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# County Wildlife Site Criteria for Cornwall



Environmental  
Records Centre  
for Cornwall and  
the Isles of Scilly



**Cornwall**

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## Acknowledgements

We are very grateful to all those who provided comments during the production of this document. We are very lucky in Cornwall to have so many deeply committed, skilled and knowledgeable recorders and wildlife enthusiasts.

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# COUNTY WILDLIFE SITE CRITERIA FOR CORNWALL

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# 1. INTRODUCTION

The aim of this document is to provide a systematic basis for the identification of non-statutory or 'Local' wildlife sites in Cornwall; these sites are called County Wildlife Sites.

## **County Wildlife Sites:**

- provide a comprehensive suite of sites that complements other site networks;
- provide wildlife refuges for most of the UK's fauna and flora;
- have a significant role to play in meeting overall national biodiversity targets;
- represent local character and distinctiveness;
- contribute to the quality of life and the well-being of the community, with many sites providing opportunities for research and education;
- are an established feature of the statutory planning process in Cornwall;
- are shown in County Minerals, Waste and Local Development Frameworks, and are an important factor taken into account when planning decisions are made.

For these reasons it is important that the process of site selection is transparent and that the rationale behind decisions made is recorded and made available to interested parties. This document is therefore of relevance to planners, landowners, developers and those working in wildlife conservation. We hope to update this document regularly and expect practical use of these criteria will highlight any amendments and updates required. We view this document to be iterative and welcome all feedback.

An equivalent document (County Geology Site Criteria for Cornwall) has been produced to provide a similar basis for the identification of County Geology Sites. These two documents provide criteria to ensure a comprehensive local sites system is in place for Cornwall.

The documents are produced in line with guidance given by the Government's Department for the Environment Food and Rural Affairs (DEFRA) in its publication "*Local Sites: Guidance on their identification, selection and management*" (DEFRA, 2006), which aims to promote more transparent and consistent approaches to the development and operation of systems to identify sites of local importance for nature conservation in England.



## 2. CONTEXT AND BACKGROUND

### 2.1 Cornwall's Biological Heritage

Cornwall is a county strongly influenced by the sea. It forms a peninsula jutting westwards into the Atlantic, and is almost an island, separated from the rest of the country by the River Tamar. No part of Cornwall is more than 24km from the coast; most is much less. The result is a maritime climate with cool summers, mild winters, salt-laden and often gale-force winds and above average rainfall. These factors, combined with the county's varied geology, all contribute to the characteristic landscape and the wealth of biodiversity that make Cornwall so special.

The biodiversity of the county is as varied as the landscape, ranging from the rugged north coast cliffs and beaches with nesting seabirds and breeding grey seals, to the sheltered south coast rias; home to otters and abundant marine life. Habitats range from the wild rugged expanse of the moors and heaths of Bodmin, Penwith and The Lizard, through agricultural landscapes criss-crossed by unique Cornish hedges, to the Ancient Woodlands and parklands of central and east Cornwall. Industry has had an influence too, seen in the old metal mining landscapes and 'china clay country', now re-colonising with distinctive assemblages of rare plants and animals.

Historically, species information in Cornwall has been gathered by a number of dedicated individuals and organisations, and these records, combined with more recent habitat mapping projects and recorder effort, have enabled an assessment of the status and trends of habitats and species in Cornwall to be made, and appropriate conservation measures to be put in place.

### 2.2 Sites of National and International Importance

The national government body concerned with nature conservation, Natural England, notifies those

areas of land that it considers to be of special nature conservation interest. These are known as Sites of Special Scientific Interest (SSSIs), although it is generally recognised that the word 'scientific' is too restrictive a term. Broadly speaking these areas are considered to be of regional or national significance. There are currently 141 SSSIs in Cornwall, protected under the provision of the Wildlife and Countryside Act 1981 (as amended).

In addition, 17 sites of European importance have been recognised and designated under the Conservation of Habitats and Species Regulations (2010), which implement the European Habitats Directive (1992). The Habitats Directive requires all member states to create a network of specially protected wildlife sites across the European Union, as part of a range of measures aimed at conserving important and threatened habitats and species. This network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

All terrestrial SACs in England are already SSSIs; the additional SAC designation recognises that their habitats are of European importance. 13 of the terrestrial SSSIs in Cornwall have been designated as SACs. At sea, where there are no SSSIs, 2 sites have been recognised as of European marine nature conservation importance and given marine SAC status, and a further 3 sites have recently been designated as candidate SACs. The Marine and Coastal Access Act 2009 has introduced new legislation for the designation of 'Marine Conservation Zones'; the designation process is ongoing.

SPAs are designated under the Birds Directive (2009) to provide a framework for the conservation and management of wild birds in Europe. 2 sites in Cornwall have been designated as SPAs for rare and migratory birds.



### 2.3 Sites of Local Importance

The system of statutory sites protects representative samples of the nation's most important wildlife and geological sites; not every site of interest is included. Therefore, to safeguard the County's biodiversity and geodiversity, wildlife in the wider environment needs a level of recognition and protection.

County Wildlife Sites across England provide a comprehensive system of sites that give a refuge to most of the nation's flora and fauna through their connecting and buffering qualities. They represent local character and distinctiveness and complement other site networks.

### 2.4 Background to County Wildlife Sites in Cornwall

The need for a County Wildlife Sites system has always been recognised, and the recent report 'Making Space for Nature' (Lawton *et al.*, 2010) stresses the importance of Local Sites in establishing a coherent and resilient ecological network. This report was submitted to the Secretary of State in September 2010.

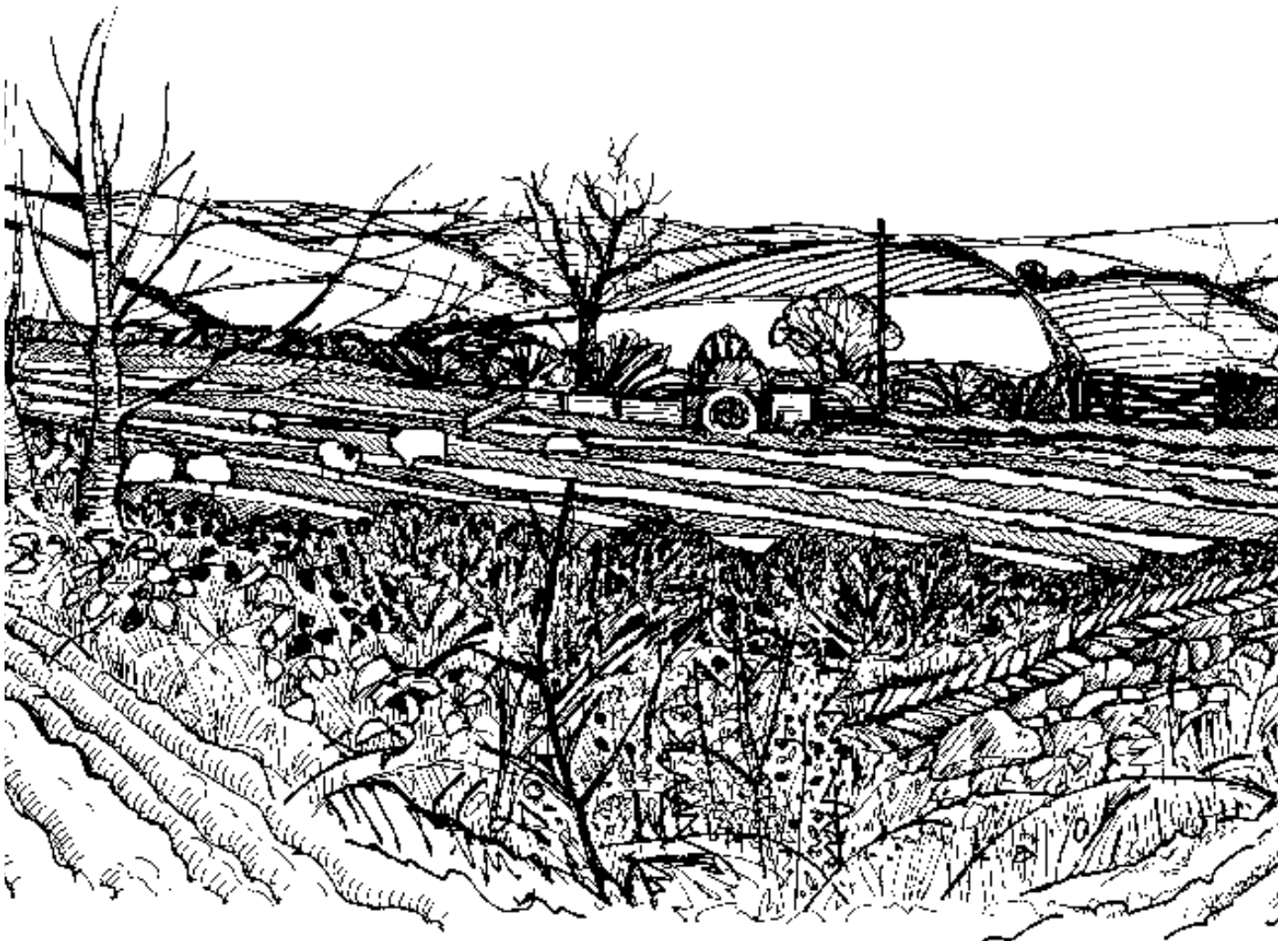
Between 1980 and 1985, Cornwall Wildlife Trust (previously called The Cornwall Naturalists Trust and then the Cornwall Trust for Nature Conservation) implemented systematic identification and detailed survey of County Wildlife Sites during an extensive programme of habitat and site surveys throughout

Cornwall. The suite of sites, initially called Cornwall Nature Conservation Sites (CNCs), was registered with the County and District Councils.

295 County Wildlife Sites (498 including subsites), covering 32984 ha (figures correct at 18th November 2010); approximately 10% of the county's land area, have been identified.

These prime sites are considered to be of at least County importance, and originally included sites designated as SSSIs and National Nature Reserves, which are of national and even international importance. In 1999, in line with national guidance from The Wildlife Trusts, the name of the CNCs was changed to County Wildlife Sites (CWSs). In 2006 the overlap with statutory designations was resolved by removal of the CWSs within SSSIs from the system. This prevents duplication of effort by different conservation organisations and the CWSs now complement the statutory sites. A list of CWSs in Cornwall is given in Appendix 1.

It must be stressed that CWSs do not include all of the wildlife habitat in Cornwall. There is much habitat crucial to wildlife at a more local level that is not currently included in the system. These areas will be incorporated when the system is reviewed using these expanded criteria.



### 3. COUNTY WILDLIFE SITE SELECTION

This section of the document describes how County Wildlife Sites (CWSs) are selected. The role of Ratcliffe's primary and secondary attributes in CWS selection are discussed and guiding principles and procedures for CWS selection are stated.

CWS selection criteria are prepared for:

1. UK Biodiversity Action Plan (BAP) priority habitats
2. Habitats that contribute to local natural character (Local habitats)
3. Species Groups

CWSs are selected by applying the criteria, using the procedures outlined, whilst considering the guiding principles and Ratcliffe's attributes.

**1. BAP priority habitats:** are habitats which, Natural England has advised the Secretary of State for Environment, Food and Rural Affairs, are of principal importance for the conservation of biological diversity in England, in accordance with the 1992 UN Convention on Biological Diversity. The conservation of BAP habitats is furthered by implementation of Action Plans for each habitat. Action Plans for BAP habitats found in Cornwall are detailed in Cornwall BAP Volume 3 (CBI, 2004).

A UK BAP species and habitats review was carried out by the Joint Nature Conservation Committee Biodiversity Reporting and Information Group (JNCC, 2007) resulting in a new UK BAP priority habitats and species list. CWS designation may be the most appropriate mechanism for conserving some of the new BAP habitats and species. A list of Cornwall BAP habitats (and species) is available on the Cornwall Wildlife Trust website: [www.cornwallwildlifetrust.org.uk/conservation](http://www.cornwallwildlifetrust.org.uk/conservation) (the version used in this document is dated 27<sup>th</sup> October 2010 for habitats and 3<sup>rd</sup> November 2010 for species). CWS selection criteria are detailed for most BAP priority habitats occurring in Cornwall. It is envisioned that this criteria document will be updated to reflect any changes to the BAP lists.

By closely aligning the CWS selection criteria with the BAP system, BAP partners can clearly see how to deliver their BAP targets by positive action concerning species and habitats within CWSs, with clear benefits for all.

**2. Habitats that contribute to local natural character (Local habitats):** BAP priority habitats do not provide a comprehensive list of habitats of conservation concern against which criteria for CWS selection should be prepared. "The selection of Local Sites to help sustain biodiversity should be founded on national, regional and local biodiversity priorities. Other habitats and species features should also be considered if they contribute substantially to local natural character, even

if they are not selected as priorities within the local BAP" (para. 39, DEFRA guidance, 2006). From hereon these habitats are referred to as 'Local' habitats. Criteria are prepared for the selection of CWSs for eight Local habitats.

**3. Species Groups:** CWS selection criteria are prepared for species where designation of CWSs is the most appropriate mechanism for conserving that species. For example, CWS designation would afford protection to the great bittern, the survival of which depends on expansion and improved condition of appropriate habitat, but yellowhammer, which has shown a marked decline in the UK, would not be best conserved by CWS designation as its survival depends on a widescale change in agricultural practices. Criteria are prepared for the selection of CWSs for ten species groups for which adequate data exists. The groups are: vascular plants; freshwater algae, fungi & lichens; bryophytes; invertebrates; butterflies; dragonflies & damselflies; fish; reptiles & amphibians; birds and mammals. As more data becomes available, CWS selection criteria will be updated and expanded.



#### 3.1 The Role of Ratcliffe's Primary and Secondary Attributes

When assessing the nature conservation value of a site, either during the selection of CWSs, or in the evaluation of relative values of sites of lower interest, a series of nationally recognised attributes are applied.

The DEFRA (2006) guidance lists 10 criteria for Local Sites: "All Local Sites systems should have a set of clear and locally defined site selection criteria with measurable thresholds developed with reference to the standard set of criteria listed... Naturalness; Size or Extent; Diversity; Rarity; Fragility; Typicalness; Connectivity within the landscape; Recorded history and Cultural Associations; Value for appreciation of nature; Value for learning" (para 50, DEFRA guidance, 2006). The first 6 of the criteria above are Ratcliffe's primary attributes as defined in 'A Nature Conservation Review' (Ratcliffe, 1977). The last 4 are loosely based on Ratcliffe's secondary attributes.

The application of the attributes is complex; different combinations or different emphasis being required according to the nature of the site and the data under consideration. The attributes are discussed below and suggestions as to how they relate to and should be applied to CWS selection in Cornwall are provided.

### 3.1.1 Application of Ratcliffe's Primary Attributes

#### *Naturalness*

Completely natural habitats (i.e. unaffected by man) are extremely rare in Britain, the majority being semi-natural types influenced by man's activities.

Recent modification and disturbance and the presence of alien species, all generally reduce the nature conservation value of a site, i.e. the nearer natural the site is, the higher the value for nature conservation placed upon it. Areas should be judged according to their particular circumstances, as some highly valued habitats have resulted from natural re-colonisation of clearly disturbed areas.

Some areas of Cornwall appear to be semi-natural but are not. For example, beech plantations are similar to native beech woodland that occurs in south-eastern England, but in Cornwall they will not be accorded the same value as oak woodlands, because beech is not native to the county whereas oak is.

Some artificial habitats are important in that they provide opportunities for species that would otherwise be scarce, for example, bryophytes colonising metalliferous mine spoil; arable fields sustaining arable weeds or a disused tunnel now utilised as a bat hibernaculum. Habitats such as these are assessed by other attributes because 'naturalness' does not apply.

In the case of species - native species will, almost without exception, be those that are considered of nature conservation importance.

#### *Size*

Larger sites are generally considered to be of higher nature conservation value, as they usually encompass a wider range of features and are less susceptible to the impacts of external change. Larger areas are more resistant to edge effects, species loss and colonisation by alien species, and consequently form viable units. However, in some places small sites may be the only locally available patch of natural greenspace for appreciation of the natural environment. The value of a small site is increased if it is connected to other sites, for example by a corridor of semi-natural habitat such as a Cornish hedge.

Where important species are a consideration it should be taken into account that many animal species require large territories for foraging and breeding and their conservation is thus dependent on the maintenance



of large areas of habitat. Some plant species require a considerable extent of suitable habitat to allow for turnover within local populations and to ensure long-term survival.

The size of a site is relative. A site that is regarded as large in one area, may be viewed as small in another. This shows the importance of relating site selection to areas of search and is looked at in more detail in Appendix 2. The optimum size for a CWS varies depending upon the habitat type for which that CWS is designated. The extent of a particular habitat type and its relationship to the total amount of that habitat in the county, or in a particular part of the county should be considered. For example where some habitat types are particularly impoverished or fragmented, even small remaining areas may be considered of high nature conservation value and eligible for selection as CWSs.

When applied to species this attribute may also be considered in terms of population numbers. Populations may be judged in relation to the proportion of the local, national or international figure, but it is rarely the case that they are known. Only for birds and mammals is there likely to be any useful information. This will also need to take into account the differences between wintering and breeding populations. Where there is no information relating to the actual population it is accepted that the appropriate measure to use is based on the number of 10-km squares in Cornwall within which any species has been recorded.

#### *Diversity*

One of the key principles of nature conservation is to sustain diversity. This includes genetic diversity within species populations as well as the overall diversity of species and habitats. In general, diverse sites, in terms of both habitats and communities are more highly valued.

However caution is necessary when considering this attribute, as some habitats are naturally more diverse than others and diversity is often related to size. In particular, plant communities are especially variable and it is only possible to compare communities of the same type. For example, it would not be appropriate to compare unimproved grassland that is generally richer in plant species, with a heathland habitat that generally



supports fewer plant species. Comparative assessments should only be made where the habitat, vegetation formation, or plant communities are similar. It is unlikely that a site would be rejected for lack of diversity having already been considered eligible for selection on the attributes of 'naturalness' and 'size'

The attribute of diversity is useful in determining site management. For example, conserving diversity on a landscape scale may mean managing a site to arrest natural habitat succession at varying stages, so representative examples of the full range of species and vegetation structure associated with a particular habitat should be maintained.

### Rarity

The rarity of a habitat type is an important element in site assessment, in addition to whether the habitat is increasing or declining. The maintenance of rare habitats is important to maintain genetic diversity and geographical range. As stated above, the attribute of 'rarity' is incorporated when considering the 'size' attribute. To assess habitat rarity it is necessary to know the extent of the different habitat types both locally and at a national level.

The rarity attribute is applicable across a wide range of species groups. It is frequently linked to population size and diversity. The more common and widespread species tend to form the plant communities which are the basis of selection for habitat or vegetation types, but it is the rarer species – both plant and animal - that often confer special interest. Rarity is considered at various levels, ranging from international to local. Nationally Rare and Nationally Scarce species, together with species that are rare or vulnerable in Cornwall, are of particular interest. This may include the fact that the species is included on a national or local Red Data list or BAP list and these can be used to help set threshold levels for site selection. If a species is not well recorded and a comprehensive picture of its population size and distribution is not known, it may not be possible to set such thresholds. It should be stressed that rare species are often indicators of the habitat quality of sites designated for other reasons.

In Cornwall the attributes are translated into more meaningful criteria for site assessment for 10 species groups. The aim is to set criteria only for species where CWS designation would afford protection.

### Fragility

A site that is regarded as fragile is judged on its *inherent* fragility or the intrinsic sensitivity of its habitats and features to change. For example, a wetland system which is sensitive to hydrological effects that could have their origins in developments which take place at some distance to the site. Another example is a site that is prone to natural successional change unless managed in a particular way. The fragility attribute is

therefore relevant to CWS designation as it could aid in conservation through prioritisation of land management resources.



### Typicalness

The aim of the CWS network is to select all sites of substantive interest, whether they are typical or atypical. Therefore 'typicalness' is not used as a primary attribute in CWS selection. Typicalness of a habitat is recorded on the CWS description summary sheet.

#### 3.1.2 Application of Ratcliffe's Secondary Attributes

"Local Site Systems should select all areas of substantive nature conservation value" (para. 42, DEFRA guidance, 2006); however, this does not preclude them from fulfilling other functions. These interests are covered by secondary attributes, detailed below. CWSs are not selected primarily to meet the requirements of the secondary attributes, instead, the secondary attributes are used to supplement a site's wildlife value. They must be applied rigorously to avoid compromising the integrity of the CWS system.

The secondary attributes are human-based factors that do not depend on the size of a site and are applied after the primary attribute of naturalness. Where secondary attributes are used, their application is based on factors such as accessibility, safety, the range of people who will benefit and the value for education.

"While some Local Sites may be sensitive to even modest levels of human disturbance, others could provide important opportunities for people to have contact with nature as well as related educational opportunities" (para. 78, DEFRA guidance, 2006). Growing medical evidence shows that access to the natural environment improves health and wellbeing, prevents disease and helps people recover from illness, and as a result the government has set targets to provide new urban greenspace, more Local Nature Reserves and programmes to encourage active use of the countryside. In line with this, Natural England has an objective to provide accessible natural space within 300 metres (or five minutes' walk) of every home in England for exercise, relaxation and wellbeing.

Where a CWS of substantive nature conservation importance is the only available open space, particularly in urban areas, it can be affected by pressures from a range of uses. It is still important to designate such sites

to establish their nature conservation interest but if other pressures prove detrimental to the nature conservation value of the site, it is important to encourage Local Authorities to designate other open space nearby to relieve this.

### **Connectivity within the landscape**

Whilst the other three secondary attributes are human-based issues, connectivity within the landscape is an objective description of the site and how it relates to the surrounding countryside. "Where a locality has a number of small fragments of semi-natural habitat which together could be managed to provide linkages for natural colonisation or movement, a Local Site boundary can be defined to take in a wider area and include both discontinuous natural patches and the areas separating them" (para.57, DEFRA guidance, 2006).

### **Recorded History and cultural associations**

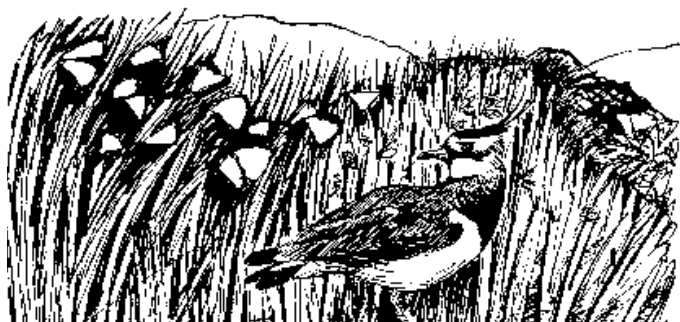
Recording of the history of a site can add greatly to its value for understanding processes and change in the natural environment. For example, recorded history is important in describing ancient woodlands, which are thought to have had a continuous cover of native trees and plants since at least 1600 AD and therefore to be relicts of the original wildwood that developed after the last glaciation. Sites may also have important links to historic events such as scientific discoveries or may have literary or artistic associations.

### **Value for appreciation of nature**

Social change and the effects of human intervention in the landscape mean that people no longer have close contact with nature and seldom encounter a high quality natural environment. However, there is growing evidence that the positive associations people have with the concept of nature are reflected in benefits to people's wellbeing from having the chance to experience and enjoy the local wildlife. In highly developed, populous areas that are poorer in good quality natural environment, sites of lesser intrinsic ecological interest may still be of substantive nature conservation value for the opportunities they provide for the appreciation of nature.

### **Value for learning**

The value of statutory sites for education has long been recognised. CWSs provide equal opportunities for people of all ages to learn about the natural world.



## **3.2 Guiding Principles for County Wildlife Site Selection**

The guiding principles used in the application of the criteria to select CWSs in Cornwall are stated below.

**A The CWS system together with other site networks, should cover the full range of important habitats and species at a level necessary to maintain the biological conservation interest of the County.** The CWS system for Cornwall is comprehensive and aims to protect as many sites of substantive interest as possible. The system complements national sites networks, which select a suite of sites that are representative samples of the range of diversity of habitats and species in England.

**B When selecting sites it is important to keep in mind the reason the sites are being selected, i.e. to raise awareness and target resources.** It is critical that the criteria select appropriate sites. Omitting sites of high enough quality to be CWSs may increase the potential for damage or degradation to those sites. Conversely, selecting sites of inferior quality can waste resources and threaten the integrity of the whole system.

**C The application of the criteria for CWS selection at a local level will be a matter of expert judgment.** The aim is to select all biological sites that meet the criteria. In general, any area that satisfies one or more of the criteria is eligible for inclusion. However, should a site marginally fail to meet two or more different criteria it could still be considered for inclusion. The criteria are not rigid and need to be applied by an expert with an understanding of ecological principles and processes and an intimate knowledge of the ecology of the County.

**D So long as a site is of substantive wildlife interest, the primary 'size' attribute can be overridden in exceptional circumstances.** This might be if the site is proven to be of exceptional value for a secondary attribute such as its educational value. More information on the issue of size in the selection of CWSs is given in Appendix 2.

**E There will often be several qualifying features, but a habitat will be considered eligible for selection if it reaches the required value for only one of them.** The term 'eligible for selection' is used in the criteria statements because it is always necessary for each case to be judged by an expert. This is particularly important where a site may be borderline, in which case, other aspects of the site including the quality of the habitat have to be considered.

**F The guiding principle of SSSI selection, in that for sites which do not clearly qualify on a single feature of interest, the combined value must be taken into account, will be followed.** This principle refers to combinations of factors within a single habitat, not habitat mosaics. For example, a site which narrowly fails to qualify for selection under habitat or single

species group criteria should be examined for additional significant interest under other species groups.

**G In certain cases it is permissible to designate CWS within Sites of Special Scientific Interest (SSSIs).**

SSSIs may include features of “substantive” nature conservation interest, important in the local context, in addition to the features that are internationally/nationally significant for which the site has been designated.

Liaison with Natural England is important to ensure a co-ordinated approach to the conservation and management of the site. Natural England should be encouraged to incorporate management for the locally significant feature within the management advice they give the landowner for the whole SSSI. This will only be possible if there is no conflict with management for the feature(s) for which the SSSI has been designated.

Where a SSSI is part of a larger area of substantive nature conservation interest in the local context, the area outside the SSSI should be considered for selection as a local site and assessed separately against the agreed criteria. This may provide a level of buffering to the SSSI.

**H The process of site selection will be transparent.**

The rationale of the decisions made will be recorded and made available to any interested parties. This will be necessary for arbitration should the CWS designation be contested. Conversely, there may be a need to show why a site has been de-selected or was not selected in the first place. Procedures for how this will be achieved are referred to in section 3.3.

**I The process of site selection will be accountable and legitimate.** The site selection procedure must be carried out by suitably qualified experts with knowledge of ecological principles and processes and an overview of the ecology of the County. The whole process must be ratified by a Local Sites Partnership; this role is adopted by the Cornwall BAP Partnership. The BAP Partnership’s role in overseeing and approving the criteria and the site assessment and selection procedures, and providing technical input as necessary, is vital in respect of the accountability of the process.

### 3.3 Procedures for County Wildlife Site Selection

A Local Sites Partnership Group has been drawn from the larger BAP Partnership, and comprises County Planners, Countryside Managers, Minerals Planners, geologists in industry, representatives from Natural England, the Farming and Wildlife Advisory Group, the Cornwall Agricultural Council, and Cornwall Wildlife Trust. This Partnership has overseen the strategic development of the County Wildlife Site and County Geology Site Systems and approved the criteria and site assessment and selection procedures. Members of the Partnership continue to provide technical input as necessary.

**The evaluation of existing or potential new sites** will be carried out using the criteria for habitats and species detailed in Section 4 and Appendices 4,5 and 6 of this report, whilst following the Guiding Principles in Section 3.2. Designation of new sites will be a 5 stage process:

1. A ‘working list’ of potential new sites will be created by members of the Local Sites Partnership. This list will be managed by Cornwall Wildlife Trust.
2. Preliminary information on these sites will be collected by members of the Local Sites Partnership (including a rough outline boundary and brief reasons for interest based on this criteria document), and brought to partnership meetings to discuss prioritisation and collate information.
3. For potential new sites thought suitable for further investigation, ecologists will collate detailed information and complete the form ‘Protocol for amending County Wildlife Site boundaries’ (in draft form in Appendix 7; currently under consultation).
4. The Local Sites Partnership will meet to evaluate sites by referring to the completed protocol form and these criteria. Sites will be approved, rejected or put on hold pending more information.
5. If the site is approved, site documentation will be completed with a Site Summary Sheet and a Site Boundary Map being produced for each site.

**The process for changes to site boundaries and/or deletion of sites** will follow the steps below (data is likely to have been collected by ecologists undertaking surveys in the field, so there is no need for steps 1 & 2 above):

1. Ecologists will collate detailed information on the site and reasons for suggested boundary changes and complete the form ‘Protocol for amending County Wildlife Site boundaries’ (currently in draft form; Appendix 7).
2. The Local Sites Partnership will meet to evaluate the proposed amendment/deletion by referring to the completed protocol form and these criteria. Sites will be approved, rejected or put on hold pending more information.
3. If the amendment/deletion is approved, site documentation will be completed with a Site Summary Sheet and a Site Boundary Map being produced for each site.

The summary sheet will be distributed to the site owner and other selected parties and will ultimately be made available on a password-protected web-based system. An example of the summary sheet is given in Appendix 3. The web-based CWS dataset will be re-issued annually. There will also be a rolling programme of site review and update, as funding allows.



### 3.4 Site Boundaries

There are many issues associated with delineating sites and drawing boundaries. Paragraphs A to E below outline the procedures associated with these.

**A Site boundaries are drawn to be meaningful in biological terms and to reflect the site selection criteria.** However, there are relatively few sites where the boundary which marks the land of interest from the wider landscape is clear-cut and necessarily some element of subjectivity and expert judgment is required. It is usually the case that the areas of semi-natural interest are first identified and then a boundary is defined that both includes all the area of interest and follows some clearly identifiable landscape feature. In practice, this usually means that the boundary of any site is coincident with parts of the local field boundary system.

**B Within parts of Cornwall certain extensive habitats that are now fragmented may still be viewed as one system.** Sympathetic management to develop links and corridors for natural colonisation and movement of species can then be encouraged. For example, the West Penwith moors are clearly part of one extended lowland heathland unit despite that fact that there are areas of heathland that are detached and isolated. In circumstances such as these it is deemed sensible to treat the whole area as one site, even though some of the components are isolated and small. There is no easy answer to how fragmented any area must be before the fragments are treated as separate sites and each case must be assessed and described on an individual basis.

**C As a general rule site boundaries do not include deliberately delineated buffer zones.** However, they may include areas which effectively act as buffers but

have been included for another reason. This might be an area that marginally fails to meet the criteria but is adjacent to others which do and is included as an integral part of the overall site. The situation may also arise where areas of lesser value form an integral part of a management unit of which the eligible area forms the majority.

**D The problem of whether artificial habitats (lacking special interest) within a site should be excluded from the site, thereby leaving 'holes' within the site map, has to be decided for each case on its merits.** This might occur where a site has a fine mosaic of artificial and semi-natural habitats for which it would be very difficult to accurately define a boundary, e.g. a conifer plantation selected for the value of the rides. It might also occur in the case of a degraded or artificial area within a block of semi-natural habitat; without detailed survey information it may be preferable to include all of the degraded and artificial land within the site boundary. However, any artificial and degraded areas included should be a relatively small proportion of the total area of the site.

**E There should be a presumption in favour of mosaics.** When dealing with habitat mosaics, if no single habitat qualifies for selection, at least one should be 'of some significance'. For example, the area should be at least two-thirds of the qualifying figure. In addition to mosaics chosen because at least one component is of County quality, the best example of each particular combination of habitats within an Area of Search (AOS) should be selected. Most blocks of semi-natural habitat are made up of a number of habitats. Whilst no single habitat may qualify on its own, the site as a whole may clearly be large and diverse and value is added by the fact that the juxtaposition of the different habitats and the transitions between them are interesting ecological features in themselves. Generally, the greater the number of additional habitats, the greater the overall importance of the area as a whole.

The Area of Search (AOS) is the area over which the criteria are applied. For this purpose Cornwall is divided into areas which reflect local variations in wildlife and natural features. Following the principles specified in paragraph 40 of the DEFRA (2006) guidance, the AOS is based on 'Natural Areas' defined by the former English Nature, combined with the former Countryside Commission's 'Character Areas'. These 'Joint Character Areas' divide Cornwall into The Culm; Bodmin Moor; Cornish Killas; Hensbarrow; Carnmenellis; The Lizard and West Penwith. Due to the large size of the 'Cornish Killas' and the different character of the north and south coasts, this area is sub-divided into 'North' and 'South'.



## 4. CRITERIA FOR COUNTY WILDLIFE SITE SELECTION IN CORNWALL

This section provides details of CWS selection criteria. The Joint Nature Conservation Committee (JNCC) assigns the whole of the UK's land surface and surrounding seas to one of 21 Broad Habitat Types (BHTs) (Jackson, 2000). The BHT system is the nationally accepted framework through which the Government is committed to meet its obligations for monitoring the countryside.

Within the BHT classification system, a sub-set of Priority Habitat Types (PHTs) are identified. PHTs are those that are identified in the UK Biodiversity Action Plan (UK BAP) as being at risk and in need of positive conservation action. Local Habitat Types (LHTs) are additional habitat types that have been recognised by the Cornwall Biodiversity Partnership as being of nature conservation significance in Cornwall.

The list of Cornwall axiophytes (plant indicator species) on the Botanical Society of the British Isles website: <http://www.bsbi.org.uk/axiophytes.html> (accessed 27<sup>th</sup>

October 2010) will be useful in determining whether a BAP Priority Habitat or a Local Habitat is eligible for selection as a CWS under these criteria. A list of axiophytes specific to Cornwall and organised according to Broad BAP habitat classification is due for publication in 2011 by the Botanical Cornwall Group.

The appendices provide more detailed information for each of the habitats and the species groups. Appendix 2 gives details of how and why the size thresholds for each habitat were determined. Appendices 4 and 5 summarise what is known about each BAP habitat and Local Habitat respectively, show what sources are available and comment on the quality of that information and its interpretation. Appendix 6 provides details on the criteria for each species group.

The following is a list of all the habitats and species groups that are considered in this document.



## BAP Priority Habitats

### **Maritime and Coastal Habitats Broad Habitat Type (BHT) (coded Mc)**

Coastal saltmarsh Priority Habitat Type (PHT)  
Coastal sand dunes PHT  
Coastal vegetated shingle PHT  
Estuarine rocky habitats PHT  
Intertidal mudflats PHT  
Maerl beds PHT  
Maritime cliff and slopes PHT  
Mud habitats in deep water PHT  
Sabellaria alveolata reefs PHT  
Saline lagoons PHT  
Seagrass beds PHT  
Sheltered muddy gravels PHT  
Subtidal sands and gravels PHT

### **Broadleaved, mixed and yew woodland BHT (coded Wd)**

Lowland mixed deciduous woodland PHT  
Traditional orchards PHT  
Upland mixed ashwoods PHT  
Upland oakwood PHT  
Wet woodland PHT  
Wood-pasture and parkland PHT

### **Boundary and linear features BHT (coded Ar)**

Hedgerows PHT

### **Arable and horticultural BHT (coded Ah)**

Arable field margins PHT

### **Improved grassland BHT (coded Ig)**

Coastal and floodplain grazing marsh PHT

### **Neutral grassland BHT (coded Ng)**

Lowland meadows PHT

### **Calcareous grassland BHT (coded Cg)**

Lowland calcareous grassland PHT

### **Acid grassland BHT (coded Ag)**

Lowland dry acid grassland PHT

### **Dwarf shrub heath BHT (coded He)**

Lowland heathland PHT  
Upland heathland PHT

### **Fen, marsh and swamp BHT (coded Fe)**

Lowland fens PHT  
Purple moor grass and rush pastures PHT  
Reedbeds PHT  
Upland flushes, fens and swamps PHT  
Reedbeds PHT  
Upland flushes, fens and swamps PHT

### **Bog BHT (coded Bo)**

Blanket bog PHT

### **Standing water and canals BHT (coded Fe)**

Eutrophic standing water PHT  
Mesotrophic lakes PHT  
Oligotrophic and dystrophic lakes PHT  
Ponds PHT

### **Rivers and streams BHT (coded Rs)**

Rivers PHT

### **Inland rock BHT (coded Ir)**

Calaminarian grasslands PHT

### **Built up areas and gardens BHT (coded Bu)**

Open mosaic habitats on previously developed land PHT

## Local Habitats

### **Broadleaved, mixed and yew woodland BHT (coded Lw)**

Local ancient woodlands  
Local mixed ashwoods  
Local parkland

### **Boundary and linear features BHT (coded Lb)**

Local boundaries

### **Neutral grassland BHT (coded Lg)**

Local floodplain grasslands  
Local lowland meadows

### **Acid grassland BHT (coded Lu)**

Upland dry acid grassland

### **Standing water and canals BHT (coded Lf)**

Local ponds

## Species Groups

### **Species Groups**

Flowering Plants and Ferns (Vascular Plants)  
Freshwater algae, fungi & lichens  
Mosses and Liverworts (Bryophytes)  
Invertebrates  
Butterflies  
Dragonflies & Damselflies (Odonata)  
Fish  
Reptiles & Amphibians (Herptiles)  
Birds  
Mammals

#### 4.1 Criteria for BAP PRIORITY HABITATS

For each habitat there is a description, a box containing the threshold area, followed by a justification. The description gives a basic idea of the nature of the habitat

### COASTAL SALTMARSH

#### Description

Coastal saltmarshes in Britain comprise the upper, vegetated portions of intertidal mudflats, lying approximately between mean high water neap tides and mean high water spring tides.

A natural saltmarsh system shows a clear zonation according to the frequency of inundation. At the lowest level the pioneer glassworts *Salicornia spp* can withstand immersion by as many as 600 tides per year, while transitional species of the upper marsh can only withstand occasional inundation.

Saltmarshes are an important resource for wading birds and wildfowl. They act as high tide refuges for birds feeding on adjacent mudflats and as a source of food for passerine birds particularly in autumn and winter. In winter, grazed saltmarshes are used as feeding grounds by wild ducks.

**Mc1 All coastal saltmarshes of at least 0.3 hectares are eligible for selection**

#### Justification

The most recent saltmarsh surveys in Britain estimate the total extent of saltmarsh (including transitional communities) to be approximately 45 000 ha. The area of this habitat in Cornwall is only 290 ha, about half of which is found in the Tamar estuary complex. This is <1% of the national total. The small areas of saltmarsh in Cornwall are not only important for their wildlife interest, but are an important element in the landscape character of an estuary.

### COASTAL SAND DUNES

#### Description

Coastal sand dunes develop where there is an adequate supply of sand in the intertidal zone and where onshore winds are prevalent. The critical factor is the presence of a sufficiently large beach plain whose surface dries out between high tides. The dry sand is then blown landwards and deposited above high water mark, where it is trapped by specialised dune-building grasses which grow up through successive layers of deposited sand.

Fixed dune grassland forms largely closed swards where accretion is no longer significant, the surface is stabilised and some soil development has taken place. These communities mentioned are, or have been, maintained

and reasons for its importance. The threshold is the area which makes the habitat eligible for selection and the justification gives basic reasons for the selection of the habitat.

by grazing, whether by domestic stock or by rabbits.

**Mc2 All coastal sand dunes of at least 1 hectare are eligible for selection**

#### Justification

Major dune systems are widely distributed within Britain. The total area is 53 000 ha (56 000 ha UK). The area of this habitat in Cornwall is 1030 ha, about 85% of which is found in only two sites, Penhale and Gwithian. This is about 2% of the national total.

Both of the major dune systems are afforded SSSI status, but the smaller sites are not. The remaining dune systems are rather small and well scattered and accordingly the majority should be protected.

### COASTAL VEGETATED SHINGLE

#### Description

Shingle is defined as sediment with particle sizes in the range 2-200 mm. Shingle structures take a variety of forms. The vegetation communities of shingle features depend on the amount of finer materials mixed in with the shingle, and on the hydrological regime. The classic pioneer species on the seaward edge include sea kale *Crambe maritima*, sea beet, *Beta vulgaris*, and sea campion *Silene uniflora*; such species can withstand exposure to salt spray and some degree of burial or erosion.

Shingle structures may support breeding birds including gulls, waders and terns. Diverse invertebrate communities are found on coastal shingle, with some species restricted to shingle habitats.

**Mc3 All coastal vegetated shingle is eligible for selection**

#### Justification

In England and Wales it is estimated that 30% of the coastline is fringed by shingle. The major vegetated shingle structures total some 5000 ha in England, 700 ha in Scotland and 100 ha in Wales and while there are six sites over 100 ha in extent in the UK, the total for Cornwall is certainly no more than 75 ha, probably significantly less.

While the largest site (Loe Bar) is a SSSI, the remaining sites - though small - are important for the range of scarce plants that are associated with such places and the majority deserve recognition.

## ESTUARINE ROCKY HABITATS

### Description

Estuarine Rocky Habitats encompasses rocky habitats in estuaries which are found from just above high water to those which are found just below low water and incorporates substrata types such as bedrock and stable boulders. Generally rias are one of the most relevant types of inlet for rocky estuarine habitats. These habitats, along with a complex of other estuarine habitats, are part of the 'connectivity' of land, estuary and open sea. For example, rich and sheltered estuarine waters provide nursery grounds for fish, and estuarine rocky habitats are an important component of these nursery grounds.

**Mc4 All mudflats of 2 hectares or more are eligible for selection**

### Justification

There is no clear understanding of what the total area of estuarine rocky habitats in Britain. The area of estuarine rocky habitats in the county is known to be very small, probably in the range of 60-100 ha, most of it found within the Fal and Helford. Any examples are likely to be a significant part of the estuarine ecosystem.

## INTERTIDAL MUDFLATS

### Description

Mudflats are sedimentary intertidal habitats created by deposition in low energy coastal environments, particularly estuaries and other sheltered areas. Their sediment consists mostly of silts and clays with a high organic content. Towards the mouths of estuaries where salinity and wave energy are higher the proportion of sand increases. Mudflats are highly productive areas which, together with other intertidal habitats, support large numbers of predatory birds and fish. They provide feeding and resting areas for internationally important populations of migrant and wintering waterfowl, and are also important nursery areas for flatfish.

**Mc5 All mudflats of 2 hectares or more are eligible for selection**

### Justification

The total British estuarine resource has been estimated at over 500 000 ha of which 55% is intertidal area, mostly mud and sandflats with a lesser amount of saltmarsh. Intertidal flats cover about 250 000 ha.

In Cornwall the area of mudflats is about 2600 ha, about 1.0% of the national total. The majority is found on the Tamar, Fal and Camel estuaries, but there are still significant areas within the smaller estuaries and creeks.

## MAERL BEDS

### Description

Maerl is a collective term for several species of calcified red seaweed. It grows as unattached nodules on the seabed, and can form extensive beds in favourable conditions. Maerl is slow-growing, but over long periods its dead calcareous skeleton can accumulate into deep deposits (an important habitat in its own right), overlain by a thin layer of pink, living maerl.

Maerl beds typically develop where there is some tidal flow, such as in the narrows and rapids of sea lochs, or the straits and sounds between islands. Beds may also develop in more open areas where wave action is sufficient to remove fine sediments, but not strong enough to break the brittle maerl branches. Live maerl has been found at depths of 40 m, but beds are typically much shallower, above 20 m and extending up to the low tide level.

**Mc6 All maerl beds are eligible for selection**

### Justification

Maerl beds are found off the southern and western coasts of the British Isles, north to Shetland, but are particularly well developed around the Scottish islands and in sea loch narrows, around Orkney, and in the south in the Fal Estuary. All the known maerl beds fall within the Fal & Helford SAC. These are of international importance. Any other areas of live maerl in Cornish waters are also of particular significance.

## MARITIME CLIFF AND SLOPES

### Description

Maritime cliffs and slopes comprise sloping to vertical faces on the coastline where a break in slope is formed by slippage and/or coastal erosion. The landward limit is determined by how far the 'maritime influence' is considered to extend.

Maritime cliffs can broadly be classified as 'hard cliffs' or 'soft cliffs', though in practice there are a number of intermediate types. Hard cliffs are vertical or steeply sloping and be formed of rocks resistant to weathering, such as granite. Soft cliffs are formed in less resistant rocks such as shales; being unstable they often form less steep slopes and are therefore more easily colonised by vegetation.

**Mc7 All maritime cliff and slopes of 3 hectares or more are eligible for selection**

### Justification

Approximately 4000 km of the British coastline has been classified as cliff. In Cornwall there are about 250 km of cliff, probably dominated by hard cliff, the total area



being at least 4000 ha, depending on where the limit of maritime influence is deemed to lie. The Cornish cliffs and maritime coast contain many stretches of wild rugged cliffs rich in wildlife which are nationally and internationally important.

### MUD HABITATS IN DEEP WATER

#### Description

Mud habitats in deep water occur below 20-30 m in many areas of Britain's marine environment, including marine inlets such as sea lochs. The relatively stable conditions associated with deep mud habitats often lead to the establishment of communities of burrowing megafaunal species where bathyal species may occur with coastal species. These soft mud communities occur extensively throughout the more sheltered basins of sea lochs and voes. As these sites are typically sheltered from wave action, these communities may occur in quite shallow depths (15 m).

**Mc8 All mud habitats in deep water are eligible for selection**

#### Justification

We have no significant knowledge of the distribution of this habitat off the coast of Cornwall. It will inevitably be of county importance wherever it occurs, because it will form a mosaic with other sublittoral habitats. The larger blocks will be of particular interest.

### *Sabellaria alveolata* REEFS

#### Description

*Sabellaria alveolata* reefs are formed by the honeycomb worm *Sabellaria alveolata*, a polychaete which constructs tubes in tightly packed masses with a distinctive honeycomb-like appearance. These reefs can be up to 30 cm or even 50 cm thick and take the form of hummocks, sheets or more massive formations. They are mainly found on the bottom third of the shore, but may reach mean high water of neap tides and extend into the shallow subtidal in places.

**Mc9 All *Sabellaria alveolata* reefs are eligible for selection**

#### Justification

The British Isles represent the northern extremity of the range in the north-east Atlantic, which extends south to Morocco. The reefs also occur in the Mediterranean. In Britain, *S. alveolata* reefs are found only on shores with strong to moderate wave action in the south and west, between Lyme Bay on the south coast of England and the Scottish coast of the Solway Firth. In Cornwall there are only about 3 ha of this kind of *Sabellaria* reef, nearly all of it at a few sites on the Bude coast.

### SALINE LAGOONS

#### Description

Lagoons in the UK are essentially bodies, natural or artificial, of saline water partially separated from the adjacent sea. They retain a proportion of their seawater at low tide and may develop as brackish, full saline or hyper-saline water bodies.

Lagoons can contain a variety of substrata, often soft sediments which in turn may support tasselweeds and stoneworts as well as filamentous green and brown algae. In addition lagoons contain invertebrates rarely found elsewhere. They may also provide important habitat for waterfowl, marshland birds and seabirds.

There are several different types of lagoons, ranging from those separated from the adjacent sea by a barrier of sand or shingle ('typical lagoons'), to those arising as ponded waters in depressions on soft sedimentary shores, to those separated by a rocky sill or artificial construction such as a sea wall.

**Mc10 All saline lagoons are eligible for selection**

#### Justification

The largest lagoon in the UK is in excess of 800 ha (Loch of Stenness) although the rest are much smaller and some may be less than 1 ha. The total area is certainly at least 5000 ha in Britain.

The area of this habitat in Cornwall is only 49 ha; this is < 1% of the national total. While the number and area of the sites in Cornwall is small, one (Swanpool) is recognised as of national importance. The others are a rare and important part of the mosaic of coastal habitats.

### SEAGRASS BEDS

#### Description

Seagrass is a marine flowering plant (angiosperm). Also referred to as eelgrass and *Zostera* spp, Seagrass beds are commonly found in shallow bays and along fairly sheltered shallow shores.

The beds stabilise the seabed, providing shelter and a surface of attachment for other species. They are also important nursery areas for fish, cuttlefish and rare species such as seahorses.

**Mc11 All seagrass beds are eligible for selection**

#### Justification

The Cromarty Firth supports what is most probably the largest total area of dwarf eelgrass and narrow leaved eelgrass in Britain (approximately 1200 ha) while the Maplin Sands is estimated to be the largest surviving continuous population of dwarf eelgrass in Europe

(covering around 325 ha). Other important sites include the Exe Estuary and the Isles of Scilly.

While there are about 350 ha within the Isles of Scilly, the area of this habitat in Cornwall is only 46 ha, two-thirds of which is found in Carrick Roads. This is < 1% of the national total. Eelgrass was abundant around the coasts of Cornwall and the Isles of Scilly until the 1930s when a wasting disease affected it throughout its range. Decades later eelgrass beds had made a reasonable recovery only to decline again. Many intertidal beds have totally disappeared.

### **SHELTERED MUDDY GRAVELS**

#### **Description**

Sheltered muddy gravel habitats occur principally in estuaries, rias and sea lochs, in areas protected from wave action and strong tidal streams. In fully marine conditions on the lower shore this habitat can be extremely species-rich because the complex nature of the substratum supports a high diversity of both infauna and epifauna. However, good quality examples of this habitat are very scarce.

The priority habitat may be considered as an intertidal extension of a habitat more common in the sublittoral. The communities of interest to this plan are restricted to the intertidal and shallow sublittoral. Shallow subtidal muddy gravel (more than 3 m below Chart Datum) can contain communities of burrowing anemones.

**Mc12 All sheltered muddy gravels are eligible for selection**

#### **Justification**

Analysis of the survey records held on the Marine Nature Conservation Review (MNCR) database suggests that fully saline sheltered muddy gravel communities are scarce in their British distribution. However, the biotope is found extensively in the Solent and the rias of south-west Britain, including the Fal Estuary and the Helford River.

We have insufficient information to know the distribution of this habitat within the county, but it may be assumed that what we do hold is of some national importance. What does occur will inevitably be of county importance wherever it occurs, because it will form a mosaic with other sublittoral habitats. The larger blocks will be of particular interest.

### **SUBTIDAL SANDS AND GRAVELS**

#### **Description**

Subtidal sand and gravel sediments are the most common habitats found below the level of the lowest low tide around the coast of the United Kingdom. The sands and gravels found to the west of Britain (English

Channel and Irish Sea) are largely shell derived, whereas those from the North Sea are largely formed from rock material.

Many of the inshore habitats are important nursery grounds for juvenile commercial species such as flatfishes and bass. Offshore, sand and gravel habitats support internationally important fish and shellfish fisheries.

**Mc13 All subtidal sands and gravels are eligible for selection**

#### **Justification**

There appears to be no detailed comprehensive overview of the national resource.

Within Cornwall there is some insight into the distribution of this habitat within both the marine SACs, but even in those places there is no clear indication of its status. What does occur will inevitably be of county importance wherever it occurs, because it will form a mosaic with other subtidal habitats. The larger blocks will be of particular interest.

### **TIDE-SWEPT CHANNELS**

#### **Description**

The term 'tide-swept channels' is defined as 'strong tidal streams resulting from a constriction in the coastline at the entrance to, or within the length of, an enclosed body of water such as a sea loch. Depth is usually shallower than five metres. In deeper situations tidal streams may generate favourable conditions for diverse marine habitats (e.g. the entrances to fjordic sea lochs, between islands, or between islands and the mainland, particularly where tidal flow is funnelled by the shape of the coastline). Strong tidal streams may be felt down to 30 m.

**Mc14 All tide-swept channels are eligible for selection**

#### **Justification**

Tidal streams occur at many places around Britain. The Isles of Scilly provide a good example of tide-swept communities considered to be of national importance.

In south-west England, eustatic change has created rias by drowning coastal river valleys such as the Dart, Tamar and Fal. At the narrow entrances of these rias, strong tidal currents have generated diverse habitats of biological significance. Maerl beds are also closely identified with the conditions found in tidal narrows and rapids in the Fal estuary. What does occur will inevitably be of county importance wherever they occur, because they will form a mosaic with other sublittoral habitats. The larger blocks will be of particular interest.

## LOWLAND MIXED DECIDUOUS WOODLAND

### Description

Lowland mixed deciduous woodlands are typically lowland woods of about 20 ha growing in a flat or gently undulating farmland landscape. The woods are usually dominated by mixtures of oak, ash and hazel which may have been coppiced in the early part of the twentieth century.

These woodlands vary considerably in their ground flora, ranging from the dog's mercury *Mercurialis perennis* dominated ground layer of the W8 woodlands which often include enchanter's nightshade *Circaea lutetiana* and primrose *Primula vulgaris* in addition to bluebell *Hyacinthoides non-scripta* and wood anemone *Anemone nemoralis* to the poorer examples of W10.

**Wd1 All lowland mixed deciduous woodland of 1.5 hectares or more is eligible for selection**

### Justification

There are no precise figures for the total extent of this woodland type, but it is believed to be between about 150 000 and 200 000 ha in the UK. It includes most semi-natural woodland in southern and western England and parts of lowland Wales and Scotland.

The area of this habitat in Cornwall is about 1500 ha: this is about 1% of the national total. About two-thirds of these woodlands are found in the eastern part of the county: there is virtually none in Penwith.

These woods are often ancient semi-natural and retain a ground flora that reflects a long history. As such they are irreplaceable remnants and an important part of Cornwall's historical heritage.

## TRADITIONAL ORCHARDS

### Description

Traditional orchards are related to wood-pasture and parkland, but are characteristically different. In general, the trees are of the family Rosaceae and the scale is smaller. This is reflected both in the size of the trees and the size of the plots.

To be classed as a priority habitat, traditional orchards need to be managed in a low intensity way. This is shown by the fact that there is permanent grassland between the trees. Visible herbicide strips indicate intensive management. A further distinction is that traditional orchards are often planted at half the density of intensive orchards, though there may be some overlap.

**Wd2 All traditional orchards are eligible for selection**

### Justification

Traditional orchards are found throughout the UK, but the majority are in England. The total area of traditional orchards in England is thought to be about 28 000 ha. There are concentrations in six counties, including Somerset in the South West. Somerset is one of the counties with large scale commercial planting, but there is thought to be little commercial planting in Cornwall where the total area of orchards would appear to be only about 70 ha.

## UPLAND MIXED ASHWOODS

### Description

The term upland mixed ashwoods is used for woods on base-rich soils in the north and west, in most of which ash is a major species, although locally oak, birch, elm, small-leaved lime and even hazel may be the most abundant species. Upland in the name reflects the abundance of this type of woodland on base-rich soils in upland Britain rather than to the altitude at which individual sites occur. Most upland mixed ashwoods are probably ancient.

Mixed ashwoods are amongst the richest habitats for wildlife in the uplands, notable for bright displays of flowers such as bluebell *Hyacinthoides non-scripta*, primrose *Primula vulgaris*, wood cranesbill *Geranium sylvaticum* and wild garlic *Allium ursinum*.

**Wd3 All upland mixed ashwoods of 1.5 hectares or more are eligible for selection**

### Justification

These woodlands are found throughout upland Britain and in Northern Ireland, though they are limited in the north-west Highlands.

There are no precise data on the total extent of upland ashwoods in the UK, but a crude estimate places the total area of upland ashwood at 67 500 ha. The area of this habitat in Cornwall is only 1740 ha, over two-thirds of which lies in the east of the county. This is about 2½% of the national total.

The ashwoods are distinctly different from the oakwoods which are the dominant semi-natural woodland, not only because of the trees, but also in their ground flora. In the ashwoods this is not only different but often more diverse.

## UPLAND OAKWOOD

### Description

Upland oakwoods are characterised by a predominance of oak (most commonly sessile, but locally pedunculate) and birch in the canopy, with varying amounts of holly, rowan and hazel as the main understorey species. The range of plants found in the ground layer varies

according to the underlying soil type and degree of grazing from bluebell-bramble-fern communities through grass and bracken dominated ones to healthy moss-dominated areas.

The ferns, mosses and liverworts found in the most oceanic of these woods are particularly rich; many also hold very diverse lichen communities and the woods typically have a distinctive breeding bird assemblage.

**Wd4 All upland oakwood of 1.5 hectares or more is eligible for selection**

#### Justification

There are no precise figures for the total extent of this woodland type, but it is believed to be between about 70 000 and 100 000 ha in the UK. It is found throughout the north and west of the UK with major concentrations in Argyll and Lochaber, Cumbria, Gwynedd, Devon and Cornwall.

The area of this habitat in Cornwall is about 1500 ha: this is about 2% of the national total. About two-thirds of these woodlands are found in the eastern part of the county: there is virtually none in Penwith.

The oakwoods of the county are often ancient semi-natural and retain a ground flora that reflects a long history. As such they are irreplaceable remnants and an important part of Cornwall's historical heritage.

### WET WOODLAND

#### Description

Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, pine and beech on the drier riparian areas. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows.

In terms of National Vegetation Classification (NVC) plant communities this habitat is characterised as W1 woodland to W3 woodland, W4c woodland, and W5 woodland to W7 woodland.

**Wd5 All wet woodland of 2 hectares or more is eligible for selection**

#### Justification

There are no precise data on the total extent of wet woodland in the UK, but a crude estimate of the total wet woodland area in the UK is 50 000–70 000 ha.

There are about 2200 ha of wet woodland in Cornwall, nearly 4% of the national total. Much of the willow woodland is found associated with the mid-Cornwall

Moors, but there are a range of other woodland types found throughout the county. In particular, the alder-dominated woodlands are particularly scarce, the majority being found in the east of the county.

### WOOD-PASTURE AND PARKLAND

#### Description

Wood-pasture and parkland is the product of historic land management systems, and represent a vegetation structure rather than being a particular plant community. Typically this structure consists of large, open-grown or high forest trees (often pollards) at various densities, in a matrix of grazed grassland, heathland and/or woodland floras. These sites are frequently of national historic, cultural and landscape importance.

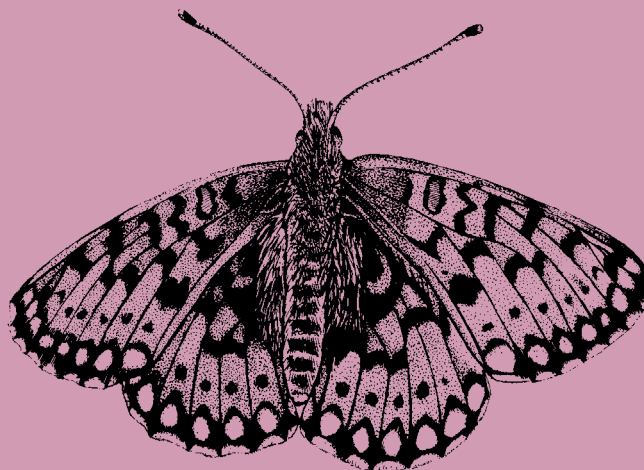
Outgrown wood-pasture and mature high forest remnants ('virgin forests') occur in northern and central Europe, but the number and continuity of ancient (veteran) trees with their associated distinctive saproxylic (wood-eating) fauna and epiphytic flora are more abundant in Britain than elsewhere. Parklands and wood-pasture may also be of interest for bats and birds and may preserve indigenous tree genotypes. These areas are outstanding at a European level.

**Wd6 All wood-pasture and parkland of 0.5 hectares or more is eligible for selection**

#### Justification

There are no reliable statistics on the extent of the overall resource, nor on historical and current rates of loss or degradation of this type of habitat. The figure of 10-20 000 ha 'currently in a working condition' given in the 'habitat statement' of the UK Biodiversity Steering Group report is the current best estimate.

There are thought to be about 500 ha of parkland in the county, but probably less than half that would qualify as this PHT. However, the remainder is still of interest at a local level and the lower quality sites will be included as a local habitat.



## HEDGEROWS

### Description

Hedgerows, which support the greatest diversity of plants and animals, are often those which were in existence before the Enclosure Acts, passed mainly between 1720 and 1840 in Britain. Species-rich hedgerows may be taken as those which contain 5 or more native woody species on average in a 30 m length, or 4 or more in northern England, upland Wales and Scotland.

Hedges which consist only of an earth or stone bank or wall are not considered, the criteria being limited to the assessment of boundary lines of trees or shrubs. Where such lines of trees or shrubs are associated with features such as banks, ditches, trees or verges, these features are considered to form part of the hedgerow.

**Ar1 All hedgerows are eligible for selection**

### Justification

The current British total may be estimated to be about 350 000 km, about 150 000 km of which are species-rich. Such hedges are concentrated in southern England, especially in the south-west, and in southern Wales, and are relatively scarce in Scotland. Because many of the field boundaries in Cornwall are classified as 'banks', it is not clear how much hedgerow there is in the county, and not clear how much of that could be classed as priority habitat.

Hedgerows are important not only for the species that compose them, but also as wildlife corridors which link blocks of habitat and as features that enhance the landscape. It is not appropriate to suggest designation of just a percentage of them as any assessment of their importance is likely to hinge on a diverse number of judgements.

## ARABLE FIELD MARGINS

### Description

The term "arable field margin" refers to strips of land lying between cereal crops and the field boundary, and extending for a limited distance into the crop, which are deliberately managed to create conditions which benefit key farmland species.

Arable field margins provide nesting and feeding sites for many birds. Species of butterflies, grasshoppers, and plant bugs are associated with such sites. Excluding soil invertebrates, micro-organisms and transients, some 2000 species of invertebrate are commonly found in cereal fields alone.

Even more dependent on arable field margins are the rare arable flowers. Threatened and important species from these margins include pheasant's eye *Adonis annua*, cornflower *Centaurea cyanus*, broadleaved spurge *Euphorbia platyphyllos*, corn parsley *Petroselinum segetum*, shepherd's-needle *Scandix pecten-veneris* and

narrow-fruited cornsalad *Valerianella dentata*.

**Ah1 All arable field margins are eligible for selection**

### Justification

Arable land covers about 60 000 km<sup>2</sup> in Great Britain (defined as total crops plus bare fallow plus grassland less than five years old).

The margins of arable fields could be managed in ways which would benefit wildlife, without having serious detrimental effects on the remaining cropped area. Estimating average national field size to be 12 ha suggests that there are about 800 000 km of arable field edge in the UK. If all such boundaries included a 6 m managed margin, some 400 000 ha of land would be brought into sensitive management.

It is not known how much land is managed in this way in Cornwall.

## COASTAL AND FLOODPLAIN GRAZING MARSH

### Description

Grazing marsh is defined as periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. Almost all areas are grazed and some are cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities.

Grazing marshes may be important for the number of breeding waders or for populations of wintering wildfowl such as wigeon *Anas penelope*.

**Ig1 All coastal and floodplain grazing marsh are eligible for selection**

### Justification

The exact extent of grazing marsh in the UK is not known but it is possible that there may be a total of 300 000 ha.

The area in Cornwall is clearly small. Only 73 ha has been identified as PHT and there is unlikely to be much more. Any remaining sites are likely to lie in the floodplains of the River Lynher and River Tamar.

The small areas that do occur are important areas for wildfowl in the winter.

## LOWLAND MEADOWS

### Description

Lowland meadows include most forms of unimproved neutral grassland across the enclosed lowland landscapes of Britain. In terms of National Vegetation Classification plant communities, they primarily embrace each type of *Cynosurus cristatus* - *Centaurea nigra* grassland, *Alopecurus pratensis* - *Sanguisorba officinalis* floodplain meadow and *Cynosurus cristatus* - *Caltha palustris* flood-pasture. The plan is not restricted to grasslands cut for hay, but also takes into account unimproved neutral pastures where livestock grazing is the main land use.

In non-agricultural settings, such grasslands are less frequent but additional examples may be found in recreational sites, church-yards, roadside verges and a variety of other localities.

**Ng1 All lowland meadows are eligible for selection**

### Justification

Recent survey findings in Britain reveal an estimated extent of less than 15 000 ha of species-rich neutral grassland surviving today in Britain.

Recent estimates for cover in Britain of the *Cynosurus* - *Centaurea* grassland indicate that there is between 7000-13 000 ha of this community in total. This is by far the most common kind of lowland meadow, the total area of the other two communities being only about one quarter that figure.

There are probably something like 50-150 ha of this PHT in the county that might be eligible for site selection. Much of it will be MG5 in inaccessible valleys, often near the coast. All these scarce flower-rich meadows are in urgent need of conservation. They are in general likely to be remnants of the semi-natural grasslands that existed before the widespread agricultural improvements of the twentieth century.

## LOWLAND CALCAREOUS GRASSLAND

### Description

Lowland calcareous grasslands are developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. These grasslands are now largely found on distinct topographic features such as escarpments or dry valley slopes and sometimes on ancient earthworks in landscapes strongly influenced by the underlying limestone geology.

More rarely, remnant examples occur on flatter topography such as in Breckland and on Salisbury Plain. They are typically managed as components of pastoral or mixed farming systems, supporting sheep, cattle or sometimes horses; a few examples are cut for hay.

**Cg1 All lowland calcareous grassland is eligible for selection**

### Justification

Lowland calcareous grassland only occurs in England and Wales. Current estimates put the amount of lowland calcareous grassland remaining in the United Kingdom around 33 000 to 41 000 ha with less than 1000 ha of this in Wales. The bulk of the resource is found on chalk (25 000 to 32 000 ha), with major concentrations in Wiltshire, Dorset and the South Downs.

The calcareous grasslands in Cornwall - which cover only 135 ha - fit the definition of the PHT, but are actually a range of grasslands found just behind the major sand dunes and might be more appropriately linked with them. Whatever the case, they are flower-rich grasslands of a particularly rare kind in the county and are worth conserving for their wildlife interest and for the way they enhance the coastal landscape.

## LOWLAND DRY ACID GRASSLAND

### Description

Lowland acid grassland often occurs as an integral part of lowland heath landscapes, in parklands and locally on coastal cliffs and shingle. It is normally managed as pasture, typically found on nutrient-poor, generally free-draining soils overlying acid rocks or superficial deposits such as sands and gravels.

Acid grassland is characterised by a range of plant species such as heath bedstraw *Galium saxatile*, sheep's-fescue *Festuca ovina*, common bent *Agrostis capillaris*, sheep's sorrel *Rumex acetosella*, sand sedge *Carex arenaria*, wavy hair-grass *Deschampsia flexuosa*, bristle bent *Agrostis curtisii* and tormentil *Potentilla erecta*.

**Ag1 All lowland dry acid grassland of 0.5 hectares or more is eligible for selection**

### Justification

Stands remote from the upland fringe, which are the primary focus of conservation attention, are now of restricted occurrence and it is estimated that less than 30,000 ha now remain in Britain. It is likely that something like 500 ha of this habitat is found in Cornwall, about 1.6% of the national total.

All of this grassland is believed to be found in association with Lowland Heathland in Cornwall. It is an important part of the heathland mosaic here where grazing or burning keeps some heathland areas in a more open and grass-dominated form.

## LOWLAND HEATHLAND

### Description

Lowland heathland is characterised by the presence of plants such as heather, dwarf gorses, and cross-leaved heath and is generally found below 300 metres in altitude. Areas of good quality heathland should consist of an ericaceous layer of varying heights and structures, some areas of scattered trees and scrub, areas of bare ground, gorse, wet heaths, bogs and open water. The presence and numbers of characteristic birds, reptiles, invertebrates, vascular plants, bryophytes and lichens are important indicators of habitat quality.

**He1 All lowland heathland with an area of 3 hectares or more is eligible for selection**

### Justification

Lowland heathland is a priority for nature conservation because it is a rare and threatened habitat. In England only one sixth of the heathland present in 1800 now remains. Cornwall is one of the most important areas for lowland heathland in Britain, only Hampshire and Dorset holding more. The area of heathland in the county is about 6500 ha, the majority of it in Penwith and the Lizard.

The remaining heaths are a distinct and important wildlife habitat. More than that, they are an important element of the landscape character in many of the wilder parts of the county.

## UPLAND HEATHLAND

### Description

Heathland vegetation occurs widely on mineral soils and thin peats (<0.5 m deep) throughout the uplands and moorlands of the UK. It is characterised by the presence of dwarf shrubs at a cover of at least 25%.

Upland heath in 'favourable condition' is typically dominated by a range of dwarf shrubs such as heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus*, crowberry *Empetrum nigrum*, bell heather *Erica cinerea* and, in the south and west, western gorse *Ulex gallii*.

**He2 All upland heathland with an area of 0.5 hectares or more is eligible for selection**

### Justification

The total upland heath resource in the UK thus amounts to between 2 and 3 million hectares. Dwarf shrub heaths are recognised as being of international importance because they are largely confined within Europe to the British Isles and the western seaboard of mainland Europe.

In Cornwall there are only a few fragments of heathland on Bodmin Moor which are characteristically upland in nature and they total only about 26 ha. However, accepting that the whole of Bodmin Moor may be classified as upland, then the total area is thought to be about 500 ha.

## LOWLAND FENS

### Description

Fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall: they are minerotrophic.

Fens can also be described as 'poor-fens' or 'rich-fens'. Poor-fens, where the water is derived from base-poor rock such as granites, occur mainly in the uplands, or are associated with lowland heaths. They are characterised by short vegetation with a high proportion of bog mosses *Sphagnum* spp. Rich-fens, are fed by mineral-enriched calcareous waters (pH 5 or more) and are mainly confined to the lowlands.

Fen habitats support a diversity of plant and animal communities. Some can contain up to 550 species of higher plants - a third of our native plant species; up to and occasionally more than half the UK's species of dragonflies and several thousand other insect species, as well as being an important habitat for a range of aquatic beetles.

**Fe1 All lowland fens of 2.5 hectares or more are eligible for selection**

### Justification

The area classified as Fens in Cornwall includes a wide range of diverse habitats. The total area of Fens (not including reedbeds) is estimated to be about 3100 ha. This indicates that it is fairly common, but the word 'fen' encapsulates such diverse vegetation communities that specific vegetation communities will be eligible for separate selection.

**Fe2 All NVC vegetation mire communities classed as lowland fen of 2 hectares or more are eligible for selection**

**Fe3 All NVC vegetation swamp communities classed as lowland fen of 0.5 hectares or more are eligible for selection**

### Justification

The range of fen communities includes such diverse types as the *Molinia mires* associated with moorlands and swamps such as the *Carex paniculata* sedge-swamp found in lowland valleys. The mires and swamps tend to be found in such different parts of the landscape and to be so inherently distinct that treating them separately is appropriate. Another fen, reedbeds, is also considered separately (see P30 below)

## PURPLE MOOR GRASS AND RUSH PASTURES

### Description

Purple moor grass and rush pastures occur on poorly drained, usually acidic soils in lowland areas of high rainfall in western Europe. Their vegetation, which has a distinct character, consists of various species-rich types of fen meadow and rush pasture. Purple moor grass *Molinia caerulea*, and rushes, especially sharp-flowered rush *Juncus acutiflorus*, are usually abundant.

**Fe4 All purple moor grass and rush pastures of 1 hectare or more are eligible for selection**

### Justification

In Britain, they are found in south-west England, particularly in Devon, southern Wales and south-west Scotland. It is probable that the total extent of the habitat in the UK is now about 31 000 ha. This is thought to be considerably more than survives in the rest of Europe, with the possible exception of the Republic of Ireland.

Cornwall holds about 920 ha of this habitat, the prime areas being found in the Culm Natural Area in North Cornwall where there are about 360 ha remaining, about a third of which is of national importance. The remaining sites are under threat of drainage and agricultural reclamation.

**Fe5 All reedbeds are eligible for selection**

### Justification

There are about 5000 ha of reedbeds in the UK, but of the 900 or so sites contributing to this total, only about 50 are greater than 20 ha, and these make a large contribution to the total area. There is about 100 ha of reedbeds in Cornwall, about 2% of the national total.

The many small reedbed sites support a large range of species many of which are dependent on them for food and shelter, some almost exclusively so.

## UPLAND FLUSHES, FENS AND SWAMPS

### Description

These areas are wetlands found above the limit of permanent enclosure that receive water and nutrients from groundwater sources as well as rainfall. It includes a wide range of mires and swamps, excluding the species-poor *Molinia* and *Juncus* swards. It is typically dominated by sedges, rushes and grasses with occasional wetland herbs, together with a carpet of bryophytes.

**Fe6 All upland flushes, fens and swamps of 0.5 hectares or more are eligible for selection**

### Justification

This is a widespread habitat found across the uplands of Britain that does not appear to have been properly assessed.

The area of such wetlands in Cornwall is about 500 ha, nearly all of which is on Bodmin Moor.

## REEDBEDS

### Description

Reedbeds are wetlands dominated by stands of the common reed *Phragmites australis*, wherein the water table is at or above ground level for most of the year. They tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them. Reedbeds are amongst the most important habitats for birds in the UK. Five GB Red Data Book invertebrates are also closely associated with reedbeds.

**Bo1 All blanket bog of 0.3 hectares or more is eligible for selection**

### Description

Blanket bog peat accumulates in response to the very slow rate at which plant material decomposes under conditions of waterlogging. Peat depth is very variable, with an average of 0.5-3 m being fairly typical but depths in excess of 5 m not unusual.

Many of the typical blanket mire species, such as heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, deer grass *Trichophorum cespitosum*, cotton grass *Eriophorum* species and several of the bog moss *Sphagnum* species, occur throughout much of the range of the habitat, although their relative proportions vary across the country.

### Justification

Blanket bog is one of the most extensive semi-natural habitats in the UK and ranges from Devon in the south to Shetland in the north. There is no agreed figure for the extent of blanket bog vegetation but in terms of national cover of blanket peat soil Britain supports some 1 345 000 ha.

The small areas of what may be blanket bog on Bodmin Moor need to be assessed to see if any can be considered to be the PHT, or whether they should be viewed as another habitat altogether. If they are blanket bog, then they are a very severely degraded form.



## EUTROPHIC STANDING WATERS

### Description

Eutrophic standing waters are highly productive because plant nutrients are plentiful, either naturally or as a result of artificial enrichment.

In their natural state eutrophic waters have high biodiversity. Planktonic algae and zooplankton are abundant in the water column, submerged vegetation is diverse and numerous species of invertebrate and fish are present. Plant assemblages differ according to geographical area but common floating-leaved plants include yellow water lily *Nuphar lutea* and there is often a marginal fringe of reedswamp, which is an important component of the aquatic ecosystems.

**Fr1 All eutrophic standing waters of 0.3 hectares or more are eligible for selection**

### Justification

Eutrophic waters are most typical of hard water areas of the lowlands of southern and eastern Britain, but they also occur in the north and west, especially near the coast.

There are no accurate estimates of the amount of eutrophic standing water in Great Britain, but it is thought to be about 84 500 ha (178 500 ha UK). The area in Cornwall is about 280 ha, the majority of the sites being rather small – generally in the range of 0.1-1.0 ha.

These waters are important for a range of plant and animal species including birds, amphibians and dragonflies.

## MESOTROPHIC LAKES

### Description

Mesotrophic lakes (i.e. those in the middle of the trophic range having a moderate level of nutrients present) are relatively infrequent in the UK and largely confined to the margins of upland areas in the north and west. They are characterised by having a narrow range of nutrients.

Mesotrophic lakes potentially have the highest plant diversity of any lake type. Furthermore, relative to other lake types, they contain a higher proportion of nationally scarce and rare aquatic plants. Insects are well represented, with particularly important groups being dragonflies, water beetles, stoneflies and mayflies.

**Fr2 All mesotrophic lakes are eligible for selection**

### Justification

There is no clear understanding of the total area of mesotrophic lakes in Britain, though it is thought to be about 25 000 ha.

The number of mesotrophic lakes in the county is likely to be very small. The total area of mesotrophic waters is probably in the range of 50-150 ha, so any examples are likely to be rather scarce. In all probability these sites will also be significant for other groups such as amphibians and birds.

## OLIGOTROPHIC AND DYSTROPHIC LAKES

### Description

Oligotrophic and Dystrophic lakes are water bodies which are characterised by low nutrient levels. They are usually found on hard acidic rocks, most often in the uplands. The shores are usually stony with sparse vegetation such as shoreweed *Littorella uniflora*. In this PHT, the majority of selected sites will be more than 2 ha.

**Fr3 All oligotrophic and dystrophic lakes are eligible for selection**

### Justification

There is no clear understanding of what the total area of oligotrophic and dystrophic lakes is in Britain, though it is thought to be about 145 000 ha, the great majority of which is in Scotland.

The total area of this habitat in Cornwall is thought to be about 800 ha, but this includes a number of reservoirs, so any revision of their status would reduce this figure sharply. The majority of sites, in particular the dystrophic ones, are thought to lie on Bodmin Moor.

## PONDS

### Description

The criteria are designed to select only the more important examples. They are various, but concentrate on smaller freshwater bodies (<2 ha) that contain significant species. The word 'significant' can mean that there are rare species present or that there are a suite of species that meet some accepted guideline. For example, the pond may support a Red Data Book or UK BAP species.

**Fr4 All ponds are eligible for selection**

### Justification

Ponds are widespread throughout Britain, but high quality examples are localised. It is thought that about 20% of the 400 000 ponds outside curtilage might qualify. There appears to have been a loss of about 70% of the ponds that existed in 1880, much of the loss taking place in the second half of the twentieth century.

There are thought to be about 1500-2000 ponds in the county with a total area of about 250 ha. Very few of them have had their nature conservation importance assessed.

## RIVERS

### Description

The rivers BAP priority habitat is based around three broad features:

- Habitats Directive Annex I habitat type Rivers with *Ranuncion fluitantis* and *Callitricho Batrachion* vegetation;
- headwaters; and
- exposed river sediments.

The important features of a river system vary from the nutrient-poor headwaters with few higher plants to the richer lowland systems. The headwaters support stoneflies, mayflies and caddis flies together with salmon *Salmo salar* and brown trout *Salmo trutta*. The lowland rivers are more likely to hold fish such as chub *Leuciscus cephalus* and roach *Rutilus rutilus*.

**Rs1 All rivers are eligible for selection**

### Justification

There is no clear understanding of what the total resource of this habitat type is within Britain. The total length of rivers and streams in the county is likely to be about 5000 km, but it is not known how much of that resource would be classified as PHT.

A number of the rivers in Cornwall are known to be important for wide ranging species such as otter *Lutra lutra* and salmon. These rivers are under a number of threats such as acidification and agricultural pollution.

## CALAMINARIAN GRASSLANDS

### Description

The Calaminarian grasslands are associated with:

- near-natural substrates such as serpentine;
- river gravels rich in heavy metals; as well as
- artificial mine workings and spoil heaps.

The plant community is typically open-structured, composed of weedy or metallophyte species of lichens, bryophytes and vascular plants such as spring sandwort *Minuartia verna*, thrift *Armeria maritima* and bladder campion *Silene maritima*. There are also rarer bryophyte species such as Cornish path moss *Ditrichum cornubicum*, lead path moss *Ditrichum plumbicola*, western rustwort *Marsupella profunda* and the liverwort *Cephaloziella nicholsonii* – all of which are found in Cornwall.

**Ir1 All calaminarian grasslands are eligible for selection**

### Justification

The majority of this community is found in certain mining areas of northern England and North Wales. There are outliers in the highlands of Scotland and probably on the Lizard peninsula in Cornwall. It is a decidedly scarce community which is declining.

The area of this habitat type in Cornwall is likely to be rather small. No specific studies have been carried out, but examples of calaminarian grasslands may be found on both the Lizard serpentine and certain old mining sites.

## OPEN MOSAIC HABITATS ON PREVIOUSLY DEVELOPED LAND

### Description

This habitat specifically excludes the Calaminarian Grassland P38 above. The habitat is defined in terms of structure, rather than specific vegetation communities. It comprises mosaics of bare ground, open grassland, scrub and other fragmentary habitats. High quality examples may be characterised as unmanaged flower-rich grasslands with sparsely-vegetated areas on poor substrates.

Invertebrate faunas can be species-rich and include many uncommon species. Between 12 and 15% of all nationally rare and nationally scarce insects are recorded from brownfield sites.

**Bu1 All open mosaic habitat on previously developed land is eligible for selection**

### Justification

These sites mostly enjoy little recognition, their early successional communities and sparsely vegetated areas being commonly mistaken as being of no nature conservation interest. Moreover, it is rare today for such sites to survive long enough to acquire any value, which means those that do exist are effectively irreplaceable.

In Cornwall, as elsewhere, there has not been a comprehensive survey of all such land, though much has been recognised through its importance for bryophytes.



## 4.2 Criteria for habitats that contribute to local natural character (LOCALHABITATS)

### LOCAL ANCIENT WOODLANDS

#### Description

Ancient woodlands are woodlands which have had a continuous history of tree cover since at least 1600, some of which will be remnants of woodlands that have been there for millennia. The majority of ancient woodlands which were included on the Cornwall Inventory of Ancient Woodland will already have been selected as some form of woodland priority BAP habitat. Those that have not been selected are included here.

**Lw1 All woodlands where there is evidence that they are both semi-natural and ancient are eligible for selection**

#### Justification

Ancient Woodland is part of the biological heritage of any county and is irreplaceable. There is only about 3000 ha of ancient semi-natural woodland remaining in the county, much of it recognised as being an important woodland priority habitat type.

In addition to those woodlands on the Inventory there will inevitably be some that have been missed and some that were too small to have been included. Because of the importance of these woodlands at a local level, all woodlands where there is strong evidence that they are ancient semi-natural will be eligible.

### LOCAL MIXED ASHWOODS

#### Description

Upland mixed ashwoods cannot be considered to be priority habitat if the canopy is composed of 50% or less site-native species of trees or shrubs. This local habitat will include all ashwoods with a typical ashwood ground flora even where over half of the trees are non-native. For example, site native trees do not include sycamore *Acer pseudoplatanus*, an introduction and a relatively common component of ashwoods in Cornwall.

**Lw2 All local mixed ashwoods are eligible for selection**

#### Justification

These local mixed ashwoods are often, generally speaking, nothing more than sycamore invaded upland mixed ashwoods. Mixed ashwoods are amongst the richest habitats for wildlife and often have a relatively rich and diverse ground flora. In a county such as Cornwall, these woodlands are especially valuable, particularly in the west of the county where woodlands of any kind are so thin on the ground.

### LOCAL PARKLAND

#### Description

The national PHT is restrictive in that there are seven attributes that can be used to create a score towards the habitat. This local habitat will encompass a wider range of parklands by looking at only four attributes.

The local parklands will rely on old maps/records indicative of parkland. Within the parkland there should be a vegetation mosaic of open and woodland communities with at least a small number of old trees. In addition there should be evidence of large herbivores, particularly livestock.

**Lw3 All local parklands of 0.3 hectares or more are eligible for selection**

#### Justification

Parklands are a distinctive and attractive landscape feature which is rare in Cornwall. They invariably have wildlife interest which is different from continuous woodland and they inevitably hold mature trees even if they are not veteran.



## LOCAL BOUNDARIES

### Description

The typical Cornish hedge is sometimes referred to as a kind of 'field bank'. These traditional boundaries are formed of earthen banks faced with stone. There may or may not be shrubby vegetation or trees growing along the top. The vegetation along the top of an earth bank is considered to be a hedgerow and can be considered for inclusion within the ancient and/or species-rich hedgerow PHT. However, the earth bank itself has received no such recognition.

The Cornish Hedge is a characteristic feature of the landscape that affords habitat for a wide range of plants and animals, some of which are priority species in their own right.

**Lb1 All local boundaries are eligible for selection**

### Justification

The Cornish Hedge is unquestionably of significant importance for its wildlife and the fact that it has not been selected as a priority habitat is due to the fact that it has not been promoted rather than any intrinsic lack of value in the hedges themselves.

Cornish hedges are important for not only for the species that compose them, but also as wildlife corridors which link blocks of habitat and as features that enhance the landscape. It is not possible to say that a certain percentage of them should be retained, as any assessment of their importance is likely to hinge on a diverse number of judgements.

## LOCAL FLOODPLAIN GRASSLANDS

### Description

This set of grasslands are those vegetation communities coded MG11, MG12 and MG13 in the NVC. The three grasslands are subject to periodic flooding, the first two often being found where the water is brackish. These grasslands may be found adjacent to or in transition with other semi-natural communities. And again, while they are not of the highest botanical interest, they do hold significantly more interest than the general meadows and pastures and other agricultural grasslands that typify the farming countryside of Cornwall.

**Lg1 All local floodplain grasslands are eligible for selection**

### Justification

These floodplain grasslands are very rare in the county and are often found as an important component of the semi-natural habitat at the landward end of several coastal saltmarshes.

*pseudacorus* variant or give consideration to the richer variants of MG7e.

Also included are other grasslands such as the mesotrophic grasslands classified as MG9 and MG10 which are both typical of permanently moist sites most often found throughout the lowlands. Both of them are often viewed as little more than unproductive agricultural land. However, their position in the landscape often makes them part of a transition between grassland to swamp, forming part of a mosaic of communities associated with damp soils. They also contain a wide range of flowering plants, albeit at low frequencies.

**Lg2 The best examples of MG1 grasslands within an AOS are eligible for selection**

### Justification

They are rather scarce, are a remnant of a once more widespread grassland and have added floristic interest together with enhanced numbers of butterflies, other invertebrates and small mammals.

**Lg3 The best examples of MG6 *Iris pseudacorus* variant grasslands within an AOS are eligible for selection**

### Justification

These grasslands are rather scarce in the county, generally being found in the damper bottoms of so much of our farmland. They are threatened by drainage and other agricultural improvement.

**Lg4 The best examples of MG9 and MG10 grasslands within an AOS are eligible for selection**

## LOCAL LOWLAND MEADOWS

### Description

This brings together a range of grasslands that are clearly more diverse and hold a range of flora and fauna which has often not been accorded much significance. We may particularly think of the MG1 *Arrhenatherum* grasslands. These are grasslands which have disappeared from the wider countryside and now typically occupy so many roadside verges.

Those grasslands which now dominate the greater part of the farmland landscape might be characterised as MG7 or the floristically impoverished forms of MG6. It has been the norm to completely ignore such communities. Nevertheless, at a local level we might think of notifying some of the elements of MG6 such as the *Iris*

### Justification

These grasslands may hold conspicuous stands of buttercups with smaller numbers of other flowers such as ladies smock. Though these are not rare or scarce species of high botanical interest, they clearly mark the grasslands as wildlife interest and enhance the character of the local landscape.

Meadows and pastures of any botanical interest were lost throughout the twentieth century. At the same time

wetlands were drained. These wet grasslands are now a scarce remnant of what once existed and they continue to be under threat.

While the floristic richness of any NVC vegetation community may vary, we will not concern ourselves with that judgement at a local level. All the semi-natural grasslands of the county that remain are under continuing threat and efforts should be made to protect them.

## UPLAND DRY ACID GRASSLAND

### Description

Upland dry acid grassland typically occurs as extensive unenclosed pastures or rough grazing at intermediate altitudes. Much of the particular character of these upland grasslands, especially U4, derives from the fact that they are grazed.

This habitat includes the unenclosed acid grassland throughout the UK uplands (normally above c. 300 m) including all acid grassland swards in old and non-functional enclosures in the upland fringes.

Acid grassland is characterised by a range of plant species such as heath bedstraw *Galium saxatile*, sheep's-fescue *Festuca ovina*, common bent *Agrostis capillaris*, bristle bent *Agrostis curtisii* and tormentil *Potentilla erecta*, with presence and abundance depending on community type and locality. Dwarf shrubs such as heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus* can also occur but at low abundance.

**Lu1 All upland dry acid grassland of 3 hectares or more are eligible for selection**

### Justification

Upland dry acid grassland is widespread throughout much of the sub-montane zone of Britain, being strongly concentrated between 150 m and 500 m altitude. It is found in much of the uplands of Scotland, the Lake District, the Pennines, Wales and SW England.

Upland dry acid grassland is characteristic of large parts of Bodmin Moor. The total area would appear to be about 4500 ha. There may be smaller areas on the uplands of Hensbarrow, Carnmenellis and West Penwith, but whether they are more properly classed as Lowland Dry Acid Grassland – or some other habitat – needs investigation. In the north of the Moor, in the area of Brown Willy and Rough Tor the wide expanses of semi-natural grazing are dominated by the U4 community, whereas in the south of the Moor it is the U3 *Agrostis curtisii* community that is dominant.

## LOCAL PONDS

### Description

The national PHT is restrictive in that there are five broad attributes that can be used to create a score towards the habitat. This local habitat will encompass a wider range of ponds by looking at only four attributes with less rigorous criteria. In general the pond should be both a feature of landscape importance and a wildlife refuge. It follows that any pond which is isolated and long-standing with significant local populations of certain species

(such as amphibians and Odonata) will certainly qualify.

**Lf1 All ponds where there is evidence that they are either wildlife refuges and/or significant landscape features are eligible for selection**

### Justification

Many Local Ponds are important for certain wetland plants and animal species such as amphibians. Others may be long-standing landscape features of local interest in addition to being wildlife refuges.



### 4.3 Criteria for SPECIES GROUPS

#### General Guidelines

These guidelines are applicable to any species found in Cornwall. They are intended to guide the selection of County Wildlife Sites (CWS) where this will aid conservation of the species. A site may be eligible for selection based on these species criteria, but it does not follow that all eligible sites should be selected; eligibility is just one part of the selection process. The specific aim for CWS selection based on species criteria is to ensure that some protection is accorded to all species that may be described as being of some conservation concern.

There are various reasons why species are deemed to be of conservation concern, including rarity, vulnerability and threat. There are several different 'lists' that can be used to direct the process of designating CWS's for species interest. Habitat assessments are carried out using BAP Priority Habitat lists alone, but BAP Priority species lists are only one indicator of species of conservation concern. Therefore, different lists have been combined to ensure that these species criteria for Cornwall reflect both national and local conservation priorities.

Species Groups Criteria have been prepared for species that are:

- listed as a Cornwall BAP Priority species;
- legally protected within the Conservation of Habitats and Species Regulations (2010) or the Wildlife and Countryside Act (1981, as amended), or listed in the EC Habitats Directive (1992, as amended) or Birds Directive (2009);
- listed in a Red Data Book (RDB);
- listed as Nationally Scarce; or
- listed as a species of county importance.

Certain species groups have been given particular attention because the amount of data available allows specific criteria for selection of County Wildlife Sites to be set. At present, bryophytes, birds and herptiles have a scoring system to inform designation of sites. Vascular plants, butterflies, Odonata and mammals have more detailed general information (but not a scoring system) to inform designation. Herptile and Odonata sites can also qualify based on presence of outstanding assemblages. In other groups, reliance on expert judgement case-by-case will be necessary (see Appendix 6 for details). We view this document to be iterative and hope to update criteria regularly as data becomes available.

For example, the list of beetles for Cornwall is quite comprehensive, but there is very little information on the distribution of each species and virtually no information on populations. For birds, we have an in-depth understanding of the distribution, population and trends of many of the species in Cornwall, sometimes at a seasonal or even monthly level. Therefore the approach for beetles is to identify the sites where certain legally protected species or species of conservation concern occur and consider based on expert judgement whether site notification would be appropriate. The approach for birds is more complex and may involve looking at all bird species that use a site, the range of species and their populations within the site, and presence of certain listed species.

The approach taken in assessing species groups therefore naturally diverges to some extent based on availability of data and the nature of the species. However, the general summary below (criteria Sg1-5) encapsulates the approach for all groups. Details of specific selection criteria by species group are given in Appendix 6.



## SPECIES GROUP CRITERIA

- FLOWERING PLANTS AND FERNS (VASCULAR PLANTS)
- FRESHWATER ALGAE, FUNGI & LICHENS
- MOSSES AND LIVERWORTS (BRYOPHYTES)
- INVERTEBRATES (EXCLUDING BUTTERFLIES AND ODONATA)
- BUTTERFLIES
- DRAGONFLIES AND DAMSELFLIES (ODONATA)
- FRESHWATER FISH
- REPTILES AND AMPHIBIANS (HERPTILES)
- BIRDS
- MAMMALS

The species group assessments rely on five general criteria (Sg1-5 below). Details of criteria specific to each species group are given in Appendix 6. Judgement of a 'significant population' needs to be justified case-by-case with reference to expert judgement.

**Sg1 A site is eligible for selection if it supports a significant population of a Cornwall BAP priority species**

### Brief description

A BAP priority species is either threatened or rare in Western Europe or Britain.

### Justification

There is an international or national responsibility for the conservation of these species. Any species in this category could benefit from site notification.

**Sg2 A site is eligible for selection if it supports a significant population of a species listed on the relevant Schedule of the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2010, or the relevant Annex of the EC Habitats or Birds Directive.**

### Brief description

Any species listed within these categories is either internationally or nationally rare.

### Justification

While these species are legally protected, it is useful to clearly identify where they occur before those places are threatened. At a local level it is probable that site notification would aid their conservation.

**Sg3 A site is eligible for selection if it supports a significant population of a species listed in the relevant British Red Data Book**

### Brief description

Red Data Book (RDB) species have been recorded in 15 or less 10 km squares (hectads) of the British National Grid system. Any species listed here is threatened or near-threatened in some way, usually because it is local and often rare.

### Justification

These are species of high conservation concern which may not be either a BAP priority species or legally protected. Site notification would be a sensible conservation measure.

**Sg4 A site is eligible for selection if it supports a significant population of a nationally scarce species**

### Brief description

Nationally Scarce species have been recorded in 16-100 10 km squares (hectads) of the British National Grid system.

### Justification

Nationally Scarce species are, generally speaking, in need of conservation. Site notification would be of some advantage to the majority of species.

**Sg5 A site is eligible for selection if it supports a significant population of a species of county importance, or if it supports two species of county importance**

### Brief description

Species of county importance have been identified for some groups, depending upon availability of data. Some species groups (bryophytes, birds and herptiles) have a scoring system to inform designation of sites. Others (vascular plants, butterflies, Odonata and mammals) have more detailed general information (but not a scoring system) to inform designation (see Appendix 6).

### Justification

Inclusion of locally important species should ensure protection of those species that are of local importance but not included within national lists.

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*Legislation cited in the text can be accessed in full at <http://www.statutelaw.gov.uk/> (version 28 September 2010).*





