceed the surrounding field or ground layer vegetation by at least 50cm in height.

9.4.1 Ground Layer categories

The purpose of the two Ground Layers is to demonstrate wildlife habitat potential, and in the ground layer, the presence of open patches (Ground Layer without Shrub cover) forces mice and voles to traverse open ground and therefore become fairly easy prey.

Table 9 - 3: Ground Layer vegetation categories

Category	Comments
Aquatic Plants	
Bare Soil	
Cotton-grass – other	
Fungi	
Grasses – Broadleaf	Leaf blade is flat (has a top, bottom and two edges) and may be very narrow (1mm). Only applicable in this level if the site is regularly grazed throughout the year or heavily suppressed.
Grasses – Fineleaf	Leaf blade tightly in-rolled i.e. bristle like. Only applicable in this level if the site is regularly grazed throughout the year or heavily suppressed.
Hairs-tail cotton-grass	
Honeysuckle	
Ivy	
Leaf Litter	
Lichens	
Mosses and Liverworts	
Other Plants	Where a plant does not fit into any of the other categories, e.g. violets, wood sorrel
Rock	
Tree Seedlings	Ensure that Young Tree Storey Components are completed
Tree Suckers	Ensure that Young Tree Storey Components are completed
Water	

9.4.2 Field Layer categories

Table 9 - 4: Field Layer vegetation categories

Category	Comments
Bilberry	
Blackthorn	
Box	
Bracken	
Bramble	
Broom	
Buddleia	If seen this plant must be recorded.
Cotoneaster	If seen this plant must be recorded.
Cotton-grass – other	
Dogwood	
Elder	
Ferns	
Forbs	Definition: Non-woody, herbaceous plants (excluding grasses, sedges and rushes) that die back each winter or last only one season.
Giant Hogweed	If seen this plant must be recorded.
Giant-rhubarb (Gunnera)	If seen this plant must be recorded.
Gorse - Common	
Gorse - Dwarf	
Gorse - Western	
Grasses - Broadleaf	Leaf blade is flat (has a top, bottom and two edges) and may be very narrow (1mm).
Grasses - Fineleaf	Leaf blade tightly in-rolled i.e. bristle like.
Hairs-tail cotton-grass	
Heather (Calluna)	
Himalayan Balsam	If seen this plant must be recorded.
Honeysuckle	
Hottentot-fig	If seen this plant must be recorded.
Ivy	
Japanese Knotweed	If seen this plant must be recorded.
Juniper	
Laurel	
Other Dwarf Shrubs	Heath plants including non-Calluna heathers e.g. bell heather, cross-leaved heath.
Other Shrubs	
Other Woody Climbers	E.g. clematis, dog-rose.
Ragwort	If seen this plant must be recorded.

Rhododendron	If seen this plant must be recorded.
Rushes	
Sedges	
Shallon	If seen this plant must be recorded.
Snowberry	If seen this plant must be recorded.
Spanish Bluebell	If seen this plant must be recorded.
Spindle	
Tree Saplings	Ensure that Young Tree Storey Components are completed
Tree Suckers	Ensure that Young Tree Storey Components are completed
Wild Privet	
Wood-rushes	

9.4.3 Shrub Layer

Table 9 - 5: Shrub Layer vegetation categories

Category	Comments
Blackthorn	Do not use – this is defined within the NFI as a tree species only and should be recorded as a Component.
Box	
Broom	
Buddleia	If seen this plant must be recorded.
Cotoneaster	If seen this plant must be recorded.
Cotton-grass, Other	
Dogwood	
Elder	
Giant Hogweed	If seen this plant must be recorded.
Gorse - Common	
Gorse - Dwarf	
Gorse - Western	
Hairs-tail cotton-grass	
Honeysuckle	
Ivy	
Juniper	
Laurel	
Other Shrubs	
Other Woody Climbers	E.g. clematis, dog-rose.
Rhododendron	If seen this plant must be recorded.
Shallon	If seen this plant must be recorded.
Snowberry	If seen this plant must be recorded.

Spindle	
Tree Saplings	Ensure that Young Tree Storey Components are completed
Tree Suckers	Ensure that Young Tree Storey Components are completed
Wild Privet	

Depending upon the Layer chosen different Data Fields will appear:

Not Applicable & None – No other Data Fields to complete
Ground, Field and Shrub Layers – see table below

Table 9 - 6: Vegetation Data Fields

Data Field	Options	Comments
Vegetation Name	Varies depending upon Layer Data Field choice	
Shrubs acting as trees (NB: Only visible if 'Shrub Layer' is chosen in the Shrub Layer data Field)	<null> Yes	Decide if the Shrub Layer vegetation chosen in the Vegetation Name is acting as a tree layer (see below). To answer 'Yes' the shrubs must be measurable (DBH ≥4cm).
% Cover	Free text	Enter % of Component area covered by the vegetation category (0-100%). 0% can be used in the rare circumstances where surveyors are certain that there is only a tiny coverage of the category (e.g. a single plant type)
If Rhododendron is chosen in the Vegetation name the following Data Fields appear:		
Height Class	Less than 1.3m More than 1.3m No Rhododendron	
Management evidence	No Yes	Is there evidence of management of the Rhododendron?

Where Rhododendron has been completely cut back and there has been no regrowth by the time of the survey enter:

Layer: Shrub Layer
Vegetation name: Rhododendron
Shrubs acting as trees: <null>
% cover: 0%
Height Class: Less than 1.3m
Management evidence: Yes

9.4.4 Shrubs acting as trees

Where a proportion of a shrub species is displaying the morphology of a tree (a woody perennial forming a single self-supporting main stem and having a definite crown) that proportion should be recorded separately.

For example: Laurel covers 50% of a Component Group of which 20% is acting as a tree. Record:

Data Fields	For the proportion acting as a tree:	For the proportion not acting as a tree:
Layer	Shrub Layer	Shrub Layer
Vegetation name	Laurel	Laurel
Shrubs acting as trees:	Yes	<null>
% cover:	20%	30%

Where a shrub is acting as a tree the shrub also needs to be recorded as a measurable Component as though it was a tree species, i.e. the shrub stems must be ≥4cm DBH.

Mensuration assessments will be taken of these shrubs where they are included within a mensuration plot as though they were trees.

Where the shrub species is not found in the Component species list use 'Other Broadleaves'.

9.4.5 Adding, Deleting and Cloning records

If there is more than one vegetation layer or multiple species/species groups within vegetation layers 'Add' or Clone vegetation.

Add by right clicking on the Vegetation folder to 'Add' a new vegetation record.
Clone by right clicking on a vegetation record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.
Delete by right clicking on a vegetation record.

9.4.6 Validation

The Vegetation folder lettering will turn from red to black if the % Cover Data Field/s is/are entered correctly. To do this, ensure the following:

The total of the % cover data fields for Ground Layer with Shrub Cover, Ground Layer without Shrub Cover and Field Layer equals 100%.
No % cover, individually, is >100%

Note that if Ground Layer with Shrub Cover is chosen then a Shrub Layer vegetation record, or records, that equal the total cover of the Ground with Shrub Cover Layer data must be entered.

For example:

Data Fields		
Layer	Ground Layer with Shrub Cover	Ground Layer with Shrub Cover
Vegetation name	Leaf litter	Bare soil
% cover:	20%	10%

Thus for the total 30% of Ground Layer with Shrub Cover there must be a corresponding shrub cover of at least 30% of which 20% is assumed to cover the leaf litter and 10% covers the bare soil. This can be split into one or more shrub vegetation types.

Alternatively if Ground Cover without Shrub Cover is chosen the total Shrub cover can be no greater than: 100% - % cover of the Ground Cover without Shrub Cover.

For example:

Data Fields		
Layer	Ground Layer without Shrub Cover	Ground Layer without Shrub Cover
Vegetation name	Leaf litter	Bare soil
% cover:	40%	15%

The maximum shrub cover can only be 45% (100% - 40% - 15%).

9.5 NVC

The National Vegetation Classification (NVC) is the standard classification for describing vegetation in Britain. It is a "phytosociological" classification, which means it classifies vegetation solely on the basis of the plant species of which it is composed.

The NVC breaks down each broad vegetation type into communities, designated by a number and a name e.g. W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland. Communities contain sub-communities which describe the range of floristic and structural variation within the community. These are designated by a letter e.g. W10b *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland, *Anemone nemorosa* sub-community.

NVC is recorded against the **lowest** storey within the Component Group. Thus if the Component Group only contains an Upper storey then NVC is recorded against the components within this storey. If it contains an Upper and a Young Tree storey then the NVC is recorded against the Young Tree storey.

NVC is always assessed for each individual treed Component Group regardless of whether the Component Group is NFI or non-NFI. The data is recorded against all the Components within the lowest storey of the Component Group.

For all Storeys above the lowest Storey delete the red NVC record by right clicking on it and choosing Delete. Failure to do this will result in a validation error.

9.5.1 Woodland NVC

The NVC woodland classification is based on more than 2500 samples taken from natural, semi-natural and planted woodlands throughout Britain.

There are 18 woodland communities (W1-18) and 7 scrub/underscrub communities (W19-25).

- Full descriptions of each of the woodland and scrub NVC communities and sub-communities are given in "British Plant Communities Volume 1: Woodlands and scrub", edited by J.S. Rodwell (1991). This includes information on the general species composition and appearance, the associated habitat, zonation and successional characteristics, and the geographical distribution. It also includes a

detailed floristic table showing frequency and abundance values for all species found in the samples upon which the classification is based.

- Summary descriptions are given in "Summary Descriptions of Woodland NVC Communities (and their Relationships with UK BAP Priority Habitats) and UK BAP Broad Habitats", compiled by Ben Averis (2010). This includes notes on how to distinguish between certain NVC communities, in summer and in winter.

- Summary descriptions for communities W1-18 are given in "JNCC National Vegetation Classification Field Guide to Woodland" by J.E. Hall, K.J. Kirby and A.M. Whitbread (2004). Species names are in Latin.

- See also the "NVC Woods table" compiled by Ben Averis (2010). This lists the dominant/common plant species associated with the various acid, neutral, base-rich, wet and dry communities. Species names are in Latin.

9.5.2 NVC Keys

You can use these to help find which of the published NVC community descriptions best fits the stand of vegetation you're attempting to identify in the field.

- A concise key to woodlands and scrub can be found in "JNCC National Vegetation Classification Field Guide to Woodland" by J.E. Hall, K.J. Kirby and A.M. Whitbread (2004). Species names are in Latin.

- See 9.5.6 NVC KEY edited by Julie Gardiner (2010). Part 1 is for native woodlands, Part 2 is for plantations and non-native woodlands. Species names are in English.

Please note that keys alone are not enough to confirm identification. Before accepting a result, check the composition of your stand against the description for the NVC community. If the stand seems very different, then review the sequence of steps that you've taken and see whether an alternative community would be a better fit.
Also bear in mind the following:

- Not all of the species mentioned in the community description need to present in the Component Group.
- Species referred to as "constant", including those used to name the community, may be absent in the Component Group.
- Differences in grazing levels can change the appearance of a community e.g. bilberry and wood-rush may be grazed out in W11, W16 and W17.
- Intermediate stands do occur, but most can be identified as closer to one NVC community than another.

- A community can occur in a place not shown on the distribution map.

9.5.3 Beech NVC communities

There are 3 NVC communities in which beech is overwhelmingly dominant:

- W12 *Fagus sylvatica – Mercurialis perennis* woodland (base-rich and calcareous).
- W14 *Fagus sylvatica – Rubus fruticosus* woodland (neutral to acidic).
- W15 *Fagus sylvatica - Deschampsia flexuosa* woodland (strongly acidic).

These NVC communities are concentrated within the native range of beech, but do also occur as plantations outwith the Beech Zone, in Wales and as far north as the Scottish Borders (although the latter are better classed as W16 Oak-birch woodland).

So when matching your stand to an NVC community, remember that W12, W14 and W15 can be assigned to beech-dominated stands of planted origin within and outwith the native range of beech, assuming the ground flora is a good fit. This is a slightly broader definition than that for the Lowland Beech and Yew Woodland Priority Habitat (which only includes long-established beech plantations outwith the Beech Zone).

Note: regenerating patches within W12, W14 and W15 where beech is scarce are usually classed as W8, W10 and W16 respectively.

9.5.4 Pine NVC communities

There is 1 NVC community in which Scots pine is dominant:

- W18 *Pinus sylvestris – Hylocomium splendens* woodland (strongly acidic).

This NVC community is confined to Scotland and best represented in the central and north-western Highlands. Planted Scots pine woodlands in England and Wales are considered as replacements of other woodland types, notably W16 *Quercus* spp. – *Betula* spp. – *Deschampsia flexuosa* woodland in southern England.

So when matching a stand to an NVC community, remember that W18 can be assigned to pine-dominated stands outwith the Pine Zone, but only within Scotland. This is a slightly broader definition than that for the Native Pine Woodlands Priority Habitat (which excludes all pine woodlands outwith the Pine Zone).

9.5.4.1 Pine bog woodland

In the National Forest Inventory we have added another NVC category:

- W18 **bog** *Scots pine – Hylocomium splendens* woodland.

This should be assigned to stands of Pine Bog Woodland- a rare habitat in the UK, but known at a number of sites within Caledonian Pinewoods in the Scottish Highlands.

Pine Bog Woodlands develop on peaty ground in hollows and along valleys where the high water table and shortage of nutrients restrict tree growth. They typically occupy the transition zone between pine woodland and bog, where the trees are thinning out.

Pine Bog Woodlands have a unique open character (see photo below). They are composed of mire vegetation (dominated by mixtures of *Sphagnum* bog-mosses, cotton-grasses and heather) with a scattering of variably stunted pine trees and saplings (some trees of considerable age- perhaps 350 years old but only 2-4m tall). The prominence of deep tussocks of *Sphagnum* bog-mosses can be a striking feature.

Plate 9 - 1: Scots pine bog woodland at Loch Morlich

The structure and function of this habitat type is finely balanced between tree growth and bog development. Tree growth is always slow (or the trees would take over the

bog), trees are likely to be widely-spaced (because much of the bog surface is too wet for them to establish) and dead trees may be common (because their weight depresses the peat, locally leading to waterlogging and death). Open woodland is therefore maintained without loss of bog species.

This habitat is not to be confused with the progressive invasion of bogs by trees (through natural colonisation or afforestation) following changes in the drainage pattern, which eventually leads to the loss of the bog community.

9.5.5 NVC community assessment

Record woodland and scrub NVC communities, W1-W22, where these are present.

9.5.5.1 Recommended steps:

1) Do a quick walk-over survey of the Section or Component Group, identifying homogenous units of vegetation. For each unit in turn, note the tree, shrub and ground flora species present and roughly estimate their individual abundance (e.g. dominant, abundant, scarce etc.).

For beginners with limited plant ID skills, surveyors can still make a good stab at NVC by noting whether the vegetation:

- Is predominantly grassy- if so, is there a good variety of grass species, mostly fine-leaved, or broad-leaved or a mix of both?
- Is predominantly heathy- if so, what is the % cover of heathers, bilberry etc.
- Is predominantly composed of sedges and marsh plants?
- Is species-rich or species-poor- i.e. does it contain a diverse mix of herbaceous plants or just a narrow range of things?
- Contains a lot of ferns- if so, lots of different species or just a few?
- Contains an abundance of mosses- if so, lots of different species or just a few, and are any of these *Sphagnum* or *Polytrichum* species?

2) Determine which of the published NVC community descriptions best fits each vegetation unit. There are a number of tools to help with this:

- Work through the NVC key in the "JNCC National Vegetation Classification Field Guide to Woodland". Electronic copy supplied in the Additional Documents folder. Species names are in Latin, so for beginners it is recommend that they purchase a hard copy and pencil in the English species names.

- Work through 9.5.6 NVC KEY (Part 1: native woodlands, Part 2: plantations and non-native woodlands).

- Read through the published NVC community descriptions (and the sub-community descriptions to understand the variation across the community).

- Refer to Ben Averis's "NVC woodland table" spreadsheet. Species names are in Latin.

9.5.5.2 NVC surveying issues

If there is a choice between two NVC communities, chose the one which best describes the vegetation in the field. If there are several possibilities, none of which are a good fit, or if there is very little vegetation to go on (e.g. spruce plantation with leaf litter and moss) then record "Not Determinable". This also applies when there is snow cover. Clearfell - ordinarily a non-woodland NVC type would be assigned, but it is not required to identify these in the National Forest Inventory, so record "Not Applicable".
If more than 1 NVC type is present in the Section or Component Group, then right click on the NVC Sub-component record to add another NVC record. Remember that the NVC percentages must sum to 100% for each Component Group.

9.5.6 NVC KEY

NATIONAL VEGETATION CLASSIFICATION KEY FOR THE NATIONAL FOREST INVENTORY

Derived from the JNCC key in NVC field guide to woodland by J.E. Hall, K.J. Kirby, and A.M. Whitbread, adapted by J. Gardiner with feedback from B. Averis: April 2010

TO DETERMINE WHICH PART OF THE KEY TO USE ANSWER WHICH IS THE MOST APPROPRIATE STATEMENT OF THE FOLLOWING TWO:

1) THE WOODLAND APPEARS TO BE MOSTLY NATURAL WITH SITE NATIVE SPECIES PREDOMINATING IN THE CANOPY

   Go to D4.1 <u>NVC KEY FOR NATIVE WOODLANDS</u>

2) THE WOODLAND APPEARS TO BE ARTIFICIAL AND EITHER MOSTLY NON-SITE NATIVE OR PLANTED

   Go to D4.2 <u>NVC KEY FOR PLANTATIONS</u>

N.B. Some communities can be derived by more than one route through the key. Within a given NVC type, species that occur in only one sub-community are underlined. Moss names are in Latin in lower case and in italics.

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9.5.6.1 NVC Key for Native Woodlands

1) IS THE AREA DOMINATED BY ANY OF THE FOLLOWING SPECIES: hawthorn, blackthorn, willow or juniper. (NB gorse and broom are not considered as woodland sections for the NFI and should thus be ignored if they form the upper canopy)

if YES go to 2

if NO go to 5

2) IS THE AREA DOMINATED BY WILLOW (sometimes with birch co-dominant but not solely dominant)   -

IF YES go to 3

IF NO go to 4

3) AREA DOMINATED BY WILLOW with possibly some downy birch– select most appropriate NVC class from the five options below (3a-3e):

3a)   Area dominated by DOWNY WILLOW possibly with some other willows (but in this community these will always be in the form of low sprawling bushes), confined to high altitude (630m – 900m) rocky slopes and ledges often with an understorey of dwarf shrub species such as: HEATHER, BILBERRY, COWBERRY. This community can overlap in altitudinal range with Juniper scrub community W19.

W20: DOWNY WILLOW – GREAT WOODRUSH scrub

There are no sub-communities

3b)   Area comprised of a mixture of GREY WILLOW, EARED WILLOW and BAY WILLOW, and possibly also some DOWNY BIRCH. Field layer swampy with five or more of the following species: CUCKOOFLOWER, MEADOWSWEET, COMMON MARSH-BEDSTRAW, MARSH-MARIGOLD, BOTTLE SEDGE, BOGBEAN, WATER HORSETAIL, ANGELICA, VALERIAN, WATER AVENS and MARSH HAWK'S BEARD. There is often an extensive moss carpet with amongst other species: *Calliergon cuspidatum, Rhizomnium punctatum* and *Mnium hornum* usually present.

W3: BAY WILLOW – BOTTLE SEDGE woodland

There are no sub-communities

3c)   GREY WILLOW/EARED WILLOW and DOWNY BIRCH and may share dominance. COMMON REED and SPHAGNUM MOSSES should be frequent and/or abundant. ALDER may be present and can share dominance with birch and willow.

W2: GREY WILLOW – DOWNY BIRCH – COMMON REED woodland

There are two sub-communities:

1. ALDER can be dominant and COMMON REED is always present normally with MEADOWSWEET, *Sphagnum palustre* never present and *Sphagnum* generally low cover;
2. DOWNY BIRCH is always the dominant shrub and *Sphagnum* is dominant in the ground storey, although COMMON REED may still be abundant, ALDER is frequently absent.

3d)   This community is dominated by GREY WILLOW, but usually with some DOWNY BIRCH (though never more than 50% canopy cover). There is often a carpet of mosses but never *Sphagnum*. Field layer is generally an open scatter of herbs, with different species attaining local prominence (including WATER MINT, MEADOWSWEET, YORKSHIRE FOG, COMMON BENT, BRAMBLE and SOFT RUSH) however the commonest species is COMMON MARSH-BEDSTRAW. This community is usually found on wet mineral soils on the margins of standing or slow-moving water, and in moist hollows. It often forms a narrow fringe around ponds, and lakes particularly in the lowlands.

W1: GREY WILLOW – COMMON MARSH-BEDSTRAW woodland

There are no sub-communities

3e)   DOWNY BIRCH always present and generally dominant, often with abundant GREY WILLOW and occasionally ALDER. Generally PURPLE MOOR-GRASS is also abundant to dominant (although this species may be entirely absent). HEATHER and/or CROSS-LEAVED HEATH may be abundant (NB HEATHER species do not occur in any other wet woodland type i.e. W1-W3, W5-W7). Other features which distinguish this community from other wetland communities potentially dominated/co-dominated by DOWNY BIRCH are that: COMMON REED is never present; BOTTLE SEDGE is rarely present and is so is never more than 10% cover; EARED, GREY & GOAT WILLOW are the only willows generally present in W4 (although occasionally there may be a bit of BAY WILLOW); MARSH-MARIGOLD is never present; COTTONGRASSES may be present in W4 and are not found in any other wetland community.
If this description appears accurate go to 9d W4 otherwise reconsider scrub types

4) Area dominated by one or more of the following: BLACKTHORN, HAWTHORN, OR JUNIPER – if so see which of the **three options** below best fits.

4a)   Area dominated almost exclusively by BLACKTHORN (no HAWTHORN present), often with very little ground flora at all below, but BRAMBLE, COMMON NETTLE & CLEAVERS can be common.

<div align="right">

W22: BLACKTHORN-BRAMBLE

</div>

There are 3 sub-communities:

1. GORSE may be present, also IVY, RED CAMPION, HONEYSUCKLE, and BLUEBELL are often prominent in the ground layer together with <u>COMMON CHICKWEED</u>;
2. GORSE and HONEYSUCKLE are never present;
3. Grasses are conspicuous including <u>COCK'S-FOOT</u>, also <u>RIBWORT PLANTAIN</u>, <u>YARROW</u> and on sea-cliffs <u>SEA CAMPION</u> and <u>THRIFT</u> may occur.

4b)   Stand dominated by HAWTHORN or a HAWTHORN/BLACKTHORN MIX, often (but not necessarily) with BRAMBLE and some DOGROSE. IVY is usually present among the ground flora sometimes with COMMON NETTLES and CLEAVERS.

<div align="right">

W21: HAWTHORN-IVY SCRUB

</div>

There are 4 sub-communities:

1. Field layer usually impoverished and sparse, BRAMBLE always present, JUNIPER never present;
2. DOG'S MERCURY usually present; also <u>BLUEBELL</u>, and <u>WOOD ANEMONE</u> may be present, JUNIPER never present;
3. JUNIPER often present as is SOFT-RUSH; and <u>VIOLET</u> may be abundant;
4. Found on deeper soils, WAYFARING-TREE always present and often abundant, as is the case with JUNIPER, but YORKSHIRE FOG, MALE FERN and BRACKEN never present.

4c)   Area dominated by JUNIPER but there may be a few scattered DOWNY BIRCH or ROWAN trees. Ground flora usually a mixture of BENT grasses, WOOD SORREL, WOOD-RUSH, TORMENTIL and HARD FERN, but may just be a profusion of various mosses. Only found in Scotland, Northumberland, the Pennines and the Lake District.

<div align="right">

W19: JUNIPER – WOOD SORREL woodland

</div>

There are 2 sub-communities:

1. Generally heathy, with WAVY HAIR-GRASS, BILBERRY and HEATH BEDSTRAW always present and usually abundant but DOG'S MERCURY never present;
2. Generally grassy or bare/mossy, but VIOLET always present normally with WOOD ANEMONE, <u>DOG'S MERCURY</u> may be abundant and <u>LADY'S BEDSTRAW, SHEEP'S SORREL</u> and <u>MEADOW BUTTERCUP</u> may be present.

5) ALDER always present and generally dominant, sometimes with tall willows such as CRACK WILLOW, ALMOND WILLOW, PURPLE WILLOW, OSIER and/or ASH. -
Go to 6

ALDER not present –
Go to 7

6) Alder Woodland – choose the best option from **the four** listed below (6a – 6d):

6a) ALDER may be dominant or may share dominance with DOWNY BIRCH and/or GREY WILLOW. Frequently this community is found as the early stages of colonisation of fen/swamp. The canopy is uneven and individual trees are frequently rather precariously perched on tussocks of ground vegetation and regularly fall over, or remain as standing dead trees. The tussocks normally consist of at least some GREATER TUSSOCK-SEDGE. Some of the following may also be present: WOOD CLUB-RUSH, LESSER POND-SEDGE, MARSH THISTLE, BITTERSWEET, BROAD BUCKLER FERN, BUGLE, OPPOSITE-LEAVED GOLDEN SAXIFRAGE, MEADOWSWEET, COMMON MARSH-BEDSTRAW, WATER MINT, BRAMBLE, VALERIAN and COMMON REED.

<div align="center">

W5: ALDER – GREATER TUSSOCK-SEDGE woodland

</div>

There are three sub-communities:

1. BITTERSWEET and GREATER TUSSOCK-SEDGE are normally present and tall herbs are generally dominant, this is the most likely sub-community in Scotland
2. BRAMBLE, COMMON MARSH-BEDSTRAW and the moss *Eurhynchium sp.* are always present with YELLOW PIMPERNEL, BROAD BUCKLER FERN and GREATER TUSSOCK-SEDGE normally also present (this sub-community is mostly confined to Broadland);
3. BRAMBLE, GREATER TUSSOCK-SEDGE, OPPOSITE-LEAVED GOLDEN SAXIFRAGE, and the mosses *Eurhynchium sp.* and *Brachythecium sp.* are always present, COMMON MARSH-BEDSTRAW, CUCKOOFLOWER, BUGLE and MARSH THISTLE also normally present (this sub-community is uncommon).

6b)   ALDER may be dominant or may share dominance with DOWNY BIRCH and/or GREY WILLOW, or various other willows named in the sub-community descriptions below. On drier stands SYCAMORE, OAK or ASH may be present at low frequency. SCOTS PINE may also invade or be planted. The field layer is species-poor with COMMON NETTLE generally dominant, frequently in association with CLEAVERS, or BRAMBLE. However, COMMON NETTLE may be entirely absent. COMMON REED and GREATER TUSSOCK-SEDGE are rarely present and if so are at low cover.
Generally found as small isolated stands, or narrow fringes of slow moving rivers or pools.

W6: **ALDER-COMMON NETTLE woodland**

There are 5 sub-communities:

1. ALDER is always the dominant tree species. COMMON NETTLE is always present and is normally abundant, CLEAVERS are also normally present and abundant. In patches where these two species are not prominent there can be CREEPING BUTTERCUP, GROUND IVY, HOGWEED and various grasses;
2. CRACK-WILLOW is always present and is normally the dominant tree species however there is normally a thick shrub layer consisting of scrubs and saplings. COMMON NETTLE is always present in the ground flora though rarely achieves more than 25% cover;
3. ALMOND WILLOW, PURPLE WILLOW and OSIER are the dominant tree species with the ground flora similar to sub-community (a);
4. BRAMBLE is always present and can form a thick layer, ALDER is normally the dominant tree with ELDER normally present in the shrub layer though generally at low cover. COMMON NETTLE is normally present and can be abundant, RAMSONS may be abundant, as can BUTTERBUR;
5. DOWNY BIRCH is always present and is often the dominant tree, there are frequently individual SCOTS PINE present, and the ground flora normally consists of BRAMBLE, HONEYSUCKLE and BROAD BUCKLER FERN.

6c)   ALDER is often not as abundant as in the previous types. ASH and/or SILVER BIRCH are frequent with mixtures of GREY WILLOW, HAZEL, and HAWTHORN in the shrub layer. Ground flora includes MEADOWSWEET, YELLOW PIMPERNEL, CREEPING BUTTERCUP, LADY FERN, ROUGH MEADOW-GRASS, CREEPING SOFT-GRASS, TUFTED HAIR-GRASS and OPPOSITE-LEAVED GOLDEN SAXIFRAGE. PURPLE MOOR-GRASS is never present.
Generally found on wet flushes, the bottom of slopes, or sometimes on periodically flooded alluvial flats.

W7: ALDER – ASH – YELLOW PIMPERNEL woodland

There are 3 sub-communities:

1. ALDER is normally the dominant tree species and the ground flora normally has CREEPING BUTTERCUP, OPPOSITE-LEAVED GOLDEN SAXIFRAGE and COMMON NETTLE which are frequent to dominant;
2. ALDER is generally dominant but ASH and DOWNY BIRCH are quite frequent. MEADOWSWEET, YELLOW PIMPERNEL and CREEPING BUTTERCUP are normally present in the ground flora, whilst COMMON NETTLE is generally absent and is never greater than 10% cover;
3. ALDER commonly shares dominance with ASH also DOWNY BIRCH and sometimes OAK or other broadleaves. TUFTED HAIR-GRASS is likely to be both present and dominant. WOOD SORREL is frequent and can be abundant in the ground layer, VIOLET, <u>WILD STRAWBERRY</u>, <u>MALE FERN, HEATH BEDSTRAW, BRACKEN, WOOD SAGE, PIGNUT</u> and IVY are often present.

6d) ALDER may be dominant or may share dominance with DOWNY BIRCH and/or GREY WILLOW, or various other willows but **never present are**: COMMON NETTLES, GREATER TUSSOCK SEDGE, CLEAVERS, COMMON REED, BITTERSWEET, OPPOSITE-LEAVED GOLDEN SAXIFRAGE, WATER MINT, and YELLOW PIMPERNEL.
Instead there may be an abundance of PURPLE MOOR GRASS (although this species may be entirely absent) and HEATHER, COTTONGRASS and/or CROSS-LEAVED HEATH may be abundant (NB HEATH and COTTONGRASS species do not occur in any other wet woodland type i.e. W1-W3, W5-W7).

If this description appears accurate go to 9d W4 otherwise reconsider other types

7)   Non-Alder Woodland Communities – **choose one of the** four options **below**:

7a)   BEECH is frequent and usually abundant in the canopy. (**N.B**. There are complications with identifying BEECH stands under the following circumstances: i) OAK or ASH may be more common in gaps where regeneration is occurring; ii) in the south-west beech may be invading an oak wood; iii) old beech stands can occur beyond the recognised range of native beech, e.g. in northern England or Scotland. Under these circumstances the following rules should apply i) If within the beech zone key as beech woodland- if outside beech zone key using

9.5.6.2 NVC Key for Plantation; ii) treat invading beech stands according to the relative abundance of the beech, oak etc in terms of their contribution to the canopy; iii) stands beyond the native range should be assessed using

9-30 **Remember to Save your Edit Session Regularly, Validate the information and Backup the Data**   Save Edits   **Last printed 6/6/2014 10:31:00 AM**

09 Sub-Component Data.doc

9.5.6.2 NVC Key for Plantation.

If this description appears accurate Go to 8

7b) YEW is frequent and abundant in the canopy with virtually no large emergent trees forming an over storey. (*Some yew stands on the Downs may formerly have had a beech canopy, but where this has now been blown down and the yew forms the canopy, count as a yew stand)*. The shade of the yew is generally so dense that virtually nothing grows with it except in small gaps where DOG's MERCURY, COMMON NETTLE, IVY and FALSE BROME may be found. Young ASH, COMMON WHITEBEAM, (in a few sites BOX), BEECH, ELDER may also occur. This community is most common on moderate-steep limestone or chalk slopes with thin soils (more rarely on moderate acid rocks in the Lake District). Most common in south-east England.

If this description appears accurate assign as W13: YEW woodland

There are two sub-communities:

1. DOG'S MERCURY is virtually absent, COMMON WHITEBEAM is frequent in the canopy;
2. DOG'S MERCURY is always present and is normally abundant, ELDER if frequent in the canopy.

7c)   SCOT'S PINE is frequent and abundant in the canopy over a heathy ground flora with some of HEATHER, BELL HEATHER, CROSS-LEAVED HEATH, BILBERRY, COWBERRY, WAVY HAIR-GRASS. Mosses (including *Sphagnum*) may be abundant. Strictly speaking this applies only to native pine stands, so it does not occur in England or Wales. Some mature pine stands that have invaded former bog should be assigned to W18 Bog Woodland.

If this description appears accurate assign as W18: SCOT'S PINE- MOSS (Hylocomium splendens) woodland.

There are five sub-communities:

1. This sub-community may include a few exotic conifers, CREEPING LADY'S TRESSES are always present but this is the only sub-community where BILBERRY is <u>absent</u>;
2. BILBERRY and COWBERRY always present, usually with minimum cover of 10%, PURPLE MOOR GRASS may be present and abundant, this species is only found in (b&d);
3. JUNIPER may be present and fairly abundant, HAIRY WOOD-RUSH is always present though normally at a low level, this species is only found in (a&c);
4. *Sphagnum* is always present, PURPLE MOOR GRASS may also be present and abundant, however HEATH BEDSTRAW, WOOD SORREL, and TORMENTIL are always absent;
5. Birch can make up to 25% of canopy cover. *Sphagnum* and *Dicranum majus* are always present, *Thuidium tamariscinum* is generally present and abundant but *Polytrichum sp.* is generally of very low cover or absent.

7d)   Woods not as above, commonly with OAK, BIRCH, ASH or ELM as the main species but also including stands of HORNBEAM, LIME, SWEET CHESTNUT, SYCAMORE etc., occurring a range of soil types from acid to base-rich, from sands to heavy clays.

[**Go to 9**](#)

8) Beech Woods – see **three options** below

8a)   Beech stands on base-rich, often thin soils, e.g. over chalk. The ground flora as always under beech may be sparse, but DOG'S MERCURY, FALSE BROME, ENCHANTER'S NIGHTSHADE, LORDS-AND-LADIES, SANICLE or other species suggesting base-rich conditions are likely to be present. IVY is also often common. Associated trees and shrubs may include ASH, HAZEL, COMMON WHITEBEAM, YEW, HAWTHORN or SYCAMORE. Found on free-draining base-rich soils with a pH usually between 7 and 8. Largely in the south-east of Britain, often on the steep drift-free faces of chalk escarpments.

W12: BEECH-DOG'S MERCURY woodland

There are three sub-communities:

1. Usually found on deeper moister soils, DOG'S MERCURY and BRAMBLE are generally the dominant ground flora, but <u>RAMSONS, WOOD ANEMONE, BROAD BUCKLER-FERN</u> and <u>LESSER CELANDINE</u> may also be abundant.
2. usually on very shallow dry chalk or limestone soils, IVY is often the dominant vegetation along with DOG'S MERCURY AND BRAMBLE, but <u>HOGWEED, COW PARSLEY, FALSE OAT-GRASS</u> and <u>BUGLE</u> may be present at low cover;
3. found on steep rocky soil and is characterised by a dense yew understorey and is thus closely related to W13 (YEW woodland, section 8b). The ground flora is sparse.

8b)   Beech stands on very acid "heathy" sites usually with some WAVY HAIR-GRASS, BILBERRY or HEATHER present at least near or under gaps. BRACKEN, BENT grasses and WOODRUSHES also often common. HOLLY, OAKS and BIRCHES are the commonest associated trees and shrubs. Found on very base-poor acid soils mainly in southern England but long-established plantations in the north have many of the same characteristics. Some stands were formerly treated as wood-pasture and contain large old pollards.

W15: BEECH-WAVY HAIR-GRASS woodland.

There are four sub-communities largely reflect trends in the level of light below the canopy from virtually no ground flora in the densest shade to HEATHER under stands with a discontinuous canopy cover:

1. The vegetation is overwhelmingly dominated by BEECH almost to the total exclusion of all other plants;

2. OAK may be frequent in the canopy with WAVY HAIR-GRASS constant in the ground flora, <u>YORKSHIRE FOG</u> may be present at a low level and *Hylocomium splendens* may be present;

3. OAK is constant and may be as frequent in the canopy as BEECH, HOLLY is also common. BILBERRY, BRACKEN, WAVY HAIR-GRASS and *Mnium hornum* are constant in the ground flora;

4. <u>HEATHER</u> is a constant and normally dominant feature of the ground flora, BRACKEN is also constant.

8c)   Beech stands often with a HOLLY understorey, and a ground flora showing neither indicators of very base-rich or of very acidic conditions. Frequently BRAMBLE or BRACKEN are common (depending on light levels), but other species such as IVY, WOOD-MELICK, WOOD-MILLET, BUTCHER'S-BROOM or TUFTED HAIR-GRASS are also frequent. Generally found on moderately acid brown earth soils, often with superficial deposits (e.g. clay-with-flints) over the southern chalk. Mainly in southern England but long-established plantations in the north and in the south-west may have these characteristics.

W14: BEECH-BRAMBLE woodland.

There are no sub-communities.

9)   **Oak and Mixed Deciduous Woods –** choose one of the **four options** (9a-d) below

9a)   Woods found on very acidic soils usually with OAK or BIRCH as dominants (sometimes self-sown PINE on lowland heaths), HOLLY and ROWAN are common understorey species, but often there is little shrub layer at all. At least one of: BILBERRY, WAVY HAIR-GRASS or HEATHER present and prominent, but with few other species, often with some BRACKEN, and extensive moss carpets.
Go to 10

9b)   Woods found on base-rich soils. ASH, usually present, often abundant, but a range of other species including ELM, LIME, SYCAMORE, or OAK (less often SWEET CHESTNUT, HORNBEAM) may be present. HAZEL is usually common in the understorey and in the south-east is often joined by FIELD MAPLE, WILD PRIVET, DOGWOOD, SPINDLE, and WAYFARING TREE. Ground flora includes at least some species characteristic of base-rich conditions such as DOG's MERCURY, FALSE BROME, ENCHANTER's NIGHTSHADE, COMMON NETTLE, HERB ROBERT, CLEAVERS, RAMSONS, ROUGH MEADOW GRASS or GROUND IVY.

9c)   Woods on moderately acid soils, often brown earths. OAK and BIRCH tend to dominate, but locally SWEET CHESTNUT, LIME and HORNBEAM may occur (also plantations of a variety of species) HAZEL and HAWTHORN are the commonest shrub species where an understorey is present. The ground flora usually has abundant (BRAMBLE, BRACKEN, HONEYSUCKLE) or BLUEBELL or is dominated by grasses (SOFT GRASSES, BENTS, WAVY HAIR-GRASS, SWEET VERNAL-GRASS). Species characteristic of base-rich conditions (cf 9b) are absent (or very scarce).

9d)   Wet birch wood, but can vary from very boggy peat to semi-dry peaty/gley with high water table. DOWNY BIRCH always present and usually dominant, although GREY WILLOW can share dominance. ALDER may be present and can be abundant; EARED WILLOW may also occur but never at greater than 10% cover. Ground flora usually dominated by PURPLE MOOR-GRASS, although this may be absent – but if so the ground flora will be dominated by either *Sphagnum* and/or *Polytrichum spp.* SOFT-RUSH and TUFTED HAIR-GRASS may dominate in some areas interspersed by one or more of the three main ground flora species listed above.

On the driest stands SILVER BIRCH and OAK may occur but neither attain more than 10% cover, ROWAN may also be present with up to 33% cover. Here the field layer may consist of BRAMBLE, BROAD BUCKLER-FERN and HONEYSUCKLE.

W4: DOWNY BIRCH – PURPLE MOOR-GRASS woodland

There are three sub-communities:

1. BRAMBLE and BROAD BUCKLER-FERN are generally both present, this sub-community tends to be found on drier soils;
2. SOFT-RUSH is always present and TORMENTIL, TUFTED HAIR-GRASS and CREEPING SOFT-GRASS are also often present, MARSH THISTLE, ANGELICA and VALERIAN are only found in this sub-community;
3. SPHAGNUM always present and generally carpets the ground, COTTONGRASSES HEATHER and CROSS-LEAVED HEATH may be present.

10) Acid Oak-Birch Woods – see **two options** below

10a) OAKS and/or BIRCHES predominate. [*In one sub-community Juniper is present and can be abundant (W17d – Birch/Juniper wood)*]. The ground flora is characterised

by extensive and very diverse moss and liverwort cover on the ground, over rocks, tree bases etc. (In ungrazed stands the abundance of mosses & liverworts may be reduced but the diversity remains high). Key species are *Dicranum majus, D. scoparium, Hylocomium splendens, Plagiothecium undulatum, Pleurozium scheberi, Polytrichum sp., Rhytidiadelphus loreus, and Thuidium tamariscinum*, four or more of which are likely to be present. BILBERRY, BRACKEN, WOOD SORREL, WAVY HAIR-GRASS and HARD FERN are the most commonly occurring ground flora species, but HEATHER, BELL HEATHER and HEATH BEDSTRAW are also frequent, particularly in the north.

Found on very acid soils, that are often shallow and rocky, the community is found mainly in the cooler, wet north-west of Britain. W17 may possibly occur in fragmentary form in the gill woods of the south-east, but otherwise is absent from the lowlands where W16 replaces it.

W17: OAK-BIRCH-MOSS (Dicranum majus) woodland

There are 4 sub-communities partly reflecting variations from "Atlantic" to more "Continental" conditions; there is also a grassy version related to W11 (see below):

1. The constants of this sub-community are OAK, and the mosses *Rhytidiadelphus loreus, Polytrichum* and *Dicranum majus*. Other species, which are almost always present, are WAVY HAIR-GRASS, and the mosses *Hylocomium splendens, Pleurozium schreberi, Plagiothecium undulatum, Dicranum scoparium* and *Mnium hornum.* Bryophytes *are the dominant feature of this sub-community with a diverse array over boulders forming a thick mat;*
2. similar to sub-community (a) but lacking the diversity of bryophytes;
3. ericoids are generally infrequent and of low cover, with grasses the dominant feature of this sub-community;
4. JUNIPER may be present, OAK is generally absent from the canopy with DOWNY BIRCH dominant. HEATHER is almost always present and BILBERRY is always present, otherwise there may be a mixture of ericoids, grasses and bryophytes.

10b) OAKS or BIRCHES are usually predominant (locally there may be some PINE on former heath). Understorey may not be well-developed but HOLLY, ROWAN or HAWTHORN are the most likely species to occur (JUNIPER does not occur). Ground flora species are often poor and BRACKEN may be dominated, but usually there will also be WAVY HAIR-GRASS or BILBERRY. Species such as BLUEBELL, and others found in part 11 of the key are generally absent. Mosses and liverworts may be common but there are generally relatively few species and *Hylocomium splendens* or *Polytrichum sp.* are lacking.

This community is found on very acidic, often sandy very free draining, soils in the lowlands and upland fringes. W16 does however spread into the uplands, particularly in

south-west England, south Wales, Yorkshire and Northumberland. Some long-established stands are former coppice or wood-pasture, but it is also typical of stands developed on lowland heath.

W16: OAK-WAVY HAIR-GRASS

There are two sub-communities:

1. SILVER BIRCH is constant in the canopy and is normally dominant with BRACKEN and WAVY HAIR-GRASS dominating the field layer;
2. SESSILE OAK is the constant and usually dominant canopy species with BILBERRY often abundant in the field layer along with WAVY HAIR-GRASS, HEATHER *(up to 90% cover compared with maximum of ~33% for sub-community a)* and BRACKEN, bryophytes may also be frequent and diverse, including *Plagiothecium undulatum, Lophocolea sp., Rhytidiadelphus loreus, R. triquetrus* and *Thuidium tamariscinum* all of which are absent from (a).

11) Base-rich Woodland – see **two options** below

11a) ASH/OAK woodland sometimes with occasional LIME, HORNBEAM, SYCAMORE, and/or ELM. The understorey tends to have HAZEL and HAWTHORN with FIELD MAPLE, DOGWOOD or SPINDLE, WILD PRIVET or WAYFARING TREE also present. Ground flora often dominated by DOG's MERCURY, WOOD ANEMONE, TUFTED HAIR-GRASS, IVY, RAMSONS and/or BLUEBELL. Other base-rich indicators may be common for example FALSE BROME, ENCHANTER's NIGHTSHADE, LORDS-AND-LADIES, COMMON NETTLES, CLEAVERS, WOOD AVENS, HERB ROBERT, and GROUND IVY. HONEYSUCKLE may also be present.
This woodland is typically found on calcareous mull soils, generally in warmer low rainfall areas, though it does extend into the NW uplands.

W8: ASH-FIELD MAPLE-DOG'S MERCURY woodland

There are seven sub-communities, which show a well defined geographical division:

1. Found in the south-east, particularly east Midlands, East Anglia and the Weald. HAZEL is constant with ASH, OAK and FIELD MAPLE normally present, whilst in the ground layer the prominent features are GROUND IVY, BUGLE and PRIMROSE;
2. Found mostly in the south-east, but with patchy distribution in the north-west including Scotland, on heavier soils. Characteristics are similar to (a) with differences mostly in the field layer with WOOD ANEMONE (constant) and LESSER CELANDINE generally more abundant than DOG'S MERCURY and BLUEBELL;

3. Found mostly in the south-east, but with patchy distribution in the north-west, on heavier soils. HAZEL and ASH are constant in the canopy but otherwise the woody cover varies widely. The constants in the field layer are TUFTED HAIR-GRASS and BRAMBLE both of which are normally abundant.
4. Found in the oceanic south-west. The canopy layer is generally species poor compared to other sub-communities, with the ground layer dominated by IVY, DOG'S MERCURY and BRAMBLE;
5. This is characteristic of the north-west, particularly Yorkshire, Derbyshire and the Welsh Marches, it is the only sub-community to occur with any frequency in Scotland. ASH can be the overwhelming dominant in the canopy but is frequently joined by SYCAMORE and ELM. The ground flora is characterised by the predominance of COMMON NETTLE, CLEAVERS, and HERB ROBERT amongst the DOG'S MERCURY and BRAMBLE;
6. This is characteristic of the north-west, particularly Yorkshire, Derbyshire and the Welsh Marches, but on deeper soils than sub-community (e). The canopy structure is similar to (e) but the ground layer is distinguished by the prominence of RAMSONS a constant and normally dominant species;
7. This is also characteristic of the north-west but is quite rare having been recorded only in parts of the Wye Valley, Derbyshire and fragmented stands in the Yorkshire Dales. The tree canopy is more diverse than the other north-west sub-communities as is the field layer with the only constants being DOG'S MERCURY and WOOD SAGE but usually at low cover intermixed with a species rich ground flora.

11b) ASH and ELM woods, found mainly in the uplands or upland fringe; ROWAN usually present but shrubs such as FIELD MAPLE, DOGWOOD, SPINDLE, WILD PRIVET etc. absent or very rare. WOOD SORREL is generally frequent (it is much less common in W8), some LORDS-AND-LADIES may be present, but GROUND IVY and HONEYSUCKLE are not present.

The field layer species tend to form complex mosaics on irregular topography. DOG's MERCURY and BLUEBELL are sometimes dominant, ENCHANTER's NIGHTSHADE, WOOD AVENS, HERB ROBERT and FALSE-BROME frequent. Ferns are very prominent and grasses may be frequent though not dominant. Mosses often form an abundant and diverse patchy mat however in terms of species present (rather than abundance and diversity of mosses generally) it is difficult to distinguish between W8 and W9 unless *Hylocomium splendens, Hylocomium brevirostre, Dicranum scoparium*, or *Isothecium myosuroides* are present in which case defer to W9: or if *Dicranella heteromalla* is present defer to W8. There are a few other definitive mosses but these require good ID skills to distinguish between the individual species in a Genus.
The community occurs on permanently moist brown soils derived from calcareous bedrock and superficial deposits in the sub-montane climate of north and west Britain.

W9: ASH-ROWAN-DOG's MERCURY woodland

There are two sub-communities:

1. Often diverse canopy cover which may include both <u>OAKS, SILVER BIRCH, BEECH, SCOT'S PINE, HOLLY</u> and <u>ELDER</u>, the ground layer is also diverse but almost always contains MALE FERN and the moss *Eurhynchium.* There may also be present <u>CLEAVERS, COMMON NETTLE, BRAMBLE, RED CAMPION, IVY, LORD'S AND LADIES</u> and <u>COW PARSLEY</u> none of which occur in sub-community (b);
2. Less diverse canopy cover containing none of the above trees, but may contain <u>GREY WILLOW</u> and <u>POPLAR</u>, which are not found in (a). The ground flora generally contains MEADOWSWEET, PIGNUT, and MARSH HAWK'S-BEARD along with the constant WOOD SORREL.

12. Mesotrophic Soil Woodlands – see **two options** below

12a) BIRCH and OAK stands often with HAZEL and ROWAN. BRACKEN and BRAMBLE do occur (cf W10) but also with several of the following: WOOD SORREL, SWEET VERNAL-GRASS, WAVY HAIR-GRASS, CREEPING SOFT-GRASS, BENT grasses, TORMENTIL, and HEATH BEDSTRAW. Mosses are more abundant than in W10, and include *Hylocomium splendens, Pleurozium schreberi, Dicranum majus, Rhytidiadelphus loreus,* and *Rhytidiadelphus squarrosus* (none of which are found in W10). The type occurs on free-draining moderately acid, base-poor brown earths in the cooler wetter parts of Britain, mainly the uplands and upland fringes.

W11: OAK-BIRCH-WOOD SORREL woodland

There are four sub-communities covering Atlantic to more Continental conditions, but all tend to have a very grassy appearance:

1. SESSILE OAK is a constant and often a dominant canopy species, BROAD BUCKLER-FERN and/or MALE FERN are usually present in the ground layer and may be dominant. Carpets of bluebells are often found in spring/ early summer (this is the only sub-community where cover is greater than 25%). In Wales this is the sub-community most likely to be encountered;
2. DOWNY BIRCH tends to be the dominant tree species with ROWAN almost always present, constants in the field layer are SWEET VERNAL GRASS, WOOD SORREL, TORMENTIL, HARD FERN, and the mosses *Thuidium tamariscinum* and *Dicranum majus*;
3. OAK or DOWNY BIRCH may be dominant but ASH or HAWTHORN are never present, constants in the ground layer are SWEET VERNAL GRASS, WAVY HAIR-

GRASS, HEATH BEDSTRAW, VIOLET, and the mosses *Thuidium tamariscinum* and *Hylocomium splendens*. BILBERRY, may be found and is unique to this sub-community;

4. The tree canopy is similar to sub-community (c) and the ground flora may be similar to (c) but the following species are never present BRAMBLE, BROAD BUCKLER-FERN, HEATHER, BELL HEATHER and the mosses *Pleurozium schreberi, Dicranum majus*, and *Atrichum undulatum*.

12b) OAK/BIRCH stands, sometimes with small amounts of CHESTNUT, LIME, and HORNBEAM. BEECH, ASH or SYCAMORE occur only rarely. HAZEL and HAWTHORN common in understorey. Ground flora of BRAMBLE, BRACKEN, HONEYSUCKLE with WOOD ANEMONE or BLUEBELL sometimes dominant, but lacking species typical of either very base rich or acidic conditions.

Found mainly on base-poor brown earths in the lowlands of Britain. In the upland fringes ASH and SYCAMORE may occur (they are usually absent) over stands with CREEPING SOFT GRASS, FERNS and WOOD SORREL (closely related to W11 above).

W10: OAK-BRACKEN-BRAMBLE woodland

There are 5 sub-communities:

1. PEDUNCULATE OAK and SILVER BIRCH may share dominance together with a diverse array of other woody associates, the ground flora may also contains most of the species found in the other sub-communities, but the diversity for an individual community may be low, and the species composition unremarkable;
2. PEDUNCULATE OAK is generally the dominant canopy species but SESSILE OAK is always absent, as are RHODODENDRON, ROWAN, CRAB APPLE, BLACKTHORN, and FIELD MAPLE which are commonly found in other sub-communities. WOOD ANEMONE, BRAMBLE, HONEYSUCKLE and BLUEBELL are normally present but other common plants of this NVC type are absent such as BENT grasses, SWEET VERNAL GRASS, FALSE BROME, WAVY HAIR-GRASS, FOXGLOVE, HEATH BEDSTRAW, SOFT RUSH, BILBERRY, RASPBERRY, DOG ROSE, and BROOM;
3. Often dominated by PEDUNCULATE OAK with an under storey of HAZEL, but SESSILE OAK may also be present, the ground flora always contains BRAMBLE, and HONEYSUCKLE with IVY almost always present and often abundant;
4. PEDUNCULATE OAK and SILVER BIRCH may share dominance, BRACKEN is always present and may be dominant in the field layer together with BRAMBLE, and YORKSHIRE FOG the latter of which is almost always present (a distinctive feature of this sub-community). Exotic conifers are frequently planted in this sub-community;

5. There may be no real dominant canopy species, the ground flora is characterised by the dominance of WOOD SORREL and CREEPING SOFT-GRASS, with <u>LEMON SCENTED-FERN</u> often present and exclusive to this sub-community. In contrast species frequently associated with all other sub-communities are <u>absent</u> including HOGWEED, GROUND IVY, HARD FERN, GORSE, SELF-HEAL, and COMMON COW-WHEAT.

9.5.6.2 NVC Key for Plantation

Assess which of the following three statements is most appropriate:

The soil is more or less permanently wet as a result of a high water table with *Sphagnum* including *Sphagnum palustre* present and a prominent feature
Go to 4

The soil is more or less permanently wet as a result of a high water table but with *Sphagnum* absent
- Go to 5

 The soil is generally dry soils (with any wet patches infrequent and small in size)
- Go to 6

4) Wet soils with *Sphagnum* prominent – choose the best option from the four below

4a) Base rich and nutrient rich soils, generally found on wet flushes, the bottom of slopes, or sometimes on periodically flooded alluvial flats. Ground flora includes MEADOWSWEET, YELLOW PIMPERNEL, CREEPING BUTTERCUP, LADY FERN, ROUGH MEADOW-GRASS, CREEPING SOFT-GRASS, TUFTED HAIR-GRASS and OPPOSITE-LEAVED GOLDEN SAXIFRAGE. PURPLE MOOR-GRASS is never present.
There may be individuals trees/shrubs or seedlings of the following species ALDER, ASH, SILVER BIRCH, GREY WILLOW, HAZEL, and HAWTHORN.
(HEATHER, WAVY HAIR-GRASS and PURPLE MOOR-GRASS are <u>never</u> present).

W7: ALDER – ASH – YELLOW PIMPERNEL woodland

There are 2 sub-communities in which Sphagnum occurs:

1. MEADOWSWEET, YELLOW PIMPERNEL and CREEPING BUTTERCUP are normally present in the ground flora, whilst COMMON NETTLE is generally absent and is never greater than 10% cover;
2. WOOD SORREL is frequent and can be abundant in the ground layer, VIOLET, <u>WILD STRAWBERRY</u>, <u>MALE FERN, HEATH BEDSTRAW, BRACKEN, WOOD SAGE,</u> <u>PIGNUT</u> and IVY are often present.

4b) Very boggy peat to semi-dry peaty/gley with high water table. Ground flora usually dominated by PURPLE MOOR-GRASS, although SOFT-RUSH and TUFTED HAIR-GRASS may dominate in some areas. DOWNY BIRCH will almost always be present and can form a major component as an understorey. Also present at low frequency may be GREY WILLOW, EARED WILLOW, and on the drier stands SILVER BIRCH, OAK and ROWAN with a field layer consisting of BRAMBLE, BROAD BUCKLER-FERN and HONEYSUCKLE.

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W4: DOWNY BIRCH – PURPLE MOOR-GRASS woodland

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There are three sub-communities:

1. Community tends to be found on drier soils;
2. SOFT-RUSH is always present and TORMENTIL, TUFTED HAIR-GRASS and CREEPING SOFT-GRASS are also often present, <u>MARSH THISTLE</u>, <u>ANGELICA</u> and <u>VALERIAN</u> are only found in this sub-community;
3. <u>BRAMBLE</u> and BROAD BUCKLER-FERN are generally both present, this sub-SPHAGNUM always present and generally carpets the ground, <u>COTTONGRASSES</u> and <u>HEATHER</u> may be present.

4c) Predominantly heathy ground flora with some of HEATHER, BELL HEATHER, CROSS-LEAVED HEATH, BILBERRY, COWBERRY and WAVY HAIR-GRASS. This may include planted stands of Scots Pine as well as exotic conifers.

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W18: SCOT'S PINE- MOSS (Hylocomium splendens) woodland.

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There are two sub-communities that exist in wet conditions:

1. *Sphagnum* is always present, PURPLE MOOR GRASS may also be present and abundant, however HEATH BEDSTRAW, WOOD SORREL, and TORMENTIL are always absent;
2. *Sphagnum* and *Dicranum majus* are always present, *Thuidium tamariscinum* is generally present and abundant but *Polytrichum sp.* is generally of very low cover or absent. PURPLE MOOR GRASS is not present.

4d)   The ground flora is characterised by extensive and very diverse moss and liverwort cover on the ground, over rocks, tree bases etc. (In ungrazed stands the abundance may be reduced but the diversity remains). Key species are *Dicranum majus, D. scoparium, Hylocomium splendens, Plagiothecium undulatum, Pleurozium schreberi, Polytrichum sp., Rhytidiadelphus loreus,* and *Thuidium tamariscinum*, four or

more of which are likely to be present. BILBERRY, BRACKEN, WOOD SORREL, WAVY HAIR-GRASS and HARD FERN are the most commonly occurring ground flora species, but HEATHER, BELL HEATHER and HEATH BEDSTRAW are also frequent, particularly in the north.

Found on very acid soils, that are often shallow and rocky, the community is found mainly in the cooler, wet north-west of Britain. W17 may possibly occur in fragmentary form in the gill woods in the south-east but otherwise is absent from the lowlands where W16 replaces it.

W17: OAK-BIRCH-MOSS (Dicranum majus) woodland

There are 4 sub-communities partly reflecting variations from "Atlantic" to more "Continental" conditions; there is also a grassy version related to W11 (see below):

1. the constants of this sub-community are the mosses *Rhytidiadelphus loreus, Polytrichum* and *Dicranum majus*. Other species, which are almost always present, are WAVY HAIR-GRASS, and the mosses *Hylocomium splendens, Pleurozium schreberi, Plagiothecium undulatum, Dicranum scoparium* and *Mnium hornum.* Bryophytes *are the dominant feature of this sub-community with a diverse array over boulders forming a thick mat;*
2. similar to sub-community (a) but lacking the diversity of bryophytes;
3. ericoids are generally infrequent and of low cover, with grasses the dominant feature of this sub-community;
4. JUNIPER may be present. HEATHER is almost always present and BILBERRY is always present, otherwise there may be a mixture of ericoids, grasses and bryophytes.

5) Wet soils but with *Sphagnum* always absent – see **two options** below

5a)   ALDER may be dominant or may share dominance with DOWNY BIRCH and/or GREY WILLOW. On drier stands SYCAMORE, OAK or ASH may be present at low frequency. SCOTS PINE may also invade or be planted. The field layer is species-poor with COMMON NETTLE generally dominant frequently in association with CLEAVERS, or BRAMBLE. COMMON REED and GREATER TUSSOCK-SEDGE are rarely present and if so are at low cover.

Generally found as small isolated stands, or narrow fringes of slow moving rivers or pools.

W6: ALDER-COMMON NETTLE woodland

There are 5 sub-communities:

1. COMMON NETTLE is always present and is normally abundant; CLEAVERS are also normally present and abundant. In patches where these two species are not prominent there can be CREEPING BUTTERCUP, GROUND IVY, HOGWEED and various grasses;
2. CRACK-WILLOW is always present and is normally the dominant tree species however there is normally a thick shrub layer consisting of scrubs and saplings. COMMON NETTLE is always present in the ground flora though rarely achieves more than 25% cover;
3. ALMOND WILLOW, PURPLE WILLOW and OSIER are the dominant tree species with the ground flora similar to sub-community (a);
4. BRAMBLE is always present and can form a thick under scrub, ALDER is normally the dominant tree with ELDER normally present in the shrub layer though generally at low cover, COMMON NETTLE is normally present and can be abundant;
5. DOWNY BIRCH is always present and is often the dominant tree, there are frequently individual SCOTS PINE present, and the ground flora normally consists of BRAMBLE, HONEYSUCKLE and BROAD BUCKLER FERN.

5b) Base rich and nutrient rich soils, generally found on wet flushes, the bottom of slopes, or sometimes on periodically flooded alluvial flats. Ground flora includes MEADOWSWEET, YELLOW PIMPERNEL, CREEPING BUTTERCUP, LADY FERN, ROUGH MEADOW-GRASS, CREEPING SOFT-GRASS, TUFTED HAIR-GRASS and OPPOSITE-LEAVED GOLDEN SAXIFRAGE. There may be individuals trees/shrubs or seedlings of the following species ALDER, ASH, SILVER BIRCH, GREY WILLOW, HAZEL, and HAWTHORN. *(HEATHER, WAVY HAIR-GRASS and PURPLE MOOR-GRASS never present).*

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W7: ALDER – ASH – YELLOW PIMPERNEL woodland

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There is one sub-community, where Sphagnum is not a prominent feature:

1. The ground flora normally has CREEPING BUTTERCUP, OPPOSITE-LEAVED GOLDEN SAXIFRAGE and COMMON NETTLE that are frequent to dominant.

6) Generally dry soils, *Sphagnum* **normally absent** – see **three options** below

6a) Woods on very acidic soils. One or all of BILBERRY, WAVY HAIR-GRASS or HEATHER present, but with few other species, often with some BRACKEN, or extensive moss carpets. Native tree/ shrub species remaining may include: OAK, BIRCH, self-sown PINE, HOLLY and ROWAN.

6b)   Woods on base-rich soils. Ground flora includes at least some species characteristic of base-rich conditions such as DOG's MERCURY, FALSE BROME, ENCHANTER's NIGHTSHADE, COMMON NETTLE, HERB ROBERT, CLEAVERS, RAMSONS, ROUGH MEADOW GRASS or GROUND IVY. Native tree/ shrub species remaining may include ASH, ELM, LIME, SYCAMORE, OAK, SWEET CHESTNUT, HORNBEAM, HAZEL, FIELD MAPLE, WILD PRIVET, DOGWOOD, SPINDLE, and WAYFARING TREE.
Go to 8

6c)   Woods on moderately nutrient rich soils (mesotrophic). The ground flora usually has abundant (BRAMBLE, BRACKEN, HONEYSUCKLE) or BLUEBELL or is dominated by grasses (SOFT GRASSES, BENTS, WAVY HAIR-GRASS, SWEET VERNAL-GRASS). Species characteristic of base-rich conditions (see section 7) are absent (or very scarce).   Native tree/ shrub species remaining may include OAK, BIRCH, SWEET CHESTNUT, LIME, HORNBEAM, HAZEL and HAWTHORN.
Go to 9

7) Woods on very acidic soils - see **five options** (7a-e) below

7a)   Found only in Scotland on nutrient poor soils. Heathy ground flora with some of HEATHER, BELL HEATHER, CROSS-LEAVED HEATH, BILBERRY, COWBERRY WAVY HAIR-GRASS. Mosses may be abundant.

W18: SCOT'S PINE- MOSS (Hylocomium splendens) woodland.

There are three remaining sub-communities:

1   this sub-community may include a few exotic conifers, CREEPING LADY'S TRESSES are always present but this is the only sub-community where BILBERRY is <u>absent</u>;
2. BILBERRY and COWBERRY always present, usually with minimum cover of 10%, PURPLE MOOR GRASS may be present and abundant, this species is only found in (b&d);
3. JUNIPER may be present and fairly abundant, HAIRY WOOD-RUSH is always present though normally at a low level, this species is only found in (a&c);

7b)   Very acid "heathy" sites found on very base-poor soils in the South of England, usually with some WAVY HAIR-GRASS, BILBERRY or HEATHER present at least near or under gaps. BRACKEN, BENT grasses and WOODRUSHES also often common. BEECH, HOLLY, OAKS and BIRCHES are the commonest associated trees and shrubs.

W15: BEECH-WAVY HAIR-GRASS woodland.

There are four sub-communities largely reflect trends in the level of light below the canopy from virtually no ground flora in the densest shade to HEATHER under stands with a discontinuous canopy cover:

1. the vegetation is overwhelmingly dominated by BEECH almost to the total exclusion of all other plants;
2. OAK may be frequent in the canopy with WAVY HAIR-GRASS constant in the ground flora, YORKSHIRE FOG may be present at a low level and *Hylocomium splendens* may be present;
3. OAK is constant and may be as frequent in the canopy as BEECH, HOLLY is also common. BILBERRY, BRACKEN, WAVY HAIR-GRASS and *Mnium hornum* are constant in the ground flora;
4. HEATHER is a constant and normally dominant feature of the ground flora, BRACKEN is also constant.

7c)   Juniper may be present and can be abundant. The ground flora is characterised by extensive and very diverse moss and liverwort cover on the ground, over rocks, tree bases etc. (In ungrazed stands the abundance may be reduced but the diversity remains). Key species are *Dicranum majus, D. scoparium, Hylocomium splendens, Plagiothecium undulatum, Pleurozium schreberi, Polytrichum sp., Rhytidiadelphus loreus, and Thuidium tamariscinum*, four or more of which are likely to be present. BILBERRY, BRACKEN, WOOD SORREL, WAVY HAIR-GRASS and HARD FERN are the most commonly occurring ground flora species, but HEATHER, BELL HEATHER and HEATH BEDSTRAW are also frequent, particularly in the north.
Found on very acid soils, that are often shallow and rocky, the community is found mainly in the cooler, wet north-west of Britain. W17 may possibly occur in fragmentary form in the gill woods in the south-east but otherwise is absent from the lowlands where W16 replaces it.

W17: OAK-BIRCH-MOSS (*Dicranum majus*) woodland

There are 4 sub-communities partly reflecting variations from "Atlantic" to more "Continental" conditions; there is also a grassy version related to W11 (see below):

1. the constants of this sub-community are the mosses *Rhytidiadelphus loreus, Polytrichum* and *Dicranum majus*. Other species, which are almost always present, are WAVY HAIR-GRASS, and the mosses *Hylocomium splendens, Pleurozium schreberi, Plagiothecium undulatum, Dicranum scoparium* and *Mnium hornum.* Bryophytes *are the dominant feature of this sub-community with a diverse array over boulders forming a thick mat;*

2   similar to sub-community (a) but lacking the diversity of bryophytes;

3   ericoids are generally infrequent and of low cover, with grasses the dominant feature of this sub-community;

4   <u>JUNIPER</u> may be present, OAK is generally absent from the canopy with DOWNY BIRCH dominant. HEATHER is almost always present and BILBERRY is always present, otherwise there may be a mixture of ericoids, grasses and bryophytes.

7d)   Understorey may not be well-developed but HOLLY, ROWAN or HAWTHORN are the most likely species to occur (JUNIPER does <u>not occur</u>). Ground flora species poor often BRACKEN dominated, but usually with WAVY HAIR-GRASS or BILBERRY and lacking species such as BLUEBELL, and others characteristic of base-rich soils. Mosses and liverworts may be common but there are generally relatively few species and *Hylocomium splendens* or *Polytrichum sp.* are lacking. This community is found on very acidic, often sandy very free draining, soils in the lowlands and upland fringes. W16 does however spread into the uplands, particularly in south-west England, south Wales, Yorkshire and Northumberland.

W16: OAK-WAVY HAIR-GRASS

There are two sub-communities:

1   SILVER BIRCH may be present with BRACKEN and WAVY HAIR-GRASS dominating the field layer;

2   SESSILE OAK may be present with BILBERRY often abundant in the field layer along with WAVY HAIR-GRASS and BRACKEN, bryophytes are also frequent and diverse, including *Plagiothecium undulatum, Lophocolea sp., Rhytidiadelphus loreus, R. triquetrus* and *Thuidium tamariscinum* all of which are absent from (a).

7e) Stand dominated by Ground flora usually a mixture of BENT grasses, WOOD SORREL, WOOD-RUSH, TORMENTIL and HARD FERN. Only found in Scotland, Northumberland, the Pennines and the Lake District. JUNIPER may remain as an understorey in the plantation.

W19: JUNIPER – WOOD SORREL woodland

There are 2 sub-communities:

1   Generally heathy, with WAVY HAIR-GRASS, BILBERRY and HEATH BEDSTRAW always present and usually abundant but DOG'S MERCURY never present;

2   generally grassy or bare, but VIOLET always present normally with WOOD ANEMONE, <u>DOG'S MERCURY</u> may be abundant and <u>LADY'S BEDSTRAW, SHEEP'S SORREL</u> and <u>MEADOW BUTTERCUP</u> may be present.

8) Woods on base-rich soils – choose the best from the **four options** (8a-d) below

8a) The ground flora is dominated by DOG's MERCURY, COMMON NETTLE, IVY, and FALSE BROME. However the typical base-rich species SANICLE and ENCHANTER'S NIGHTSHADE are never present. Under the planted conifers YEW, young ASH, COMMON WHITEBEAM, (in a few sites BOX), BEECH, and ELDER may occur. This community is most common on moderate-steep limestone or chalk slopes with thin soils (more rarely on moderate acid rocks in the Lake District). Most common in south-east England.

W13: YEW woodland

There are two sub-communities:

1   DOG'S MERCURY is virtually absent;
2   DOG'S MERCURY is always present and is normally abundant.

8b)   Former beech stands on base-rich, often thin soils, e.g. over chalk. The ground flora may be sparse but DOG'S MERCURY, FALSE BROME, ENCHANTER'S NIGHTSHADE, LORDS-AND-LADIES, SANICLE or other species suggesting base-rich conditions are likely to be present. IVY is also often common. Associated trees and shrubs may include BEECH, ASH, HAZEL, COMMON WHITEBEAM, YEW, HAWTHORN or SYCAMORE. Found on free-draining base-rich soils with a pH usually between 7 and 8. Largely in the south-east of Britain, often on the steep drift-free faces of chalk escarpments.

W12: BEECH-DOG'S MERCURY woodland

There are three sub-communities:

1   Usually found on deeper moister soils, DOG'S MERCURY and BRAMBLE are generally the dominant ground flora, but <u>RAMSONS, WOOD ANEMONE, BROAD BUCKLER-FERN</u> and <u>LESSER CELANDINE</u> may also be abundant.
2   Usually on very shallow dry chalk or limestone soils, IVY is often the dominant vegetation along with DOG'S MERCURY AND BRAMBLE, but <u>HOGWEED, COW PARSLEY, FALSE OAT-GRASS</u> and <u>BUGLE</u> may be present at low cover;
3   Found on steep rocky soil and is characterised by a dense yew understorey and is thus closely related to W13 (YEW woodland, section 8b). The ground flora is sparse.

8c) Ground flora often dominated by DOG's MERCURY, WOOD ANEMONE, TUFTED HAIR-GRASS, IVY, RAMSONS and/or BLUEBELL. Other base-rich indicators may be common for example FALSE BROME, ENCHANTER's NIGHTSHADE, LORDS-AND-LADIES, COMMON NETTLES, CLEAVERS, and GROUND IVY. WOOD SORREL is generally of low cover.

Native tree\ shrub species that may occur are OAK, ASH, LIME, ELM, HORNBEAM, HAZEL, HAWTHORN, FIELD MAPLE, DOGWOOD, SPINDLE, WILD PRIVET or WAYFARING TREE also present.

This woodland is typically found on calcareous mull soils, generally in warmer low rainfall areas, though it does extend into the NW uplands.

W8: ASH-FIELD MAPLE-DOG'S MERCURY woodland

There are seven sub-communities, which show a well defined geographical division:

1. Found in the south-east, particularly east Midlands, East Anglia and the Weald. In the ground layer the prominent features are GROUND IVY, BUGLE and PRIMROSE;
2. Found mostly in the south-east, but with patchy distribution in the north-west including Scotland, on heavier soils. Characteristics are similar to (a) with differences mostly in the field layer with WOOD ANEMONE (constant) and LESSER CELANDINE generally more abundant than DOG'S MERCURY and BLUEBELL;
3. Found mostly in the south-east, but with patchy distribution in the north-west, on heavier soils. The constants in the field layer are TUFTED HAIR-GRASS and BRAMBLE both of which are normally abundant.
4. Found in the oceanic south-west. The canopy layer is generally species poor compared to other sub-communities, with the ground layer dominated by IVY, DOG'S MERCURY and BRAMBLE;
5. This is characteristic of the north-west, particularly Yorkshire, Derbyshire and the Welsh Marches, it is the only sub-community to occur with any frequency in Scotland. ASH can be the overwhelming dominant in the canopy but is frequently joined by SYCAMORE and ELM. The ground flora is characterised by the predominance of COMMON NETTLE, CLEAVERS, and HERB ROBERT amongst the DOG'S MERCURY and BRAMBLE;
6. This is characteristic of the north-west, particularly Yorkshire, Derbyshire and the Welsh Marches, but on deeper soils than sub-community (e). The canopy structure is similar to (e) but the ground layer is distinguished by the prominence of RAMSONS a constant and normally dominant species;
7. This is also characteristic of the north-west but is quite rare having been recorded only in parts of the Wye Valley, Derbyshire and fragmented stands in the

Yorkshire Dales. The tree canopy is more diverse than the other north-west sub-communities as is the field layer with the only constants being DOG'S MERCURY and WOOD SAGE but usually at low cover intermixed with a species rich ground flora.

8d)   WOOD SORREL is generally a prominent feature, some LORDS-AND-LADIES are often present.

The field layer species tend to form complex mosaics on irregular topography. DOG's MERCURY and BLUEBELL are sometimes dominant, ENCHANTER's NIGHTSHADE, WOOD AVENS, HERB ROBERT and FALSE-BROME frequent. Ferns are very prominent and grasses may be frequent though not dominant. Native tree/shrub species that may remain include ROWAN, ASH, OAK, ELM, FIELD MAPLE, DOGWOOD, SPINDLE, and WILD PRIVET.

The community occurs on permanently moist brown soils derived from calcareous bedrock and superficial deposits in the sub-montane climate of north and west Britain in the uplands or upland fringe.

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W9: **ASH-ROWAN-DOG's MERCURY woodland**

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There are two sub-communities:

1   Often diverse canopy cover which may include both <u>OAKS, SILVER BIRCH, BEECH, SCOT'S PINE, HOLLY</u> and <u>ELDER</u>, the ground layer is also diverse but almost always contains MALE FERN and the moss *Eurhynchium.* There may also be present <u>CLEAVERS, COMMON NETTLE, BRAMBLE, RED CAMPION, IVY, LORD'S AND LADIES </u>and <u>COW PARSLEY</u> none of which occur in sub-community (b);
2   Less diverse canopy cover containing none of the above trees, but may contain <u>GREY WILLOW </u>and <u>POPLAR</u>, which are not found in (a). The ground flora generally contains MEADOWSWEET, PIGNUT, and MARSH HAWK'S-BEARD along with the constant WOOD SORREL.

9) Woods on moderately nutrient rich soils (mesotrophic) - see **three options** (9a-c) below

9a) Ground flora showing neither indicators of very base-rich or of very acidic conditions. Frequently BRAMBLE or BRACKEN are common (depending on light levels), but other species such as IVY, WOOD-MELICK, WOOD-MILLET, BUTCHER'S-BROOM or TUFTED HAIR-GRASS are also frequent. Generally found on moderately acid brown earth soils, often with superficial deposits (e.g. clay-with-flints) over the southern chalk of England. BEECH and HOLLY may be present as remnant species.

W14: BEECH-BRAMBLE woodland.

There are no sub-communities.

9b) BRACKEN and BRAMBLE do occur (cf W10) but also with several of the following: WOOD SORREL, SWEET VERNAL-GRASS, WAVY HAIR-GRASS, CREEPING SOFT-GRASS, BENT grasses, TORMENTIL, and HEATH BEDSTRAW. Mosses are more abundant than in W10, and include *Hylocomium splendens, Pleurozium schreberi, Dicranum majus, Rhytidiadelphus loreus,* and *Rhytidiadelphus squarrosus* (none of which are found in W10). Native tree/ shrub species remaining may include BIRCH, OAK, HAZEL and ROWAN.

The type occurs on free-draining moderately acid, base-poor brown earths in the cooler wetter parts of Britain, mainly the uplands and upland fringes.

W11: OAK-BIRCH-WOOD SORREL woodland

There are four sub-communities covering Atlantic to more Continental conditions, but all tend to have a very grassy appearance:

1. BROAD BUCKLER-FERN and/or MALE FERN are usually present in the ground layer and may be dominant. Bluebells may carpet the ground with up to 100% cover (in all other sub-communities they do not exceed 25% cover). This is the sub-community most likely to be encountered in Wales;
2. constants in the field layer are SWEET VERNAL GRASS, WOOD SORREL, TORMENTIL, HARD FERN, and the mosses *Thuidium tamariscinum* and *Dicranum majus*;
3. constants in the ground layer are SWEET VERNAL GRASS, WAVY HAIR-GRASS, HEATH BEDSTRAW, VIOLET, and the mosses *Thuidium tamariscinum* and *Hylocomium splendens*. BILBERRY, may be found and is unique to this sub-community;

4   The ground flora may be similar to (c) but the following species are <u>never</u> present BRAMBLE, BROAD BUCKLER-FERN, HEATHER, BELL HEATHER and the mosses *Pleurozium schreberi, Dicranum majus*, and *Atrichum undulatum*.

9c)   Ground flora of BRAMBLE, BRACKEN, and HONEYSUCKLE with WOOD ANEMONE or BLUEBELL sometimes dominant, but lacking species typical of either very base rich or acidic conditions. Native tree/ shrub species remaining may include OAK, BIRCH, CHESTNUT, LIME, HORNNBEAM, BEECH, ASH, SYCAMORE, HAZEL and HAWTHORN. Found mainly on base-poor brown earths in the lowlands of Britain. In the upland fringes ASH and SYCAMORE may occur (they are usually absent) over stands with CREEPING SOFT GRASS, FERNS and WOOD SORREL (closely related to W11 above).

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W10: OAK-BRACKEN-BRAMBLE woodland

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There are 5 sub-communities:

1   The ground flora is diverse, as are any remnant native tree/shrub species;
2   WOOD ANEMONE, BRAMBLE, HONEYSUCKLE and BLUEBELL are normally present but other common plants of this NVC type are <u>absent</u> such as BENT grasses, SWEET VERNAL GRASS, FALSE BROME, WAVY HAIR-GRASS, FOXGLOVE, HEATH BEDSTRAW, SOFT RUSH, BILBERRY, RASPBERRY, DOG ROSE, and BROOM;
3   The ground flora always contains BRAMBLE, and HONEYSUCKLE with IVY almost always present and often abundant;
4   BRACKEN is always present and may be dominant in the field layer together with BRAMBLE, and YORKSHIRE FOG the latter of which is a distinctive feature of this sub-community. Exotic conifers are frequently planted in this sub-community;
5   The ground flora is characterised by the dominance of WOOD SORREL and CREEPING SOFT-GRASS, with <u>LEMON SCENTED-FERN</u> often present and exclusive to this sub-community. In contrast species frequently associated with all other sub-communities are <u>absent</u> including HOGWEED, GROUND IVY, HARD FERN, GORSE, SELF-HEAL, and COMMON COW-WHEAT.

For the Component Group fill in the following Data Fields:

Table 9 - 7: NVC Data Fields

Data Field	Options	Comments
NVC Class	Various	See the NFI Survey Manual Appendix D for more details, also the NVC documents in the Additional Documents folder.
	Not applicable	Non-treed/open Component Groups e.g. urban areas
% Cover	Free Text	Ensure that the total NVC coverage equals 100%.

9.5.7 Adding, Deleting and Cloning records

Add by right clicking on the NVC folder to 'Add' a new NVC record.
Clone by right clicking on a NVC record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a NVC record.

9.6 Browsing Damage

Open the Browsing Damage Sub-component. For the Component fill in the following Data Fields:

Table 9 - 8: Browsing Damage Data Fields

Data Field	Options	Comments
Browsing Damage	No Yes Not Applicable	If Yes then further fields appear (see rest of table). Not Applicable –use for when trees are protected (either singly or in small groups) e.g. tubes, or where trees cannot be accessed for assessment.
Browsing Frequency	None <20% damaged 20-80% damaged >80% damaged	This Data Field relates to the % of trees within the Component that show evidence of browsing.
Browsing Severity	<20% browsed 20-80% browsed >80% browsed	Of those trees that have been browsed only, what is the mean proportion of the tree that has been browsed?

9.6.1 Adding, Deleting and Cloning records

Add by right clicking on the Browsing folder to 'Add' a new Browsing record.
Clone by right clicking on a Browsing record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a Browsing record.

9.7 Bark Stripping Damage

Open the Bark Stripping Damage Sub-component. For the Component fill in the following Data Fields:

Table 9 - 9: Bark Stripping Damage Data Fields

Data Field	Options	Comments
Stripping Location	None Not Applicable Up to 0.5m 0.5m – 1.8m > 1.8m	If anything other than None or Not Applicable then further fields appear. Not Applicable – use for when trees are in tubes or other protection (singly or in small groups) or for trees that cannot be accessed for assessment.
Damage Frequency	<20% damaged 20-80% damaged >80% damaged	This Data Field relates to the % of trees within the Component that show evidence of bark stripping.
Stripping Severity	Majority of Trees Damaged will Survive Majority of Trees Damaged will Die	Of those trees that have been damaged, will the majority of them Survive or Die due to the damage?

9.7.1 Adding, Deleting and Cloning records

Add by right clicking on the Bark Stripping Damage folder to 'Add' a new Browsing record.
Clone by right clicking on a Bark Stripping Damage record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a Bark Stripping Damage record.

For example: Adding more than one category of damage:

If 25% of the Component has damage at 0-0.5m and it is felt that most of these trees will die then the following should be recorded:

Stripping Location – Up to 0.5m

Damage Frequency - 20-80% damaged
Stripping Severity - Majority of Trees Damaged will Die

If there is also evidence of bark stripping above 1.8m (from Squirrels for example) for 10% of the component and these trees are likely to survive the following will also need to be Added:

Stripping Location – Above 1.8m
Damage Frequency - <20% damaged
Stripping Severity - Majority of Trees Damaged will Survive.

9.8 Tree Health

Open the Tree Health Sub-component. For the Component fill in the following Data Fields where there is any evidence of the following on one or more stems of:

Table 9 - 10: Tree Health Data Fields

Data Field	Options	Comments
General Poor Health	Yes No Not Applicable	Not Applicable – for use when the trees cannot be accessed for assessment
Crown Dieback	Yes No Not Applicable	Death of branches in the upper crown rather than needle/leaf loss. Not Applicable – for use when the trees cannot be accessed for assessment
Stem Decay	Yes No Not Applicable	Areas of exposed wood evidently decayed, or a cavity has formed, or fruit bodies of wood-rotting fungi form on bark or exposed wood. Not Applicable – for use when the trees cannot be accessed for assessment
Poor Health Indicators	None Not Applicable Mechanical Damage Snow damage Windsnap	 Not Applicable – for use when the trees cannot be accessed for assessment From harvesting vehicles, e.g. abrasion Branches, and occasionally stems, permanently bent or broken by weight of snow. Stem is snapped by wind rather than blown over

	Resin Bleed Bacterial Seep Red Needles Yellow Needles Needle Drop Fruiting Bodies • Excessive leaf loss • Needle retention • Brown needles • Leaf retention • Bore holes – Oval • Bore holes – Circular • Bore holes - D-shaped • Bore hole location – Buttress • Bore hole location - Knee height to lower canopy • Bore hole location – Canopy • Bore hole - size class – Up to 3mm across • Bore hole - size class – >3mm across • Bark lesions (bruising / dieback of bark)	Excessive needle drop From fungi Bore holes are assessed for live and dead trees.

9.8.1 Adding, Deleting and Cloning records

Add by right clicking on the Tree Health folder to 'Add' a new Tree Health record.
Clone by right clicking on a Tree Health record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a Tree Health record.

For sites with tree health issues submit photographs in the Photo field (See 9.3 Photo) with descriptions of the issue/s.

9.9 Tree Pest/Disease

Open the Tree Disease Sub-component. For the Component, fill in the following Data Fields:

Table 9 - 11: Tree Pest/Disease Data Fields

Data Field	Options	Alternative Name
General Poor Health	Not Applicable	Not Applicable – for use when the trees cannot be accessed for assessment
	None	
	Anoplophora chinensis	Citrus Longhorn beetle
	Anoplophora glabripennis	Asian Longhorn beetle
	Canker	-
	Cryphonectria parasitica	Chestnut blight
	Dendroctinus micans	Great spruce bark beetle
	Gibberella circinata	Pine Pitch canker
	Horse Chestnut Bleeding Canker	Pseudomonus syringae
	Ips amitinus	}
	Ips duplicatus	} 8-Toothed spruce bark
	Ips typographus	} beetle
	Oak Processionary Moth	Thaumetopoea processionea
	Phytophthora kernoviae	
	Phytophthora ramorum	Sudden oak death
	Red band needle blight	Dothistroma needle blight
	Tomicus piniperda	Pine Shoot beetle
	Weevils	Hylobius/Hylastes/Pissodes
	Asian Longhorn beetle	Anoplophora glabripennis
	Ash Dieback	Chalara fraxinea
	Pine Lappet Moth	Dendrolimus pini
	Sawyer Beetle	Prionus coriarius
	Pine Processionary Moth	Thaumetopoea pityocampa
	Emerald Ash Borer	Agrilus planipennis
	Bronze Birch borer	Agrilus anxius
	Horse chestnut leaf miner	Cameraria ohridella
	Phytopthera lateralis	-
	Phytopthera austrocedrae	-
	Phytopthera spp	-
	Acute/Chronic Oak decline	-

The table below highlights the main pests & diseases the surveyors need to be aware of in each Bidding Area. These are the priority pests & diseases the surveyor needs to ensure they know how to identify for work in any given Bid Area. The numbers next to the pest or disease relate to the numbered diseas in the previous table.

Table 9 - 12: Top five pests & disease per Bidding Area

Bid Area	2. Anoplophora glabripennis / Longhorn Beetle	4. Cryptonectria parasitica / Chestnut Blight	5. Dendroctinus micans / Great Spruce Bark Beetle	Processionary Moth / Thaumtopoea processionea	13. Phytophthora ramorum / Sudden Oak Death	Needle Blight / Dothistroma	18. Ash Dieback / Chalara fraxinea	Lappet Moth / pini	26. Phytophthora austrocedrae	Chronic oak decline	Larch bark beetle / Ips cembrae
0					Y		Y				
1			Y		Y	Y	Y	Y			
2			Y		Y		Y	Y			Y
3			Y		Y		Y	Y			Y
4			Y		Y		Y	Y	Y		
5			Y		Y	Y	Y		Y		
6			Y		Y	Y	Y				Y
7					Y	Y	Y			Y	Y
8					Y	Y	Y		Y	Y	
9					Y	Y	Y		Y	Y	
10					Y	Y	Y		Y	Y	
11					Y	Y	Y		Y	Y	
12					Y	Y	Y			Y	Y
13		Y		Y	Y	Y				Y	
14					Y	Y	Y			Y	Y
15	Y			Y	Y		Y			Y	
16	Y	Y		Y	Y					Y	
17	Y	Y			Y		Y			Y	
18	Y	Y		Y	Y		Y				
19	Y	Y		Y	Y		Y				
S1			Y		Y		Y	Y	Y		
S2		Y		Y	Y	Y				Y	
S3	Y				Y	Y	Y			Y	

9.9.1 Adding, Deleting and Cloning records

Add by right clicking on the Pests & Disease folder to 'Add' a new Pests & Disease record. Clone by right clicking on a Pests & Disease record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a Pests & Disease record.

For sites with tree health issues submit photographs in the Photo field (Chapter 9.3 Photo) with descriptions of the issue/s.

9.10 Manual Intervention

Open the Manual Intervention Sub-component. Assessments for Manual Intervention are mainly for each individual Component Group but there are instances where individual Components within a Component Group have extra Interventions e.g. pruning. For each Component fill in the following Data Fields:

Table 9 - 13: Manual Intervention Data Fields

Data Field	Options	Comments
Management	Less than 3 years old Greater than 3 years old Future None	Where a management intervention has occurred within 3 years and more than 3 years ago record the intervention in both categories. The exception to this rule is where Thinning has occurred more than once (see below).
Category (for Less than 3 years old and Greater than 3 years old)	Brashing	Removal of the lower dead tree branches of the Component up to about two metres. This does not include inspection brashing racks (paths) but does include patch brashing for e.g. educational use
	Cleaning	The removal of unwanted broadleaves and woody shrubs usually before canopy closure
	Clearfell	The site has been clearfelled
	Coppicing	Trees that are cut near ground level causing them to intentionally produce many new stems
	Draining	The site has open drains dug to drain water
	Fencing – Partial	Fencing that has fully/partially collapsed and is no longer acting as a complete barrier
	Fencing – Complete	Fencing that is whole within the square and as far as can practically be seen outside the square

	Ground preparation	The site has been prepared for planting
	Planting	A Component planted within the last five years.
	Pollarding	A pollard is a tree with branches which have been cut back to the trunk, above browsing height, so that it may produce a dense growth of new shoots
	Pruning	Removal of selected branches to improve the end-product
	Weeding	Removal of competing vegetation during the establishment phase of the trees
	Brash - removal / mulched / burned	Lying branches and deadwood has been removed or mulched
	De-stumped	Tree stumps are removed
	Mounded	Site has mounds of earth across it in preparation for planting
	Ploughed – Single mouldboard	Ploughed – the earth from the plough line is all to 1 side
	Ploughed – Double mouldboard	As above but earth is gathered on both sides of plough line
	Ripped	A ploughing method to break up iron pans
	Scarified	A method for clearing planting lines by clearing brash and vegetation and leaving the soil bare
	Windrowed	Timber and/or stumps which are pushed into lines after clearfelling
	Other	An intervention not included in any of the other options

	Thinning Once Thinning more than once	Thinning – only record the timing of the most recent thinning event – whether <3yrs old or ≥3 years old. Do not record thinning twice.
	Orchard	The site has been turned into an orchard
Category (for Future) Assign a category based upon the present assumed use and/or future use.	Agroforestry	Agroforestry is an integrated approach of using the interactive benefits from combining trees and shrubs with crops and/or livestock. It combines agriculture and forestry.
	Conservation	The land is being used for conservation purposes, e.g. for fritillary butterflies. If the site is classed as a SSSI according to the GIS layer record as Conservation
	Game Birds	There is evidence that the land is currently, or will be, used for game birds, e.g. feeders are present
	Grazing	Intentional grazing by domestic and wild herbivores
	Ornamental	An area managed for aesthetics and tree diversity e.g. arboreta
	Public Recreation	Intentional management of the area for public use
	Screening / Shelter	A site intentionally planted to be used mainly for screening/shelter
	Timber Production	Commercial timber production
	Personal recreation	Managed for the personal recreation use of the owner e.g. dens, huts etc. which are not for public use
	Orchard	The site has been/will be turned into an

		orchard
Prescription derivation	Guess from Surveyor Known from owner	Where did the information come from for the Future manual intervention answer given? If known from any source (e.g. a map layer) use 'Known from Owner'.
Planned Fell Year	Free text	This is optional so do not use unless for actual planned felling.

9.10.1 Adding, Deleting and Cloning records

Add by right clicking on the Manual Intervention folder to 'Add' a new Manual Intervention record.

Clone by right clicking on a Manual Intervention record. Cloning is useful where a new record is similar to an existing record and can save entry time BUT it is vital that the new record is edited correctly.

Delete by right clicking on a Manual Intervention record.

9-65 **Remember to Save your Edit Session Regularly, Validate the information and Backup the Data**   Save Edits   **Last printed 6/6/2014 10:31:00 AM**

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