



Surrey Nature Partnership

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Guidance for the Selection of Sites of Nature Conservation Importance (SNCIs) in Surrey

As adopted by Surrey Nature Partnership Board

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For more information on SNCIs, please contact the Surrey Biodiversity Information Centre surreybic@surreywt.org.uk



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Table 1 – Acronyms

Acronym	Definition
AHEQ	Area of High Ecological Quality
BOA	Biodiversity Opportunity Area
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
HPI	Habitat of Principal Importance (NERC Act, 2006)
INNS	Invasive non-native species
LGS	Local Geological Sites
LWS	Local Wildlife Sites
NVC	National Vegetation Classification
RCA	River Condition Assessment
RIGS	Regionally Important Geological/Geomorphological Sites
SARG	Surrey Amphibian and Reptile Group
SBIC	Surrey Biodiversity Information Centre
SBS	Surrey Botanical Society
SCC	Surrey County Council
SLSP	Surrey Local Sites Partnership
SNCI	Site of Nature Conservation Importance
SNCLG	Surrey Nature Conservation Liaison Group
SNP	Surrey Nature Partnership
SPI	Species of Principal Importance (NERC Act, 2006)
SSSI	Site of Special Scientific Interest
SWT	Surrey Wildlife Trust
UKBAP	UK Biodiversity Action Plan
UKHab	UK Habitat Classification



Section A: Policies and Procedures

1 Introduction

- 1.1.1 Surrey supports a diversity of wildlife habitats and species, ranging from the chalk grasslands and woodlands of the North Downs, through scarce flood meadows along the rivers Wey and Mole, to the extensive heaths, bogs and acid grasslands of the Thames terrace gravels and Wealden sandstone. The county is also estimated to support approximately 85 specially protected species and at least 300 species recognised as being a priority for conservation (Surrey Nature Partnership, 2019a).
- 1.1.2 This document lays out guidance for the selection of Sites of Nature Conservation Importance (SNCIs) within Surrey. **It updates and replaces the criteria outlined in the previous version written in 2008** (Surrey Wildlife Trust, 2008).
- 1.1.3 The terminology for these sites can be confusing as different parts of the UK use different terms for the same thing. DEFRA refer to Local Sites in their guidance on the topic (DEFRA, 2006). The generic Local Sites term encompasses both Local Wildlife Sites (LWS) and Local Geological Sites (LGS), the latter also being known as Regionally Important Geological/Geomorphological Sites (RIGS). In Surrey the term **RIGS** is used for geological sites and the term **SNCI** is used for Local Wildlife Sites. RIGS, regarded as the geological equivalent of SNCIs are not considered further in this document.
- 1.1.4 SNCIs are non-statutory, however they can be equal in their ecological quality to statutory sites such as Sites of Special Scientific Interest (SSSIs). Their protection is limited to that offered through jurisdictional planning policy. SNCIs and RIGS can therefore be protected from land-use changes requiring planning permission that would damage them under policies within Surrey's local plans. However, SNCIs rarely require or imply an expectation for their positive management or to maintain their biodiversity interest.
- 1.1.5 DEFRA stressed in its 2006 guidance that the Local Sites network is an inclusive and comprehensive set of sites so that *all* sites that meet the locally derived selection criteria should be selected. This contrasts with statutory nature conservation sites such as SSSIs which are a *representative* suite of sites that exemplify the nation's most important wildlife and geological features (DEFRA, 2006). Therefore, an important function of SNCI selection is to provide recognition for sites outside the SSSI system which contain habitat and species of conservation value.
- 1.1.6 These sites make a vital contribution to delivering our national and international commitments to halting the loss and prioritising the recovery of biodiversity and were identified in the Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network (DEFRA, 2010) as being vital components in England's ecological network. Importantly, these sites can provide additional resilience by establishing and improving connectivity between existing wildlife-rich sites and by providing capacity for these sites to increase in size. In addition, they may have additional benefits such as providing social and community functions and can play a part in wider green infrastructure or open space strategies. They may also have interests relating to education, research or quiet enjoyment.



- 1.1.7 Within the context of a changing climate, Local Wildlife Sites represent some of the best opportunities to conserve species and habitats as well as important reference sites for monitoring change. They can play an important role in the natural processes that maintain air, soil and water quality and reduce the effects of flooding and pollution.
- 1.1.8 The selection criteria for SNCIs in Surrey was last updated in 2008 (Surrey Wildlife Trust, 2008). It is important that a revision now takes place so that the criteria take into account changes to legislation and conservation policy and priorities since that time.
- 1.1.9 The guidance has been produced following extensive review and consultation with local experts, local authorities and conservation organisations as listed in the acknowledgement section.
- 1.1.10 These criteria should be reviewed regularly in order to reflect increased scientific knowledge and the changing status of habitats and species in Surrey and the UK. We will aim to review this guidance at least every 5 years. The enhanced 'biodiversity duty' for public bodies and local authorities (introduced by the Environment Act 2021) came into effect in January 2023, with the first reporting deadline due January 2026. Future iterations of these criteria will look to align with the timescales of this duty.
- 1.1.11 The selection of SNCIs in no way diminishes the importance of other areas of semi-natural habitat in Surrey, and it is recognised that all semi-natural habitat has importance at least for local wildlife and community value.

2 Background and context

- 2.1.1 SNCIs in Surrey have their origin in 1975 when SWT was first commissioned by Surrey County Council (SCC) to identify important sites for wildlife for the Surrey Structure Plan. This led to the identification of Areas of High Ecological Quality (AHEQs).
- 2.1.2 The project to compile a list of SNCIs for Surrey began in 1992 as a joint initiative between a number of organisations including Surrey County Council (SCC), Local Authorities, the Surrey Biological Records Centre (SBIC) and Surrey Wildlife Trust (SWT). Input was also received from a range of other local ecologists, organisations and groups active in the county including Natural England, Environment Agency, Surrey Botanical Society, Surrey Bat Group, Surrey Amphibian and Reptile group and Surrey Bird Club amongst others. This group of organisations and experts was known as the Surrey Nature Conservation Liaison Group (SNCLG).
- 2.1.3 Following recommendations within the DEFRA guidance (DEFRA, 2006), this body was renamed as the Surrey Local Sites Partnership (SLSP) in 2010. The SLSP provides a framework to establish and administer the Local Sites system in Surrey. It sits as a sub-group of the Surrey Nature Partnership (SNP) Biodiversity Working Group with the Secretariat provided by SBIC. Further details of this group and its roles are detailed within the 'Policies and Procedures for the Identification & Selection of SNCIs in Surrey & SLSP - Terms of Reference' (Surrey Nature Partnership, 2019b).



- 2.1.4 Since 2009, the management of Local Sites has been made accountable as National Indicator 197, now termed Single Data List 160-00. This records the number of sites in 'positive management' and in consequence, a general awareness of the importance of these sites has been raised.
- 2.1.5 At the time of writing, 775 SNCIs have been selected as SNCIs by the SLSP. This covers 15,326ha or 9.18% of Surrey. There are also 227 potential SNCIs (pSNCIs), covering 1735ha or 1.04% of county. pSNCIs are sites that have been identified as potentially of SNCI quality but where there is currently not enough information to select them.

3 Procedures for site selection / de-selection

- 3.1.1 Detailed policies and procedures for the identification and selection of SNCIs in Surrey can be found in the 2019 document produced by the SNP (Surrey Nature Partnership, 2019b). The most relevant points are summarised below for context.
- 3.1.2 As recommended by DEFRA (DEFRA, 2006), the process for selection of SNCIs through to their recommendation for adoption by the planning sector in Surrey will be undertaken by the SLSP, following the rigorous application of the procedures detailed within the 'Policies and Procedures for the Identification & Selection of SNCIs in Surrey & SLSP - Terms of Reference' (Surrey Nature Partnership, 2019b).
- 3.1.3 Selection will be considered on the basis of the criteria outlined in this document. It is recognised that decisions will involve an element of subjectivity which should be applied by those with a good knowledge and experience of Surrey's wildlife. Knowledge, understanding and agreement amongst a panel of experts is required in order to make valid conclusions on the value of a site and whether it should be selected as a SNCI.
- 3.1.4 Site selection by the SLSP marks the point at which a site can become formally regarded as an SNCI. After sites are selected (or de-selected) by the SLSP the relevant local planning authority is formally notified by SBIC as secretariat on behalf of the SLSP of any changes to the SNCI register for their borough/district. This notification also recommends that the local authority adopts and recognises the selected sites as subject to its relevant planning policy, after which they may be considered as effectively 'designated'. The simplicity of this procedure is vital, as it clarifies the basis from which cases where any subsequent challenges to the validity of the designation arising from respective local planning authorities' refusal to adopt, may then be negotiated.
- 3.1.5 Owners and occupiers of sites may challenge the factual basis on which an entire/part of a site has been selected (or not selected) as a SNCI following the procedure laid out within the 'Policies and Procedures for the Identification & Selection of SNCIs in Surrey & SLSP - Terms of Reference' (Surrey Nature Partnership, 2019b).
- 3.1.6 Sites may be completely de-selected as SNCIs if it is found that their nature conservation interest has deteriorated to the extent that they no longer meet the SNCI selection criteria and they are unlikely to be able to be restored within a reasonable timeframe.



3.1.7 The SLSP is responsible for all decisions concerning additions, deletions and boundary changes in respect of the SNCI register(s).

4 Principles and priorities in site selection

4.1.1 These criteria have been developed and designed to identify those sites of substantive nature conservation in Surrey in a standard and systematic way, and in alignment with the DEFRA guidance (DEFRA, 2006). They take into account both national and local priorities and responsibilities, relevant ongoing threats as well as local distinctiveness.

4.2 Key characteristics for assessing the conservation value of a site

4.2.1 The DEFRA guidance (DEFRA, 2006) recommends that criteria for the selection of LWS should be derived with reference to a set of key characteristics based on the original 'Ratcliffe criteria' drawn up in 1977, as a guide for the selection of biological SSSIs (Ratcliffe, 1977). Each of these key characteristics is discussed in more detail below.

4.2.2 These key characteristics have been used to help establish the more detailed habitat and species criteria in sections B and C. When assessing the value of a site, they should be used in conjunction with the more specific habitat and species guidance. Each of the characteristics should not be used in isolation, but in conjunction with others.

4.2.3 Sites which are close to, but do not quite meet the detailed habitat and species guidelines later in the report may be considered for selection where they are judged as important using the key characteristics which follow.

K1 Naturalness

4.2.4 The 'naturalness' of a site is related to the degree to which the site has been or is being modified by human activity; the more modified the site, the less natural it is. In general, it could be argued that the nearer to being natural a site is, the higher the value that should be placed on it. However, human modification may lead to positive impacts on the quality of the habitat for wildlife. In Surrey there are very few habitats that have not been affected by people. Many of the important habitats within Surrey have been created historically, are maintained by man and are considered as semi-natural.

4.2.5 Factors which would reduce the value of a site include the following;

- Sites where most or all of the species present have been deliberately introduced, or deliberately favoured through highly intensive management.
- Agricultural improvement.
- Heavy modification of water courses.
- The presence of non-native, particularly invasive species.

4.2.6 It should be noted that in some cases artificial habitats may be of high value for wildlife. For example, rare plants within arable land, bat roosts and hibernacula within a man-made structure and rare invertebrate species on brownfield sites. In such cases artificial habitats may be selected if they qualify under other guidance.



K2 Size or extent

- 4.2.7 As a general rule, larger areas of habitat are of greater value to biodiversity than smaller areas. In many cases this is due to larger areas having a greater diversity of habitats. Large areas are more likely to support viable populations of species and are likely to be more able to resist change.
- 4.2.8 However, some very small sites will be important as part of a larger, composite habitat resource dispersed across the landscape and can be important in areas lacking natural greenspace. Small sites can still and often do support populations of very rare species.
- 4.2.9 The minimum or optimal size of a site will vary according to habitat and will also vary according to the abundance of the habitat on a local, regional and national scale. The lower limit should be determined by the viability of the habitat unit or species population. It is particularly important that this factor is considered in conjunction with other factors.

K3 Diversity

- 4.2.10 Sites of high diversity are generally considered to be more important than sites of lower diversity. However, with regard to species diversity, some habitats are naturally more diverse than others. For example, acid grasslands can be intrinsically species-poor whereas chalk grasslands tend to be exceptionally species-rich. Therefore, species diversity should be assessed in relation to the expected diversity for the habitat. Sites including a large number of locally native species will be considered for SNCI selection.
- 4.2.11 Sites containing a mosaic of different habitats tend to be very important for wildlife. Diversity may be due to a range of habitat communities present on a site or to a range of microclimates such as varying vegetation height, areas of scrub, slopes and bare ground. There may be cases where none of the individual habitats on the site fully meets the guidance for selection as SNCI, but where the combined value may be sufficient to warrant selection.
- 4.2.12 Often undervalued, scrub is an important feature for increasing the structural diversity of a site. Various types of scrub provide essential or important habitat requirements for many species of higher plants, herbivorous insects and birds, including Red Data-Listed and England Species of Principal Importance (SPI species). It is also likely to be equally important for lower plants, non-herbivorous invertebrates, reptiles and amphibians, and mammals.
- 4.2.13 When selecting sites based on other habitats all areas of associated scrub should be identified and included within the SNCI boundary. The site notes should highlight the importance of scrub and any management recommendations should safeguard this habitat.

K4 Rare or exceptional features

- 4.2.14 The presence of a rare or scarce habitat type or species should be a key factor in determining the selection of an SNCI. This should be considered in an international, national, regional and local context. The selection should take into account cases



where Surrey is a national stronghold for a species or habitat, where we have a clear national responsibility for their conservation. Further specific details regarding the selection of SNCIs for rare species and habitats are given later in the document.

K5 Typicalness

- 4.2.15 In addition to protecting rare and vulnerable habitats and species it is also important that the SNCI network includes good examples of habitats typical of an area and helps to maintain viable populations of species typical of an area.
- 4.2.16 Consideration should be given to:
- Habitats typical of the county.
 - Habitats typical of each of the county's geological areas.
 - Habitats typical of the National Character Areas Profiles (Natural England, 2014).
 - Habitats typical of the Biodiversity Opportunity Area (BOA) (if relevant) (Surrey Nature Partnership, 2019 (revised)).
 - Representative examples of typical and more commonplace habitats, e.g. ancient woodland which is relatively common in The Weald but is rare nationally should therefore be included.

K6 Fragility / Irreplaceable habitat

- 4.2.17 Fragility can relate to the current extent and rarity of a habitat or species or to how vulnerable a site is to change or damage. Some habitats are more sensitive to change and are at greater risk of being lost or damaged due to direct or indirect impacts of climate change, human activities or other influences. For example, whereas woodlands tend to be relatively stable and resistant to damage, grasslands are particularly vulnerable to changes in management, and wetlands to changes in water quality and supply.
- 4.2.18 Fragility also needs to take into account the ease with which a habitat may be re-created. Relatively stable habitats, such as ancient woodland, may be relatively resistant to damage but once lost are impossible to replace. The importance of irreplaceable habitats is recognised in the National Planning Policy Framework 2023 (Department for Levelling Up, Housing and Communities, 2023) which states that *“development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists”*.
- 4.2.19 The Surrey Nature Partnership has produced a planning guidance document which lists four criteria which would contribute to a decision that a particular habitat is irreplaceable (Surrey Nature Partnership, 2020);
- **Age:** Habitats generally become more complex over time, for example by accruing greater species diversity or supporting species with more specialised requirements. Age will also directly elevate their importance as a carbon storage asset.
 - **Environmental context:** Habitats may exist only as a result of a unique or very rare combination of physical, ecological or historical circumstances.



- **Achievability of re-creation:** Judgements as to whether or not the habitat and its key features can be re-created successfully within a realistic timescale (based on practical evidence and scientific research).
 - **Geographical position within the landscape:** Increasingly the unique location of a habitat patch within the landscape, and thus its role in an ecological connectivity 'network' is recognised as of quite fundamental importance to its distinctiveness and irreplaceability.
- 4.2.20 This irreplaceable habitats guidance (Surrey Nature Partnership, 2020) states that “these criteria are often interrelated and a habitat may be considered irreplaceable when any one or more of the three initial factors, or at least one of these plus the fourth apply. It is also very likely that presence of the first three criteria may qualify a habitat patch for selection as a SNCI, or even a new SSSI (although subsequent designation by Natural England in the latter case is at the current time fairly remote).
- 4.2.21 The Wildlife Sites Handbook (Hawkswell, 1997) advises that “Wildlife Sites should not be selected because of the degree of threat to a particular site. Nor should sites be excluded because there is considerable threat and the site is likely to be lost.”
- 4.2.22 It is important to consider the fragility of a habitat when deciding the boundary of an SNCI. A buffer may be required to protect vulnerable habitats. It is also an important factor when considering the direction of management resources and funds in the future.

K7 Connectivity within the landscape

- 4.2.23 Sites should not be viewed in isolation and their value should be considered as part of the wider landscape. The countryside has become increasingly fragmented and in a world with an unpredictable and changing climate, the presence of corridors and stepping stones linking habitats is particularly important.
- 4.2.24 Improving connectivity is one of the key principles highlighted within the influential 'Making Space for Nature' DEFRA report (Lawton, 2010) and the National Planning Policy Framework 2023 (Department for Levelling Up, Housing and Communities, 2023) states that “*plans should: promote the conservation, restoration and enhancement of...ecological networks*”.
- 4.2.25 Sites which are linked to other sites through green corridors or mosaics are of greater value than similar isolated sites. Sites linking other habitats or acting as stepping-stones for example, hedgerows, rivers, canals, railway embankments and road verges are particularly important. These sites may not meet other guidance but are important in their linking capacity.
- 4.2.26 Sites adjacent to other important sites (such as SNCIs or SSSIs) which may act as protective buffers or join several otherwise isolated sites together, are particularly important and should be considered for selection.
- 4.2.27 For species that form meta-populations, connectivity between individual sub-populations and their habitats is particularly important (permeability). For example, a site that supports Great Crested Newts will be of greater value if it has good connections with ponds and rough vegetation in its immediate area. Therefore, the



presence of other sub-populations in the surrounding area should be taken into account.

- 4.2.28 Additional weight will be given to sites within Surrey's Biodiversity Opportunity Areas (BOAs), or their successors identified as part of the Surrey Local Nature Recovery Strategy (LNRS). Surrey's BOAs identify the most important areas for wildlife conservation in Surrey, where targeted conservation action will have the greatest benefit. The main aim within BOAs is to recover declining biodiversity at a landscape scale. BOAs in Surrey link with BOAs mapped across the whole of south-east England (Surrey Nature Partnership, 2019a). The BOAs will form the basis for the LNRS which is currently in production.

K8 Recorded history and cultural associations

- 4.2.29 Many sites have a long history of ecological recording and this can increase the importance of the site. Such records can be proof that a habitat is long-established on the site and can yield useful scientific data about habitats, species or the effects of site management. Recorded history and cultural associations are particularly important for sites used for education and research and can improve our understanding of the processes driving ecological change.
- 4.2.30 The recorded history and/or the cultural associations of a site can provide supplementary justification for selecting a site where it meets other guidance described in this document.

K9 Value for the appreciation of nature and for learning

- 4.2.31 The value of a site in providing an opportunity for contact with and enjoyment of nature and as a resource for learning about the natural world or for research into natural features and processes should not be underestimated. Sites which demonstrate a significant role in providing these functions should be considered for selection in combination with other guidance.
- 4.2.32 Sites should not be selected for social, recreational or educational reasons alone (the planning system provides other mechanisms for protecting sites for local cultural and social value), however sites which are close to but do not fully meet the habitat or species guidelines listed elsewhere may be considered for selection if they provide an important resource for local communities.

K10 Potential value

- 4.2.33 When considering the value of a site, the potential value of the area can be taken into account. Sites should be considered for selection only if they have the potential to be of SSSI value, e.g. by a change of management or the cessation of damaging activities. This must be practically possible within a reasonable timescale (e.g. 5-10 years). However, this criterion is likely to more often be used when routinely re-evaluating existing SSSIs that have deteriorated in the interim from, typically, management neglect.

4.3 SSSI boundaries

- 4.3.1 SSSI boundaries are ideally chosen to define a boundary that is clearly demarcated by features on the ground, such as a hedge or fence line. This may include marginal



areas within the site which do not meet the necessary selection criteria (such as areas of poor semi-improved grassland within a field of otherwise unimproved grassland). Sites can also include entire parcels of ground (for example individual fields, or blocks within woodland) which do not clearly meet the criteria but are justified for inclusion in the context of an overall site complex (for example coniferous plantation stands of little apparent interest which are isolated within otherwise semi-natural woodland). Continuity with an adjoining, related habitat within a SSSI or an already designated SNCI is a consideration when selecting sites, and sites designated as geological SSSIs or RIGS may also be selected as SNCIs for their wildlife/biological interest (Surrey Nature Partnership, 2019b).



Section B: Habitat Guidelines

5 Woodland and related habitats

5.1 Woodland

Sites which meet the following criteria should be considered for selection;

Criteria

- H1 All sites containing Ancient Semi-natural Woodland (ASNW).**
- H2 Other ancient woodland including Plantations on Ancient Woodland Sites (PAWS) where there is a significant element of the original semi-natural woodland surviving.**
- H3 Areas of woodland which are not themselves ancient, but which are immediately adjacent to ancient woodland sites or act as a connecting feature between other areas of ancient woodland should also be considered for selection.**
- H4 Other semi-natural woodland should be considered for selection if it comprises important community types of restricted distribution in the county. This includes;**
- **Wet woodland falling within UKHab w1d and/or supporting an assemblage of species indicative of NVC types; W1, W2, W4c, W5, W6 and W7.**
 - **Lowland Beech, Yew and Box Woodland falling within UKHab w1c and/or supporting an assemblage of species indicative of NVC types; W12, W13, W14 and W15.**
 - **Wealden 'ghyll' woodland in the greensands and Low Weald.**
- H5 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 5.1.1 Ancient woodland covers just 2.4% of the UK (Hayhow, 2019) and yet covers 7.1% of Surrey (Davies R. , 2011). The habitat contains a diverse flora and fauna which has evolved over many centuries. Their soils, with long established microbial and mycorrhizal communities have been found to be of great importance even where the tree species have been altered over time such as in plantations on ancient woodlands. Once destroyed, the habitat cannot be replaced within a reasonable timescale. As such, it is essential to protect ancient woodland sites within Surrey.
- 5.1.2 Lowland Beech and Yew woodland (UKHab – w1c), Wet woodland (UKHab – w1d) and Lowland mixed deciduous woodland (UK Hab - w1f) were originally identified in the UK Biodiversity Action Plan as a priority habitat and were are therefore Habitats of Principal Importance in England (HPI), listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.



- 5.1.3 The Surrey Habitat Framework estimates that 21% of Surrey consists of the priority habitat types Lowland mixed deciduous and Beech and Yew woodland. Due to the quantity of woodland in Surrey, it is not appropriate to select all woodland that meets the description for Lowland mixed deciduous woodland as an SNCI. Therefore, ancient woodland and woodland of certain important community types in the county have been prioritised as the basis for these criteria.
- 5.1.4 The NVC communities listed in the criteria are those found within Surrey which are included within the UK Habitat Action Plans for Wet woodland and Lowland Beech and Yew woodland and are also referenced by the UKHab for the relevant habitat (UKHab Ltd, 2023). The State of Surrey's Nature report (Surrey Nature Partnership, 2017) describes the North Downs Beech hangers, Yew groves and the extensive wooded Low Wealden ghylls as particularly important and the Box stand at Box Hill as being nationally unique.

Application

- 5.1.5 Natural England define ancient woodland as:
- 5.1.6 "Ancient woodland in England is defined as an area that has been wooded continuously since at least 1600AD. Ancient woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stands are classed as ancient woods." (Kirby, 2006).
- 5.1.7 Areas of identified ASNW and PAWS over 0.25ha are shown on Surrey's Ancient Woodland Inventory (Davies R. , 2011) and can also be found on Magic maps (Defra, 2024).
- 5.1.8 SNCIs will not normally be selected solely on the basis of historic mapping or other archive sources used to compile the revised Ancient Woodland Inventory. Rather, selection will need to be supported by field data confirming the woodland has at least one of the following attributes;
- it holds at least 10 ancient woodland indicator species.
 - it holds at least 5 ancient woodland indicator species and includes other features associated with ancient woodland e.g. well-developed boundary banks and ditches, old/large coppice stools or veteran trees or other archaeological features, or,
 - there is other clear, specified evidence, that the woodland should be considered as ancient e.g. old maps, historical documents, the wood's name, shape, internal boundaries and location relative to other features.
- 5.1.9 Where a woodland is not indicated as ASNW in the Inventory of Ancient Woodland for Surrey, it may still be considered as ancient if the woodland has at least one of the attributes listed in 5.1.8 above.
- 5.1.10 PAWS sites should be considered for inclusion where there is a significant element of the original semi-natural woodland surviving. The site should retain elements of the former tree canopy, ground flora or other ancient woodland features. As above it should either;
- hold at least 10 ancient woodland indicator species, or,



- hold at least 5 ancient woodland indicator species and include other features associated with ancient woodland e.g. well-developed boundary banks and ditches, old/large coppice stools or veteran trees or other archaeological features.

5.2 Wood Pasture, Parkland and Veteran Trees

Sites which meet the following criteria should be considered for selection;

Criteria

- H6 Wood pasture and parkland over 2ha which meet the UKHab definition for Wood-pasture and Parkland (secondary code 26) should be considered for selection.**
- H7 Groups of 3 or more ancient or veteran trees (as defined below) within 0.25ha.**
- H8 Saproxylic beetles - all sites with an Index of Ecological Continuity (Alexander, 2004) of 15 or more.**
- H9 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 5.2.1 Wood pasture and parkland (UKHab secondary code: 26) was identified in the UK Biodiversity Action Plan as a priority habitat and is therefore a Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 5.2.2 The south-east of England supports 70% of the UK's Wood pasture and parkland. The Priority Habitats Inventory indicates that the Wood pasture and parkland habitat is particularly well represented in Surrey (Surrey Nature Partnership, 2017) and Surrey has more historic parks and gardens than any other region of Great Britain, with the exception of Greater London. Surrey is a stronghold for Wood pasture and parkland and we have a national responsibility to protect this habitat.
- 5.2.3 Veteran and ancient trees are an integral part of England's cultural and biological heritage. Once damaged or destroyed they are irreplaceable within our lifetime. Tree Protection Orders do not cover dead or dying trees and therefore it is important that they are given some form of protection. Groups of veteran trees are particularly important as they provide a number of alternative niches for wildlife, and organisms that require precise micro-habitats are more likely to find enough of these to support viable populations.
- 5.2.4 The Index of Ecological Continuity was originally developed as a means of producing a simple statistic which could be used in grading a site for its significance to nature conservation (Alexander, 2004). Sites scoring at least 80 are deemed to be of international importance, 25 or more of national importance and 15 or more for regional importance (Alexander, 2004).



Application

5.2.5 The definition of Wood pasture and parkland can be found in the UKHab definitions document (UKHab Ltd, 2023). The UKHab describes Wood-pasture and parkland habitats as displaying at least some of the following characteristics:

- Open grown trees, some of which are ancient or veteran and may be hollow and support significant amounts of dead and decaying timber.
- If managed, the ancient or veteran trees have generally been pollarded, although wood pastures may incorporate other forms of tree management.
- The trees often exhibit a browse line at the maximum height that browsing animals can reach.
- Scrub as individual plants or clumps, in some instances providing tree protection or opportunities for tree regeneration.
- Evidence of past land use for extensive agriculture. Open grown veteran trees (often pollards) may in some instances now be within a matrix of secondary woodland or scrub that has developed by regeneration and/or planting in the absence of grazing animals.
- Wood-pasture or parkland that has been converted to other land uses such as arable fields, forestry and amenity land, but where surviving veteran trees are of nature conservation interest. Some of the characteristic wood-pasture and parkland species may be surviving this change in state in the short term while the veteran trees remain alive. Sites may contain ancient pollards and other less usual tree forms, which result from trees being managed for timber, fodder and other products in the presence of grazing animals.

5.2.6 Areas of Wood pasture and parkland identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on Magic maps (Defra, 2024), however there may be areas present which have not yet been included in this dataset.

5.2.7 The Woodland Trust (Woodland Trust, 2008) defines an ancient tree as “*one that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.*” The following characteristics of an ancient tree are listed by the Woodland Trust:

Key Characteristics* of an ancient tree

- Crown ‘growing downwards’ or flattening (in conifers) through the ageing process;
- A large girth by comparison with other trees of the same species - (it may have a smaller girth if it is growing in poor conditions or is a pollard).

Also:

- Hollowing trunk: this may have one or more openings to the outside.
- Stag-headedness (dead, antler-like branches extending beyond the crown)
- Fruit bodies of heart-rot fungi.
- Cavities (e.g. where branches have broken away), sap runs or naturally forming water pools in branch hollows.
- Rougher or more creviced bark.
- An ‘old’ look which has high aesthetic appeal.

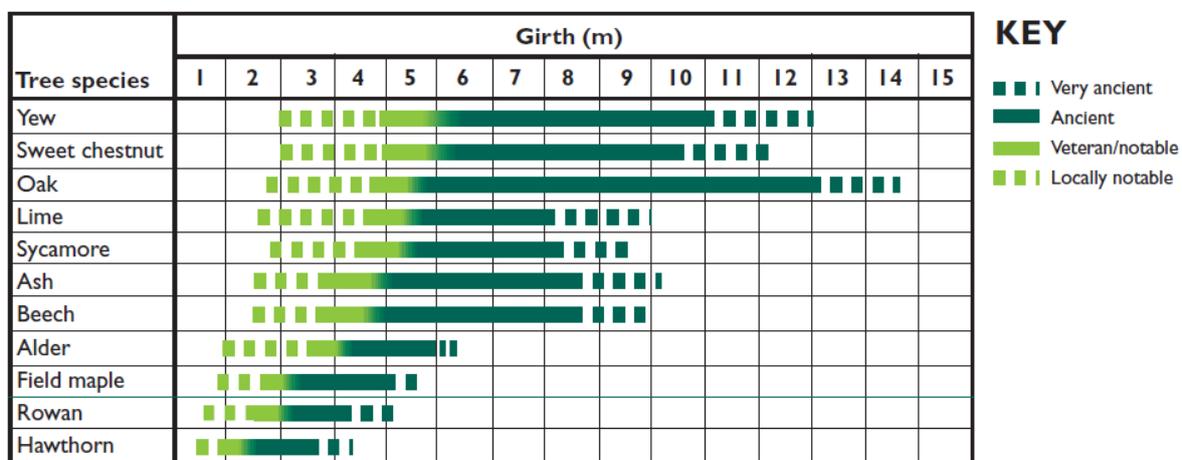
- Aerial roots growing down into the decaying trunk or branches.

* The more of these a tree has, the more likely it is to be ancient.

5.2.8 All ancient trees are veteran trees, but not all veteran trees are old enough to be ancient. The UKHab (UKHab Ltd, 2023) defines a veteran tree as “a tree, usually in the second and mature stage of its life, with important wildlife and habitat features including; hollowing or associated decay fungi, holes, wounds, and large dead branches. It will generally include old trees but also younger, middle-aged trees where premature aging characteristics are present.”

5.2.9 The following table taken from the Woodland Trust Ancient Tree Guide (Woodland Trust, 2008) shows the typical relationship between girth and tree species growing in average conditions.

Table 2 – Average girth of ancient/veteran tree species (Woodland Trust, 2008)



5.2.10 Saproxyllic beetles - When applying the Alexander Index, each species of beetle is given a score from 0 to 3. The index uses the sum of the scores of the species found at a site to arrive at a total score for the whole site (Alexander, 2004).

5.2.11 When determining the boundary of the SNCI, consideration should be given to the need to include a buffer zone encompassing trees which could become veteran trees of the future. The boundary should include a buffer sufficient to protect the roots and mycorrhizal associations of the trees. British Standard 5837, ‘Trees in relation to construction’ gives guidelines as to the minimum distances for protective fencing around trees of varying age and diameter. This should be used as a minimum for the boundary of the SNCI.

5.2.12 Where a group of trees is selected the land in between should be included within the SNCI. The boundary should include adjacent mature trees as assemblages of species associated with ancients are also likely to be present on these nearby younger trees. These also will provide continuity of habitat by providing the next generation of ancient trees.

5.2.13 Known ancient and veteran trees are shown on the Woodland Trust Ancient Tree Inventory (<https://ati.woodlandtrust.org.uk/>) and/or the working draft of the Surrey



Veteran Tree database available from the Surrey Biodiversity Information Centre (SBIC).

5.3 Traditional Orchards

Sites which meet the following criteria should be considered for selection;

Criteria

H10 Traditionally managed orchards (UK Hab secondary code: 27) where;

- There are at least 5 trees with crown edges less than 20m apart *and*
- a substantial number of the trees are old and have an abundance of dead wood and/or rot holes *or*
- the trees support an important fungal flora, lichen flora or saproxylic invertebrate fauna *or*
- the site supports other features of substantive nature conservation value such as unimproved grassland.

H11 Sites which support a significant population of a species as discussed in the species guidance.

Justification

- 5.3.1 Traditional orchards (UK Hab secondary code: 27) are identified in the UK Biodiversity Action Plan as a priority habitat and are a Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 5.3.2 Orchards were once widespread throughout the British Isles however pressure on land for development and the importation of cheap fruit from abroad has caused the loss of many small orchards. It is estimated that 90% of traditional orchards in England have been lost since 1950 (Natural England, 2011).
- 5.3.3 Culturally, orchards are very important having been central to community life. They represented cultural distinctiveness with over 200 varieties of apple once grown. Old orchards are known to be important for birds, bats, small mammals, invertebrates, fungi and lower plants such as lichens and bryophytes.
- 5.3.4 The UKBAP habitat definition for traditional orchard states that “the minimum size of a traditional orchard is defined as five trees with crown edges less than 20m apart. (BRIG (ed. Ant Maddock), 2008)”

Application

- 5.3.5 The UKBAP defines traditional orchards as “groups of fruit and nut trees planted on vigorous rootstocks at low densities in permanent grassland; and managed in a low intensity way. Cobnut plats are also included” (BRIG (ed. Ant Maddock), 2008).
- 5.3.6 Traditionally managed orchards do not include orchards managed intensively which are likely to involve inputs of chemicals, inorganic fertilisers, frequent mowing of the orchard floor rather than grazing or cutting for hay, and planting of short-lived, high density, dwarf or bush fruit trees.



- 5.3.7 Areas of Traditional orchard identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there will be areas present which have not yet been included in this dataset. The People's Trust for Endangered Species (PTES) also has a traditional orchard inventory map. (<https://ptes.org/get-involved/surveys/countryside/traditional-orchard-survey/orchard-maps/>)

5.4 Hedgerows and Green Lanes

Sites which meet the following criteria should be considered for selection;

Criteria

H12 Hedgerows and green lanes with significant ecological value due to their intrinsic flora and fauna or their ecological function in the landscape.

Justification

- 5.4.1 Hedgerows are important features in the landscape, offering food and shelter for many species as well as important ecological connections through the landscape. Hedgerows in the UK have seen a significant decline since the 1950s with an estimated 118,000 miles having been lost (Woodland Trust, 2023). Although this loss has slowed since the 1990s, neglect, damage and removal remain significant threats.
- 5.4.2 Certain hedgerows (UK Hab h2a) are identified in the UK Biodiversity Action Plan as a priority habitat and are a Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 5.4.3 Hedgerows are particularly important for their role in providing connectivity through the landscape acting as wildlife corridors allowing dispersal between isolated habitats.
- 5.4.4 Due to the high number of hedgerows within Surrey which would meet the UKHab definition of priority hedgerow, it is not appropriate to select them all as SNCIs. Therefore, hedgerows with significant ecological value as described below will be prioritised.

Application

- 5.4.5 All hedgerows considered for SNCI selection should meet, as a minimum, the UKHab definition of species-rich native hedgerow (h2a5). In addition, when considering which hedgerow and/or green lanes have significant ecological value, consideration should be given to:
- Hedgerows that represent the 'ghost' outline of a former ancient wood (provided they retain some of the characteristic flora and/or fauna of an ancient wood).
 - Hedgerows and/or green lanes supporting a suite of species indicative of ancient woodland conditions (for plants this would include at least 10 ancient woodland indicator species).
 - Hedgerow and/or green lane networks that support an unusually high density of very large or veteran standard trees.
 - The connectivity role of the hedgerow/s and/or green lane/s as part of a wildlife corridor complex, assisting the dispersal of wildlife through the open countryside.



- 5.4.6 The UKHab defines hedgerows (h2) as “a boundary line of shrubs, provided that at one time the shrubs were stock proof and more or less continuous”. Native hedgerow (h2a) is defined as “a hedgerow with >80% canopy cover of UK native or archaeophyte woody species. Species-rich native hedgerow (h2a5) support ≥5 UK native or archaeophyte woody species in a 30m section.

6 Grassland

6.1 Lowland Meadow & Other Neutral Grasslands

Sites which meet the following criteria should be considered for selection;

Criteria

- H13 All sites supporting UKHab g3a: Lowland Meadows and/or an assemblage of species indicative of the following NVC communities; MG4, MG5 or MG8.**
- H14 Other grassland sites (including UKHab g3c: Other neutral grassland and NVC communities MG1c-e & MG7c) which support a high diversity of Surrey grassland axiophytes. As a guideline, sites which support **xx** or more Surrey axiophytes are likely to be of SNCI quality.**
- H15 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 6.1.1 All types of unimproved grassland have seen substantial declines in the 20th Century mainly due to changes in agricultural practices as well as development. It has been estimated that 97% of lowland unimproved grassland was lost between 1930 and 1984 in England and Wales (Fuller, 1987). The UK Biodiversity Action Plan published in 2008 estimated that that there was less than 15,000ha of species rich neutral grassland surviving in the UK at that time (BRIG (ed. Ant Maddock), 2008). Individual areas are now small in extent, seldom exceeding 10ha, and are highly fragmented (Jefferson, 2019).
- 6.1.2 The area of lowland meadow in Surrey is thought to be only about 33 hectares (Surrey Nature Partnership, 2017), however it is one of the least well-audited habitats in Surrey currently (Surrey Nature Partnership, 2017). The ongoing Surrey 'Old' Grasslands Inventory Project should help address this gap.
- 6.1.3 Lowland meadow (UKHab: g3a) was identified in the UK Biodiversity Action Plan as a priority habitat and is therefore a Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 6.1.4 The NVC communities listed within the criteria are those found within Surrey which are included within the UK Habitat Action Plan for Lowland meadows and are also referenced by UK Hab 2.0 (UKHab Ltd, 2023) for g3a. Sites which meet criteria H13 or H14 are likely to be diverse grasslands with species characteristic of unimproved conditions.



Application

- 6.1.5 A list of grassland axiophytes for Surrey is shown in Appendix 1.
- 6.1.6 Valuable grassland can be found in a range of situations. Some of the less obvious examples include churchyards, cricket pitches and roadside verges. Roadside verges are particularly important in acting as seed reservoirs of species for recolonisation of surrounding areas.
- 6.1.7 Areas of lowland meadows identified by Natural England as part of the Priority Habitats Inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there may be areas present which have not yet been included in this dataset.
- 6.1.8 Scrub can often form a significant component of grassland sites where it may be invasive and a threat to the existing biological interest. However, some scrub stands, especially if under a management regime to maintain a varied age-structure, can add greatly to the diversity and value of a site and be of value to species such as birds, dormice and a host of invertebrates. Therefore, associated scrub should be included within the boundary of an SNCI selected for its grassland.
- 6.1.9 SNCIs will not normally be selected solely on the basis of their inclusion in the Surrey 'Old' Grasslands Inventory (SWT, In Preparation), rather sites should also meet one or more of the Habitat or Species criteria described elsewhere in this report.

6.2 Lowland Calcareous Grassland

Sites which meet the following criteria should be considered for selection;

Criteria

- H16 All sites supporting UKHab g2a: Lowland calcareous grassland and/or an assemblage of species indicative of the following NVC communities: CG2, CG3, CG4, CG5, CG6 or CG7.**
- H17 Other lowland calcareous grassland sites which support a high diversity of Surrey axiophytes. As a guideline, sites which support **xx** or more Surrey axiophytes are likely to be of SNCI quality.**
- H18 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 6.2.1 It is estimated that only around 307ha of chalk grassland remain in Surrey. This covers about 0.2% of the county and occurs as multiple fragmented units averaging around one hectare in size (Surrey Nature Partnership, 2017). This habitat is floristically rich and forms an especially important habitat for butterflies and other invertebrates (Jefferson, 2019).
- 6.2.2 Lowland calcareous grassland (UKHab: g2a) was identified in the UK Biodiversity Action Plan as a priority habitat and is therefore a Habitat of Principal Importance (HPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.



- 6.2.3 The NVC communities listed above are those found within Surrey which are included within the UK Habitat Action Plan for Lowland calcareous grassland. Sites that meet criteria H17 and H18 are likely to be diverse grasslands with species characteristic of unimproved conditions.

Application

- 6.2.4 A list of grassland axiophytes for Surrey is shown in Appendix 1.
- 6.2.5 Valuable grassland can be found in a range of situations. Some of the less obvious examples include churchyards, cricket pitches and roadside verges. Roadside verges are particularly important in acting as seed reservoirs of species for recolonisation of surrounding areas.
- 6.2.6 Areas of lowland calcareous grassland identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there will be areas present which have not yet been included in this dataset.
- 6.2.7 Scrub can often form a significant component of grassland sites where it may be invasive and a threat to the existing biological interest. However, some scrub stands, especially in this habitat and if under a management regime to maintain a varied age-structure, can add greatly to the diversity and value of a site and be of value to species such as birds, dormice and a host of invertebrate species. Therefore, associated scrub should be included within the boundary of an SNCI selected for its grassland.
- 6.2.8 SNCIs will not normally be selected solely on the basis of their inclusion in the Surrey 'Old' Grasslands Inventory (SWT, In Preparation), rather sites should also meet one or more of the Habitat or Species criteria described elsewhere in this report.

6.3 6.3 Lowland Dry Acid Grassland

Sites which meet the following criteria should be considered for selection;

Criteria

- H19 All sites supporting UKHab g1a: Lowland dry acid grassland and/or an assemblage of species indicative of the following NVC communities: U1, U2, U3, U4 or U20a.**
- H20 Other lowland dry acid grassland sites which support a high diversity of Surrey axiophytes. As a guideline, sites which support xx or more of the species listed in Table 3 are likely to be of SNCI quality.**
- H21 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 6.3.1 There is thought to be only approximately 151ha of acid grassland in Surrey covering 0.1% of the county (Surrey Nature Partnership, 2017). Lowland dry acid grassland (UKHab: g1a) was identified in the UK Biodiversity Action Plan as a priority habitat and is therefore a HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.



- 6.3.2 The NVC communities listed in the criteria are those found within Surrey which are included within the UK Habitat Action Plan for Lowland dry acid grassland and are referenced by the UK Hab 2.0 for g1a (UKHab Ltd, 2023). Sites which meet criteria H21 or H22 are likely to be diverse grasslands with species characteristic of unimproved conditions.

Application

- 6.3.3 A list of grassland axiophytes for Surrey is shown in Appendix 1.
- 6.3.4 Valuable grassland can be found in a range of situations. Some of the less obvious examples include churchyards, cricket pitches and roadside verges. Roadside verges are particularly important in acting as seed reservoirs of species for recolonisation of surrounding areas.
- 6.3.5 Areas of Lowland dry acid grassland identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there will be areas present which have not yet been included in this dataset.
- 6.3.6 Scrub can often form a significant component of grassland sites where it may be invasive and a threat to the existing biological interest. However, gorse and broom stands, especially if under a management regime to maintain a varied age-structure, can add greatly to the diversity and value of a site and be of value to species such as birds and a host of invertebrates. Therefore, associated scrub should be included within the boundary of an SSCI selected for its grassland.
- 6.3.7 SSSIs will not normally be selected solely on the basis of their inclusion in the Surrey 'Old' Grasslands Inventory (SWT, In Preparation), rather sites should also meet one or more of the Habitat or Species criteria described elsewhere in this report.



7 Lowland Heathland

Sites which meet the following criteria should be considered for selection;

- H22 All areas of heathland vegetation (UKHab h1a); including matrices of dwarf shrub, bare ground, grassland, valley mires and scrub should be considered for selection. All areas containing over 0.25ha of heathland would automatically qualify as SNCIs.**
- H23 Areas of heathland which are heavily afforested or have succeeded to mature woodland can be selected if they have potential to be restored to heathland and either:**
- **retain sufficient remnants of heathland vegetation which would enable their recovery, or,**
 - **are contiguous with or form an integral part of an open area of heathland.**
- H24 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 7.1.1 Lowland heathland is a priority for conservation because it is an internationally rare and threatened habitat that has suffered dramatic decline in the past century. Lowland heathland has reduced by an estimated 80% in the UK since 1800 and Surrey supports a significant 13% of the remaining habitat (Surrey Nature Partnership, 2017). Surrey's heathland is of international importance, and we therefore have an international responsibility to conserve it. The habitat (UKHab h1a) is identified as a priority habitat within the UK Biodiversity Action Plan and is therefore a HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Application

- 7.1.2 The UKHab definition of Lowland heathland (h1a) defines the habitat as “a broadly open landscape, on impoverished, acidic mineral and shallow peat soil, which is characterised by the presence of plants such as heathers and dwarf gorses, Crowberry *Empetrum nigrum* and grass species such as Bristle Bent *Agrostis curtisii* and Sheep's Fescue *Festuca ovina*” (UKHab Ltd, 2023). Grass-dominated areas with less than 25% dwarf shrub cover are excluded from this habitat type.
- 7.1.3 Areas of lowland heathland identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there will be areas present which have not yet been included in this dataset.
- 7.1.4 The boundaries of heathland SNCIs should be drawn to include any contiguous areas of gorse, bracken, acidic grassland, valley bogs, bare sandy or peaty ground, scattered trees and shrubs and open water habitats on acidic substrates and any areas of scrub, conifer plantations, secondary birch, woodland or other vegetation which could potentially be restored to heathland, or which might contribute to the biodiversity interest of the heathland habitat.



8 Wetlands

General Application

- 8.1.1 The boundary of wetland sites should include subsidiary habitats if they either warrant designation in their own right or if they are hydrologically contiguous with the wetland or provide important habitat for part of the life cycle of species of interest that are associated with the SNCI. An appropriate buffer zone should be included within the SNCI in order to protect the interest of the site from pollution or disturbance. This should be a minimum of 5m, but in many cases will need to be larger.

8.2 Standing Open Water and Canals

Sites which meet the following criteria should be considered for selection;

- H25 Any standing open water including lakes, ponds and ditch systems which supports at least xx aquatic plants (floating, submerged or emergent) from the Surrey axiophyte list.**
- H26 Ponds which meet the definition for priority habitat within the UKHab (Secondary code 40).**
- H27 Standing open water with a 'good' or 'high' ecological status.**
- H28 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 8.2.1 Eutrophic standing waters (UKHab r1a) and certain ponds (UKHab secondary code 40) are recognised as priority habitats within the UK Biodiversity Action Plan and are therefore HPs under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 8.2.2 It is estimated that there has been a 50% loss of farm ponds over the past 50 years (WWT, 2022). Standing open water such as ponds and ditches are often located within intensively managed agricultural land and can provide important stepping stones for the movement of wetland species through the landscape as well as providing important open water for species to drink from and forage over.
- 8.2.3 In Surrey a number of large water bodies are important for wintering waterfowl and some are given international protection. Those not given international or national protection may be important in forming part of a complex of lakes in support of the protected sites, and in any case, it is recognised that the flocking behaviour of waterfowl is subject to significant local variation on a much shorter timescale than can be accommodated within protected habitats legislation.

Application

- 8.2.4 A list of wetland axiophytes for Surrey is shown in Appendix 1.
- 8.2.5 Standing open water includes freshwater ponds, lakes, lagoons, reservoirs, ditches, drains and canals. Some will be natural features although many will have been created by man. Species characteristic of natural habitats often seek refuge in artificial habitats if their natural habitats have been destroyed or degraded.



Therefore, artificial habitats may be selected as SNCIs where they support particular biological assemblages or rare species.

8.2.6 It is anticipated that many lake SNCIs will be selected for their value to birds and therefore selected under the species criteria.

8.2.7 Priority habitat ponds are defined by the UKHab (UKHab Ltd, 2023) as permanent and seasonal standing water bodies up to 2ha in extent which meet one or more of the following criteria:

- *Habitats of international importance.* Ponds that meet criteria under Annex I of the Habitats Directive.
- *Species of high conservation importance.* Ponds supporting Red Data-listed species, UK BAP species, species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.
- *Exceptional assemblages of key biotic groups:* Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in Guidelines for the selection of Biological SSSIs (currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥ 30 wetland plant species or ≥ 50 aquatic macroinvertebrate species).
- *Ponds of high ecological quality:* Ponds classified in the top PSYM category (“high”) for ecological quality (i.e. having a PSYM score $\geq 75\%$). [PSYM (the Predictive SYstem for Multimetrics) is a method for assessing the biological quality of still waters in England and Wales; plant species and / or invertebrate families are surveyed using a standard method; the PSYM model makes predictions for the site based on environmental data and using a minimally impaired pond dataset; comparison of the prediction and observed data gives a % score for ponds quality]
- *Other important ponds:* Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context. In Surrey this may include ephemeral ponds or dew ponds.

8.2.8 Ecological status is based on a range of different parameters which together give an indication of the ecological quality of a water body. This includes; biological quality, general chemical and physico-chemical quality, water quality with respect to specific pollutants (synthetic and non synthetic), and hydromorphological quality as well as the presence of invasive non-native species (INNS). The overall Ecological Status is determined by the class of the worst (lowest) scoring element (Environment Agency, 2015). Therefore, standing open water with a ‘good’ or ‘high’ ecological status will represent the best examples in terms of their overall ecology. The ecological status of a water body, can be found by referring to the Environment Agency’s Catchment Data Explorer: <https://environment.data.gov.uk/catchment-planning>. Additional information on individual water bodies including their typology, chemistry and water quality, can be found on the UK Centre for Ecology & Hydrology’s UK Lakes Portal: <https://uklakes.ceh.ac.uk/>



8.3 Rivers and Streams

Sites which meet the following criteria should be considered for selection;

- H29 All stretches of rivers and streams which meet the UKHab definition for Rivers (priority habitat) (r2a) (UKHab Ltd, 2023).**
- H30 All stretches of rivers and streams with a ‘good’ or ‘high’ ecological status.**
- H31 All stretches of rivers and streams which are assessed as in ‘good’ condition using River Condition Assessment (RCA) methodology outlined in the DEFRA Statutory Biodiversity Metric.**
- H32 Sites where Riverfly scores are above 18 over the course of a year where monthly monitoring is taking place.**
- H33 All stretches of rivers and streams which support a viable population of species in Column A in Table 3.**
- H34 All stretches of rivers and streams supporting a diversity of notable species. As a guide, stretches with records of 5 or more of the species listed in Column B in Table 3 are likely to be of SNCI quality.**
- H35 Sites which support a significant population of a species as discussed in the species guidance.**

Table 3 – Species of importance in Surrey’s rivers and streams

Column A	Column B
Water vole <i>Arvicola amphibius</i>	Otter <i>Lutra lutra</i>
White-clawed Crayfish <i>Austropotamobius pallipes</i>	Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>
Cut-grass <i>Leersia oryzoides</i> *1	Daubenton’s Bat <i>Myotis daubentonii</i>
Greater Water-parsnip <i>Sium latifolium</i> *1	Atlantic Salmon <i>Salmo salar</i>
Little Whirlpool Ram’s-horn Snail <i>Anisus vorticulus</i>	Brown/Sea Trout <i>Salmo trutta</i>
Desmoulin’s Whorl-snail <i>Vertigo moulinsiana</i>	European Eel <i>Anguilla anguilla</i>
Thames ram’s-horn Snail <i>Gyraulus acronicus</i>	Bullhead <i>Cottus gobio</i>
	Brook Lamprey <i>Lampetra planeri</i>
	River Lamprey <i>Lamprey fluviatilis</i>
	Two-tone Reed Beetle <i>Donacia bicolora</i>
	The Crescent <i>Celaena leucostigma</i> (a moth)



Column A	Column B
	Dusky-lemon Sallow <i>Xanthia gilvago</i> (a moth)
	Scarce Four-dot Pin-palp Beetle <i>Bembidion quadripustulatum</i>
	a river shingle beetle <i>Meotica anglica</i>
	Southern Silver-stiletto Fly <i>Clorismia rustica</i>
	Southern Yellow Splinter <i>Lipsothrix nervosa</i> (a crane fly)
	Oblique Carpet <i>Orthonama vittata</i> (a moth)
	Iron Blue Mayfly <i>Nigrobaetis niger</i>
	Fine-lined Pea Mussel <i>Pisidium tenuilineatum</i>
	Shining Ram's-horn Snail <i>Segmentina nitida</i>
	Depressed River Mussel <i>Pseudanodonta complanata</i>
	Tubular Water-dropwort <i>Oenanthe fistulosa</i> *1
	Marsh Stitchwort <i>Stellaria palustris</i> *1
	Reed Bunting <i>Emberiza schoeniclus</i> (Confirmed breeding)
	Kingfisher <i>Alcedo atthis</i> (Confirmed breeding)
	Grey Wagtail <i>Motacilla cinerea</i> (Confirmed breeding)

*1 – N.B These species are largely recorded from wetland habitats other than Rivers and Streams in Surrey. See section 8.3.15 for further details on the incorporation of riparian habitats within the boundaries of River or Stream SNCIs.

Justification

- 8.3.1 Rivers and streams are incredibly important as wildlife habitats in their own right, as well as for providing connecting features within the landscape. The river network of an individual catchment is naturally connected and provides connectivity between associated land areas within the catchment (Mainstone, 2018). This is especially important between fragmented habitats in intensively farmed or urban settings.
- 8.3.2 Rivers and streams which meet certain criteria (see application section) are recognised as priority habitats within the UK Biodiversity Action Plan and are



therefore HPIs under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

- 8.3.3 Ecological status is based on a range of different parameters which together give an indication of the ecological quality of a water body. This includes; biological quality, general chemical and physico-chemical quality, water quality with respect to specific pollutants (synthetic and non synthetic), and hydromorphological quality as well as the presence of invasive non-native species (INNS). The overall Ecological Status is determined by the class of the worst (lowest) scoring element (Environment Agency, 2015). Therefore, rivers and streams with a 'good' or 'high' ecological status will represent the best examples of rivers in terms of their overall ecology.
- 8.3.4 The methodology recommended for the assessment of rivers and streams as part of Biodiversity Net Gain calculations is likely to be increasingly used over the coming years as requirements within the Environment Act 2021 come into force. The assessment of river condition using this methodology is based on the MoRPh river condition assessment methodology. It looks at extent and diversity of observed physical features in the river channel and riparian zone (including the physical structure of vegetation) as well as the extent and types of any human modifications. The physical state of a river reach is a useful proxy for determining overall riverine ecological quality (DEFRA, 2024). Rivers and streams in 'good' condition are likely to represent the best examples of rivers in terms of their overall ecology.
- 8.3.5 Common riverfly characteristics of limited mobility, relatively long-life cycles, presence throughout the year and specific tolerances to changes in environmental conditions make them good biotic indicators of water quality and useful indicators of change in local environmental conditions such as pollution, siltation and low flows. A riverfly score of above 18 would indicate good water quality and in stream habitat. If scores remained consistent over a year, this would indicate a lack of intermittent pollution issues.
- 8.3.6 The species in column A of Table 3 represent those species of particular value within Surrey. The presence of any of those species are likely to make the stretch of water of county importance. The species in column B are a combination of the species listed in the BAP priority criteria for rivers (present within Surrey) along with other notable species in Surrey which are associated with rivers (Surrey Nature Partnership, 2018).

Application

- 8.3.7 River data is dynamic and will change depending on negative and/or positive impacts on a river over time. Sites should be assessed on the most up to date data at the time of selection which ideally would be no more than 5 years old.
- 8.3.8 The previous SNCI criteria for Surrey (Surrey Wildlife Trust, 2008) includes a number of river criteria covering datasets that are no longer regularly collected. Therefore, these have been removed from the updated criteria. However, sites selected under the previous version of the SNCI criteria will remain SNCIs until they have been robustly reviewed against the new criteria.



- 8.3.9 In order to qualify under the UK Hab 2.0 definition of rivers (priority habitat (r2a)) one or more of the following criteria must be met:
- Riverine water bodies of high hydromorphological/ecological status
 - Headwaters
 - Occurrence of rivers with floating vegetation (H3260) Annex 1 habitat r2a5
 - Chalk rivers
 - Active shingle rivers
 - SSSIs designated for river species, riverine features or fluvial geomorphology
 - Contains species including:
 - Habitats Directive Annex 2 species
 - Biodiversity Action Plan (BAP) priority species
 - Invertebrate species that are strongly indicative of river shingle
- 8.3.10 A Natural England dataset is available for the location of headwaters: <https://www.data.gov.uk/dataset/e19f3b5e-23b3-4b43-8a1a-0bca58f5736c/priority-river-habitat-headwater-areas>. However, this is based on land cover only and ideally would be followed up with field survey.
- 8.3.11 The location of chalk rivers identified by Natural England as part of the priority habitats inventory (Natural England, 2024) is shown on MAGIC maps (Defra, 2024), however there may be rivers present which have not yet been included in this dataset.
- 8.3.12 Information on a range of river parameters including ecological status is available on the Environment Agency's Catchment Data Explorer: <https://environment.data.gov.uk/catchment-planning>.
- 8.3.13 In order to determine the riverfly score for a stretch of river, a 3 minute kick sample is carried out and all invertebrates caught in the net in that time are recorded. Scores are assigned relative to species diversity and abundance. More details regarding obtaining a riverfly score and training in the methodology can be found here: <https://www.riverflies.org/get-involved>
- 8.3.14 Where rivers are borderline cases using the guidance above, additional information can be used as part of the selection process. For example, data on the macroinvertebrate scores of a stretch of river or water quality values could be used if there is other evidence of their value.

Determining the boundary of a river SNCI

- 8.3.15 Where possible the boundary of the river SNCI should extend 10m from the top of each bank. This is the riparian zone width defined by the Statutory Biodiversity Metric (DEFRA, 2024) and is the standard buffer zone width used by the Environment Agency to protect rivers. When considering the boundary, it should be recognised that (a) it may be desirable to restore a river to a previous course, and (b) a river's floodplain (present or historical) may be essential to its ecological functioning. Adjacent ponds would be included within the river SNCI if they have been formed as a result of river dynamics (e.g. oxbows), but not if they are artificial or formed by an unrelated process.
- 8.3.16 Where extensive riparian vegetation occurs along the riverbank, this should be included within the boundary if possible. Significant areas of adjoining priority habitats



(such as fen, woodland, grassland and heathland types) may form an integral component of river systems and should be included within the boundary of the river SNCI where they meet the other relevant habitat or species criteria.

- 8.3.17 Stretches of river selected for a specific species or datapoint (e.g. riverfly score) should include a buffer of 1km both upstream and downstream of the record.
- 8.3.18 The final stage in the process of determining the boundary for a river SNCI should be a rationalisation process. This should ensure that selected stretches of river are not isolated. If two sections of selected river are separated by a gap of less than 3km, the gap should also be selected.

8.4 Reedbeds, Fen, Mire, Swamp

Sites which meet the following criteria should be considered for selection;

- H36 All sites supporting over 2ha, of Lowland Fens (UKHab f2a) or Reedbeds (UKHab f2e) and/or an assemblage of species indicative of the following NVC communities: M21, M24, M25, M27, M29, S3, S4, S5, S6, S7, S8, S9, S10, S12, S13, S14, S15, S16, S19, S22, S23, S26, S27, S28.**
- H37 Other wetland habitats (UKHab: f2) over 2ha which support at least xx Surrey axiophytes.**
- H38 Wetland habitats (meeting the description in H39 or H40) of between 0.25 and 2ha where they form part of a wider habitat mosaic.**
- H39 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 8.4.1 Lowland fens (UKHab f2a) and Reedbeds (UKHab f2e) are recognised as priority habitats within the UK Biodiversity Action Plan and are therefore HPIs under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Large stands of reedbeds are amongst the most important habitats for birds in the UK. They support a distinctive breeding bird assemblage including six nationally rare Red Data Birds and provide roosting and feeding sites for migratory species. They are also used as roost sites for several raptor species in winter. Five GB Red Data Book invertebrates are also closely associated with reedbeds ((BRIG (ed. Ant Maddock), 2008). Fen habitats are often species rich supporting a large number of wetland plants and often rich in invertebrates. Other marsh and swamp habitat often occurs as part of a wider wetland matrix forming an important component of the wetland mosaic.
- 8.4.2 As in other counties, wetland losses other than open water in Surrey have been high, often as a result of land drainage, river engineering and agriculture, and the remaining sites in Surrey, although often small and fragmented, are important for protection. Large reedbeds and wetland (incorporating rivers and streams, fen, marsh, swamp and linear reedbed), have been identified as priorities within Surrey for which habitat action plans have been written in the past. The Surrey HAP for Open Water & Large Reedbeds stated that in Surrey, stands of reedbed of 2 hectares or more are



significant (Surrey Biodiversity Partnership). The NVC communities listed in the criteria are those found within Surrey which are referenced by the UK Hab for lowland fen (f2a) and reedbed (f2e) (UKHab Ltd, 2023).

Application

- 8.4.3 UKHab defines fen, marsh and swamp (f2) as characterised by a variety of vegetation types that are found on minerotrophic (groundwater-fed), permanently, seasonally or periodically waterlogged peat, peaty soils or mineral soils (UKHab Ltd, 2023). They are often associated with valleys or hollows and include a wide range of vegetation types from tall broad-leaved wetland herb formations, vegetation dominated by small sedge fens, tall wetland sedge/herb/grass fens, fen meadows and rush dominated vegetation; acid poor-fens and reedbeds to bryophyte springs and flushes.
- 8.4.4 UKHab (f2e) defines reedbeds as wetlands that are dominated by >5m wide stands of the Common Reed *Phragmites australis*, and where the water table is at or above ground level for most of the year. It defines lowland fens (f2a) as wetlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall. (UKHab Ltd, 2023).
- 8.4.5 A list of wetland axiophytes for Surrey is shown in Appendix 1.
- 8.4.6 The location of lowland fen and reedbed habitat identified by Natural England as part of the priority habitats inventory (Natural England, 2024) is shown on MAGIC maps (Defra, 2024), however there may be other areas present which have not yet been included in this dataset.

8.5 Floodplain Grazing Marsh

Sites which meet the following criteria should be considered for selection;

- H40 All floodplain grazing marsh (UKHab secondary code:19) over 5ha that is not designated as SSSI.**
- H41 Floodplain grazing marsh (UKHab secondary code:19) of less than 5ha where it forms part of a wider habitat mosaic of water-dependent habitats, or where it links SSSIs.**
- H42 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 8.5.1 Coastal and floodplain grazing marsh is recognised as a priority habitat within the UK Biodiversity Action Plan and is therefore a HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Grazing marshes can be particularly important for the number of breeding waders they support, such as snipe, lapwing and curlew. Internationally important populations of wintering wildfowl can also occur (BRIG (ed. Ant Maddock), 2008). The ditches within floodplain grazing marsh can be especially rich in plants and invertebrates (UKHab Ltd, 2023) while the grassland itself can be agriculturally improved and therefore have low species diversity.



Application

- 8.5.2 UKHab defines Coastal and floodplain grazing marsh (secondary code 19) as periodically inundated pasture or meadow with ditches that maintain the water levels containing standing, brackish or fresh water. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species, such as reeds.
- 8.5.3 Areas of floodplain grazing marsh identified by Natural England as part of the priority habitats inventory (Natural England, 2024) are shown on MAGIC maps (Defra, 2024), however there may be areas present which have not yet been included in this dataset. Help with the identification of this habitat can also be gained by looking at Environment Agency floodplain maps as well as soil maps. Floodplain grazing marsh will be found on mineral rather than organic soils. Grazing should be feasible on the site, but not necessarily in place at the time.
- 8.5.4 SNCIs will not normally be selected solely on the basis of their inclusion in the Surrey 'Old' Grasslands Inventory (SWT, In Preparation), rather sites should also meet one or more of the Habitat or Species criteria described elsewhere in this report.

9 Open Mosaic Habitats on Previously Developed Land

Sites which meet the following criteria should be considered for selection;

H43 All Open Mosaic Habitat on Previously Developed Land of at least 0.25ha in size, meeting the UKHab definition for Secondary Code: 80 which either;

- Supports a rich mosaic of habitats *or*
- Supports a significant assemblage of species.

H44 Sites which support a significant population of a species as discussed in the species guidelines.

Justification

- 9.1.1 Open mosaic habitats on previously developed land are a recognised priority habitat within the UK Biodiversity Action Plan, and therefore as a HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These habitats can be extremely diverse, supporting a wide range of terrestrial and aquatic habitats. The either low nutrient or polluted status of previously developed sites, often prevents rapid succession and allows open vegetation mosaics to develop with structural and floristic diversity in combination with significant areas of bare ground.
- 9.1.2 The diversity of habitats is ideal for species which require two or more habitats near to each other to complete their life cycle. They are increasingly important within ecological networks, particularly for rare and scarce invertebrates, especially hymenoptera and coleoptera. The habitat is of particular importance for species requiring bare substrate, sandy burrowing or nesting sites, and flowery nectar sources in close proximity.
- 9.1.3 The habitat can also be important for plants. It can include several scarce and threatened open vegetation communities and a number of plants recognised as



Species of Principal Importance (SPIs) under Section 41 of the NERC Act 2006 are strongly associated with this habitat. The habitat is also of recognised importance for lichens, birds, reptiles and amphibians (Buglife).

- 9.1.4 This habitat is always at high risk of destruction and serious degradation, as it is usually prioritised for re-development. Major factors threatening it include urban development, landfill, unsuitable reclamation, eutrophication, lack of appropriate management and natural succession.

Application

- 9.1.5 The UKHab defines Open mosaic habitats on previously developed land (secondary code 80) as meeting the following five criteria;
- Open mosaic habitat ≥ 0.25 ha in size.
 - Known history of disturbance or evidence that soil has been removed or severely modified by previous use(s). Extraneous materials/substrates such as industrial spoil may have been added.
 - The site contains some vegetation. This will comprise early successional communities consisting mainly of stress tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of one of the following: a) annuals, b) mosses/ liverworts, c) lichens d) ruderals e) inundation species, f) open grassland, g) flower-rich grassland, h) heathland.
 - Contains unvegetated, loose bare substrate and pools may be present.
 - The site shows spatial variation within 0.25ha, forming a mosaic of one or more early successional communities plus bare substrate.
- 9.1.6 The habitat may be found in a wide range of different sites and land uses. In Surrey disused quarry and mining sites and previously built land are key examples. Roadside cuttings and walls could also form examples of this habitat. Sites may also contain significant areas of other target habitats such as grassland and heathland.
- 9.1.7 The location of open mosaic habitat identified by Natural England as part of the priority habitats inventory (Natural England, 2024) is shown on MAGIC maps (Defra, 2024), however this is currently in draft form and there will definitely be other areas present which have not yet been included in this dataset.



10 Arable

Sites which meet the following criteria should be considered for selection;

- H45 All sites which meet the Plantlife criteria for ‘Important Arable Plant Areas - outstanding assemblages’ at county importance or higher, which are not covered by other designations.**
- H46 Other Arable field margins (UKHab: c1a) which support at least **xx** arable specialist species from the Surrey axiophytes list.**
- H47 Sites which support a significant population of a species as discussed in the species guidance.**

Justification

- 10.1.1 Arable plants have seen massive declines during the second half of the 20th century as agricultural intensification and specialisation have simplified the farmed landscape and made it the domain of just a few species. Today arable species make up one of the most threatened groups of plants in the UK. Arable field margins (UKHab c1a) are recognised as a priority habitat within the UK Biodiversity Action Plan and are therefore a HPI under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Application

- 10.1.2 The UK Hab defines Arable field margins (c1a) as herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. The arable field must be in a crop rotation that includes an arable crop, even if in certain years the field is in temporary grass, set-aside or fallow.
- 10.1.3 The boundary of the SNCI should be drawn to include all areas important currently or with potential for the arable plant assemblages.
- 10.1.4 The Plantlife criteria for the selection of Important Arable Plant Areas for their outstanding assemblages is given in Appendix 2.
- 10.1.5 A list of arable axiophytes for Surrey is shown in Appendix 1.



Section C: Species Guidelines

11 Introduction

- 11.1.1 Surrey's State of Nature report (Surrey Nature Partnership, 2017) showed that out of the 404 priority species known to have been recorded in Surrey 31.2% are now extinct and 37.1% are threatened or declining. Although many species will be protected as a result of protecting sites under the habitat criteria above, some species may need additional consideration and protection.
- 11.1.2 These species criteria will ensure that those sites with significant species interest are identified and recorded even if there are other reasons for selection. It is important that the specific interest is taken into account as it may affect management considerations.
- 11.1.3 Some of the Surrey specific species information referred to within this report, for example the Surrey Rare Plant Register (Sankey, et al., 2024) is based on the Vice-county (VC) boundary (VC17: Surrey) rather than the administrative boundary of the modern County which the Criteria cover. Vice-counties are geographical divisions of the British Isles used for biological recording and other scientific data-gathering. Vice-county boundaries are unchanging and therefore species lists made 100 years ago can be compared with those made today. Expert opinion should be sought on a case-by-case basis if it is thought that this difference could affect the selection of a site which for example falls outside of the Vice-county boundary.
- 11.1.4 The tables within this report are based on knowledge available at the time of writing. The status of species in the UK and Surrey will change with time and our understanding and it is therefore important to ensure that the most recent information is consulted. Species status changes, both nationally and locally, published subsequent to adoption of these criteria will be logged on the Surrey Nature Partnership website.
- 11.1.5 In general, when selecting a site for the presence of a particular species, evidence should be based on records of not more than 5 years old. However, it should be borne in mind that the monitoring of sites for the presence of species can take place only as often as resources allow.
- 11.1.6 Species can be regarded as extinct at a site if a **30 year** period has elapsed without the species being recorded, unless otherwise specified within individual species criteria. However at least one survey in good weather at appropriate time of year needs to have been undertaken before a site is removed.
- 11.1.7 When considering the boundary of a site selected for a species, it is important that sufficient habitat is included to enable the species to complete all stages of its life cycle. It should also be remembered that some species require conservation at a meta-population level if they are to retain long-term viability. In these cases, good ecological knowledge of the species in question will be required to ensure that sufficient areas are included within the SNCI to maintain the species.



12 Vascular Plants

Sites which meet the following criteria should be considered for selection;

S1 All sites supporting a sustainable population of a species;

- Listed in Schedule 8 and fully protected under the Wildlife and Countryside Act 1981 (as amended).
- Classified as Nationally rare.
- Classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the latest GB or England Red Data list for plants, or,
- Classified as rare within Surrey.

S2 Sites supporting important populations or assemblages of a species;

- Listed under Section 41 as a Species of Principal Importance (SPI) within the Natural Environment and Rural Communities (NERC) Act 2006.
- Classified as Nationally scarce, or,
- Classified as scarce within Surrey.

S3 Sites selected as Important Plant Areas by Plantlife.

Justification

12.1.1 The majority of the species covered by these criteria will be associated with sites already qualifying for selection under the habitats criteria. However, some of the species may occur in habitats not usually considered to be of high nature conservation importance or they may fall on sites which fail to satisfy the minimum habitat thresholds for selection. These criteria are designed to ensure that such species receive adequate recognition.

Application

12.1.2 The Surrey Rare Plants Register (Sankey, et al., 2024) (covering VC17) lists all plants within Surrey that would fall within the criteria above (see Appendix 3). VC17 Rare includes plants recorded in 1-10 1km squares from 2000 onwards. VC17 Scarce includes plants recorded in 11-30 1km squares from 2000 onwards.

12.1.3 All sites with these notable species should be considered for selection, however not all will warrant specific protection. In the case of criteria S2, expert advice, such as the Surrey Botanical Society, should be sought in order to assess whether a species and/or assemblage is 'important'. This assessment should take into account the national, regional and local rarity and threat of the species concerned. Final decisions will be ratified through the Local Sites Partnership.

12.1.4 When using multiple published Red Lists, the highest level of threat should always be the one used to determine a taxon's SNCI selection requirements, regardless of the geographical scale at which that assessment was made. Thus, a taxon listed as threatened at country level should be treated as such for SNCI selection purposes, even though it may not be threatened in GB (and vice versa).

12.1.5 When considering the boundary of the SNCI, consideration should be given to including a sufficient area of suitable habitat to enable the long-term maintenance of the species or assemblage. Plant populations are frequently dynamic, with individuals



colonising new patches of suitable habitat whilst others may be lost due to natural change in habitat condition, etc. Therefore, patches of suitable (or potentially suitable) habitat within the same management unit that do not currently support the qualifying species/assemblage should still be included within the SNCI boundary. Areas of suitable habitat nearby should also be considered for inclusion, especially if the habitat is particularly rare or unusual, or if the species in question is known to be opportunistic or highly mobile, thus allowing appropriate management to be applied across a wider area to provide additional opportunities for the species' spread.

- 12.1.6 Vascular plant taxa vary enormously in their life strategies, ranging from annuals to perennials which may live for centuries. Some are evident above ground – or in the water column in the case of aquatics – throughout the year, whilst others may spend part of the year (usually but not always the winter months in Britain) dormant underground either as seed (the 'seed bank') or as a variety of 'perennating' organs (bulbs, corms, tubers, etc.). Many taxa are notoriously erratic in their appearance above ground, sometimes remaining 'invisible' for several years in a row. It is therefore essential that surveys are undertaken at the correct time of year and whilst a thorough single survey may be perfectly adequate for certain taxa others will require multiple assessments potentially over a number of years.
- 12.1.7 The location of Important Plant Areas can be found on Magic maps (Defra, 2024) and are identified by Plantlife using the following criteria;
- A: The site holds significant populations of species of global or regional concern.
 - B: The site has exceptionally rich flora in a regional context in relation to its biogeographic zone.
 - C: The site is an outstanding example of a habitat type of global or regional importance.

13 Lower Plants

Sites which meet the following criteria should be considered for selection;

S4 All sites supporting a sustainable population of a species;

- Listed in Schedule 8 and fully protected under the Wildlife and Countryside Act 1981 (as amended).
- Classified as Nationally rare or,
- Classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the latest GB or England Red Data list for plants.
- Classified as rare within Surrey or South East England.

S5 Sites supporting important populations or assemblages of a species;

- Listed under Section 41 as a Species of Principal Importance (SPI) within the Natural Environment and Rural Communities (NERC) Act 2006.
- Classified as Nationally scarce or,
- Classified as scarce within Surrey or South East England.



S6 Sites selected as Important Stonewort Areas by Plantlife.

Justification

13.1.1 The British non-vascular flora is one of the richest in Europe. While Britain's vascular flora consists of only about 18% of the total European vascular flora, the figure for bryophytes, for example, is about 70% (NCC, 1989). The species meeting the criteria below are the rarest and/or most threatened lower plant species in the British Isles and Britain has a national and international responsibility to conserve them throughout their distribution. This international importance is however, concentrated in the north and west of the British Isles and not so much in the south-east, although interesting disjunct populations do occur in localised regions (e.g. the High Weald). Lowland valley mires are also locally important for their bryophytes.

Application

13.1.2 Lists of bryophytes and stoneworts found in Surrey and meeting the criteria above can be found in the State of Surrey's Nature: lists of Species of Conservation Concern in Surrey (Surrey Nature Partnership, 2017).

13.1.3 Lower plants are a difficult group to use for SNCI selection. There is often a lack of up-to-date data. Many species need very specialist knowledge for identification, they are inconspicuous and often require microscopic examination for identification.

13.1.4 In many cases non-vascular plants may have very restricted distributions for example a single tree or stone. Wherever possible surveys should establish whether the species is more widespread in the local vicinity. If further information is not available, the boundary of the SNCI should be drawn to include other similar habitats in the immediate locality.

13.1.5 When considering S5, an important assemblage of such species is likely to be one that supports at least 10 species falling within these categories.

13.1.6 Important Stonewort Areas are identified by Plantlife using the following criteria;

- A: All significant sites of species listed on Schedule 8 of the Wildlife and Countryside Act 1981 (plus amendments); AND up to five best sites for additional red data list species.
- B: All sites with five or more stonewort species present. OR all sites with one red list/near threatened species and at least two additional species.
- C: All sites thought, or inferred to contain 5% or more of the national resource (by area), or the five 'best' sites of priority threatened habitats of major significance to stoneworts listed on Annex I of the EU Habitats Directive; OR up to five 'best' sites, of other threatened (but non-priority) habitats listed on Annex I.



14 Fungi (including lichens)

14.1 Non-lichenised fungi

Sites which meet the following criteria should be considered for selection;

S7 Sites supporting species of UK importance.

S8 Sites supporting important populations of species classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) on the global IUCN RDL.

S9 Sites supporting a substantial number of indicator species for an ecologically coherent and important fungi assemblage(s) for the following important habitats in Surrey;

- Tooth fungi associated with Fagaceae
- Beech deadwood fungi
- Oak deadwood fungi
- Grassland fungi

S10 Sites supporting a fungi assemblage characteristic of the following important habitats in Surrey (*no published list of indicator species or scoring system devised*);

- Calcareous beech woodland (Ectomycorrhizal and saprotrophic Fagus associates)
- Alder woodland (Ectomycorrhizal and saprotrophic Alder associates in wet woodland)
- Reedbed fungi
- Boletes of wood pasture and parkland (Thermophilous boletes in open woodland)

S11 Sites with an exceptionally rich and well recorded mycota in a UK context. A site should be considered if it has at least 600 recorded species.

Justification

14.1.1 Fungi, including lichens are fundamental to the proper functioning of all ecosystems. Threats to fungi are many and include environmental pollution, habitat destruction, commercial collecting, competition with plants and public pressure.

14.1.2 Selecting a site as an SNCI based on the importance of fungi should encourage the manager of the site to take action to protect the fungi or its habitat by removing or reducing the threats listed above.

14.1.3 These criteria are based on the guidelines for SSSI selection (Bosanquet.S, Ainsworth.A, Cooch.S, Genney.D, & Wilkins.T, 2018), but with a lowered threshold and on the Plantlife criteria for Important Fungus Areas (Evans.S, Harper.M, & Marren.P, 2001).

Application

14.1.4 Currently most species records will come from surveys of fungal fruiting-bodies, however in the future as DNA data becomes more available, records will increasingly arise from soil sampling.



- 14.1.5 The sporadic, historical appearance of many (especially rarer) fungal fruiting-bodies should be taken into account.

When considering S7:

- 14.1.6 For Boletaceae fungi, refer to the list in Appendix 4 taken from (Ainsworth.A, et al., 2013). Sites will qualify if they support one threatened species (classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU)) plus a good representation of other Boletaceae species or **two** threatened species.
- 14.1.7 Sites will qualify if they support **three** of the rarer species proposed to be Red-Listed for Great Britain: Bankeraceae, Cantharellaceae, Geastraceae, Hericiaceae and selected genera of Agaricaceae (*Battarrea*, *Bovista*, *Lycoperdon* & *Tulostoma*) and Fomitopsidaceae (*Fomitopsis*, previously *Piptoporus*) (Smith.J, Suz.L, & Ainsworth.A, 2016) as provided in Appendix 4.
- 14.1.8 Sites that support **three** priority species listed as Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. A list of SPI fungi found within Surrey is provided in Appendix 4, and in the State of Surrey's Nature lists of Species of Conservation Concern in Surrey (SNP, 2017).

When considering S8:

- 14.1.9 Refer to the global IUCN Red List of Threatened Species <http://www.iucnredlist.org/> and Distribution, ecology and status of 51 macromycetes in Europe (Fraiture A. & Otto P. (eds), 2015). All sites supporting CR species should be selected. For sites supporting species that are EN or VU, important populations should be identified by experts and will prioritise sites where the largest persistent fruiting population exists in an area.

When considering S9:

- 14.1.10 The lists of indicator species can be found in Appendix 5 which was derived from the SSSI guidelines (Bosanquet.S, Ainsworth.A, Cooch.S, Genney.D, & Wilkins.T, 2018). For the grassland fungi assemblages, some amendments have been made to the tables within the SSSI guidelines to account for local priorities. The number of indicator species which would qualify a site for SNCI selection (score) is shown in the table for each habitat, based on 2/3 of the indicator score for SSSI selection.
- 14.1.11 Four grassland species are considered to be indicators of high fungal diversity (Newton.A, et al., 2003) and should be considered priority species. These are *Clavaria zollingeri*, *Entoloma bloxamii* agg., *Geoglossum atropurpureum*, and *Microglossum olivaceum* agg. Should any of these high diversity indicators be found on a site, it would be reasonable to consider it for potential SNCI designation and a priority for targeted survey.

When considering S10

- 14.1.12 Expert opinion such as the Surrey Fungus Study Group will be sought to determine whether a site qualifies under this criterion.



14.2 Lichenised fungi

Sites which meet the following criteria should be considered for selection;

S12 All sites supporting a sustainable population of a species;

- Classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the latest GB or England Red Data list for lichens.
- Listed in Schedule 8 and fully protected under the Wildlife and Countryside Act 1981 (as amended).
- Classified as Nationally rare.
- Considered as rare within Surrey.

S13 Sites supporting important populations or assemblages of a species;

- Listed as a Species of Principal Importance (SPI) within the NERC Act or Classified as Nationally scarce.

S14 Sites supporting indicator species for an ecologically coherent and important lichen assemblage(s) for the following important habitats in Surrey;

- Old forest indicator species.
- Dead wood assemblages of “pin lichens”.
- Chalk grassland assemblages.
- Indicators of clean air (i.e. species intolerant of high levels of NO_x and NH₃ and also SO₂ (still a factor in parts of the county).
- Churchyards (with ancient memorials and walls).
- Orchards (long-established).
- Lichenicolous fungi (larger numbers suggest the lichen assemblages have been established on the site for very many years).

S15 Sites with a long history of lichen recording (over 50 years) that serve as a benchmark for changes over time.

Application

- 14.2.1 At the time of writing, the current British IUCN Red List for lichens is (Coppins & Woods, 2012). The most up to date source of lichen species status can be found on the British Lichen Society website:
<https://britishlichensociety.org.uk/resources/lichen-taxon-database>.
- 14.2.2 There is no published list for rare and scarce lichen species within Surrey at this time, but frequency of lichens and lichenicolous fungi can be seen through the records (including maps) in the British Lichen Society database (<https://britishlichensociety.org.uk/resources/species-accounts>).
- 14.2.3 When considering S14, the lichen chapter of the guidelines for the selection of biological SSSIs should be referred to. This provides indicator lists for the different habitats along with threshold scores for sites eligible for SSSI selection. This can be used as a guide to determine whether the site is likely to be of county importance. For old forest indicator species refer to (Coppins & Coppins, 2002). For indicators of clean air refer to: (British Standards Institute , 2014), (Davies, Bates, Bell, James, &



Purvis, 2006) and (Hawksworth & Rose, 1976). For churchyard indicator species at least 120 species would indicate an important assemblage; refer to (Chester & Blatchley, 2001).

15 Mammals

15.1 General

Sites which meet the following criteria should be considered for selection;

- S16 All sites known to support a viable population of Hazel Dormouse *Muscardinus avellanarius*.**
- S17 All sites supporting an occupied Otter *Lutra lutra* holt or which is part of an otter's established and mapped breeding territory.**
- S18 All sites with records of Water Vole *Arvicola amphibius* within last 5 years (including reintroduction sites).**
- S19 All sites supporting a naturalised, self-sustaining population of Brown Hare *Lepus europaeus*.**
- S20 The presence of the following species will be a contributing factor in the selection of sites under the habitat guidelines;**
 - Harvest Mouse *Micromys minutus*
 - European Hedgehog *Erinaceus europaeus*
 - Polecat *Mustela putorius*.

Justification

- 15.1.1 It is estimated that the Hazel Dormouse has declined by over 50% since the early 1900's. More recent data from the National Dormouse Monitoring Programme indicates a 72% decline between 1993 and 2014 (Goodwin, 2017). The species is a SPI and is protected under Schedule 2 of the Conservation of Habitats and Species Regulations, 2019 (as amended) and Schedule 5 of the Wildlife and Countryside Act 1981. Hazel Dormouse is considered a flagship species, their presence is an indicator of habitat integrity and their habitat is usually very suitable for a wide range of other species. Surrey lies at the heart of the range for the species in the UK but despite this, numbers are still in decline and it is considered vulnerable to extinction. It is also an under-recorded species and many sites supporting suitable habitat remain unsurveyed. As such, any site containing suitable Hazel Dormouse habitat (including a range of food species), which are well connected to surrounding habitat known to support this species, should be considered for selection.
- 15.1.2 The Water Vole has suffered a significant decline, nationally. A national survey in 1989-90 failed to find signs of voles in 67% of sites where they were previously recorded and this decline has continued since this time. The Water Vole is a SPI and is protected under Schedule 5 (sec 9(4)) of the Wildlife and Countryside Act 1981. The species is considered functionally extinct in Surrey. Any site supporting this species in Surrey should be considered for selection, this includes sites where formally recognised or established reintroductions of Water Vole have taken place.



- 15.1.3 The Otter underwent a rapid decline in numbers from the 1950s to 1970s and was lost from Surrey at that time. It is an SPI and is protected under Schedule 5 of the WCA 1981 and Schedule 2 of the Conservation of Habitats and Species Regulations, 2019 (as amended). The Otter is considered a flagship species as their presence is likely to indicate a healthy aquatic environment. In recent years, evidence of Otters moving back into Surrey has been found. Otters occupy very large territories, 20-30 km of riverbanks for females with a male Otter's home range covering several female territories (UK Wild Otter Trust, 2024). Given the large territory size, any site supporting an otter holt (shelter and breeding, natural or artificial) including an appropriate buffer area upstream and downstream and any contiguous bankside semi-natural habitat, should be considered for SNCI selection.
- 15.1.4 Due to the mobile and landscape scale nature of mammals, some species do not lend themselves to protection within the SNCI system in their own right (e.g. Polecat, Harvest Mouse, Brown Hare and Hedgehog). However, these species are all SPI and should be used as attributes which enhance the value of sites assessed on other features.

Application

- 15.1.5 Sites should be selected based on field signs or sightings of no more than 5 years old as well as an assessment of habitat suitability. The boundaries of the sites for the above species should include areas critical for nesting, foraging, laying up, territorial or other significant use, where this has been determined by survey.
- 15.1.6 For Hazel Dormouse the boundary should include all adjoining areas of suitable dormouse habitat and important movement corridors.
- 15.1.7 Where rivers/streams are selected for a mammal species, the boundary should be determined as described in the "Rivers, Canals and Streams" guidance and should include an appropriate buffer of no-more than 1km both upstream and downstream of the viable population of the species or record as well as adjacent semi-natural vegetation at least 10m from the top of the bank or habitat as required for the species to complete its life cycle.

15.2 Bats

Sites which meet the following criteria should be considered for selection;

- S21 Sites containing a 'significant' bat roost or hibernation site.**
- S22 Any roost, hibernation site or swarming site used by multiple bat species concurrently should be considered for selection.**
- S23 Foraging sites not associated directly with roosts should be considered for selection if more than 7 species are regularly recorded there or if used by a) any Annex II species, or b) Grey Long-eared or c) female or juvenile Alcthoë Bat.**

Justification

- 15.2.1 Bat populations across Europe are known to have declined dramatically in the last 150 years. Part of the reason for this is their vulnerability at certain times of the year.



In the early summer large concentrations of female bats gather to give birth and if this maternity roost is disturbed or destroyed the breeding success for an entire area will be reduced or eliminated. Bats also need sites with cool, constant temperatures and high humidity to enable them to hibernate efficiently, but suitable sites are becoming more difficult to find and while in hibernation bats are very vulnerable to disturbance.

- 15.2.2 All British bat species are afforded protection under the Wildlife and Countryside Act 1981 through inclusion on Schedule 5, and additionally under Schedule 2 of the Conservation of Habitats and Species Regulations, 2019 (as amended). These make it illegal to kill, injure, capture or disturb bats; or to obstruct access to, damage or destroy a bat roost.
- 15.2.3 Furthermore, seven bat species are Species of Principal Importance (SPI), covered under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. These are Barbastelle, Bechstein’s, Noctule, Soprano Pipistrelle, Brown Long-eared, Lesser Horseshoe and Greater Horseshoe Bats.
- 15.2.4 Although bats and their roosts are well protected by law their swarming sites (typically hibernation sites where bats gather in late summer and autumn to mate, check availability for hibernation and introduce newly volant young to the site), foraging areas, and commuting routes between them, are not as well protected. However viable populations cannot be sustained without preserving these important areas and so these should also be considered for SNCI designation.
- 15.2.5 Alcaholic Bat was new to science in 2001 and was first reported as present in the UK in 2010, with records in Yorkshire and West Sussex. Since then, no further records for Yorkshire have been published and very few outside the core area of Surrey and West Sussex. A review of the population and conservation status of British mammals published in June 2018 classed the species as Data Deficient, but gave the known distribution as Surrey, Sussex and west Kent.

Application

- 15.2.6 Whether a roost or hibernation site is ‘significant’ should be determined by experts using Table 4 below as a guide. This table gives an indication of the numbers of bats which could be expected within a bat roost likely to be of significance within Surrey.

Table 4 – A guide to the number of bats that may indicate a significant roost or hibernation site in Surrey

Species	Roost	Hibernation Site
Barbastelle (<i>Barbastella barbastellus</i>) *	1	1
Serotine (<i>Eptesicus serotinus</i>)	5	1
Bechstein's Bat (<i>Myotis bechsteinii</i>) *	1	1
Brandt's Bat (<i>Myotis brandtii</i>)	1	1
Daubenton's Bat (<i>Myotis daubentonii</i>)	40	5



Species	Roost	Hibernation Site
Greater mouse-eared Bat (<i>Myotis myotis</i>) *	1	1
Whiskered Bat (<i>Myotis mystacinus</i>)	5	2
Natterer's Bat (<i>Myotis nattereri</i>)	10	5
Alcathoe Bat (<i>Myotis alcathoe</i>)	1	1
Leisler's Bat (<i>Nyctalus leisleri</i>)	1	1
Noctule (<i>Nyctalus noctula</i>)	5	1
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	60	10
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	200	10
Nathusius' Pipistrelle (<i>Pipistrellus nathusii</i>)	15	1
Brown Long-eared Bat (<i>Plecotus auritus</i>)	20	2
Grey Long-eared Bat (<i>Plecotus austriacus</i>)	1	1
Greater Horseshoe Bat (<i>Rhinolophus ferrumequinum</i>) *	1	1
Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) *	1	1

* Species listed in EU Habitats Directive Annex II.

15.2.7 The bat selection criteria will not be applied to domestic buildings or to industrial and agricultural buildings in current use. Disused industrial and agricultural buildings, and other built structures such as ice houses, grottos, other architectural follies, mineshafts, military fortifications, bridges and tunnels, should be considered for selection. Most woodland bats hibernate in trees within their summer foraging areas, which should be borne in mind when planning management work.

15.2.8 When considering the boundary of the SNCI, in addition to the resting sites, consideration should also be given to selecting surrounding semi-natural habitat used for foraging, commuting routes between sites and any important foraging sites identified away from the roosting site. Reference should be made to the Core Sustainment Zones and habitats of importance to the bat species in question as defined by the Bat Conservation Trust (BCT) (Bat Conservation Trust, 2020).



16 Amphibians

Sites which meet the following criteria should be considered for selection;

- S24 Sites that support populations of Natterjack Toad, *Epidalea calamita*.**
- S25 Sites which support populations of four or more native amphibian species.**
- S26 Sites that have recorded 'exceptional' populations of any amphibian species or a good population of Common Toad.**
- S27 Sites that have recorded 'good' populations of 3 or more native amphibian species.**

Justification

- 16.1.1 Natterjack Toad, Common Toad and Great Crested Newt are SPIs covered under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Natterjack Toad and Great Crested Newt are also protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
- 16.1.2 The Natterjack Toad is amongst the rarest animals in Britain classified as Endangered at Great Britain and country level (Foster, 2021) It requires specialised habitat which small parts of Surrey provide. All established populations of this species should already be covered by SSSI designation. The inclusion of this criteria will ensure that no sites are left unprotected.
- 16.1.3 The Great Crested Newt has suffered a significant decline in numbers over recent years. Britain holds probably the largest population in the world and Surrey has a significant share of that population.
- 16.1.4 Four or more native amphibian species is considered to be a significant assemblage of amphibians for Surrey. Sites containing 'exceptional' populations are important for the population of the species within Surrey and should be protected. Likewise, sites supporting three or more native amphibian species with a 'good' population are considered significant and important to protect.

Application

- 16.1.5 'Good' and 'exceptional' populations can be determined using the scoring system below. This has been taken from the *Guidelines for selection of biological SSSIs* (1989, Nature Conservancy Council) which has been amended by the Surrey Amphibian and Reptile Group to reflect the status of amphibians within Surrey.
- 16.1.6 Data should be based on at least 2 years of data which should have been gathered within the last 10 years by experienced personnel. The highest count on a given year of monitoring can be taken as the population class size. This guidance should be used to guide decisions and the final decision on the selection of sites should be agreed by relevant experts such as Surrey Amphibian and Reptile Group.
- 16.1.7 The boundary of the SNCI should include the pond as well as adjacent habitat known or likely to be used by the amphibian species for foraging, shelter and hibernation. The significance of terrestrial habitat for amphibians should not be under-estimated



as they spend the majority of their life on land. The boundary should be determined by experienced personnel with a detailed knowledge of the site in question.

- 16.1.8 Sites without a pond present but where numbers of amphibians detected under stones or other refugia indicate good or exceptional populations can be selected as this indicates an important foraging or hibernation site.
- 16.1.9 Domestic gardens can be included in the selection where owners agree to inclusion as an SNCI, or it contains a pond of an origin that pre-exists its current usage as a garden pond.
- 16.1.10 Ponds in a cluster can support a metapopulation. Such ponds can be included as one site, and therefore the counts for each of the ponds combined, if they are not separated by any obvious barriers and preferably are connected by suitable amphibian terrestrial habitat. Water bodies within 250m can be considered as a cluster. Where there are isolated ponds within 500m of each other they could be considered together if connected by amphibian terrestrial habitat known to be used or likely to be used by amphibians.
- 16.1.11 The occurrence of any amphibian species on a site should be considered as a supporting reason for selection of a site which also qualifies under other guidelines.
- 16.1.12 Where notable populations of amphibians are present, sites currently designated SSSI for other interest features can have additional designation of SNCI to ensure that all reasons for protection are cited.

Table 5 – A scoring system for the selection of amphibian sites in Surrey

		Low Population	Good Population	Exceptional population
Great Crested Newt, <i>Triturus cristatus</i>	Seen* or netted in day	<5	5-30	>30
	Counted at night	<10	10-50	>50
Smooth Newt, <i>Lissotriton vulgaris</i>	Netted in day	<10	10-100	>100
	Counted at night			
Palmate Newt, <i>Lissotriton helveticus</i>	Netted in day	<10	10-100	>100
	Counted at night			
Common Toad, <i>Bufo</i>	Estimated	<300	300-2,000	>1,000
	Counted	<100	100-800	>800
Common Frog, <i>Rana temporaria</i>	Spawn clumps counted	<50	50-500	>500

* This can include adults detected by looking under stones or refugia in daytime survey

- Counts refer to adult specimens (the incredibly high mortality rates for eggs and juveniles could skew the results)



- Counts should be for breeding sites observed during the breeding season.
- Daytime netting should be made during a 15-minute period for sites with less than 50m of water's edge, for 30 minutes for sites with 50-100m, etc.
- Data from toad crossings on roads can be used to identify population numbers within the breeding pond.

17 Reptiles

Sites which meet the following criteria should be considered for selection;

- S28 Sites that support populations of Smooth Snake *Coronella austriaca* or Sand Lizard *Lacerta agilis*.**
- S29 Sites which contain populations of 3 or more native reptile species (Adder *Vipera berus*, Grass Snake *Natrix natrix*, Viviparous Lizard *Zootaca vivipara* and Slow-worm *Anguis fragilis*).**
- S30 Sites with an 'exceptional' population of a single reptile species or a 'good' or locally significant population of Adders.**
- S31 Sites supporting an assemblage of species scoring at least 4 points using the scoring system below can be considered for selection.**

Justification

- 17.1.1 All reptile species in the UK are SPIs covered under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and are all protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended).
- 17.1.2 The Smooth Snake and Sand Lizard are amongst the rarest animals in Britain both regarded as Endangered in Great Britain (Foster, 2021) and both receive protection under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended) They require specialised habitat which small parts of Surrey provide.
- 17.1.3 The Adder is assessed as Near Threatened at Great Britain level and Vulnerable in England (Foster, 2021).
- 17.1.4 The SSSI guidelines recommend that the best localities containing "at least three" of the commoner native reptiles be selected as potential SSSIs. The SNCI network should be used to extend the protection to all sites of conservation value for reptiles that fall outside the SSSI guidelines.
- 17.1.5 Sites containing 'exceptional' populations are important for the population of the species within Surrey and should be protected.
- 17.1.6 Sites supporting an assemblage of species scoring four points or more using the scoring system below are considered to be a significant assemblage of reptiles for Surrey.

Application

- 17.1.7 The determination of an exceptional population should be based on the scoring system below. This scoring system is used by Froglife for identifying Key Reptile Sites (Froglife, 1999). It should be based on the maximum number of adult animals



seen under artificial refugia or by general observation by one experienced person in one day. The Froglife, 1999 guidance relating to density of mats of up to 10 per hectare is considered low, with most surveyors deploying more than this minimum. Survey protocols for the British herpetofauna Version 1.0 (Sewell, D. et al, 2013) suggests a minimum of 30 refugia should be used for presence / absence in good quality reptile habitat (irrespective of the size of site). Guidance produced by the Highways Agency (Highways Agency, 2005) recommended at least 50 refugia / ha. As such, for the purposes of SNCI selection, between 30-50 refugia / ha should be used to ascertain presence / absence of reptiles. If a site is very small in size or suitable reptile habitat is very limited, a lower number of refugia can be justified.

- 17.1.8 Data should be based on at least 2 years of data which should have been gathered within the last 10 years by experienced personnel. The highest count on a given year of monitoring can be taken as the population class size. This criterion should be used to guide decisions and the final decision on the selection of sites should be agreed by relevant experts.
- 17.1.9 When considering assemblages of species, it is accepted that the highest count per species across the year can be applied. This is because different weather conditions could lead to records of different species e.g. a cold day with bright sunshine might reveal adder but not slow worm which might be recorded on a future visit with conditions less suitable for Adder.
- 17.1.10 There may be cases where although an Adder population is low, it is locally significant due to its geographical isolation. For example, Adders within the M25. These populations are important as if the population was lost the species would lose significant range across Surrey. Whether the population is locally significant would be decided in consultation with local experts such as Surrey Amphibian and Reptile Group.
- 17.1.11 Domestic gardens can be included in the selection where owners agree to inclusion as an SNCI.
- 17.1.12 When deciding the boundary of the SNCI, contiguous, open, semi-natural habitat should be included. Suitable man-made structures (e.g. tumuli, embankments and stone walls) should also be included. Site boundaries should take into account the area of habitat used by the species throughout the year, particularly hibernation and breeding sites and favoured feeding habitat. This should be determined by experienced personnel with a detailed knowledge of the site in question.
- 17.1.13 The occurrence of any reptile species on a site should be considered a supporting reason for selection of a site which also qualifies under other guidelines.



Table 6 – A scoring system for the selection of reptile sites in Surrey (taken from (Froglife, 1999).

	Low Population Score 1	Good Population Score 2	Exceptional Population Score 3
Adder (<i>Vipera berus</i>)	<5	5-10	>10
Grass Snake (<i>Natrix natrix</i>)	<5	5-10	>10
Viviparous Lizard (<i>Zootaca vivipara</i>)	<5	5-20	>20
Slow-worm (<i>Anguis fragilis</i>)	<5	5-20	>20

18 Birds

Sites which meet the following criteria should be considered for selection;

- S32 Any site that holds 5% or more of the total Surrey breeding population and/or wintering population and/or migratory waterbird (includes wildfowl and waders) population of a single species.**
- S33 Any site that holds 1% or more of the total Surrey breeding population of any UK Rare Breeding Bird species, as defined by the UK Rare Breeding Bird Panel.**
- S34 Any site that supports species on the conservation concern list for Surrey categories 1-4 (devised by Surrey Bird Club, see Table 7 – the species must be either breeding or wintering as specified in the table).**
- S35 Any site which supports a breeding bird assemblage or wintering waterbird assemblage of county importance as indicated by Table 10.**

Justification

- 18.1.1 Sites supporting more than 5% of the Surrey population are important for the maintenance of the total county population.
- 18.1.2 The list of species of conservation concern within Surrey has been devised by Surrey Bird Club using the criteria shown in Table 9.
- 18.1.3 Criteria S32 is intended to identify important assemblages of different bird species, characteristic of particular habitats, which are significant in a County context. Table 10 has been adapted, by Surrey Bird Club, from the guidelines regarding the selection of SSSIs (Drewitt, Whitehead, & Cohen, 2023), to identify sites that are likely to be of county importance within Surrey. The species points have been adjusted from the SSSI guidelines so that one point has been added for a species with a Surrey breeding population of 10 or less pairs. Half a point has been added for species with a Surrey breeding population of 11-20 pairs. The score for sites indicative of high-quality habitat has been taken from the site threshold values in the SSSI guidelines and divided by 2 to indicate sites likely to be of county importance. The SSSI



guidelines do not include a scoring system for winter waterbird communities. The scoring system for this community has been retained from the previous SNCI criteria for Surrey (Surrey Wildlife Trust, 2008).

Application

- 18.1.4 Bird data can be complex and require expert interpretation therefore sites should be considered on a case-by-case basis following advice from local experts such as Surrey Bird Club.
- 18.1.5 When considering criteria S29 & S30, evidence should be based on the last 5 years of published bird data (i.e. the last 5 Surrey Bird reports published) and sites should be judged on the average population over 5 years if known. If more up to date information is provided by Surrey Bird Club, this can also be used.
- 18.1.6 Information on breeding and wintering species will be obtained from local experts including Surrey Bird Club. The list of species of conservation concern within Surrey states for each species whether a wintering or breeding population is required for each species. One-off sightings of birds cannot be used as evidence for these criteria. Regular sightings over at least two years within the breeding or wintering seasons (mid April- mid July for breeding and mid November - end February for wintering) would constitute sufficient evidence.
- 18.1.7 The boundary of the SNCI should include land used for activities associated with breeding, foraging and roosting. Local experts should advise on suitable boundaries on a case-by-case basis.
- 18.1.8 The value of a site within a complex should be considered as birds will often move between sites within a discreet geographical area depending on food availability, levels of human disturbance, predation and roosting opportunities.
- 18.1.9 Eligible sites will exclude domestic, agricultural and industrial buildings which are in use.



Table 7 – Bird species of Conservation Concern within Surrey

B = a breeding population, W = a wintering population, (B) = not currently breeding in the county but could do so in the near future

Species	Category				Notes
	1	2	3	4	
Bittern, <i>Botaurus stellaris</i>		W			Nationally rare breeder, small numbers winter in Surrey. Schedule 1 species.
Honey Buzzard, <i>Pernis apivorus</i>	B	B			Schedule 1 species
Goshawk, <i>Accipiter gentilis</i>	B	B			Schedule 1 species
Garganey, <i>Anas querquedula</i>	(B)	(B)			Has bred, may do so in future. Schedule 1 species
Pochard, <i>Aythya ferina</i>	B	B			
Little Ringed Plover, <i>Charadrius dubius</i>	B	B			Schedule 1 species
Hobby, <i>Falco subbuteo</i>	B	B			Schedule 1 species
Peregrine, <i>Falco peregrinus</i>	B	B			Schedule 1 species
Gadwall, <i>Anas strepera</i>		B			
Woodlark, <i>Lullula arborea</i>	B		B		Relatively common in Surrey, rare UK breeding species. Surrey holds large % of UK population. Schedule 1 species
Black Redstart, <i>Phoenicurus ochruros</i>	B	B			Schedule 1 species



Species	Category				Notes
Dartford Warbler, <i>Sylvia undata</i>	B		B		Relatively common in Surrey, rare UK breeding species. Surrey holds large % of UK population. Schedule 1 species
Lesser Redpoll, <i>Acanthis cabaret</i>	(B)	(B)			
Hawfinch, <i>Coccothraustes coccothraustes</i>	B	B / W			
Shoveler, <i>Anas clypeata</i>	(B)	(B)			Has bred, might to do in the future.
Turtle Dove, <i>Streptopelia turtur</i>	B	B		B	
Lesser Spotted Woodpecker, <i>Dryobates minor</i>	B	B		B	
Tree pipit, <i>Anthus trivialis</i>		B		B	
Spotted flycatcher, <i>Muscicapa striata</i>				B	
Cuckoo, <i>Cuculus canorus</i>				B	
Lapwing, <i>Vanellus vanellus</i>		B		B	
Little Egret, <i>Egretta garzetta</i>		B			
Barn Owl, <i>Tyto alba</i>		B			Schedule 1 species
Shelduck, <i>Tadorna tadorna</i>		B			
Teal, <i>Anas crecca</i>		B			



Species	Category			Notes
Smew, <i>Mergus albellus</i>		W		
Grey Partridge, <i>Perdix perdix</i>		B / W		
Ringed Plover, <i>Charadrius hiaticula</i>		B		Regularly breeds in Spelthorne (which Surrey Bird Club do not report on), and occasionally within 'old' county boundary.
Jack Snipe, <i>Lymnocyptes minimus</i>		W		
Snipe, <i>Galinago gallinago</i>		B		
Curlew, <i>Numenius arquata</i>		B	B	
Redshank, <i>Tringa totanus</i>		B		
Long-eared Owl, <i>Asio otus</i>		W / B ?		Could breed but very hard to establish because of ecology of species
Yellow Wagtail, <i>Motacilla flava</i>		(B)		Has bred, might do in the future and/or in Spelthorne (which Surrey Bird Club do not report on).
Grasshopper Warbler, <i>Locustella naevia</i>		B	B	
Wood Warbler, <i>Phylloscopus sibilatrix</i>		(B)	(B)	Has bred, may do in the future. Although UK distribution is shifting north and west.
Marsh Tit, <i>Parus palustris</i>		B	B	
Willow Tit, <i>Parus montanus</i>		(B)	B	Has bred but is now extinct in the county. UK distribution is shifting north and west. Do still breed in adjacent counties.
Tree Sparrow, <i>Passer montanus</i>		(B)		Has bred, may do in future.



Species	Category			Notes	
Siskin, <i>Carduelis spinus</i>		B			
Common Crossbill, <i>Loxia curvirostra</i>		B			
Corn Bunting, <i>Miliaria calandra</i>		(B) / W		Has bred, may do in future.	
Nightjar, <i>Caprimulgus europaeus</i>			B		
Nightingale, <i>Luscinia megarhynchos</i>			B	B	Large population decline in UK and Surrey.

Category 1: UK rare breeding species (either scarce or scarce breeders) as identified by the UK Rare Breeding Birds Panel. Often Schedule 1 species.

Category 2: A species with 20 or fewer breeding pairs in Surrey, which is restricted to 10 or less breeding sites, with 20 or less wintering individuals in Surrey or that is restricted to 10 or less wintering sites.

Category 3: A species for which Surrey holds a significant percentage (> 1%) of the UK breeding population.

Category 4: A species in significant national decline (Red on the BTO BOCC list (Stanbury, et al., 2021)), in decline in Surrey and where climate change is or is likely to be a factor in driving that decline.



Table 8 – Bird assemblages likely to be of county importance in Surrey

Lowland damp grassland			
Mute Swan	3	Marsh Harrier	5
Shelduck	4	Lapwing	2.5
Gadwall	4	Snipe	3
Teal	4	Curlew	2
Pintail	6	Redshank	3
Garganey	5.5	Cuckoo	2.5
Shoveler	4	Grasshopper Warbler	4
Pochard	5	Sedge Warbler	1
Grey Heron	3	Yellow Wagtail	3
Little Egret	3.5	Reed Bunting	1
Cattle Egret	6.5		
A score of 12.5 or more points is indicative of high-quality habitat			

Lowland open waters and their margins			
Greylag Goose	2	Spotted Crake	6
Mute Swan	3	Avocet	4
Shelduck	4	Little Ringed Plover	4
Gadwall	4	Ringed Plover	4
Teal	4	Snipe	3
Pintail	6	Redshank	3
Garganey	5.5	Common Tern	2.5
Shoveler	4	Cuckoo	2.5
Pochard	5	Kingfisher	3
Tufted Duck	2	Bearded Tit	5
Bittern	5	Willow Tit	4
Little Egret	3.5	Cetti's Warbler	3
Grey Heron	3	Grasshopper Warbler	4
Great White Egret	6.5	Savi's Warbler	7
Little Grebe	3	Sedge Warbler	1
Great Crested Grebe	3	Marsh Warbler	7
Black-Necked Grebe	6	Reed Warbler	1
Marsh Harrier	5	Yellow Wagtail	3
Osprey	5	Grey Wagtail	2
Water Rail	3	Reed Bunting	1
A score of 23.5 or more points is indicative of high-quality habitat			



Lowland fen (without open water)			
Grey Heron	3	Bearded Tit	5
Great White Egret	6.5	Cetti's Warbler	3
Bittern	5	Grasshopper Warbler	4
Marsh Harrier	5	Savi's Warbler	7
Water Rail	3	Sedge Warbler	1
Spotted Crake	6	Marsh Warbler	7
Snipe	3	Reed Warbler	1
Cuckoo	2.5	Reed Bunting	1
A score of 8 or more points is indicative of high-quality habitat			

Lowland heathland			
Hobby	3.5	Woodlark	3
Snipe	3	Dartford Warbler	3
Curlew	3	Grasshopper Warbler	4
Redshank	2	Stonechat	2
Cuckoo	2.5	Wheatear	2
Long-eared Owl	4	Tree pipit	1.5
Nightjar	3	Linnet	1
A score of 9 or more points is indicative of high-quality habitat			

Lowland scrub (excluding heath)			
Turtle Dove	4	Grasshopper Warbler	4
Cuckoo	2.5	Nightingale	3
Long-Eared Owl	4	Linnet	1
Willow Tit	4	Lesser Redpoll	2
Long-Tailed Tit	1	Bulfinch	1
Garden Warbler	1	Yellowhammer	1
Lesser Whitethroat	2		
A score of 7 or more points is indicative of high-quality habitat			



Lowland farmland			
Grey Partridge	3	Barn Owl	3
Quail	5	Magpie	1
Marsh Harrier	5	Rook	1
Buzzard	2	Swallow	1
Kestrel	2	Tree Sparrow	2
Hobby	3.5	Yellow Wagtail	2
Lapwing	3	Pied Wagtail	1
Curlew	3	Linnet	1
Stock Dove	1	Yellowhammer	1
Turtle Dove	4	Reed Bunting	1
Cuckoo	2.5	Corn Bunting	3.5
A score of 13 or more points is indicative of high-quality habitat			

Woodland			
Grey Heron	3	Goldcrest	1
Little Egret	3	Coal Tit	1
Honey Buzzard	6	Willow Tit	4
Red Kite	4	Marsh Tit	2.5
Goshawk	5	Long-Tailed Tit	1
Sparrowhawk	2	Wood Warbler	4
Buzzard	2	Garden Warbler	1
Osprey	5	Nuthatch	1
Hobby	3.5	Treecreeper	1
Woodcock	2	Spotted Flycatcher	2.5
Stock Dove	1	Nightingale	3
Cuckoo	2.5	Redstart	1.5
Tawny Owl	2	Tree Pipit	1.5
Long-Eared Owl	4	Siskin	2
Wryneck	7	Lesser Redpoll	2
Green Woodpecker	2	Common Crossbill	3
Great Spotted Woodpecker	1	Bullfinch	1
Lesser Spotted Woodpecker	4	Hawfinch	5
Jay	1	Firecrest	3
Raven	3.5		
A score of 19 or more points is indicative of high-quality habitat			



Winter waterbird community			
Little Grebe	2	Goldeneye	3.5
Great Crested Grebe	2	Smew	4
Black-Necked Grebe	4	Goosander	3.5
Cormorant	2	Coot	1
Mute Swan	2	Snipe	2
Shelduck	3	Jack Snipe	4
Wigeon	2	Redshank	3
Gadwall	2	Golden Plover	2.5
Teal	2	Lapwing	2
Pintail	3	Dunlin	3
Shoveler	2.5	Common Gull	1
Pochard	2	Herring Gull	1
Tufted Duck	2	Great Black-Backed Gull	2
Lesser Black-Backed Gull	1		
A score of 20 or more points is indicative of high-quality habitat			



19 Invertebrates

19.1.1 Note: Some invertebrate groups are sufficiently well known in Surrey to merit special treatment within these guidelines. The importance of sites for dragonflies, butterflies and moths should therefore be assessed using the criteria outlined within the specific sections for these species groups (19.3-19.5) rather than by using the general criteria for invertebrates below (19.2).

19.2 General

Sites which meet the following criteria should be considered for selection;

Criteria

- S36 Sites supporting one or more species that is nationally rare or is classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) under IUCN criteria.**
- S37 Sites supporting an important assemblage or population(s) of a species of principal importance.**
- S38 Sites supporting an important assemblage or population(s) of a nationally scarce species, or a species considered rare or scarce within Surrey.**
- S39 Sites with at least four Specific Assemblage Types (SATs) in favourable condition according to Pantheon.**
- S40 Sites which have been identified as Important Invertebrate Areas by Buglife.**

Justification

- 19.2.1 The UK supports nearly 40,000 invertebrate species. They are vital to our lives, underpinning our wildlife-rich habitats and the ecosystem services which they provide. However, a number of recent studies have shown dramatic declines in insect abundance and biomass (Hallmann, 2017). Surrey's State of Nature report found that out of 2110 species looked at 12.7% were locally extinct, 2.5% threatened, 1.8% near threatened and 16.4% in decline. It is therefore important that sites are selected to support these species where required.
- 19.2.2 Pantheon is an analytical tool developed by Natural England and the Centre for Ecology and Hydrology to assist invertebrate nature conservation in England. The programme gives ecologists a method to provide comparative measures of the value of sites for invertebrates. Pantheon gives a condition status for various different habitat/assemblage types (SATs) based on the invertebrates present. Favourable status is based on passing a threshold of qualifying species and is based on assessing the condition of SSSIs.
- 19.2.3 Important Invertebrate Areas (IIAs) have been identified by Buglife based on 45 million records across Great Britain. They are nationally or internationally significant places for the conservation of invertebrates and the habitats upon which they rely. The criteria for the selection of IIAs is shown in Table 9 below.



Table 9 – Criteria for the identification of Important Invertebrate Areas (IIAs)

Criterion	Description
A(i) Area supports globally endangered species	Species listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) on IUCN global red lists.
A(ii) Area supports European endangered species	Species listed as Critically Endangered (CR) or Endangered (EN) on IUCN European red lists.
A(iii) Area supports nationally Critically Endangered species	Species listed as Critically Endangered (CR) on national red lists.
A(iv) Area supports an endemic species	Species recognised as endemics, only found in the UK and not widely distributed.
B Area supports a nationally important assemblage of rare or threatened invertebrates	A single score for each hectad – calculated as total number of species recorded from the area (each species scores 1). Qualifying species: <ul style="list-style-type: none"> - Species listed as Vulnerable (VU) on IUCN European red lists, or listed on Habitats Directive Annexes Ila and Iva, or Bern Convention Appendix II or III. - Species listed as Endangered (EN) on national red lists. - Species listed as nationally rare (GB NR or equivalent).

Application

- 19.2.4 Lists of invertebrates found in Surrey and meeting the criteria above can be found in The State of Surrey’s Nature: lists of Species of Conservation Concern in Surrey (Surrey Nature Partnership, 2017).
- 19.2.5 The status of invertebrates changes regularly due to updated knowledge and changes in invertebrate distribution. Consultation should take place with appropriate experts in order to determine whether a species remains important at the time of site selection.
- 19.2.6 When selecting under criteria S37 & S38, a site should only be selected where it is considered by an appropriately expert organisation or individual as being of importance for the maintenance of the conservation status of one or more invertebrate species within the county (some of these species may be widespread and abundant in parts of Surrey) and where this decision is ratified through the decision making process undertaken by the Local Sites Partnership.
- 19.2.7 Ideally, site selection should be based on stable populations that have been resident for at least 3 years, however this is only a guideline and will depend on the data available. It is important to ensure that the site provides suitable habitat conditions to provide the key resources necessary for survival of the species. to exclude vagrants or wanderers.
- 19.2.8 When deciding the boundary of the site it should be remembered that many invertebrates use different habitats at different life-stages. A saproxylic beetle for example may require old trees for the larval stage, but scrub and flowers as an adult.



- 19.2.9 Pantheon can be accessed at the following website: [Home | Pantheon \(brc.ac.uk\)](https://www.brc.ac.uk/). Users import lists of invertebrates (called “samples”) into Pantheon, which analyses the sample, attaching associated habitats and resources, assemblage types, conservation status, habitat fidelity scores and other information against them. This information can be used to determine site quality by revealing whether the species list is indicative of good quality habitat, inform on species ecology and assist in management decisions by revealing the key ecological resources.
- 19.2.10 Information on IIAs can be found on the following website; <https://www.buglife.org.uk/our-work/important-invertebrate-areas/> Although currently only broad-scale hectad maps are available, over the coming years, Buglife will work with local stakeholders and experts to produce fine-scale maps for each IIA to identify the core network of sites that help to support the IIAs invertebrate interest. Only the fine-scale maps should be used to select SNCIs.
- 19.2.11 A list of SPI invertebrates found within Surrey can be found in Appendix II of Biodiversity & Planning in Surrey (Surrey Nature Partnership, 2018).

19.3 Dragonflies

Sites which meet the following criteria should be considered for selection;

S38 Sites which meet the British Dragonfly Society criteria for a Priority Site of national or local importance.

Application

- 19.3.1 The British Dragonfly Society have a set of criteria for identifying Priority Sites of both National and local importance (British Dragonfly Society, 2022). The guidance for applying the criteria is shown in Appendix 6. The criteria include a list of nationally important species and species of local importance to Surrey as well as a diversity threshold for the assemblage of dragonflies on a site specifically for Surrey (18).

19.4 Butterflies

Sites which meet the following criteria should be considered for selection;

Criteria

- S41 Sites supporting a population of a butterfly species within List A in Table 11.**
- S42 Sites supporting a significant population of a species within List B in Table 11.**
- S43 Any site that regularly supports an assemblage of 21 or more butterfly species.**

Justification

- 19.4.1 Since 1850, VC17 (Surrey) has lost nine species of butterfly (Clarke, 2021). Greatest conservation effort should go into protecting the existing species to prevent any further extinctions. Priority should be given to those species at greatest risk of extinction based on scientific analysis. Second priority should be given to those species at risk of extinction from England, and thirdly from Europe.



- 19.4.2 Although not all the species listed are rare in Surrey, they are still vulnerable and the best sites in the county should be identified and protected.
- 19.4.3 These criteria have been developed in consultation with Butterfly Conservation, Surrey and SW London and the County Butterfly Recorder for VC17.
- 19.4.4 Species listed in Table 11 are those that are considered notable due to being;
 - A resident species of Surrey, excluding migrants and unauthorised introductions/releases (Willmott K, 2013) and
 - Being recognised as one or more of the following:
 - A threatened species in Surrey according to IUCN Red List Criteria (Clarke HE, 2020).
 - A threatened species in England according to IUCN Red List Criteria (Fox R, 2022)
 - A species of Principal Importance (SPI) in the UK under Section 41 of the NERC Act 2006
 - A threatened species in Europe according to IUCN Red List Criteria (Van Swaay C, 2010).
 - Listed as a highest or high priority species for the south east of the UK by Butterfly Conservation (Wheatley, 2017)
 - Identified as a top priority or high priority species in Surrey by Butterfly Conservation, Surrey and SW London, 2023.
- 19.4.5 Sites which do not support notable species but which support a notable assemblage of butterflies should also be protected. Butterfly Conservation has defined an important assemblage criterion as 50% of the average number of resident species recorded within that area (Wheatley, 2017).

Application

- 19.4.6 The status of species in the UK and Surrey will change with time and our understanding and it is therefore important to ensure that the most recent information is consulted. Table 11 is based on knowledge available at the time of writing. Consultation with appropriate experts may be advisable in order to determine whether a species remains important at the time of site selection.
- 19.4.7 Butterfly Conservation (Wheatley, 2017) have defined evidence required for sites believed to support butterfly species (confirmed, probable and possible) as detailed in Table 10 below;

Table 10 – Evidence required for sites believed to support butterfly species

Confidence category	Evidence
Confirmed	<ul style="list-style-type: none"> - Oviposition / ovum - Larvae - Pupae - Emerging adult - Territorial behaviour by adult
Probable	<ul style="list-style-type: none"> - Copulating pair - Multiple adults during one site visit in each of the last five years



Confidence category	Evidence
	<ul style="list-style-type: none">- Known larval foodplant present and both male and female recorded in two of the last five years
Possible	<ul style="list-style-type: none">- Adult nectaring- Adult roosting- Multiple adults during one site visit in two of the last five years- Known larval foodplant present and adult recorded in last five years

19.4.8 Authorised introductions in accordance with Butterfly Conservation’s policy on introductions and reintroductions (Butterfly Conservation, 2010) should be supported. However, unauthorised introductions, which are possibly an offence under the Wildlife and Countryside Act 1981 should be excluded from consideration.

19.4.9 Single records should not be used so as to exclude wanderers or vagrants.

19.4.10 Species can be regarded as extinct at a site if a 30 year period has elapsed without the species being recorded. However at least one survey in good weather at appropriate time of year needs to have been undertaken before a site’s SNCI status is removed

19.4.11 Whether the population is ‘significant’ should be determined on a species by species basis in consultation with appropriate experts.



Table 11 – Butterfly species of importance within Surrey

Species	SPI	Red List	BC Priority Species for SE UK	Notes on Surrey populations	List A (Top Priority)	List B (High Priority)
Wood White	✓	EN	Highest	Surrey's rarest butterfly. Currently stable in Surrey. Was once widespread in deciduous woodlands, due to changes in forestry practices, now only occurs in the forests of the West Weald with the core population in the Chiddingfold Forest complex.	✓	
Grayling	✓	EN	Highest	Vulnerable to extinction from Surrey. Now predominantly a coastal species in the UK. Lost from the North Downs. The Surrey Heaths are one of its few remaining inland strongholds.	✓	
Silver-studded Blue	✓	VU	Highest	A heathland species which has undergone declines throughout its range in the UK. Vulnerable to extinction from Surrey. Lost from the North Downs and now confined in Surrey to the Thames Basin and Greensand Heaths with a few outlying colonies.	✓	
Adonis Blue		VU	Highest	Habitat specialist on calcareous grasslands. This is arguably the butterfly species most likely to be lost from Surrey. It is only reliably present on three sites along the North Downs and numbers have been in steep decline.	✓	
Wall		EN	High	A species that was present in Surrey but for some years extinct and now found predominantly in coastal locations in the UK. However, there are signs that the butterfly may possibly be staging a comeback in SE England. If it returns to Surrey, any site supporting a population should be considered for selection.	✓	
Chalk Hill Blue		VU	High	A habitat specialist of calcareous grassland and currently doing well in Surrey, although declining in other parts of the UK.		✓
Grizzled Skipper	✓	VU	High	A species that has declined massively due to habitat loss. Still reliably found on chalk grassland sites along the North Downs, in some parts of the Weald, on some brownfield sites and a few on heaths.		✓
Silver-spotted Skipper		VU	High	Habitat specialist on calcareous grasslands. In the 1970s there were fears for the survival of this species in the UK and the North Downs in Surrey was one of its last strongholds. However, the warming climate appears to have benefitted the butterfly and it is now extending its range.		✓



Species	SPI	Red List	BC Priority Species for SE UK	Notes on Surrey populations	List A (Top Priority)	List B (High Priority)
White Admiral	✓	VU	High	Habitat specialist of deciduous woodlands present across Surrey but thinly spread.		✓
Small Blue	✓	NT	High	Habitat specialist on calcareous grasslands. Declined to fragmented colonies along the North Downs during the 20 th century. Conservation work creating 'stepping stones' of habitat have enabled it to spread more widely in recent years. These however require maintenance and so the species remains vulnerable in Surrey.		✓
Dark Green Fritillary		NT	High	Habitat specialist on calcareous grasslands which in recent years has increased its distribution and abundance along the North Downs. There are a few records off the chalk.		✓
Dingy Skipper	✓	LC	High	A species widespread on the North Downs and with scattered records across the Weald, including woodland rides and brownfield sites.		✓
Purple Emperor		LC	High	A spectacular canopy species which is thinly spread across Surrey and almost certainly more common than is generally realised.		✓
Brown Hairstreak	✓	VU	High	Until a few years ago this species was thought to be a rare, only present in the West Weald and at a few other Surrey sites. However recent egg surveys show it to be widespread throughout Surrey, except on the heathlands where blackthorn is scarce. The species seems to be increasing its range, but distribution remains extremely thin. Significant populations acting as feeder populations should be protected.		✓
White-letter Hairstreak	✓	VU	High	An elusive canopy species breeding on species of elm – its sole larval food plant. It was catastrophically impacted by successive waves of Dutch Elm Disease (DED) in the 1970s and 1980s. Surveys in recent years have shown it to be remarkably resilient and is probably under-recorded in Surrey.		✓



19.5 Moths

Sites which meet the following criteria should be considered for selection;

Criteria

- S44 Sites supporting one or more nationally endangered (CR, EN) or nationally rare larger moth species.**
- S45 Sites supporting an important assemblage or population(s) of a Nationally Scarce, Vulnerable (VU) or Near Threatened (NT) larger moth species.**
- S46 Sites supporting an important assemblage or population(s) of larger moth species that are Rare or Scarce in Surrey.**
- S47 Sites supporting an important assemblage or population(s) of larger moths or microlepidoptera species included in Butterfly Conservation's UK list of Conservation Action priority species.**
- S48 Sites supporting an important assemblage or population(s) of microlepidoptera that are scarce or rare both nationally and in Surrey.**

Application

General

- 19.5.1 The status of species in the UK and Surrey will change with time and our understanding and it is therefore important to ensure that the most recent information is consulted. The tables included within this report (Appendices 7 & 8) are based on knowledge available at the time of writing. Consultation with appropriate experts may be advisable in order to determine whether a species remains important at the time of site selection.
- 19.5.2 The following are regarded as evidence for confirmed or probable breeding in order of importance.
 - Confirmed mating, ova, larvae or pupae at the site.
 - Trapping, or observing a gravid female egg-laying, at the site.
 - Foodplants of the species present on site or close by and regular occurrence of the species at the site over successive years.
 - Occurrence of several individuals of the particular species recorded at the site on a single visit.
- 19.5.3 Single records should not be used so as to exclude wanderers or vagrants.
- 19.5.4 Species can be regarded as extinct at a site if a 15yr period has elapsed without the species being recorded. However at least one survey in good weather at appropriate time of year needs to have been undertaken before a site's SNCI status is removed.
- 19.5.5 Whether the assemblage or population is 'important' should be determined using the notes below and in consultation with appropriate experts.
- 19.5.6 The presence of species that rely on foodplants associated with important habitats discussed in the habitat criteria may be used to support borderline cases for habitat selection.



19.5.7 Appendices 7 or 8 do not include species currently considered extinct in Surrey, however, should such a species or a notable species new to Surrey be discovered, these should be considered using the criteria above.

When considering S44

19.5.8 Nationally endangered species encompass those with a conservation status of Critically Endangered (CR) or Endangered (EN) using current IUCN red list categories. The conservation status of larger moths has recently been assessed taking into account their rate of population decline as well as scarcity based on hectad occupancy (Fox et al, 2019). Any site supporting a CR species should be considered for legal (SSSI) protection. The conservation status of microlepidoptera has not been assessed as of the time of writing.

When considering S45

19.5.9 When considering sites supporting Nationally Scarce, VU or NT larger moth species, only sites supporting strong nationally or locally important populations should be considered for selection. Some species under these categories are considered fairly common and widespread in Surrey. High priority should be given to species that are also scarce (<4% of tetrads) or rare (<1% of tetrads) in Surrey. As a guide sites supporting an assemblage of two or more Surrey local species (occurring in <10% of tetrads) should be considered. Sites supporting species occurring in >10% of tetrads in Surrey may be considered of less importance unless Surrey is considered a stronghold of strategic importance for their conservation nationally. (refer to Appendix 7 for Surrey distribution information of Nationally Scarce, VU and NT species at the time of writing of this criteria).

When considering S46

19.5.10 This criterion covers species that are not necessarily considered threatened or near threatened nationally but are scarce (<4% of tetrads) or rare (<1% of tetrads) in Surrey. As a guide, sites supporting an assemblage of two or more such species should be considered. Some species may now be considered extinct in Surrey but are included in case they are re-found; a site supporting any of these should be considered. (Refer to Appendix 7 for a list of rare or scarce larger moths of Surrey).

When considering S47

19.5.11 Butterfly Conservation's UK list of Conservation Action priority species (Butterfly Conservation, 2018) considers microlepidoptera as well as the larger moths. Sites supporting any species in Table 3 of that report: "Prioritisation for conservation action of 103 UK moth species" should be considered for selection. These moths are those previously classified as BAP1 or 3- conservation action priority species plus 22 additional species that are now recognised as equally threatened.

When considering S48

19.5.12 Microlepidoptera (micro-moths) have not been assessed using current IUCN red list categories as there is not an equivalent set of data to that used to assess changes in population in larger moths.



- 19.5.13 A review of scarcity of microlepidoptera was undertaken in 2012 (Davis T. , 2012). When it was published, Nationally Rare was split into pRDB1, 2 and 3 and Nationally Scarce into A (<31 hectads) and B (31-100 hectads).
- 19.5.14 Microlepidoptera that are scarce or rare both in Surrey and nationally add up to 287 species, 257 of which were recorded during surveying for the Surrey Atlas (Palmer.R, Porter.J, & Collins, 2012) (summarised in Appendix 8).
- 19.5.15 Species that are rare or scarce only nationally or only within Surrey could be used to support borderline cases for habitats selected under the habitat criteria.



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