

# **Study of the Woodland Boundaries within the Malvern Hills Site of Special Scientific Interest Phase 2**

## **1.0 Introduction**

This specialist survey was commissioned by The Malvern Hills Conservators and English Nature as the second stage in the identification of Ancient Semi-natural Woodland (ASNW) and other woodland boundaries within the Malvern Hills Site of Special Scientific Interest (SSSI).

Phase 1 of the study involved the documentary research to determine any previously identified ancient semi-natural woodland (ASNW) boundaries within the Malvern Hills SSSI, under the jurisdiction of the Malvern Hills Conservators.

This secondary stage involved the identification of ASNW woodland and boundaries in the field with cross reference to the areas identified in the initial stage of this study. In addition, it was intended that all other woodland boundaries and associated ecotones should be identified to enable justified decisions to be made on future management of these areas.

## **2.0 Commissioning Brief**

Countryside Consultants were instructed by The Malvern Hills Conservators on 22nd January 2002 to carry out field survey to identify all woodland and associated ecotones within the Malvern Hills SSSI under the jurisdiction of the Malvern Hills Conservators. This involved the following:

- To carry out a field survey identifying (and cross referencing evidence on the ground to that shown in Phase 1 of the survey) all ASNW within the Malvern Hills SSSI under the jurisdiction of the Malvern Hills Conservators.
- To carry out field survey identifying a definable woodland/scrub boundary, stating the criteria used.
- To identify the woodland boundary on the lower slopes of the Malvern Hills SSSI by mapping.
- To identify, by mapping the ASNW within the woodland boundary.
- To present a considered appraisal of the study, highlighting problems using the woodland identification criteria.
- To digitise woodland boundaries in a Mapinfo compatible GIS.

In addition to the above brief, on the 25th January 2002 English Nature instructed Countryside Consultants to increase the area of this search to include parts of the Malvern Hills SSSI outside the jurisdiction of the Malvern Hills Conservators located in the vicinity of Herefordshire Beacon, News Wood, Midsummer Hill, Ragged Stone Hill and Chase End.

### **3.0 Methodology**

#### **3.1 Survey team**

**Project manager** – Katey Stephen (Partner), BSc (Hons) Environmental Biology with specialist expertise in NVC Phase II surveying of woodland, heathland, grassland and scrub communities, field ecology, field experience of archaeological feature identification and accredited ecological surveyor of Native Woodland by the Forestry Authority.

#### **3.2 Preparation**

Initial preparation before starting field survey was essential to ensure that the survey results would be clear and consistent throughout such a large area.

An initial day was spent sampling different areas on the Malvern Hills to produce definitions of scrub/woodland that could then be applied to the project as a whole. Descriptions of scrub and woodland types were then used as a template for field survey, although there was still scope for flexibility in these since they were only based on a sample section of the survey area.

Hard copies of the relevant maps were provided by Malvern Hills Conservators in a Landline GIS format. Possible boundaries of the ASNW as identified by Phase I of the survey were translated onto the maps as a reference point to be used in field survey.

Details of woodland cover taken from aerial photographs was also provided by the Malvern Hills Conservators and used as a guideline, although it was found that some of these boundaries had changed quite considerably since 1999 when the photographs had been taken.

Access permission was sought from landowners of the areas outside the jurisdiction of the Malvern Hills Conservators, as provided by English Nature.

Health and safety risk assessments for the areas covered by the survey were provided by the Malvern Hills Conservators and field work was carried out within this framework.

#### **3.3 Field Survey**

The extent of each ecotone was mapped by walking its boundary. Notes were taken on where the vegetation type/balance changed and hence where the balance of grassland to scrub and scrub to woodland changed.

Each area was classified by the vegetation types summarised in section 4.1 as defined by Countryside Consultants in consultation with the Malvern Hills Conservators and English Nature.

In the case of ASNW the areas identified in Phase I of the study were walked noting the presence of the following:

- National Vegetation Classification (NVC) types;
- Adjacent land use;
- Boundaries and their condition;
- Location and species of veteran trees;
- The presence of archaeological evidence such as ditched bank, break of slope, other earthworks and lines of boundary trees;
- The presence of indicator species relevant to the woodland type;
- Management recommendations for the boundaries.

NVC classifications were accredited to each scrub and woodland type on a general basis as described in section 4.1 although it must be stated that these classifications are not based upon a Standard Phase II NVC methodology. As such, this information should be regarded as additional information assessed during a Phase I survey.

### **3.4 Recording of survey material**

Information gathered from the field survey was transferred onto digitised maps compatible with Mapinfo GIS at the offices of the Malvern Hills Conservators.

### **3.5 Method for differentiating ecotones**

The evidence for differentiation and identification of boundaries across the ecotone will be based upon ecological survey and analysis utilising the NVC. This involved the identification of homogenous stands of vegetation most closely resembling the NVC type, e.g U2 grassland, W25 scrub, W16 woodland.

'Grey' areas between these stands were considered as mosaics and described in terms of the % cover of the individual mosaics such as 30% U2 and 70% W25.

The boundary was defined in most circumstances where this balance exceeds 50% in favour of the succeeding community. The exceptions to this were where the under-growing vegetation type persists with a profile characteristic to that described for that of the homogenous stand despite less than 50% of the overall cover within the mosaic.

An example of this would be where the respective coverage of U2 grassland and W25 scrub are 35% and 65% yet where the grassland sward still retains a relatively diverse mixture of species. The absence of rank grasses such as *Arrhenatherum elatius* from the sward in this example would also point

towards the existence of viable grassland - scrub mosaic despite the threshold of 50% being exceeded.

## **4.0 Results**

### **4.1 Definition of habitat types**

Defining a boundary, a definite and dividing line between scrub and woodland growth is a difficult process. Scrub, by its definition is a change or gradation from grassland to woodland and tends to be a grey area. Any system for recording and classifying scrub and woodland boundaries must be clear in its definition.

The following types of scrub and woodland were defined that best describe the vegetation found through this survey.

#### **A) Light scrub**

This is widespread throughout the Malvern Hills SSSI, tending to occur on the upper fringes of woodland/scrub areas. The vegetation types described cannot be defined as scrub or woodland, but rather as light scrub where the scrub element is represented by Gorse, Broome or Bracken and other woody species are very low in number. In both cases the area could be reverted to an upland grassland community. Please note that NVC codes attributed to each definition are as a guideline only since this survey did not include a Phase II NVC survey.

Such areas comprise isolated saplings of Sycamore, Hawthorn, Rowan, Birch and Oak with a dense covering of Bracken or Gorse that does not constitute woodland. Isolated patches of grassland may be present in these areas, but are very patchy. They represent areas of pioneer woodland where low intensity grazing has resulted in the loss of a grassland habitat. These areas could be reverted to grassland through clearance and/or the introduction of a grazing regime.

This area may be characterised in terms of:

Canopy cover	2% cover
Canopy height	Height 2m+
NVC codes	These areas tend to conform to either: U20 Pteridium aquilinum- Galium saxatile community W23 Ulex europaeus-Rubus fruticosus scrub W24 Rubus fruticosus- Holcus lanatus underscrub

#### **B) Managed wood grassland**

This is also widespread along the Malvern Hills and consists of isolated semi mature and mature trees within a grassland or bracken habitat. These tend to be Sessile oak, Rowan, Sycamore or Birch.

It appears to be the result of past scrub clearance where individual specimen trees have been retained resulting in a predominantly Bracken or grassland habitat with isolated trees. As a result of this being a more managed habitat it occurs throughout the Malvern Hills SSSI at a variety of altitudes.

These areas cannot be classified as woodland or scrub and the isolated trees do not appear to affect the ground flora to any great extent. A typical example of this is at the top of Green Valley.

This area may be characterised in terms of:

Canopy cover	1% Cover
Canopy height	Height 10m+
NVC codes	U20 Pteridium aquilinum- Galium saxatile community W25 Pteridium aquilinum- Rubus fruticosus underscrub Or an upland grassland community

### **C) Scrub grassland**

This is a more developed example of area A described above with predominantly Sycamore, Oak, Rowan and Birch trees of 2m and above in height. Gorse as the main shrubby species with little evidence of past grassland and Bracken, but the tree cover is still very low and such areas could be reverted to grassland through clearance and/or the introduction of a grazing regime.

This area may be characterised in terms of:

Canopy cover	10-20% cover
Canopy height	3-10m
NVC codes	These areas tend to conform to either W23 Ulex europaeus-Rubus fruticosus scrub U20 Pteridium aquilinum- Galium saxatile community

### **D) Scrub woodland**

This classification comprises scattered Hawthorn, Blackthorn, Elder with saplings of Ash, Sycamore, Beech, Oak and Rowan at a low to moderate cover. The ground flora typically comprises Brambles and/or Bracken.

There may be a mosaic of woodland and grassland in these areas, but generally there is an overall lack of woodland associated ground flora such as ferns, mosses, Bluebells and Dog's mercury. The ground flora is still relatively dense in these areas reflecting the increased light levels within scrub.

This area may be characterised as:

Canopy cover	20-40% cover
Canopy height	10m+

NVC codes                    These areas tend to conform to either:  
W23 Ulex europaeus-Rubus fruticosus scrub  
W24 Rubus fruticosus – Holcus lanatus underscrub  
W25 Pteridium aquilinum- Rubus fruticosus underscrub

### **E) Birch grassland**

This is an exception to the theoretical definition of scrub set out in the proposals for this survey in that the tree cover here is greater than 50%, yet this is classified as scrub.

The community comprises dense Birch colonisation with an understory of Bramble or Bracken. The tree cover is high, but the ground vegetation does not reflect a woodland flora. The canopy density suggests that this should be woodland, but no other woodland indicators are present and the Birch is relatively young. Examples of this can be found below Worcestershire Beacon on the eastern side of the hills.

This area may be characterised as:

Canopy cover                80%+ cover  
Canopy height              15m+  
NVC codes                    These areas tend to conform to either W23 Ulex europaeus-Rubus fruticosus scrub or W24 Rubus fruticosus – Holcus lanatus underscrub which can both exhibit dense thickets of Birch on dry soils.

### **F) Light woodland**

This represents a stage between scrub and woodland that is difficult to categorise into either since it is a transition zone. Tree cover here is from 40-50% with semi mature Sycamore, Hawthorn, Rowan and Oak as the most dominant species. The shrub layer is absent and the ground flora has elements of woodland flora, but is sparse. This category also covers Hawthorn scrub which is infrequent in the area of survey.

This area may be characterised as:

Canopy cover                40-50%  
Canopy height              15m+  
NVC codes                    This is best described as between W24 Rubus fruticosus – Holcus lanatus underscrub, W25 Pteridium aquilinum- Rubus fruticosus underscrub and W10 Quercus robur- Pteridium aquilinum- Rubus fruticosus woodland. Areas where Hawthorn scrub occurs are Crataegus monogyna- Hedera helix scrub.

The woodland may fall into one of several NVC communities. General notes were made on many of the woods, but Phase II survey was not carried out in this assessment. Categories that may be present have affinities to:

- W8 Fraxinus excelsior- Acer campestre- Mercurialis perennis woodland
- W10 Quercus robur- Pteridium aquilinum- Rubus fruticosus woodland
- W16 Quercus spp.- Betula spp.- Deschampsia flexuosa woodland

### **G) Woodland**

This classification includes semi natural woodland with a variety of species including Sycamore, Oak, Ash, Rowan and Hawthorn. The shrub layer is present including species such as Hazel and slow colonisers such as Holly and Yew. The ground flora sparse, but of a woodland nature including Bluebells, Dog's mercury, Bramble, Wood anemone, ferns and mosses.

In many such areas the naturalness of the woodland is detracted from by the dominance of Sycamore in the canopy. This woodland is not ASNW, but frequently occurs on the fringes of such areas.

This category also includes Sycamore wood that has been cleared in the past so all trees are a mono-age structure. They are generally species poor in woody plants and ground flora.

This area may be characterised as:

Canopy cover	95% Cover
Canopy height	15-25m

### **H) Conifer plantation**

This classification is represented by conifer plantation which, usually Larch. This is not common within the SSSI itself, but occurs in such areas as Thirds Land to the south of Colwall.

The ground flora vegetation is sparse, composed mainly of Brambles and ferns. Regeneration by native broadleaves is occurring in such areas and it is this vegetation suggests that many of these areas have been wooded for a long time.

This area may be characterised as follows:

Canopy cover	95-100%
Canopy height	25m

### **I) ASNW**

This classification is described as ASNW with rich species variety. These areas show a wide variety of species including many ancient woodland indicators such as Bluebells, Dog's mercury, Hornbeam, Small leaved lime and Toothwort. Such

woodland was not common in the Malvern Hills SSSI and each area is discussed individually in the report.

Generally, these areas may be characterised as follows:

Canopy cover	80-100%
Canopy height	25-30m

ASNW areas may fall into one of several NVC communities. General notes were made on many of the woods, but Phase II survey was not carried out in this assessment. Categories that may be present have affinities to:

- W8 Fraxinus excelsior- Acer campestre- Mercurialis perennis woodland
- W10 Quercus robur- Pteridium aquilinum- Rubus fruticosus woodland
- W16 Quercus spp.- Betula spp.- Deschampsia flexuosa woodland

