

# **Common Standards Monitoring Guidance**

for

Woodland Habitats

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## **Common Standards Monitoring guidance for woodland habitats**

### **1 Introduction**

- 1.1 Woodland in the UK encompasses a huge range of ecological variation. This section of the guidance is essentially applicable to all woodland habitats, in both 'lowland' and 'upland' situations, including wood pasture/parkland and fen/bog woodlands (see Table 1). Additional, more detailed guidance on specific woodland types including less conventional structures such as bog woodland is being developed.
- 1.2 Specific guidance for scrub types is not included, although much of the approach set out here could also be applied to scrub. Guidance for montane willow scrub and upland juniper scrub is included within the Upland habitats section.
- 1.3 This guidance will need to be used in conjunction with that for other features that may qualify in their own right on a site, particularly species interests, but also for other habitat features. For woodland on coastal cliffs and slopes the relevant coastal habitat guidance should be consulted. For wet woodlands associated with open mire vegetation the lowland wetland or upland guidance should be consulted as appropriate.
- 1.4 Condition assessment for woodland relies on the judgement of the person carrying out the assessment: it is not a statistical sampling process. The guidance provided is however designed to make this judgement process more consistent between surveyors and over time.
- 1.5 The guidance on targets throughout this report is for guidance only; we expect the targets to be customised to the woodland feature and site being considered. This is the only way that local knowledge and distinctiveness can be brought to bear on the objective-setting process.
- 1.6 The approach described here is for assessing woodland condition within sites. The agencies recognise that there is a need to assess the "condition" of the landscape within which sites sit: for example how connected are the woods; what are they next to; how well can species move between different woods; what is the total range of conditions encompassed by a suite of woods within a landscape. This landscape condition assessment will be developed as a separate exercise, bringing in the ideas of forest habitat networks.
- 1.7 The nature and management of surrounding woodland can, however, also affect how we set the objectives and judge the condition of a particular site; it may be less critical that some structures or conditions are always maintained on site, if they are present as necessary in the adjacent (non-scheduled) woodland or open habitat.

### **2 Defining the 'feature of interest'**

- 2.1 To set the conservation objectives agency staff need to be familiar with the woodland feature on the site in question and with why it was selected as part of the designated site series. The 'feature of interest' for a woodland site is seldom confined to a single vegetation type within the site (whether vegetation type is defined in Stand Type, Merlewood Type or National Vegetation Classification terms). Therefore the guidance developed has moved away from trying to assess each NVC or Stand Type separately towards assessing woodland at a broader level, i.e. across a mixture of NVC types in some cases.
- 2.2 Woodland SSSIs have (with a few long-standing exceptions) been selected according to the woodland chapter in the *Guidelines for the Selection of Biological SSSIs*, published by NCC in 1989. The information as to why a particular site was initially selected may be more-or-less precisely documented. The citation for a site is the starting point; there may also be separate Criteria Sheets that were produced for some notification packages. However these latter

usually only indicate the particular vegetation type (Peterken Stand Type, Merlewood Type, NVC type) for which the site was chosen as an example. In practice the criteria actually used to select that site as the example were applied to the whole wood. Having identified what appear to be the best candidate *stands* of a particular vegetation type the guidelines state (paragraph 4.5 in the Woodland chapter), that the *woods* in which these stands occur should be assessed according to their size, richness, structural features, associated habitats, historical features, unique elements and lack of (severe) deleterious influences (paragraphs 3.4.3 - 3.4.8 in the woodland chapter).

- 2.3 Not all of every woodland S/ASSI consists of the specific vegetation type that is listed on the criterion sheet or which receives most attention in the citation, because the woodland S/ASSI selection process focused on whole woods, not just selected stands. For the purposes of this guidance the feature of interest is normally the whole woodland on the site (but see 2.5). The questions in Box 1 may help to clarify whether plantations or areas of recent semi-natural woodland should and should not be included.
- 2.4 However as Box 1 indicates there will be on some sites significant areas of woodland that are not subject to the woodland condition assessment (points 8, 9, 10 below) because they do not contribute to the interest of the site. Such excluded areas may still be the subject of discussions over management with the owner; it is simply that the outcome of this does not affect the overall assessment of condition of the site. Excluded woodland where our aims are to clear the woodland to restore open habitats of one sort or another (point 9) should be assessed as unfavourable grassland, heathland etc.

<b>Box 1.</b> How much of the woodland is the feature of interest?	
<i>Do any of the following apply</i>	<i>Include as part of the interest feature for assessment purposes?</i>
1. Woodland area is one of the types listed as one of the criterion features for the SSSI?	Yes
2. Small intrusions of other types (including plantations) within the criterion types?	Yes
3. Woodland that forms part of the same ecological functional system as the criterion types?	Yes
4. Plantations on ancient sites that must be restored to native species in the short to medium term to maintain the interest of the existing semi-natural stands?	Yes
5. Extent of whole ancient/semi-natural woodland used as part of justification for selection of site?	Yes
6. Overall richness of flora and fauna of whole woodland (not confined to criterion types) used as part of justification?	Yes
7. Associated habitats and species associated with them (e.g. open space, water bodies rock features, dead wood, old trees) across whole woodland used as part of justification?	Yes
8. Woodland (usually on sites designated for particular species groups) that forms the matrix within which the species' habitat occurs without contributing significantly to the interest of the site?	No
9. Recent Semi-natural woodland that is to be cleared to restore open heath etc?	No
10. Plantations included as part of boundary convenience only.	No

- 2.5 Where there are two different woodland types on site it may be that one is in favourable condition and the other is not. Where the S/ASSI is also an SAC the interest feature defined by the Annex I type plus small additions covered by the second, third and fourth questions in Box 1 has to be reported on separately. Where the Annex I habitat and woodland SSSI area are not coincident then either two assessments (two sets of forms) should be made; or a combined assessment may be done provided that any difference in condition between the Annex I habitat and the rest is recorded.

### 3 Attributes and targets

- 3.1 The approach to target setting proposed for woodland reflects what is considered necessary to cover its structural complexity and variability, which tend to be greater than for other terrestrial habitat types in the UK. For most woodland habitats conservation objectives can be expressed in terms of five broad attributes and associated targets. The five attributes that should be used are **Extent; Structure and natural processes; Regeneration potential; Tree and shrub composition;** and **Indicators of local distinctiveness**. Each of these is capable of sub-division but beyond this level they start to lose generality. Subsequent sections go through each of these attributes in more detail, but in summary they cover the following:

- Extent - includes the extent and, where appropriate, distribution of the woodland feature across the site. Internal variations are considered under other attributes.
- Structure and natural processes - includes the balance between canopy and shrub layers; the importance of old trees versus open space on a site; the level of dead wood present; the extent to which we wish the structure to be determined by natural processes rather than defined by a management regime.
- Regeneration potential - includes the level and distribution of saplings and young trees we expect to see; extent of regrowth from coppice or pollarding; and what limits there may be on planting. The emphasis is on *potential* since there are circumstances where we would not expect to see any actual regeneration, for example because the wood consists of a young dense canopy layer.
- Composition (trees and shrubs) - includes the level of native trees and shrubs we expect to see overall; any minimum requirements to maintain particular species; plus (in most cases) a target to alert us to rapid declines in native trees and shrubs, for example as a consequence of a new disease coming in.
- Indicators of local distinctiveness - includes (usually) the broad ground flora composition (as indicated by NVC type or typical common species), but also no more than 4 other features that are particularly important about a wood, that contributed towards its selection as S/ASSI and have not have been covered adequately by the previous attributes. Examples might be the occurrence of particular species, a series of rich flushes, or a good transition zone to another habitat.

- 3.2 The five attributes are mandatory; it would be very exceptional for any of these attributes not to be relevant to a feature on a particular site. Therefore **at least one target must be set for each attribute** for a feature on a given site. There is however considerable flexibility in how the targets are set for each attribute, as is discussed in later sections. The degree to which targets are specified varies in part according to the expected degree of intervention. Highly prescriptive targets imply a likelihood of high levels of intervention in the form of management. The more that the state of the wood is to be determined by natural processes the less prescriptive do the targets need to be. Therefore the targets may in general be less prescriptive in the Scottish uplands than in the English lowlands.

- 3.3 In sections 4-8 we have provided some generic guidance on target setting for each attribute and some specific examples (with others in the annexes). This is summarised in Table 1. However it is essential that the guidance is tailored as appropriate to any particular site. A wide variation in composition, structures and associated fauna can occur within woods of the same vegetation type (whether defined in BAP, NVC or Stand Type terms) according to their different histories and past treatments. Therefore the composition and structure targets need to take account of the needs of relevant species or species groups.
- 3.4 The targets set for particular attributes must be capable of being assessed consistently in a relatively brief visit to the site. In developing the approach we have assumed that the assessment will be done by Agency staff on a visit to a site of say 10-20 ha that lasts between about 2-5 hours (i.e. half day to a day per site). The procedure is described in more detail in section 9. As far as possible therefore targets should be set that have a wide window for recording and do not rely too heavily on specialist woodland experience. Any limitations in this respect should be noted and it may be possible to give only a provisional assessment, if for example one target could not be checked because it was the wrong time of year, or the surveyor did not have the necessary skill to assess it.
- 3.5 Some targets may only apply to part of a site: in the example in Annex 1 the area of frequent *Sorbus torminalis* was confined to the northwest corner. Significant transitions between types may be confined to quite small parts of the site; veteran trees may be only in some compartments. There is no reason why targets should not be geographically defined/limited as long as this fact and the reasons behind it are clearly documented, for example through being marked on the recording base map. Outside these defined areas these targets then do not apply. It is not necessarily the case that every stand/ownership unit must meet all targets. Mature trees may be in one place, temporary open glades in a second, and dense young growth in a third. Further, not only may some stands not meet a particular target at a given time, but the stands that do meet that target may change over time, without compromising the favourable condition assessment.
- 3.6 The five attributes have been chosen because they are relevant to assessing the condition of woodland S/ASSIs. However there is a read-across to how Favourable Conservation Status is defined in terms of area, structure and function, and typical species under the Habitats Directive. There is also a read-across to the requirements of the UK Forestry Standard and associated policies to maintain the area of ancient semi-natural woodland, promote a diversity of structures in them, encourage natural regeneration and use of local provenance, and maintain the special interest of these woods.

#### **4 Extent**

- 4.1 This attribute is concerned with assessing gross changes in the overall habitat extent. The targets should relate to the overall desired habitat extent within the SSSI; its distribution across the site (if it does not occupy the whole site already); its relationship to other significant open habitat areas, for example how far might woodland be allowed to spread up the hill on to open upland; where are the transitions to open fen in a wetland site? In setting targets for this attribute (usually best accompanied by an annotated map) consider the following:
- What is the current area of the feature that is to be conserved (see also Box 1)?
  - How much, if any, could be lost without the value of the woodland being reduced? A net decrease in the area of semi-natural woodland may be acceptable where this is to re-create other habitats judged to be more important in the context of the site. The area lost and the justification must be recorded. Equally where the current tree-covered area is less than the SSSI as a whole it may be that the target is for an increased area.

- Some parts of the woodland may be more important/higher quality than others such that damage to them is more significant. This should be recognised in the target setting and assessment process.
  - In some sites the boundary of the woodland may change without there being a net change in area. On some large native pinewoods an interchange over time between moor and forest may be normal part of the functioning of the system and therefore the boundary change is not a sign of unfavourable condition. However more commonly it would not be acceptable to lose an area of ancient woodland on the SSSI even if a corresponding area of recent woodland was created. Hence the target may need to distinguish (e.g. through a map) areas which must be kept as woodland and any where interchange with other habitats is acceptable.
- 4.2 Small glades, rides etc within the wood are normally treated as part of the woodland: changes in their extent would not normally be recorded here as a threat to the area of the woodland. Similarly internal patterns of woodland types are normally dealt with under 'Indicators of local distinctiveness'. On some sites there are plantations of introduced species and our aim is to restore these to semi-natural broadleaves. In this case the extent of the wood against which the assessment is made includes the conifers; it is not just the area of existing semi-natural woodland. The restoration process is recorded (in condition assessment terms) through the reduction in the extent of non-natives under the 'Tree and shrub composition' attribute. Loss of area does not normally include the conversion of areas to plantation or dense rhododendron: these should however be picked up as a shift towards an unfavourable state under the 'Tree and shrub composition' attribute.
- 4.3 While in principle we wish to see no loss of area, this could be taken to extremes - is a 2 square metre loss worth making a fuss about in a very big site? How big a loss counts as being significant? Our generic guidance is that anything over 0.5 ha or 0.5% of the target area (whichever is the smaller) should be considered as a significant "loss"; stricter targets may be set where it is deemed appropriate. Repeated smaller losses (e.g. 0.1 ha per year over 5 years) would come to be considered unacceptable.
- 4.4 During the development of this guidance discussions were held as to whether we could set a minimum size for a woodland S/ASSI; any sites below this would then be permanently in unfavourable condition unless opportunities arose to expand the sites on to adjacent (usually non-designated) land. Various minimum sizes have been suggested for woodland sustainability, often in the range from 5 - 50 ha, although even the latter would not be large enough to support the full suite of large herbivores or to buffer the site against extreme events such as the 1987 storm. We concluded that it was not helpful to set such a minimum size for several reasons:
- The minimum viable size depends on the nature of the woodland; a site with a rare species or community has a smaller viable area than one where we wish to see the full range of stand dynamics taking place.
  - Most of these sites have been small for centuries; it is not clear that continuing species losses are occurring purely as a consequence of the size effect.
  - The effects of small size can be partly off-set by management (a succession of open space can be maintained in a small wood by management)
  - Focusing on the need to expand small sites in order to meet some theoretical minimum size would not necessarily be a good use of resources, compared to addressing other issues.
  - Logically we would have to designate the surrounding land within which the expansion should take place. If that land were unimproved open habitat this might be possible, but expansion of woodland might then be unacceptable; if it were arable land it is doubtful if we could legally designate it.
- 4.5 To assess whether this attribute is in favourable condition in the field you will obviously need a map (or if available a recent aerial photograph) of the baseline condition. The map used as the baseline should be referred to in the target statement. If a suitable map (or equivalent)

does not exist it will need to be created on an initial visit. The map can also be used to show NVC types and other significant variations even if the feature is defined at a higher level (e.g. all semi-natural woodland) since there may be times when types may need to be disaggregated. If there is a significant difference in the condition between different parts of the woodland this must be indicated on the map and in subsequent assessments.

- 4.6 For parkland sites the actual area of the site is may not be as useful as the numbers and distribution of veteran trees. Even so there is likely to be a concern that there is not encroachment on (say) the area of unimproved grassland or heath around the trees, so defining the area within which the trees are concentrated may still be valid (see Table 1).
- 4.7 Bog woodland and certain other fen woodland types of open structure will usually be contiguous with both drier woodland and open mire, hence some judgement will need to be made when defining the area to be assessed within the site if assessing this feature specifically. Tree spacing and structure and ground vegetation communities should provide useful guides. Loss of area to 'true' woodland can be assumed when the trees have a closed canopy and the ground vegetation loses the characteristic dominance of *Sphagnum* and/or other wetland species. If conditions get wetter, loss of bog woodland to bog might be assumed when there are no trees (including stunted trees), or all trees are dead, within approx. 1/2 hectare (70m by 70m square).

## **5 Structure and natural processes**

- 5.1 Woodland structure includes variations in age, tree form, layering, the distribution and abundance of open space and dead wood. It plays a critical role in woodland ecosystem functioning. The targets set within this attribute should reflect what is the most appropriate structure for the woodland feature on a particular site, taking account of its known interest, history, past management and the landscape context. The targets should be set in terms of the desired state of the wood, not in terms of a management regime e.g. the target should be something like 'a mixture with at least 10% open space, 30 % of stands providing dense young growth...', not 'the woodland should be managed as coppice ...'. How prescriptive the targets are will vary on how tightly our requirements for the structural state are set.
- 5.2 One reason for concentrating on the state of the woodland we want to establish/maintain, rather than the management regime, is that different ways may exist to deliver a particular woodland state: dense young growth for example could be created by coppicing whole stands or by having ride-side strips in a wood otherwise managed as high forest. A high level of fallen dead wood could come from leaving a site alone or by managing it without removing all the timber; veteran trees could be standards in coppice or trees left in perpetuity in high forest. Circumstances may change so that while the objectives and targets remain the same the appropriateness of a particular regime changes.
- For example prior to the 1987 great storm there were woods in southern England where our open space target was not being met; hence we were encouraging small-scale felling to create gaps. After the storm there was no need to promote management to create open space - the gaps had been created by the wind.
  - In many pine woods we are concerned that there is a lack of understorey/ young trees because of browsing; we might set a target of (say) 10% understorey. If this is not being met we then might encourage exclosures or an active culling programme to reduce deer numbers and so promote the understorey development. However if deer numbers crashed the need for such action might disappear as the target level of understorey could be met without any intervention.

In practice the nature of our objectives and targets may suggest a preferred management regime but it is important to keep this as a separate stage.

- 5.3 Depending on the size of the wood and the way it is treated so a greater or lesser variety of structures may be maintained within the one site. However many woods are too small to maintain the full potential range. Specifying the desired structural state then becomes important because two woods with the same botanical composition may have very different invertebrate, bird, and lower plant assemblages depending on, for example the amount of dead wood, the extent of glades, whether there is a dense shrub layer or not. Whether or not these faunal groups are referred to in the citation they are as much a component of the woodland type as are the ground flora. Our objectives should take account of what is known about the species assemblages in that particular woodland feature (Box 2).

**Box 2.** The process of setting structural objectives

In each case points 1 and 2 form part of the conservation objective setting process, point 3 is not.

*Example (a):*

1. Site is notified as an example of ash-maple woodland with a rich butterfly fauna and high populations of scrub-nesting warblers. The 'ash-maple' element can be maintained in a variety of different structural states, but the butterflies need temporary open space in which the food-plant grows and the warblers need dense young growth.
2. The structural targets therefore include:  
At least 5% of area in temporary open space at any one time;  
At least 15% of area in stands between one and 10 years old.
3. The above targets (and hence this bit of the conservation objective) can be met either by coppicing or by some form of management of ride edges in a high forest system: the choice is up to the manager as long as the targets are met.

*Example (b):*

1. Site is a western oak woodland with a scatter of large old oaks with a rich lichen flora. The lower trunks of the trees need to be kept reasonably free from shading.
2. The structural target then includes:  
Canopy around large old trees not more than 20% cover; no shrub layer.
3. It is up to the manager whether the open nature of the woodland around the old trees is maintained through a grazing regime or by thinning any regrowth that occurs as part of a forestry operation.

*Example (c)*

1. Site is wet alder woodland, with a mixture of open and closed conditions, generating a rich flora, across a series of back channels to a stream that is actively moving, undermining some trees, creating natural gaps.
2. The target is to maintain a mixture of canopy conditions with at least 10% open canopy at any one time.
3. This could be achieved by minimum intervention since the stream is moving and that might be the preferred approach. However in terms of meeting the specific target of open space a small scale coppice programme or a managed high forest system could also be acceptable.

- 5.4 In setting your objectives in relation to this attribute consider the following:



- Species requirements - are there a particular set of structural characteristics (open space, dense shrub layer or young stands, old trees, abundant dead wood) that it would be desirable to maintain because the woodland is known for particular associated species? This should be clear from the site file, citation or other easily available records. If there is no direct information to guide you use the size of the wood, its current structure, its past treatment, the history of the site and how other woods in the region are being treated as a guide to desirable structures. Further guidance on structural targets for different species groups is being developed. If there is no initial assessment of what the structure of the woodland is like then this will need to be explored in an initial visit.

- What are the minimum levels of different structural elements required?

The targets will usually reflect what have been the dominant structural characteristics of a feature in the past, but this does not mean that they cannot be improved upon. Our main interest in a wood may be to promote species associated with young growth and open space but targets for some dead wood and old trees should be included providing these do not compromise achieving the young growth structural targets. In high forest stands important for dead wood there may be merit in having a target to keep some permanent open space. The larger the wood the more opportunities there are to develop/maintain a variety of woodland structures and this should be reflected in the objectives and targets; in small woods we may need to concentrate on just the one key element of woodland structure.

5.5 As a minimum, we will normally want to see:

- some open space (a mixture of temporary and permanent areas is desirable) e.g. a minimum of 10% of the woodland;
- some areas of relatively undisturbed mature/old growth stands or a scatter of large trees allowed to grow to over-maturity/death on site (e.g. a minimum of 10% of the woodland or 5-10 trees per ha);
- a build-up of the fallen and standing dead wood resource from less than 10m<sup>3</sup> per ha (typical of most managed woods at present) to two to three times this level (but see paragraph 2.12 on setting dead wood targets);
- at least three age classes spread across the average life expectancy of the commonest trees.

5.6 The targets do not have to be applied within just one vegetation type where the woodland is a mixture of types. Thus at a given time the open space might be mainly in the ash-elm (W9) area whereas old trees are more in the oak-birch (W11) area. At some future date this may be reversed (see 3.5). Often the species that depend on a particular structural form are less fussy about which tree species they use. Similarly if some structural elements can be provided by adjacent woodland the need for a specific target to be met actually on a particular SSSI, at least in the short term may be reduced. Thus if there is an adjacent (unscheduled) meadow next to the wood then this might be functioning in the same way as a glade within the wood. Failure to meet the open space target within the wood could then be accepted. However if on a subsequent visit the meadow had gone then it would be critical that the open space target was met within the wood (see also 1.7).

5.7 An example of how targets for the Structure and Natural Processes attribute for a particular feature (beech woodland) might be expressed is as follows:

Target	Comments
<ul style="list-style-type: none"> <li>• At least the current level of structural diversity maintained. See 1999 survey by GS for baseline description.</li> </ul>	Any changes leading to exceedance of these limits due to natural processes are likely to be acceptable.
<ul style="list-style-type: none"> <li>• Understorey (2-5m) present over 10-</li> </ul>	The understorey in beech woodland ranges from

80% of total stand area. • Canopy cover present over 30-90 % of stand area.	virtually non-existent to impenetrable holly, box or yew. At present this site is towards the lower end of the range. If the understorey becomes very dense it may affect the ground flora although this is often sparse anyway.
• A minimum of 3 fallen lying trees >20 cm diameter per ha and 10 trees per ha allowed to die standing.	The wood is predominantly even-aged high forest with some understorey, with regeneration in places. No ancient trees currently present.

An example for a pinewood is as follows.

Target	Comments
Natural processes to prevail in the structural development of the native woodland; therefore no specific state has been stated.	Ongoing deer management will need to be continued to ensure natural processes are not disrupted.

5.8 Bog woodland has been defined as the stable condition whereby both the woodland and the bog elements are maintained. This may encompass quite a range of canopy covers from very scattered trees to considerable tree cover, however, canopy closure will lead to the loss of the bog elements. A site-specific target may therefore be set, linked to a map showing areas of similar tree density and height. For age structure of bog woodlands see 6.15.

5.9 Wood pastures present some differences to other woodland and further work is needed but a possible approach might be as follows.

Attribute	Target	Comment
Structure and natural processes	Mosaic of 25% open vegetation, 15% scrubby stage and 60% 'grove-stage'.  Transitions between stages over time occur.	The figures here are used to illustrate a way of capturing the mosaic nature of the habitat, using Vera-type stage categories. This reflects that we are not looking for a fixed mosaic pattern.

5.10 For dead wood targets see Table 1, noting the need for caution in assessing this element. Where dead wood is particularly important on a site, this might be specifically picked up as follows (example based on beech woodland in the New Forest).

Target	Comments
Deadwood to be scored as 'good' across 80% of units containing ancient pasture woodland	Assessment is based on 10 samples per unit. 'Good' equals '1 or 2 large (>50cm diameter) fallen trees or trunks visible with plenty of 5-50 cm pieces in view at each sample point.
Within the old enclosure units dead wood should be scored as at least average to good.	Average = 1 or 2 large pieces visible, little smaller material, or only smaller (5-50cm) material in view. Poor = Even smaller material is scarce.

5.11 Be realistic in target setting. Estimates of canopy cover, understorey cover are unlikely to be made with better than 10% accuracy. Therefore do not try to be too precise when giving the acceptable range. The default assumption is that the targets set apply across the woodland feature as a whole, but bear in mind that the structure will usually vary across the site. Thus if the target is 50% shrub layer this could be met by having 100% cover in part of the woodland and 0% in the other half. If that is not acceptable the targets will need to be made more

specific, e.g. in any one compartment the understorey should not be less than 10% or more than 70%. (See also 3.5).

#### *Dealing with natural change*

- 5.12 The key to dealing with natural change in woodland is to be clear about what is important about the site (which may or may not be clear from the stated interest features).
- 5.13 For some woodland sites and features of interest natural change could be as damaging as direct human intervention. If a site is important for butterflies associated with open space, 'natural change' that lead to the glades scrubbing up will put the site in unfavourable condition. In another site important lichens might occur on just six specific veteran trees: if wind blow uproots the trees (leaving them lichen-side down) the site becomes unfavourable with respect to the lichen interest feature.
- 5.14 Where the interest feature is more general, for example the semi-natural woodland community the impact of 'natural change' may be viewed more benignly. A shift in the relative abundance of vernal flowers or in the relative dominance of oak versus other site native trees may be acceptable, or at most slight changes in management may be recommended to off-set it, without the need to alter the overall condition assessment.
- 5.15 A third situation is for those woodlands where our aim is to develop as near-natural a woodland state as we can under the prevailing conditions. Since we do not know what 'near-natural' actually is in 'state' terms we must judge success by the degree to which natural processes operate. In these circumstances, almost any woodland composition/structure is acceptable provided it is the result of a natural process in operation. Thus, if a wood in this category blows down (as many did in the 1987 storm) this is not an undesirable event and does not make the site unfavourable. On the other hand if the wood was flattened by felling this would be unfavourable – the process is as important as the state created.

## **6 Regeneration potential**

- 6.1 The regeneration potential of the woodland being assessed must be maintained in the long-term if the wood is to survive, both in terms of quantity of regeneration and in terms of appropriate species. Include regeneration of the trees and shrubs from saplings or suckers, regrowth from coppice stools or pollards, and where appropriate planting.
- 6.2 The nature of that regeneration potential, how it is assessed and what targets are set, varies according to the past and present condition of the site and its treatment. The regeneration needed to maintain the wood in a favourable state from a nature conservation point of view may be much less than that required to meet (say) wood production objectives; species that might be acceptable in the regeneration from a wood production point of view may not be from a conservation angle. Therefore the wood may be in favourable conservation condition, but not be regenerating enough to meet the owner's objectives, or *vice versa*.
- 6.3 The distribution of regeneration is unlikely to be uniform in either space or time under natural conditions. In some woods there will be years where regeneration is limited for some species by a lack of seed (poor mast years) but this may be compensated for a few years later by a bumper crop. For light-loving species such as oak few if any seedlings would be expected under stands where there is a dense canopy; instead the regeneration should be looked for around the edge of a wood. Moderate shade-bearing trees (including ash when it is young) are however capable of establishing a bank of saplings under the canopy, ready to take advantage of any gaps that appear.

6.4 Periods of heavy grazing limit sapling growth, but if there are times when the grazing level drops then these may be sufficient to allow regeneration to take place. Only if grazing is fairly heavy and sustained over long periods may there be a concern from a regeneration point of view. Grazing levels that permit regeneration vary from site to site, but the following table may help in judging what the current grazing level is and whether grazing is likely to be the main factor limiting regeneration. More guidance on assessing over-grazing is being developed.

<b>Grazing and browsing indicators</b>	
Heavy	Absence of shrub layer. Topiary effect on shrubs and young trees. Browse line on mature trees. Ground vegetation <10cm tall, mostly grasses and mosses or other unpalatable species. Abundant dung, paths, or other signs of grazing animals.
Moderate	Patchy understorey, with some evidence of pruning or browse line. Ground vegetation about 30cm high, with a mixture of palatable and unpalatable species, locally some close-cropped areas. Tree saplings projecting above ground vegetation in at least some areas, but may show signs of browsing.
Light	Well-developed understorey with no obvious browse line. Lush ground vegetation with some grazing sensitive species such as bramble, honeysuckle, ivy. Tree seedlings and saplings common under canopy gaps.

**Box 3.** Is planting an acceptable way of maintaining the regeneration potential of a woodland feature?

The agencies have accepted planting on S/ASSIs in the past, but there is increasingly a view that we should be promoting more use of natural regeneration particularly on SACs. If planting is acceptable, should there be any restriction on the use of non-local provenance? Decisions on these questions need to be reflected in conservation objectives and in condition assessments for a site.

While there may always be exceptions the starting point should be that natural regeneration is preferred and management should promote conditions that will allow it to happen. In particular we should not introduce it to areas where there is no recent history of planting (e.g. no planting within the last 15 years) and for species that have not been subject to widespread planting in the past (most native trees and shrubs other than the main timber-producing species oak, beech, pine and locally ash). Planted trees become a negative indicator. Where planting is acceptable then the presumption should be that it is only used as a support for natural regeneration and that it should be of locally native origin material only.

The sort of targets that might be written to reflect the above might be:  
No (new) planted material on site; or  
No (new) planted material other than species x; or  
Planted trees to be no more than 20% of any regeneration block; and  
All planting stock of local provenance.

6.5 There could be periods (even decades) where no regeneration is present anywhere in a particular site without the long-term potential of regeneration and the interest of the woodland being compromised. For example, we could easily assess a wood as being in favourable condition with no regeneration present at all, if the woodland were all closed-canopy high forest stands in the age range 20 - 50 years. In this case no regeneration would be expected nor would it be necessary in the near future. Most woods are not however in that state.

- 6.6 While we may accept periods where no regeneration is successful, future regeneration (say in 20 years time when it is needed) may depend on action being taken **now**. This could be where there is clearly a factor operating that will prevent future regeneration or a clear threat to existing young woody growth such as excessive browsing by grazing animals. Since condition monitoring is to be used as a trigger to management we should consider conditions for future, as well as present, regeneration. Except in minimum intervention stands we are unlikely to be willing to accept as favourable a situation where no successful regeneration (of the appropriate species) is likely in the next 20 years.
- 6.7 Decide what sort of regeneration is appropriate/acceptable for your site e.g. from natural regeneration, planting, coppice regrowth, pollard restoration, planting (see Box 10). What levels of regeneration are required to maintain the desired structures and composition in future? The management plan for a site, site management statement or general survey accounts should provide you with guidance as to what level of regeneration is either present now or might be expected in the woodland. If there is no prior guidance you will have to assess this in the field through a pre-assessment visit, taking into account the structure and history of the wood.
- 6.8 In assessing this attribute it may be helpful to take a retrospective view. Has there been regeneration in the recent past; for example are there groups of young trees under the canopy (for shade bearing species such as beech) or in gaps or on the edge of the wood (for light-demanding species such as oak). Are there saplings and young trees up to 2m managing to grow up in gaps? Are there signs of significant browsing on stems less than 2m high? Is the regeneration that is occurring of acceptable species?
- 6.9 An example of how targets for the Regeneration attribute for a particular feature (beech woodland) might be expressed is as follows:

Target	Comment
<ul style="list-style-type: none"> <li>Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice).</li> </ul>	A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy. Regeneration may occur more on the edge of woods if there are insufficient gaps within it.
<ul style="list-style-type: none"> <li>No more than 20% of re-stocked areas regenerated by planting.</li> <li>Any planting material used to be of locally native stock</li> </ul>	The minimum level of regeneration to be acceptable from a nature conservation viewpoint may be less than that needed where wood production is also an objective.

- 6.10 For woodland where the objectives are to promote young growth (and which consequently are being managed as coppice) the targets might be set as follows:

Target	Comment
<ul style="list-style-type: none"> <li>At least 75% of stools showing regrowth at the end of the first summer after cutting.</li> <li>At least 75% of regrowth at least 1 m high at the end of the first summer after cutting.</li> </ul>	If the regrowth does not show this vigour it is unlikely that it will be possible to continue with the coppice cycle in the long-term and hence to create and maintain the open-space/young growth mosaic that is desired.

- 6.11 For open wood-pastures only a very low density of new trees might be needed to retain the characteristic structure in the long term so the target (in this case for part of the New Forest beech stands) might be expressed as follows:

Target	Comment
<ul style="list-style-type: none"> <li>At least one native sapling with leader out of reach of grazing animals within 30 minutes walking.</li> <li>Oak and beech forming at least 10% of saplings seen.</li> </ul>	Saplings are defined as >1.5 m high but < 15 cm dbh for this purpose. The nature of the New Forest is such that it is easier to define a density in terms of time spent walking through the woodland than on a per ha basis. Oak and beech are key species for the associated lichens and invertebrate on the site so both must be present in the regeneration.

- 6.12 Where part of our objective in parkland may be a prolongation of the habitat found within veteran trees (through restoring pollarding) then a target might be:

Target	Comment
Regeneration from the boles should normally be at least 50cm - 1m long two years after cutting on about 80% of boles	A higher rate of failure might be acceptable where young trees are being pollarded for the first time.

- 6.13 An example from a Scottish birch-hazel woodland is as follows.

Target	Comment
Regeneration of site native species in areas left open by fallen trees: at least 10% cover in gaps of more than one tree height that have existed for more than 10 years.	This will require some judgement with respect to what is expected in younger gaps: we must judge them according to whether they are moving in the right direction.

- 6.14 Under minimum intervention treatment there are no hard and fast rules as to what the stand should look like or how it should function - the whole point of minimum intervention treatment is that the wood should develop with as little direct input from human management as possible. Once an area has been properly launched on a minimum intervention trajectory targets should not be set for gap creation, the composition of the regeneration, or the speed at which regeneration occurs since these are all part of the internal stand dynamics. However even in such stands the levels of deer browsing may become unacceptable, because this is controlled not by factors internal to the wood, but by conditions over the surrounding landscape. Therefore a regeneration or a maximum browse damage target is still required.

- 6.15 For pine bog woodlands, regeneration of bog pines may only occur sporadically following a succession of dry summers; therefore we may not expect evidence of regeneration all the time. Determining the age of bog pines based on physical characteristics is not always simple as some stunted pines are of considerable age. However, recent research suggests that if trees are less than 1.5m in height and less than 5cm DBH, have smooth bark and are relatively lichen free, we might assume they are less than 30 years old. In order to ensure some continuity of tree presence, we might want to ensure that there are at least some trees that appear to be in this <30 year old cohort. We would also expect that there are some older trees, either of greater height or diameter and perhaps also some dead trees. Lichens tend to be more abundant on older pine trees, hence older specimens may have significant cover of crustose species. The target may therefore simply be that there should be a range of tree ages. However, a description of what the current balance between these cohorts appears to be, would assist future comparisons. Field trials indicated that classifying trees in the categories 'over head height', 'under head height' and 'below heather height', while recording approximate DBH ranges is a relatively simple surrogate for recording the range of age-classes present.

## **7 Composition of trees and shrubs**

- 7.1 This attribute covers the composition of the tree and shrub layer and any sudden changes in its composition through rapid dieback. Ground flora layer targets are considered under 'Indicators of local distinctiveness'. For the woodland feature to be in favourable condition it should (with a few exceptions) be composed predominantly of native species and there should not be signs of rapid (> 10% over a six year period) loss of native trees and shrubs.
- 7.2 In most woodland there can a wide variation in the composition of the tree and shrub layer within the limits of any particular type: beech stands may in part lack beech, oak woods lack oak over much of the stand. Internal patterns may alter over time. The composition in regenerating stands may be very different to that of the mature stand from which they are derived. Within an oak-beech woodland the distribution of oak and beech-dominated stands may alter without affecting site condition. Following major windblow of a beech stand, for example, the regeneration phase may be mainly oak or ash. Under climate change conditions, where beech currently occurs in only small amounts (but as a native species) stands may move more towards beech dominance. In these cases the change would not necessarily affect the condition class assigned to the stand. Targets must be set such that they allow for such changes where we think they are acceptable in nature conservation terms.
- 7.3 The converse of the stand being mainly composed of native trees and shrubs is that the area occupied by introduced species, whether in the tree and shrub layers should be small. Introductions within the field layer are considered under the next attribute (Indicators of local distinctiveness) since they will influence how far we consider that the ground flora reflects the relevant semi-natural woodland vegetation.
- 7.4 The decision as to what should be classed as an introduced species is usually clear-cut for a site, but any possible causes for future uncertainty should be stated in notes accompanying the objectives for the site. For example in some western oak woods beech may be accepted as a future-natural component whereas in others the aim is to remove it. There may be circumstances where sycamore eradication is the aim; in other cases this would cause more significant disturbance than leaving the trees alone. The target for percentage native species will therefore be lower where sycamore is to be left than where it is to be eliminated. The position for each species should be set before the assessment is made.
- 7.5 The ideal might be to have no introduced species at all, but it becomes counter-productive if, for example, a single (non-regenerating) mature Douglas fir in a wood leads to it being classed as unfavourable, when the tree is having no significant adverse impact on the woodland community and may be acting as a raptor nesting-site! On the Isle of Wight non-native pine may be retained as a food source for red squirrels. On the other hand even one rhododendron bush on a sensitive site could be a potential problem. Grey squirrel damage, although very significant in wood production terms, may be judged not that worrying for nature conservation if most of it is on sycamore, but more important if it is on (native) beech or oak. The levels of introduced species and their impact that are judged to be acceptable therefore vary according to the nature of the site and the introduced species. Higher target levels (i.e. a lower percentage of exotics) should be set where the threat is from 'spreading' species or is a recent event, whether the spread is through natural regeneration or by assisted planting. Long-established stands (e.g. 19th century conifer plantings) that have already had their main impact may be accepted at a higher level, at least in the short term, than recent plantings that have still to exert their full influences. We suggest as an initial guide that site-native species should be over 95% of the cover in both the tree and the shrub layers. Existing surveys should indicate the level of non-native species and the degree to which their future spread or impact may threaten the integrity of the site. If this information is not available it will have to be collected on a pre-assessment visit.

- 7.6 General accounts of the different woodland types provide indications of typical composition of tree and shrub layers. However NVC tables and the like should not be used prescriptively to set minimum targets for particular native trees that should be present in the canopy at all times. They are 'averages' and may not be appropriate for particular sites. There are however circumstances where prescribing minimum levels for certain species is appropriate. In Scottish aspen woods loss of the aspen would remove the key element of the interest; the same is true for lime in the Lincolnshire limewoods. It is usually the minor, unusual components where we will regard continued presence of these species (the *Sorbus torminalis* in Annex 1 for example) as part of the definition of favourable condition. Maintaining a mosaic of types (both oak and beech woodland, pine and oak woodland, wet birch and alder woodland on site) may also be a reason for specifying at least some minimum level of the different native species.
- 7.7 Explanations must be given as to how species are treated, in order that your successors know why they are accepting sycamore or beech at this site, but not another, why we need a minimum of 30% oak in the canopy (or whatever). This is true even if the generic targets are used.
- 7.8 In some woods it could be argued that even non-native species should be allowed to spread as they will, but in practice invasion by non-native species is likely to be one case where intervention is accepted even in minimum intervention woods (hence we refer to minimum intervention rather than non-intervention.). However no limits should otherwise be set in terms of the native composition of the wood.
- 7.9 In parkland veteran non-native trees may be of value and should not automatically be removed. The target may be best set in terms of a proportion of numbers of trees rather than their area.

## **8 Indicators of local distinctiveness**

- 8.1 This attribute includes targets related to ground flora, but also to other things that make the wood special and hence were likely to have contributed to its selection compared to other similar woods in the county or region. The ground flora should normally correspond to a relevant NVC type; there may be rich woodland rides or small boggy hollows; there may be a good representation of ancient woodland indicators; elements needed by species that are also features of interest in their own right may also be picked up here. Usually no more than five (usually less) targets will be justified under this attribute.
- 8.2 Indicators of local distinctiveness should be apparent from the SSSI citation Criteria sheets (if available), or past surveys. In selecting them ensure that they are also capable of relatively simple assessment. A pre-assessment visit may help to identify or check the ease of recording of appropriate indicators. A test as to whether something is an appropriate 'quality indicator' or not is to ask whether the value of the woodland would be significantly reduced in nature conservation terms if that thing were removed or damaged. It is possible to have negative 'quality indicators' if for example there is a species (other than trees and shrubs which have been covered in the previous section) that you do not want to spread, such as Himalayan balsam; or undesirable erosion, poaching of the soil, areas affected by herbicide usage, etc.
- 8.3 Under this attribute therefore two sets of questions need to be asked:
- what are the vegetation types present that are relevant to the selection of this site;
  - what are the other 'quality indicators' associated with this site?



8.4 For most woodland features, one key target is likely to be that most of the flora corresponds to a relevant woodland NVC type/Stand Type/Annex I type (including mixtures and mosaics). We do not expect surveyors to be able to instantly recognize NVC types by eye to sub-community level, although recognition of communities should in most cases be straightforward. However even if this is not possible surveyors should be able to assess whether the ground flora is a predominantly woodland vegetation rather than having abundant exotics, improved grasses, or extensive bare ground. Other semi-natural vegetation may be important locally (e.g. patches of mire/fen) and in wood-pastures the bulk of the ground flora may be closer to non-woodland vegetation types. For bog woodlands, targets from the relevant lowland wetland or upland guidance for attributes such as habitat structure, hydrology and vegetation composition may be appropriate to use.

8.5 Simply being able to allocate a stand to a particular vegetation type does not automatically help in assessing its quality. Many good stands are not 'better fits' to their relevant NVC type than poor-quality ones, because the classifications are biased to some extent towards the average stands. If a woodland has been selected as a herb Paris-dominated (rather than dog's mercury) example of W8, or as an ungrazed version of W9 (such as on the west coast of Argyll) we would not consider that the site was still in favourable condition if dog's mercury replaces the herb Paris or the W9 site becomes grazed - but the NVC type would probably not have changed in either case.

8.6 An example of how targets for this attribute for a particular feature (hornbeam woodland) might be expressed is as follows:

Target	Comment
<ul style="list-style-type: none"> <li>80% of ground flora cover referable to relevant NVC community i.e. W10 +W16 (see Collingridge report 1998).</li> </ul>	Changes leading to these targets not being met may be acceptable where this is due to natural processes.
<ul style="list-style-type: none"> <li>Distinctive elements maintained at current levels and in current locations (as shown on attached maps): Patches of <i>Luzula sylvatica</i> present Relatively undisturbed stream channels. Bryophytes, particularly <i>Dicranum</i> species, on stream banks. (refer to map) Patches of <i>Melampyrum pratense</i> (common cow wheat) a locally rare species. Extensive stands of <i>Anemone nemorosa</i>.</li> </ul>	The <i>Anemone</i> target could only be assessed in spring.

8.7 For riverine woodland the quality indicators may relate to characteristics of the channel structure and flow dynamics.

Target (examples)	Comment
Back channels present Debris dams present No artificial channel works	The assumption here is that the functioning of the riverine woodland and hence its quality in part depends on the natural functioning of the river system. Note that one of the indicators is a negative one.

8.8 At Birkham Wood key elements in the selection of the site (as compared to other examples of these woodland types in the county) were the transitions between three woodland communities

and the only large colony of herb Paris in the area of search. These could be expressed in target form as follows.

Target	Comments
<ul style="list-style-type: none"> <li>• 80% of ground flora cover to be referable to communities W7, 8, 10.</li> <li>• Transition areas between W10/W8, W8/W7 to be maintained.</li> <li>• Herb Paris colony at X (see map) to be maintained.</li> </ul>	<p>The second and third targets bring out the fact that a loss of the transition area or of the herb Paris colony would be seen as a more serious degradation of the quality of the woodland than an equivalent loss of area elsewhere.</p>

## 9 Methods of assessment

- 9.1 It is recommended that the assessment should normally be based on a structured walk around the site with a series of observation stops along the way. On an appropriate-scaled map (usually 1:10,000) mark a route that gives a reasonable coverage of the area to be assessed, taking account of any known variability, e.g. from previous visits, aerial photographs etc and any areas under high risk of change. Checking that important glades are still open may need to be done more often than assessing overall canopy cover. Within limits imposed by health and safety considerations the route should not be confined to paths but should go across the middle of stands, across the contours etc. Allow about 2-3 hours on site for straightforward woods up to about 20 ha; larger or more tricky sites may need most of a day if the whole feature is to be assessed.
- 9.2 The simplest approach to ensuring systematic coverage is to mark ten “stops” on the map along the route, evenly spaced or to cover the expected variation. These will be the main assessment points, but the state of the wood between the stops should be used as well. It is not essential that the same points will be re-surveyed on future visits, but it may be helpful if there is at least some overlap. In particular, if there are areas that raised concerns previously these should be included on this visit.
- 9.3 The aim is to gain as good an overview of the woodland feature as possible within a limited time, to enable you to judge whether the targets are being met or not. The pre-determined route and ten stops are there to help you be consistent in your assessments between sites and between recorders. Do not be too constrained by the route or precise position of the stops if minor deviations will give you a better picture of the wood. However do record any major variations in the route.
- 9.4 Do not rely on your memory to assess the area visited at the end of the walk. Make notes relevant to the targets at each of the ten stops. There will be additional comments worth making on the state of the wood between stops. A balance needs to be struck between this assessment and carrying out a full Phase 2 survey, which is not the intention. Make notes even if a woodland feature is so uniform that the notes at each stop start to be the same as those at the start. The feature may be changing gradually and by the next assessment we will want to be sure of what it has changed from across the whole of the area assessed.
- 9.5 At each stop consider the woodland around you that you can see easily. In most sites this will equate to about a 50 x 50 m plot but it is not necessary to measure out a plot as this is not meant to be a quantitative sampling process. Make a brief note against each of the attributes and the targets associated with them. If the area around the stop is atypical of what you had been walking through up to that point note this.
- 9.6 The “stops” are not intended to be a formal statistical sample; the targets cannot just be ticked as favourable/unfavourable at each stop and then totalled at the end to give the overall state of

the wood (cf Box 4). Rather the notes made at each will contribute to your overall judgement. So make the notes helpful to you and to the surveyor who will come after you. If the target is a quantitative one try and give your estimate of what the cover/density/etc is, rather than simply saying whether it meets the target or not. This may help in judging trends at the next visit.

- 9.7 Be prepared to alter your ideas as you go through the wood, particularly if you are not that familiar with the site. The first few stops may look in very bad condition but subsequently it may become clear that this state applies to only a very small area (or *vice versa*). Alternatively what appears to be a favourable state initially - a well-structured stand with old trees and dense under-storey - may, because it is repeated across the whole site, be undesirable: the wood lacks any open space and too many of the old trees are in danger of being over-topped by younger growth.
- 9.8 You are assessing condition, not management, but make a note of any recent management or other activity that may help in interpreting your condition assessment and what should be done as a consequence. Condition assessment is only one part of the management control cycle.

## **10 Making the assessment**

- 10.1 At the end of the site visit review each attribute for the woodland that you have covered. Ideally all applicable targets will have been met but some targets may not have been. For these consider how significant are the “missed” targets compared to those that were met and what was the cause of the failure.
- 10.2 Some of the targets have relatively arbitrary thresholds in them. There is not a sudden step-change in condition at the threshold point. Just missing (or indeed just achieving) such thresholds is less significant than knowing whether the trend is up or down, and what factors are influencing that trend. If the reason for a target not being met is some unforeseen natural event, or a temporary management glitch that is being rectified, this may be less serious than if the failure were due to deliberate vandalism.
- 10.3 As an initial guide (to be reviewed in the light of experience) no major target should be significantly missed. If some targets are clearly more minor, or if a major target has failed by a very small margin then a single failure of these is allowed. This will however need a full written justification and should probably be followed up within one to two years to ensure that the failure was not symptomatic of a more serious problem. A failure on any one attribute should lead to an Unfavourable Condition rating for the area assessed.
- 10.4 The assessment is made on the targets and attributes assessed. If for some reason some targets cannot be considered (wrong season, wrong bit of the wood, inadequate expertise) then a provisional assessment is made on the basis of the targets that were assessed. A judgement will then be needed as to when the missing targets will be picked up.
- 10.5 If the area assessed corresponds to that entire feature on that site, i.e. the whole woodland, then the assessment you come up with is that for the feature as a whole. However, if the feature is large and the assessment is done over a number of visits then a further stage may be needed. For example, if a woodland feature includes several stands of different ages, which happen (for convenience) to be assessed independently then each might be judged Unfavourable in structural terms (because it was even-aged) but the woodland feature as a whole has a Favourable (multi-aged) structure. This issue will come up particularly with large sites.

- 10.6 We also need to know, if the wood is judged unfavourable, whether it is recovering, declining or there is no change. On a first visit this may be difficult to assess. Even with a previous assessment it may not be obvious. Two approaches should be used.
- 10.7 Where the targets are quantitative then it may be possible to make some comparisons between successive records, but this assumes that the stops are reasonably representative of the whole and that a quantitative estimate for the target has been made (rather than just judging it as favourable or unfavourable). While this appears attractive there is such a high degree of variation likely that it may not yield much that is useful.
- 10.8 On the first assessment this option is not available anyway. Therefore a judgement based on what is happening in the wood should be made. This must be made on evidence on the ground, not on good intentions in a management plan! Signs that exotics are spreading (invasion fronts), that deer browsing is likely to continue, would count towards a 'declining' verdict. Signs that introduced conifers are being removed (stumps and recently cut stems), recently coppiced areas, or opened out rides in woods otherwise lacking in open space, point to recovery.
- 10.9 The process does inevitably involve your judgement. That is why it is important to record notes as you go round the feature and to explain how you came to the decision that you have. Box 12 represents the decision-making process in a qualitative way.

**Table 1. UK GUIDANCE ON CONSERVATION OBJECTIVES FOR MONITORING DESIGNATED SITES**

**Interest feature: Woodland**

Includes the following NVC types: W1 to W19

Equivalent Phase 1 categories: A1 Woodland, A3 Parkland and scattered trees

Includes the Annex I priority types **9180 *Tilio-Acerion* forests of slopes, screes and ravines**, **91C0 Caledonian forest**, **91D0 Bog woodland**, **91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)** and **91J0 *Taxus baccata* woods of the British Isles**; and the Annex I types **Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Illici-Fagenion*)** and **H91J0 *Taxus baccata* woods of the British Isles**.

**Reporting categories:**        **Broadleaved, mixed and yew woodland**  
    **Coniferous woodland**

All five of the broad attributes are mandatory, but the targets listed are **indicative only** and should be determined on a site-specific basis (see relevant text)

Attributes	Targets	Method of assessment	Comments
Habitat extent (ha)	<ul style="list-style-type: none"> <li>• No loss of ancient semi-natural stands.</li> <li>• At least current area of recent semi-natural stands maintained, although their location may alter.</li> <li>• No loss of ancient woodland.</li>   <li>• For wood pasture/parkland:</li> <li>• No loss of semi-natural wood-pasture mosaic area.</li> <li>• No reduction in the number of veteran trees.</li> </ul>	Field survey and/or aerial photography, in relation to baseline map.	<p>Different targets may be appropriate, depending on the woodland type (see text).</p> <p>Stand loss due to natural processes e.g. in minimum intervention stands may be acceptable.</p> <p>Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact.</p> <p>As a guideline, loss can be defined as at least 0.5 ha or 0.5% of the stand area, whichever is the smaller.</p> <p>20% canopy cover is conventionally taken as the lower limit for an area to be considered as woodland.</p> <p>Targets for extent may be modified where a target has been set to increase the extent of other habitat features on the site at the expense of woodland</p>

Attributes	Targets	Method of assessment	Comments
Structure and natural processes	<ul style="list-style-type: none"> <li>• Understorey (2-5m) present over at least 20% of total stand area (except in parkland).</li> <li>• Canopy cover present over 30-90 % of stand area (except in parkland stands).</li> <li>• At least three age classes spread across the average life expectancy of the commonest trees.</li> <li>• some areas of relatively undisturbed mature/old growth stands or a scatter of large trees allowed to grow to over-maturity/death on site (e.g. a minimum of 10% of the woodland or 5-10 trees per ha).</li> <li>• A minimum of 3 fallen lying trees &gt;20 cm diameter per ha and 4 trees per ha allowed to die standing.</li> </ul>	Assess by field survey using structured walk and/or transects.	<p>Different woodland types will differ in their expected cover in different layers e.g. in beech or oak woods the shrub layer is often sparse. This should be reflected in the tailoring of these targets to particular sites.</p> <p>In coppiced stands a lower canopy cover (of standards) can be accepted, as will also be the case in parkland.</p> <p>More detailed targets for deadwood may be appropriate where this is an important element of the woodland (see section 5.9). Note however that assessment of dead wood targets may be difficult to carry out and caution should be exercised in judging condition for this element.</p>
Regeneration potential	<ul style="list-style-type: none"> <li>• Signs of seedlings growing through to saplings to young trees at sufficient density to maintain canopy density over a 10 yr period (or equivalent regrowth from coppice stumps).</li> <li>• No more than 20% of areas regenerated by planting.</li> <li>• All planting material of locally native stock</li> <li>• No planting in sites where it has not occurred in the last 15 years.</li> </ul>	Assess by field survey using structured walk and/or transects.	<p>A proportion of gaps at any one time may develop into permanent open space; equally some current permanent open space/glades may in time regenerate to closed canopy.</p> <p>Regeneration may often occur on the edges of woods rather than in gaps within it.</p> <p>The density of regeneration considered sufficient is clearly less in parkland sites than in high forest; in coppice most of the regeneration will be as stump regrowth.</p> <p>The minimum level of regeneration to be acceptable from a nature conservation viewpoint is likely to be much less than that needed where wood production is also an objective.</p>
Composition: trees and shrubs	<ul style="list-style-type: none"> <li>• At least 95% of cover in any one layer of site-native or acceptable naturalised</li> </ul>	Assess by field survey using structured walk	In sites where there might be uncertainty as to what counts as site-native or as acceptable naturalised species this must be made clear (e.g. the position of sycamore).

Attributes	Targets	Method of assessment	Comments
	<p>species.</p> <ul style="list-style-type: none"> <li>• Minimum levels of particular native tree/shrub species (where important and appropriate – see text)</li> <li>• Death, destruction or replacement of native woodland species through effects of introduced fauna or other external unnatural factors not more than 10% by number or area in a five year period.</li> </ul>	<p>and/or transects.</p>	<p>Where cover in any one layer is less than 100% then the 95% target applies to the area actually covered by that layer.</p> <p>Factors leading to the death or replacement of woodland species could include pollution or new diseases.</p> <p>Damage to species by non-native species that does not lead to their death is not necessarily unacceptable.</p> <p>Excessive browsing/grazing, even by native ungulates, may be undesirable if it causes shifts in the composition/structure of the stand.</p>
<p>Indicators of local distinctiveness</p>	<ul style="list-style-type: none"> <li>• 80% of ground flora cover referable to relevant NVC community</li> <li>• Target(s) also to be set to maintain distinctive elements at current extent/levels and/or in current locations, e.g. to maintain important microhabitats (other than dead wood), patches of associated habitats, transitions between habitats, or existing populations of locally notable species (other than trees/shrubs).</li> </ul>	<p>Assess by field survey using structured walk and/or transects, or as appropriate to feature.</p>	<p>This attribute is intended to cover any site-specific aspects of this habitat feature (forming part of the reason for notification) which are not covered adequately by the previous attributes, or by separate guidance (e.g. notified species features).</p> <p>For notable species it is not intended to set a target for detailed species monitoring, rather to provide a rapid indication of presence/ absence and/or approximate extent, allowing for natural fluctuations in population size.</p> <p>Distinctive elements and patches should be marked on maps for ease of checking in the field where possible.</p>

**Annex 1. Example of a Conservation Objectives Table - Sheephouse Wood**

*Objective:* to maintain the oak-hazel (NVC W10) stands in the wood in favourable condition where this is expressed in terms of the following attributes and targets.

<b>Attribute</b>	<b>Targets</b>
Extent	<ul style="list-style-type: none"> <li>• No loss of ancient woodland area</li> <li>• No decline in the area that is considered semi-natural.</li> </ul>
Natural processes and structural development	<ul style="list-style-type: none"> <li>• At least 25% of woodland left as mature to over-mature growth (south-west corner); elsewhere no more than 25% of woodland as stands of under 20 years at any one time.</li> <li>• well-developed ride structure: wide rides with scrubby edges, plus some left narrow and overgrown.</li> <li>• some dead wood (3-5 trees/ha equivalent) left lying in any clear-fell; dead trees left standing where practical; 2-3 living trees per ha left to grow on to over-maturity in managed areas.</li> <li>• mature stands to have understorey of at least 20% and canopy cover of at least 50%</li> </ul>
Regeneration potential	<ul style="list-style-type: none"> <li>• No more than 20% of regeneration areas restocked by planting.</li> <li>• any planting material to be of local oak stock.</li> <li>• restocked area with closed canopy within 15 years.</li> </ul>
Composition (trees and shrubs)	<ul style="list-style-type: none"> <li>• &gt;95% native species in all layers</li> <li>• no significant change (&gt;10% of area) to woodland composition/structure attributable to unnatural external factors (e.g. pollution) or introduced fauna (deer) over a five year period</li> <li>• oak present in canopy over at least 50% of the wood</li> </ul>
Indicators of local distinctiveness	<ul style="list-style-type: none"> <li>• at least 80% of the woodland areas referable to relevant NVC communities (with transitions to ash-maple woodland in the north (W8) but the majority W10 oak hazel woodland in the south);</li> <li>• good population of wild service tree <i>Sorbus torminalis</i> maintained;</li> <li>• scrubby 'green lane' along the edge (past populations of hairstreak butterflies)</li> </ul>



**Annex 2. Example of a Conservation Objectives Table - Roche Abbey Woods**

To maintain the semi-natural woodland (predominantly ash-maple woodland with significant component of lime) in favourable condition.

<b>Attribute</b>	<b>Target</b>	<b>Comment</b>
Extent	Area of ancient woodland maintained Area of semi-natural stands at least maintained.	Ancient and semi-natural areas defined from GFP surveys and Phase 1 habitat maps; areas of scrubby elm regrowth count as part of the woodland. There is potential in increase the semi-natural area through restoration of some of the marginal plantations.
Structure and natural processes	Near-natural structural development under minimum intervention (Kings and Grange Wood)  Nor Wood - diverse structure 10-20% open space 50-80% canopy cover 20-40% shrub layer 40-100% ground flora  Wood edge/glade conditions in valley bottom  No felling/removal of veteran trees Fallen dead wood left on site.	If minimum intervention is accepted for much of the site then we must accept whatever composition and structure develops, but with the following limits Invasive exotics (notably snowberry) should be controlled. Deer may need to be managed more heavily in future Large leaved lime populations may require attention if they were found to be in decline.  In Nor Wood the young growth structure and high public access mean that minimum intervention is less appropriate.
Regeneration potential	Regeneration in minimum intervention area not limited by deer or invasive exotics. In Nor Wood regeneration sufficient to maintain canopy cover from natural regeneration or coppice regrowth No planting.	
Composition: trees and shrubs	Whatever native species balance develops in minimum intervention area, subject to continued presence of large-leaved lime Exotic trees and shrubs to be less than 5% cover In Nor Wood the current mix of native species should be maintained.	In the management of Nor Wood the following species should be favoured in order of preference: lime, elm, sessile oak, ash, birch.  Beech should be treated as potentially native on this site. Although beyond the currently accepted range it is a long-established component of the site and it is the sort of site where an outlier of the past range Or advance invasion (in response to climate change) might be expected.

Attribute	Target	Comment
Indicators of local distinctiveness	<p>No increase in extent of pheasant pens, feeders, camp fires etc in minimum intervention zone</p> <p>Significant (5%) occurrence of lime through the woods</p> <p>At least 85% of woodland vegetation referable to relevant NVC communities (mainly W8)</p> <p>Associated pockets of acid woodland, yew on crags, and transitions to wet woodland maintained.</p> <p>Locally rare plants e.g. <i>Gagea lutea</i>, <i>Hordelymus europaeus</i> maintained. (See survey maps on file)</p>	<p>Precise map of current use needed.</p> <p>Location of stand and NVC types from GFP and other surveys.</p> <p>Locally rare plants would not be assessed directly on most visits, but opportunities should be taken to get them checked periodically.</p>