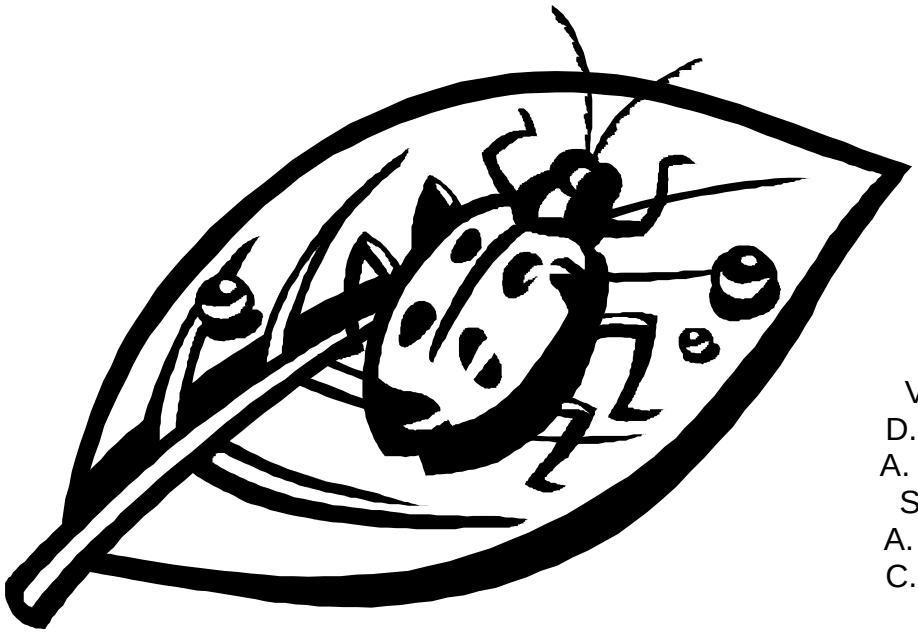
Guidelines for the selection of Local Wildlife Sites in Staffordshire



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1 Introduction

1.1 Background

Sites of Biological Importance (SBIs) were first identified and listed in Staffordshire during the first County Habitat Survey of 1979-84 and since this time have been the main system for identifying and monitoring sites of local conservation importance. In the past, these sites were selected by the Staffordshire Grading Committee, a panel of experts representing Staffordshire Wildlife Trust, English Nature, Staffordshire County Council and the Potteries Museum.

With increased knowledge and with conservation becoming more mainstream there is a need to rationalise the selection procedure by adding set guidelines so that it can stand up to close scrutiny e.g. in a Public Inquiry.

This document aims to produce clear guidance so that the selection of County Wildlife Sites is as objective as possible.

1.2 Coverage

These guidelines are intended to apply to Staffordshire excluding the Peak Park and Stoke-on-Trent. In the Peak Park, different mechanisms for the identification and protection of land of nature conservation value apply. Stoke-on-Trent has its own site system which is run by the City Council. These are referred to as Natural Heritage Sites and are equivalent to SBIs. This designation has been set up separately because the City Council has unitary status.

1.3 Staffordshire

Staffordshire is a midland county situated to the north of the centre of England. Its greatest length from north to south is about 90 kilometres and its extreme width from east to west is nearly sixty kilometres. Staffordshire covers two thousand seven hundred square kilometres.

Staffordshire has three well-defined physical regions: the northern hills, the central plain and the southern plateau. The hill country is divided by a series of parallel rivers that flow from northwest to southeast directly into the Trent or into the Dove, which joins the Trent on the Derbyshire border. The central plain is a low lying tract of land watered by the River Trent, which rises on the moors near Biddulph and sweeps eastwards in a great curve. The southern plateau protrudes like a wedge into the central plain and rises to its highest point on Cannock Chase. The topography is such that nearly the whole of Staffordshire is in the catchment area of the Trent. The main exception is the southwest of the county, which is in the Severn catchment.

1.4 Nature Conservation Resource

There is no entirely 'natural' habitat left in Staffordshire as it has all been influenced to some extent by human activity. Most has been heavily modified, for example, agriculturally improved grassland, arable fields and conifer plantations. These habitats often support only a limited range of plant and animal species and so have low biodiversity.

The habitats which usually support greatest biodiversity are those which have a long history of low intensity management. These are referred to as semi-natural habitats; within Staffordshire these include:

- Broadleaved Woodland
- Wood-pasture and parkland
- Hedgerows
- Grasslands
- Heathland
- Standing water
- Streams and rivers
- Wetlands

Most of the remaining semi-natural habitat in Staffordshire occurs within designated nature conservation sites, which are described below.

Other habitats that are considered in the guidelines include traditionally farmed land and previously developed sites. Although these are not regarded as semi-natural habitats, they often support assemblages of important species, such as farmland birds.

1.5 Nature Conservation Site System

1.5.1 Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs)

Sites of Special Scientific Interest (SSSIs) are the finest sites for wildlife and natural features, supporting many characteristic, rare and endangered species, habitats and natural features. The purpose of SSSIs is to safeguard for present and future generations a series of sites that are individually of high natural heritage importance. They make a vital contribution to the ecological processes upon which we all depend.

The SSSIs cover approximately 8% of England, and alone they cannot fulfil national biodiversity and geological targets. Many SSSIs are small and isolated, and have to be managed as an integral part of the surrounding landscape. Conservation action is required throughout England if wildlife and natural features are to flourish and enrich our lives. Supportive land use and sustainable development policies, and active conservation management, are vital to the well-being of SSSIs. The majority of SSSIs are privately owned, and those in a favourable condition owe their continued importance to the way in which their owners and occupiers have managed and cared for them.

Selecting and designating SSSIs under Section 28 of the Wildlife and Countryside Act, 1981 (as amended) is a key function of the Council of English Nature, whose members are appointed by the Secretary of State for Environment, Food and Rural Affairs. Sites are selected after detailed scientific survey and evaluation against published guidelines.

Within the area covered by the Staffordshire Biodiversity Action Plan there are 57 SSSIs of which eight are notified purely for their geological features. The biological SSSIs cover some 3900 ha, 1.5% of area.

Special Areas of Conservation (SACs) are sites of European importance designated under the Conservation (Natural Habitats, &c.) Regulations 1994 (Habitats Regulations) that implement Council Directive 92/43/EEC (Habitats Directive). All sites designated under this European legislation are

already SSSIs and in the Biodiversity Action Plan area include Cannock Chase, Cannock Extension Canal, Chartley Moss, Mottey Meadows, Pasturefields Salt Marsh and the River Mease.

Ramsar Sites are designated under the terms of the Convention on Wetlands of International Importance. Again, all sites are also SSSIs and include Aqualate Mere, Betley Mere, Black Firs & Cranberry Bog, Chartley Moss and Cop Mere. There are four National Nature Reserves within the Plan area, all being managed by English Nature. A further eight SSSIs are partly or wholly managed by the Staffordshire Wildlife Trust as nature reserves.

1.5.2 Sites of County Biological Importance and Biodiversity Alert Sites (SBIs and BASs)

These are sites of local importance and contain most of the best remaining areas of semi-natural habitat in the county. The terminology in Staffordshire for local wildlife sites including Sites of Biological Importance and Biodiversity Alert Sites has evolved over twenty-five years. A clear description of the different terms is set out in Appendix 1.

Sites were selected as the result of a series of County Habitat Surveys, carried out between 1979 and 1984 with resurveys between 1995 and 2004. The surveys and resurveys were designed to identify and evaluate the best remaining areas of semi-natural vegetation within Staffordshire, together with as much information as possible about their associated fauna. In the past, selection was carried out on similar guidelines to those employed by English Nature for the selection of SSSIs, only applied less rigorously, and on a county rather than a regional or national basis. The grading has not until now followed written guidelines, but has rather been based on the collective experience of the grading committee. This committee consists of representatives from Staffordshire Wildlife Trust, English Nature, Staffordshire County Council, the Environment Agency and the Potteries Museum, Stoke-on-Trent.

The series of sites within Staffordshire are ranked into two categories of value, namely Sites of Biological Importance and Biodiversity Alert Sites. Sites of Biological importance are sites of 'substantive nature conservation value' in a County context and are given a degree of protection through the planning system. Biodiversity Alert Sites are sites of local rather than County importance. These sites have some nature conservation value and have the potential to be of 'substantive nature conservation value' through appropriate management. This designation helps target land management advice to bring new sites into the SBI system.

Information on all these sites is held by the County Council, Staffordshire Wildlife Trust and the Potteries Museum, these bodies have co-operated in servicing, monitoring and updating the record system to date. In 2001, a partnership of these organisations was formed to manage data on habitats and species, including SBIs. This partnership is known as Staffordshire Ecological Record and employs an Ecological Records Co-ordinator.

The grading system for local wildlife sites within Staffordshire may be described as follows:

"*Sites of Biological Importance (previously Grade 1 SBIs)*
Generally these sites are the best remaining examples within the County of habitats which rate highly on the basis of such factors as naturalness, diversity, or rarity of species or communities. These sites are frequently the remnants of larger areas of semi-natural vegetation, which may not be either sufficiently extensive or undisturbed to warrant SSSI status, but they are important examples of characteristic or notable vegetation types or habitat complexes, sometimes with associated dependant plant or animal species. As such, they provide an invaluable complement to the SSSIs and contribute the most significant element in the County's nature conservation resource, most of which is irreplaceable in the event of loss or damage.

Biodiveristy Alert Sites (previously Grade 2 Sites)
These sites are of lesser significance on a County basis, because of lower intrinsic quality, smaller size or damage or disturbance. Nevertheless they collectively form a significant part of the County's nature conservation resource, and in some cases a valuable 'reserve series' for some of the Sites of Biological Importance.

The degree of protection merited by each site needs to be assessed on an individual basis and in the light of prevailing circumstances. Both SBIs and BASs contribute significantly to the maintenance of biodiversity in the wider countryside, now recognised as a major local and national objective."

Staffordshire (excluding the Peak Park) currently contains approximately 750 SBIs, covering a total of 11207 hectares (4.1% of the total land area). Since the 1995-2000 re-survey the number of sites has fallen, due to sites being destroyed or downgraded or to the recent policy of combining adjacent SBIs into one large site.

The list of SBIs is not exhaustive and there are also likely to be a number of other sites that may be of SBI standard, but have not been recognised. These may be sites that have not yet been surveyed, or sites that have not yet been incorporated into the data system.

1.6 Policy background

In England, the policy framework for planning control is provided by the development plan system. In Staffordshire this comprises the Staffordshire and Stoke-on-Trent Structure Plan 1996-2011, together with subject-based local plans for minerals and waste (prepared by the County and Stoke-on-Trent City Councils) and district-wide local plans prepared by the eight district local authorities within the County.

The Structure Plan provides a broad planning framework in the form of a comprehensive, sustainable strategy relating to land-use, transportation and the environment. Included in this are a series of policies and proposals for safeguarding and enhancing the County's natural and cultural assets. Among these policies there are 13 that have a direct or indirect bearing on nature conservation. Perhaps the most significant of these policies (NC6) refers to important semi-natural habitats as follows:

> "*In considering or formulating proposals for development or land use change, planning authorities will ensure, wherever possible, that damage to important semi-natural habitats or other features or sites of significant nature conservation or geological value is avoided. Particular care will be taken to safeguard and consolidate the integrity of linear and other landscape features which are of major importance for wild fauna and flora. Where damage is unavoidable, measures to mitigate or compensate through establishment of replacement habitat or features should be taken, wherever possible*."

The 13 policies in the Staffordshire and Stoke-on-Trent Structure Plan 1996-2011 are supplemented by more specific policies relating to individual sites and specific habitats of nature conservation importance, and to the safeguard of legally protected species.

The Structure Plan Policies are in turn developed, as appropriate, in the various district-wide local plans, and in the subject-based local plans, for example in relation to mineral working and restoration. Local Plans also contain specific policies, which refer to protection of sites, species and habitats outside legally designated sites (SSSIs etc.). For details of these policies it is advised that enquirers refer to the current copy of the relevant Plan or Plans.

Government guidance (Planning Policy Guidance no. 9) indicates that there is a clear need to recognise and identify the County's important nature conservation sites, species and features.

> *"Structure plans*
> *22. Structure plans and part I of unitary development plans set out general policies and proposals on key strategic issues, taking account of the appropriate published national and regional policy guidance. They should identify key sites of nature conservation importance, such as SSSIs, NNRs, SPAs, SACs and Ramsar sites, to establish a strategic framework and exemplify the particular characteristics of nature conservation interest in the plan area in their national and international context. Policies to be applied to these sites should reflect their relative significance ……, and place particular emphasis on the protection of internationally important sites……."*
>
> *"Local plans*
> *24 Local plans and part II of unitary development plans should identify relevant international, national and local nature conservation interests. They should ensure that the protection and enhancement of those interests is properly provided for in development and land-use policies, and place particular emphasis on the strength of protection afforded to international designations. Plans should offer reasonable certainty to developers, landowners and residents alike about the weight that will be given to nature conservation interest in reaching planning decisions. Nature conservation issues should be included in the surveys of local authority areas required by sections 11 and 30 of the Town and Country Planning Act 1990 to ensure that plans are based on fully adequate information about local species, habitats, geology and landform. Plans should be concerned not only with designated areas but also with other land of nature conservation value…..and the possible provision of new habitats……."*

This guidance indicates that there is a need to protect and maintain natural and semi-natural habitats of nature conservation value outside of statutory designated sites to sustain the variety of important habitats and species within the UK. The importance of this is reflected in the UK Biodiversity Action Plan where a number of key habitats in Staffordshire are listed.

Table 1 UK Biodiversity Action Plan Habitat types in Staffordshire

SBI Habitat Types	UK BAP Broad Habitat Type	UK Key Habitats in Staffordshire from UK BAP	NVC Community Types
Woodland	Broad-leaved, mixed and Yew Woodland	Lowland Beech and Yew Woodland	W12, W13, W14, W15
		Lowland Oak and Mixed Deciduous Woodland	W8a-d, W9, W13
		Upland Mixed Ash Woodland	W8d-g, W9, W13
		Upland Oak Woodland	W10e, W11, W16b, W17
		Upland Birch Woods	W10e, W11, W17, W4a & b
		Wet Woodland	W1-3, W4c, W5-7
Pasture Woodland and Mature Timber Habitat	Broad-leaved, mixed and Yew Woodland	Wood Pasture and Parkland	W10, W11, W14, W15, W16, W17
Boundary Features	Boundary and Linear Features	Hedgerows	
Grassland	Calcareous Grassland	Lowland Calcareous Grassland	CG1-CG9
		Upland Calcareous Grassland	CG9-CG14
Grassland	Acid Grassland	Lowland Dry Acidic Grassland	U1-3, U4a,c,d, SD10b & SD11b (inland examples only).
Grassland	Improved Grassland	Coastal and Floodplain Grazing Marsh	MG9 & MG10 (in floodplain situations) MG11, MG13
Grassland	Neutral Grassland	Lowland Meadow	MG4, MG5, MG8

Grassland	Fen, Marsh & Swamp	Purple Moor-Grass and Rush Pasture	M22-M26
Fen and Swamp	Fen, Marsh and Swamp	Reedbeds	S4
		Lowland Fens	M4-M6, M9-M11, M13
		Upland Flushes, Fens & Swamps	M27-29, M31-35, M37-38, S9-11 and others
Heathland	Dwarf Shrub Heath	Lowland Heath	H4, H8-10
		Upland Heath	H4, H8-10, H12, H16, H18, H21, M15, M16
Peatland Sites	Bogs	Lowland Raised Bog	M1-M3, M15
		Blanket Bog	M1-M3, M15, M17-M20, M25
Rivers & Streams	Rivers & Streams	Rivers	A2, A8-9, A11-20, S4-9 and others
Ponds & Lakes	Standing Open Waters & Canals	Ponds	OV28-35
Mixed Habitats & Structural Mosaics	Built up areas & Gardens	Open Mosaic Habitats on Previously Developed Land	Poor NVC Fit

2. SBI Guidelines

2.1 The Ratcliffe Criteria

The main guidelines upon which site selection is based are derived from criteria developed by Ratcliffe (1977) outlined below:

Size

The overall size of any given site is very important, generally the larger the area of habitat the more viable it is. The SBI guidelines contain size thresholds or different points for the different size of habitat. This size is partly influenced by habitat types; that is an area representing a reasonably sized pond or lake (e.g. 100 square metres) would not make a viable woodland. For this reason size is covered separately under each habitat type.

Diversity

In general the greater the diversity within the site, the better it is for wildlife. Features that add structural diversity, such as glades within woodland, are also important and are covered within habitats where appropriate. Species diversity is covered using a variety of methods; these include scores for species assemblages including birds, insects and plants. The guidelines for habitats are based on either species diversity or structural diversity or both.

Naturalness

This criterion is difficult to assess. Ratcliffe intended that sites formed and or maintained by largely natural processes would be regarded as more important than highly modified or artificial habitats. The difficulty is in that nearly all habitats have been influenced by the activities of humans to a greater or lesser extent. It is the degree to which this has occurred that is important in this context, so a grazed grassland with little or no fertilizer input is considered to be more natural than, say, a bowling green with high inputs and regular mowing and rolling. Species composition, particularly the presence of exotic species, tends to reflect the levels of intervention that have influenced a habitat, for example woodland containing rhododendron. In the guidelines woodlands and grassland with a representative range of typical species score more highly than habitats where these typical species are poorly represented.

Typicalness

Ratcliffe considered that typical habitats with characteristic species assemblages were important in their own right, and that an absence of rare species should not cause a habitat to be dismissed. This new Staffordshire system has been designed to address typicalness by giving relatively low weighting to rare species and concentrating on characteristic components of each habitat. This aims to prevent situations arising where the presence or absence of one species can affect the grade given to a site

Rarity

Both examples of rare habitats and rare species have been included in the guidelines. Where these habitats and species fulfil the guidelines they will be included within sites. Introduced species and artificially created habitats are generally excluded, although they may be considered if they have become well-established over a considerable period of time.

Potential Value

This is not widely used as a criterion in the Staffordshire system because it can often be difficult to evaluate. Grade 2 status (BAS) has previously been used to recognise sites which were considered to have the potential to reach Grade 1 status (SBI) following appropriate treatment, such as remedial management. It is envisaged that Grade 2 (BAS) status will continue to reflect this for habitats because improvements to diversity, structure etc could be recognised by a higher status following re-examination. For sites selected under the species guidelines it is often more difficult to judge what factors will effect an increase in the population or whether a smaller population can be reasonably be expected to remain viable in the meantime. For this reason Grade 2 (BAS) sites for species are not usually used.

Position in Ecological Unit

This is applied where two sites of similar habitat type are present within the same geographical area. The sites would be regarded as having greater importance than they would if present in isolation. This also applies for many species where the possibility for migration between populations is important.

Fragility

Fragility refers to the "degree of sensitivity of habitats, communities and species to environmental change..." It is a fundamental consideration in applying the guidelines, but does not have any specific criteria, rather it is reflected in other considerations such as size.

Recorded History

Ratcliffe intended that the importance of recorded history be recognised and that sites with a record of use for scientific study or research should be regarded as more important than similar sites that lack historical records. He considered that this criterion was less important than the intrinsic features of the sites themselves. In practice the majority of SBIs do not have a strong recorded history, but where possible this will be taken into consideration.

Intrinsic Appeal

'Attractive' sites and species tend to gain more attention than less appealing sites and species, gaining better records and thus being more likely to be included as SBIs. Ratcliffe recognised that this human error would be likely to apply, even if only because of the imbalance in recording between popular and unpopular species. The guidelines are designed to allow for recognition of a wide range of habitats and species and every effort will be made to avoid subjective bias.

2.2 Further development of system

The SBI system is subject to regular review by Staffordshire Sites of Biological Importance Grading Committee and these guidelines will be revised as and when necessary. Comments on the system should be submitted to the committee.

3 Application of the Guidelines

3.1 How to use the guidelines

The Selection Guidelines for 'Sites of Biological Importance' are divided into two parts, Section 4 which details the Habitat Selection Guidelines and Section 5 which details the Species Selection Guidelines for sites.

3.1.1 Habitats

Section 4 covers the major habitat types, most habitats have size and species composition parameters. Parameters are given for both SBI and BAS selection. Where sites contain only one major habitat type assessment should be straightforward. For sites where more than 25% of the area comprises additional habitat type / s, the method shown in section 3.3 should be used.

A habitat should not be selected on its potential, but the possibilities for improvement should be borne in mind. The site description should refer to this.

3.1.2 Species

Section 5 deals with populations of important species where habitat guidelines cannot be applied; for example a large water body with little vegetation interest but good numbers of nesting or wintering birds.

3.2 The Site System

3.2.1 Site Assessment and Notification Procedure

All surveys for site designation must be carried out to meet the minimum requirements for survey outlined in Appendix 2. Following site surveys and assessment using the guidelines, the Grading Committee is responsible for the approval of sites of suitable quality to be designated. Ultimately it is this specialist Committee of experts that decides which sites will be identified as SBIs or BASs.

Surveys are carried out largely by the Staffordshire Wildlife Trust but the Grading Committee will consider any new sites which fully meet the minimum standards for survey. The Committee will also take into consideration any valid observations received from landowners when approving sites and will notify landowners in writing of the outcome as decided by the Committee. The survey results are presented in a written citation and are also held in a database with Staffordshire Ecological Record (SER). Once sites have been ratified by the Grading Committee the relevant District Councils, County Council and other Partners have access to this information via SER. Printed copies of site reports are also sent out to landowners.

3.2.2 Monitoring and Re-survey

A process of review is essential to ensure a common standard is maintained in line with government guidance that sites should be of 'substantive nature conservation interest'. All SBIs/BASs need to be re-visited periodically to assess their current condition. Grassland and wetland (including rivers & streams and ponds & lakes) ideally will be revisited every 5 years, with woodland, wood pasture and heathland sites revisited every 10 years. Revisits will include a monitoring check against existing information held on a site and the completion of a 'Site Monitoring Form' found in **Appendix 3**. If any major changes have occurred to a site e.g. habitat changes brought about by inappropriate management a full extended Phase 1 Survey will be carried out to fully identify the changes and the site will be reassessed against the Guidelines and put forward to the Grading Committee for approval. Re-visits also provide scope for the identification of additional adjacent areas of potential SBI quality

habitat which should be surveyed and brought forward to the Grading Committee for inclusion within existing site boundaries.

In some instances, where change has resulted in the destruction of the site or the whole site may no longer be of suitable quality to retain its designation, if it is to the agreement of the Grading Committee, then the site can be de-scheduled. Both the relevant Local Authority and the landowner will be informed in writing of this process and it will be recorded within the Staffordshire Ecological Record database. In such cases the landowner will also be offered the relevant advice to encourage the restoration or recovery of a site for it to be potentially re-designated.

Monitoring and re-survey should not become a mechanism for identifying the decline of sites. Therefore through the use of existing grant aid and advisory services positive management for sites should be secured wherever possible to enable good condition to be maintained or for condition to improve.

3.2.3 Determining Site Boundaries

Once a site has been assessed as being of SBI/BAS quality, a suitable boundary is determined which can be readily located on maps and on the ground and includes the area of land which meets the selection guidelines. This can be problematic for certain sites.

The boundary should be determined by readily identifiable management units, this may include habitat of lesser value where it is an integral part of the management unit. Where there is an aggregation of separate management units adjacent to one another, be it of the same or different habitat types the boundary should include all units as a single site. This is relevant for example where there are a series of unimproved meadows adjacent to one another which meet the selection guidelines.

3.3 Sites selected using previous systems

Following the publication of these Guidelines, a process of re-examining existing SBIs has commenced. It is considered that sufficient information is already available to enable most sites to be graded within the new system.

In the absence of the necessary information, it will be necessary to re-survey sites and a programme will be produced for this process.

Sites that have not yet been graded or re-surveyed according to the above will be assumed to retain their original grade.

3.4 Sites containing more than one main habitat type

Where more than 25% of a site is of a different habitat type, it is considered to require separate assessment. The way in which the site is considered will vary depending on which habitats are present. Combinations of habitats can often be said to act in synergy; giving greater advantages than the sum of the separate habitats, and would be more highly regarded than single habitats. All components of a site should be at least semi-natural habitat, although inclusion of other land will be considered where it is felt to be fundamental to the site's integrity.

4 Habitats

4.1 Woodland

Sites of Biological Importance

Any site included in the Staffordshire Ancient Woodland Inventory unless

1. there is subsequent evidence to suggest that it is not of ancient origin.
2. the site has been totally lost since the inventory
3. Sites for which there is no recent information should provisionally be included as SBI until recent survey information can be obtained

Any broadleaved semi-natural or plantation woodland over 0.5ha that scores 11 or more on the Woodland Score.

Any area of semi-natural woodland or scrub over 0.5ha that is considered to be of an important woodland National Vegetation Classification (NVC) community that is rare or uncommon in the County.

Rare or Uncommon Woodland NVC Communities in Staffordshire.

W1. *Salix cinera-Galium palustre* (Grey Willow-Common Marsh-bedstraw) woodland.
W2. *Salix cinera-Betula pubescens-Phragmites australis* (Grey Willow-Downy Birch-Common Reed) woodland.
W3. *Salix pentandra-Carex rostrata* (Bay Willow-Bottle Sedge) woodland.
W4. *Betula pubescens-Molinia caerulea* (Downy Birch-Purple Moor-grass) woodland.
W5. *Alnus glutinosa-Carex paniculata* (Alder-Greater Tussock-sedge) woodland.
W6. *Alnus glutinosa-Urtica dioica* (Alder-Common Nettle) woodland.
W7. *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* (Alder-Ash-Yellow Pimpernel) woodland.
W9. *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* (Ash-Rowan-Dog's Mercury) woodland.

Biodiversity Alert Sites

Any broadleaved and mixed semi-natural and plantation woodlands over 0.5ha in size and which scores 6 –10 on the Woodland Score.

Any area of semi-natural woodland or scrub between 0.25-0.5ha that is considered to be of an important National Vegetation Classification (NVC) community that is rare or uncommon in the County.

Table 2 Woodland Score

Scientific Name*	Common Name	Abundance	Score
Adoxa moschatellina	Moschatel	O+	2
Allium ursinum	Ramsons	O	1
Allium ursinum	Ramsons	F+	3
Anemone nemorosa	Wood Anemone	O+	3
Campanula latifolia	Giant Bellflower	Present	2
Campanula trachelium	Nettle-leaved Bellflower	Present	2
Calluna vulgaris	Heather	O+	2
Carex laevigata	Smooth-stalked Sedge	Present	2
Carex pallescens	Pale Sedge	Present	2
Carex pendula	Pendulous Sedge	Present	3
Carex remota	Remote Sedge	Present	2
Carex strigosa	Thin-spiked Wood-sedge	Present	3
Carex sylvatica	Wood Sedge	Present	2
Chrysosplenium alternifolium	Alternate-leaved Golden -saxifrage	O+	1
Circaea lutetiana	Enchanter's-nightshade	O	1
Circaea lutetiana	Enchanter's-nightshade	F+	3
Conopodium majus	Pignut	O+	1
Corydalis claviculata	Climbing Corydalis	O+	2
Deschampsia flexuosa	Wavy Hair-grass	F+	1
Epipactis helleborine	Broad-leaved Helleborine	Present	3
Equisetum sylvaticum	Wood Horsetail	O+	2
Euphorbia amygdaloides	Wood Spurge	O+	3
Frangula alnus	Alder Buckthorn	Present	2
Galium odoratum	Woodruff	O+	3
Galium saxatile	Heath Bedstraw	O+	1
Geum rivale	Water Avens	Present	1
Hordelymus europaeus	Wood Barley	O+	1
Hyacinthoides non-scripta	Bluebell	O	1
Hyacinthoides non-scripta	Bluebell	F+	3
Lamiastrum galeobdolon	Yellow Archangel	O+	3
Lathraea squamaria	Toothwort	O+	2
Ligustrum vulgare	Wild Privet	O+	1
Lonicera periclymenum	Honeysuckle	O+	1
Luzula pilosa	Hairy Wood-rush	O+	2
Luzula sylvatica	Great Wood-rush	O+	3
Lysimachia nemorum	Yellow Pimpernel	O+	1
Malus sylvestris s.l.	Crab Apple	Present	1
Melampyrum pratense	Common Cow-wheat	O+	3
Melica uniflora	Wood Melick	O+	3
Mercurialis perennis	Dog's Mercury	O	1
Mercurialis perennis	Dog's Mercury	F+	3
Molinia caerulea	Purple Moor-grass	O+	2
Milium effusum	Wood Millet	O+	1
Myosotis sylvatica	Wood Forget-me-not	O+	1
Narcissus pseudonarcissus	Wild Daffodil	O+	1
Orchis mascula	Early-purple Orchid	Present	1

Oxalis acetosella	Wood-sorrel	O+	2
Paris quadrifolia	Herb Paris	Present	3
Poa nemoralis	Wood Meadow-grass	O+	1
Polystichum aculeatum	Hard Shield-fern	O+	2
Polystichum setiferum	Soft Shield-fern	O+	2
Populus tremula	Aspen	O+	1
Prunus padus	Bird Cherry	O+	1
Quercus petraea	Sessile Oak	O+	1
Ranunculus auricomus	Goldilocks Buttercup	O+	1
Ribes alpinum	Mountain Currant	O+	2
Ribes nigrum	Black Currant	O+	1
Ribes rubrum s.s.	Red Currant	O+	1
Ribes sanguineum	Flowering Current	O+	1
Ribes uva-crispa	Gooseberry	O+	1
Sanicula europaea	Sanicle	O+	3
Scrophularia nodosa	Common Figwort	O+	2
Sorbus torminalis	Wild Service-tree	Present	3
Stellaria nemorum	Wood Stitchwort	Present	2
Stellaria holostea	Greater Stitchwort	O	1
Stellaria holostea	Greater Stitchwort	F+	3
Tilia cordata	Small-leaved Lime	Present	3
Vaccinium myrtillus	Bilberry	O+	2
Veronica montana	Wood Speedwell	O+	2
Vicia sylvatica	Wood Vetch	Present	2
Viscum album	Mistletoe	O+	1
Four or more ferns excluding Bracken		Present	2
All native species listed in Hawksford (annual update) as R or VR		Present	2
		Occasional/LF	3
		Frequent	4

Other features	**Abundance**	**Score**
Veteran trees	At least 3 per hectare	2
Wood bank and ditch	Present	2
Well structured rides and glades	At least 5% of total area	2
Scrub	At least 5% of total area	2
Woodland Pools	F+	1
Fallen Deadwood	F+	1
Standing Deadwood	F+	1

Wet Woodland **

Scientific Name*	**Common Name**	**Abundance**	**Score**
Ajuga reptans	Bugle	O+	1
Caltha palustris	Marsh marigold	O+	1
Cardamine amara	Large Bitter-cress	O+	1
Carex paniculata	Greater Tussock-sedge	O+	3
Carex pseudocyperus	Cyperus Sedge	Present	3
Cornus sanguinea	Dogwood	O+	1
Equisetum telmateia	Great Horsetail	O+	2
Iris pseudacorus	Yellow Iris	O+	2
One or more *Carex* spp.	One or more Sedge spp.	F+	1
Phyllitis scolopendrium	Hart's-tongue	O+	2
Scrophularia auriculata	Water Figwort	O+	2

Scutellaria galericulata	Skullcap	O+	2
Viburnum opulus	Guelder-rose	O+	1

***for all species <u>do not include</u> if suspected to be introduced**

** wet woodland indicators are used when a substantial part of the wood is wet in character – these should be added to the dry woodland list. Not for adjoining wetland or in small amounts along edge.

Hawksford, J. E. (annual update) *A checklist of the Flora of Staffordshire (revised annually – follow website link)*. http://bsbi.org/staffordshire.

4.2 Boundary Features

4.2.1 Hedgerows

A single hedgerow is defined as starting and ending from points at which it links up with other hedgerows. Hedgerows do not include lines of trees, or scrub but do include features associated with hedgerows such as banks, ditches, trees or verges as these features are considered important ecological components.

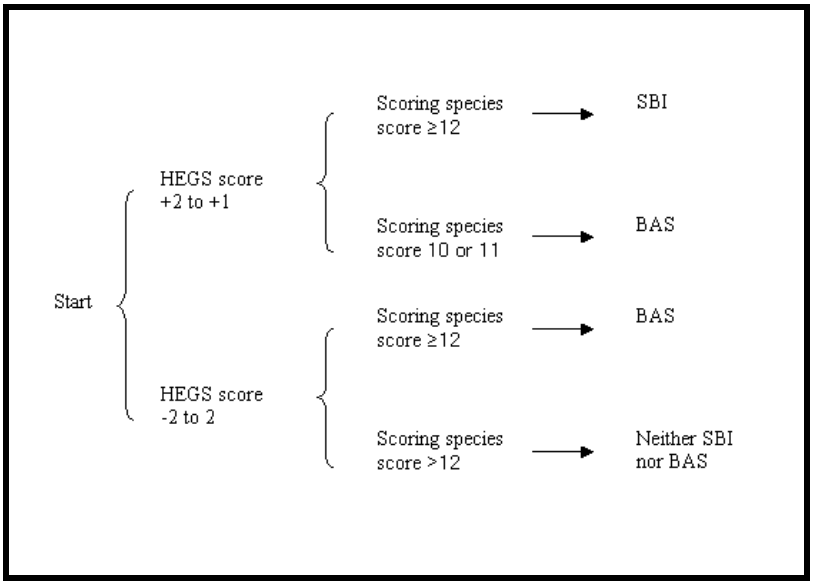
To be considered as a graded site, any one system of connected hedges must be no less than 100m total length and not known to have been planted since 1950.

Survey methodology used in the selection of Hedgerow county wildlife sites follow a modified version of the Hedgerow Evaluation and Grading System (HEGS).

The HEGS survey technique was developed as a quick and comprehensive survey method for assessing the ecological value of hedgerows. The whole hedgerow is surveyed and includes four broad hedgerow characteristics. Structure (height, width, cross section and standard trees), connectivity (gaps and connections with other hedgerows and woodlands), diversity (the number of woody species, as defined by Clements and Tofts (1992)) and associated features (banks, ditches and verges). Each of these categories is then scored according to the value of those characteristics exhibited by the hedgerow. The HEGS method then produces a numeric score for the hedgerow by putting those individual scores through a hierarchical flow chart (Appendix 4).

Alterations
The assessment and grading of Sites of Biological Importance (SBIs) relies heavily on the floral composition of a site. The ground flora of the hedgerow, as well as the floristic composition of the woody element, is an important component of the ecological value of a hedgerow habitat. It was therefore considered that in order to fully assess the wildlife value and potential for Site of Biologicial Importance (SBI) or Biodiversity Alert Site (BAS) designation, the new survey methodology should represent and fully assess these aspects. A list of botanical species considered important for the County were therefore included. This list consists of ground flora species typical of woodland, as well as wet and unimproved grasslands, a number of woody species that are considered to be poor natural colonisers, such as Field Maple and Dogwood (Rackham, 1986) and/or rarely (at present) planted species such as Spindle (Rackham, 1986). Climbing species, such as Hop are also included, as it is considered that these provide added diversity to the hedgerow habitat. The full list of species and their associated scoring and DAFOR recording level can be seen in Appendix 4. For each species included on the altered HEGS survey form a score was allocated. These scores, 1 to 3, aimed to reflect the importance of the species (ecologically and for rarity) being present in the hedgerow. The scores from 1 to 3 follow the scoring method used in Webb, *et al.*, (2007).

Hedgerow grading



4.3 Pasture Woodland and Mature Timber Habitat

Veteran trees are defined as "..trees which, because of their great age, size or condition, are of exceptional value culturally, in the landscape or for wildlife." (Veteran Tree Initiative, 2000)[1]

Sites of Biological Importance

All sites with 10 or more broad-leaved veteran trees.

All sites with an Alexander Index (1996)[2] of saproxylic beetles of 10 or more.

Biodiversity Alert Sites

All sites with 5 or more broad-leaved veteran trees.

Any site which either:

- Has been recorded as an old deer park or
- Is on the historic parkland register or
- Is adjacent to a deer park or ancient woodland and has a covering of mature trees.

A broad outline of setting parkland boundaries is outlined below:

Areas included in the site boundary

Areas of parkland satisfying the site guidelines.

Adjacent semi-natural habitats e.g. pools, wetland, ancient woodland.

Areas of plantation containing veteran trees or a typical woodland ground flora.

Small areas of improved or poor semi-improved grassland (less then 0.5ha) within old parklands that are devoid of any mature or veteran trees.

Areas Included Under Individual Merit

Parts of parkland adjacent to groups of veteran trees that contain only mature and young trees.

1.Veteran Tree Initiative (2000) *Veteran tree initiative: specialist survey method*. English Nature; Peterborough.

2. Alexander, K. (1996) "Index of Ecological Continuity. In: Reid, C. Management of veteran trees on National Nature Reserves. pp105-110, Read H.J., ed., *Pollard and Veteran Tree Management II*. Burnham Beeches: Corporation of London."

4.4 Traditional Orchards

Traditional orchards are a UK priority habitat type as defined by the UK Biodiversity Action Plan (UK BAP) (BRIG (ed. Ant Maddock) 2008). They are similar in structure to wood pasture and parkland habitats but differ in the tree species typically planted; in orchards the dominant trees are domestic fruit and nut species which have been traditionally farmed for fruit and nut production. Traditional orchards provide features which are beneficial to a range of species such as providing a spring nectar source, fallen and standing dead wood which may support saproxylic invertebrates and windfall fruit which may serve as a food source. Habitat features such as scrub, ponds, walls, hedgerows and hedgerow trees which may also be present provide additional niches to support wider range of species. Traditional orchards are usually managed at low intensity and don't usually support short-lived high-density dwarf fruit trees which are more associated with commercial fruit production.

UK BAP definition:

'Traditional orchards are defined, for priority habitat purposes, 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 plants are also included (BRIG (ed. Ant Maddock) 2008)'.

Local Wildlife Site criteria

* For use with orchards which are not within the curtilage of a residential dwelling where the orchard forms all or part of a domestic garden.

1. **The orchard consists of at least 5 fruit or nut trees planted at low density (approximately 3-20 metres apart).**
2. **At least 50% of the trees in the orchard are domestic varieties of fruit or nut species which are not commercial dwarf varieties and are mature trees.**
3. The ground flora consists of permanent grassland.
4. The orchard is under a low intensity management regime without the wide use of pesticides, herbicides or inorganic fertilisers.
5. Associated features are present on site; standing and fallen deadwood, evidence of Saproxylic invertebrates, veteran trees, species-rich semi-improved grassland or unimproved grassland.
6. Associated habitats are present on site including; scrub, hedgerows, ponds or walls or the orchard is connected to BAP habitat such as an ancient woodland or an adjoining LWS.

Based on the Cheshire Orchards LWS criteria (Giles *et al.* 2014).

Sites of Biological Importance

All sites which meet four points or more from the above criteria including points 1 and 2.

Biodiversity Alert Sites

Has to meet at least points 1 and 2.

References

Biodiversity Reporting and Information Group. (ed. Ant Maddock) (2008) **Biodiversity: The UK Action Plan. UK Biodiversity Action Plan; Priority Habitat Descriptions: Traditional Orchards**. Her Majesty's Stationary Office, London.

Derbyshire Wildlife Trust (2011) **Derbyshire Local Wildlife Sites handbook Volume 2**. http://www.derbyshirewildlifetrust.org.uk

Giles. R. *et al.* (2014) **Local Wildlife Site Selection Criteria for the Cheshire region.** Cheshire Wildlife Trust.

Worcestershire Wildlife Trust (2011) **Worcs. Dual Orchard-grassland criteria for Local Wildlife Site Assessment (version for site survey use)**. Worcestershire Wildlife Trust.

4.5 Ponds

Ponds (up to 2ha in size) are surveyed using the PSYM methodology (Predictive SYstem for Multmetrics) which is a standard survey technique developed by Pond Conservation (Pond Conservation 2002).
Using the PSYM method involves the following steps:
1. Simple environmental data are gathered for each waterbody from map or field evidence (area, grid reference, geology etc.).
2. Biological surveys of the plant and animal communities are undertaken and net samples are processed.
3. The biological and environmental data are entered into the PSYM computer programme which:
    (i) uses the environmental data to predict which plants and animals should be present in the water body if it is un-degraded,
    (ii) takes the real plant and animal lists and calculates a number of metrics.

Finally the program compares the predicted plant and animal metrics with the real survey metrics to see how similar they are (i.e. how near the water body currently is to its ideal/un-degraded state). The metric scores are then combined to provide a single value which summarises the overall ecological quality of the water body. The similarity of the surveyed pond metric to an ideal pond metric is expressed as a percentage known as the PSYM category. A copy of the PSYM survey form can be found at the back of this document in Appendix 5.

Pond grading

Sites of Biological Importance

Any pond of high ecological quality: ponds classified in the top PSYM (Predictive System for Multimetrics) category for ecological quality, scoring ≥76%*.

Any site which supports more than three species of amphibian or supports a good population of Great Crested Newts (More than 5 netted in the day or more than 10 counted at night).

BAS sites consisting of three or more water bodies within 250m of each other are elevated to SBI status.

Biodiversity Alert Site

Any pond of moderate ecological quality: ponds classified in the second PSYM (Predictive System for Multimetrics) category for ecological quality, scoring 51-75%*.

Any site which supports three species of amphibian or a low population of Great Crested Newts (between 1 and 5 netted in the day or between 1 and 10 counted at night).

Low scoring sites (against PSYM) with more than three water bodies within 250m of each other are elevated to BAS status.

4.6 Fen and Swamp

Fen is defined as "a wetland type often following swamp in the hydroseral succession. Fens have a summer water table at or below the sediment surface but being flooded in winter. Can be divided into poor and rich fens, based both on chemical composition of the fen waters and the species diversity of the vegetation" (Sites of Importance for Nature Conservation in North Yorkshire, 2002)[3].

Swamp is defined as "a freshwater wetland habitat characteristic of lake margins in both organic and inorganic materials contribute to sediment surface and the vegetation is usually dominated by herbaceous monocotyledons. Species diversity is often low with plant communities often dominated by 1 or 2 species" (Sites of Importance for Nature Conservation in North Yorkshire, 2002).

Sites of Biological Importance

Any fen and/or swamp site over 0.5ha in size except where they are dominated by *Urtica dioica* (Common Nettle), *Impatiens glandulifera* (Himalayan/Indian Balsam) and/or *Typha latifolia* (Bulrush); to the exclusion of other species.

OR

Any fen and/or swamp site between 0.25ha and 0.5ha, in excess of 20m wide and adjacent to another SBI or BAS habitat, except where they are dominated by *Urtica dioica*, *Impatiens glandulifera* and/or *Typha latifolia*

Other species of note include *Micromys minutes* (Harvest Mouse) and *Neomys fodiens* (Water Shrew), all sites with known populations should be considered for inclusion.

Biodiversity Alert Site

Any Swamp and/or fen site between 0.25ha and 0.5ha, and in excess of 20m wide, except where they are dominated by *Urtica dioica*, *Impatiens glandulifera* and/or *Typha latifolia*.

OR

Any swamp and/or fen site adjacent to another BAS habitat except where they are dominated by *Urtica dioica* and/or *Impatiens glandulifera* and/or *Typha latifolia.*

3. North Yorkshire Sites of Importance for Nature Conservation Panel (2002) *Guidelines for site selection*. North Yorkshire SINC Panel. Northallerton; North Yorkshire.

4.7 Canals

Sites of Biological Importance

A canal which scores 10 or over is an SBI

Biodiversity Alert Sites

A canal which scores between 6 and 9 is a BAS

Scores should be calculated from **Table 3** *below:*

Table 6 Canal Features

Length of Canal*	**Less than 50 metres**	**51-150 metres**	**151- 300 metres**	**301+ metres**
Score	Not included	0	2	4

Frequency of Feature	**None-R**	**O**	**LF, F,**	**A, D, LD**
Aquatic Vegetation	0	1	2	3
Floating Vegetation	0	1	2	3
Emergent Vegetation	0	1	2	3
Adjacent Vegetation	0	1	2	3
Rare Plant Species (per species)**	0	2	2	2
Other Important Species***	1	1	1	1
Towpath= SBI grassland	3	3	3	3
Towpath= BAS grassland	1	1	1	1

* Includes up to 6 metre wide strip surrounding any canal. Habitats which do not score include improved grassland, well managed amenity grassland, concreted areas etc.

** Includes Himalayan Balsam, *Azolla*, *Hydrocotyle ranunculoides*, *Crassula, Elodea* species – these species should be excluded from aquatic, floating, emergent or adjacent vegetation assessments.

*** other important species include: grass snake, white clawed crayfish, any amphibian species, water vole, bat roosts, harvest mouse, water shrew and birds from the open water species list (**Table 11**).

4.8 Rivers & Streams (to be revised)

The guidelines have been set against river structure, rather than species diversity.

Sites of Biological Importance

An SBI must consist of at least one primary feature (refer to **Table 4** on page 18). If more than one primary feature is present and they are separated by less than 30 metres then the features should be combined into one SBI. If the river has one or more primary features and adjacent or nearby secondary features then all features are combined into one SBI. Where evidence exists of regular pollution incidents occur, sites should be excluded.

Site Boundary

5 metre buffer zone either side of the banktop
Up and down stream boundaries- to the nearest feature e.g. bridge, field boundary or weir, etc.

Table 7 River features for Sites of Biological Importance

PRIMARY/ STAND ALONE FEATURES	**SIZE THRESHOLD**
Eroding earth cliffs	1-1.5m high 20m stretch
Eroding earth cliffs	1.6m+ high 10m stretch
Braided channel	Over 100m stretch
Unvegetated side bar (i.e. less than 50% vegetation)	10m+ in length
Unvegetated mid channel bar	10m+
River island	20m+
Natural waterfall	None
Sedimentary deposits	20m+
Boulder cascade	Over a 20m+ stretch
Riffle and pool/glide system.	A riffle every 5-7 times the width of the channel
Woody debris	5 or more collections within 100m
Ox bow lake	None
Any 4 "in combination feature"	Within a 100m stretch
SECONDARY/ IN COMBINATION FEATURES	**SIZE THRESHOLD**
Eroding earth cliffs	Not meeting the size threshold set for Primary/stand alone features
Backwater	None
Braided channel	Less than a 100m stretch
Unvegetated side bar	Less than 10m long
Unvegetated mid channel bar	Less than 10m long
River island	Less than 20m long
Botanically species rich buffer strip on the bank top (to SBI Grade 2 standard)	At least 2m wide
Sedimentary deposit	Less than a 20m stretch
Boulder cascade	Over less than a 20m stretch
Floating vegetation	Abundant or dominant over a 50m stretch
Fringes of emergent vegetation	Abundant or dominant over a 50m stretch
Mature bank side trees, including hollow trees and exposed root plates	None
Woody debris	Less than 5 collections within 100m

ADDITIONAL FEATURES (already covered separately in the Guidelines.)

Wetlands: Reedbed Fen Wet Grassland Wet woodland Pond/lake/ditch Marsh bog	Within 15m of river. These features can be encompassed within the SBI boundary if they are of sufficient quality.
Presence of SBAP and other key species in or adjacent to the river channel.	

4.9 Heathland

Sites of Biological Importance

Any site greater than 0.5ha in which any of the following dwarf shrubs, either individually or in combination, have close to or more than 25% cover:

Calluna vulgaris (Heather)
Vaccinium myrtillus (Bilberry)
Vaccinium vitis-idaea (Cowberry)
Vaccinium myrtillus x *vitis idaea* (Hybrid Bilberry)
Erica cinerea (Bell Heather)
Erica tetralix (Cross-leaved Heath)
Empetrum nigrum ssp. nigrum (Crowberry)
Ulex species, when in combination with any of the above

The site should also include any adjoining or integral areas of scrub, bare sandy paths, sand exposures and grassland / ruderal land containing flowering plants of up to 25% of the total amount of heathland. If over 25% then the site should be considered as described in **Section 3.3**.

Biodiversity Alert Sites

Any site between 0.1 – 0.5ha in which any of the following dwarf shrubs, either individually or in combination, have close to or more than 25% cover:

Calluna vulgaris (Heather)
Vaccinium myrtillus (Bilberry)
V. vitis-idaea (Cowberry)
V. myrtillus x *vitis idaea* (Hybrid Bilberry)
Erica cinerea (Bell Heather)
Erica tetralix (Cross-leaved Heath)
Empetrum nigrum ssp. nigrum (Crowberry)
Ulex species, when in combination with any of the above

The site should also include areas of scrub, bare sandy paths, sand exposures and grassland / ruderal land containing flowering plants.

4.10 Peatland sites

It is understood that all peatland sites within Staffordshire have already been identified. Of these, all sites with a reasonable, typical species composition are notified as Sites of Special Scientific Interest. Any remaining peatland sites, including degraded sites, are considered capable of being restored and will be listed SBIs. A GIS layer of Staffordshire peatlands is held at Staffordshire Wildlife Trust which identifies known areas of peat.

Functioning Ecological Unit

The Functional Ecological Unit (FEU) for significant meres and mosses has been mapped by Matt Jones as part of the Meres and Mosses Landscape Partnership Project which comes into the west of Staffordshire. These areas are often larger than the area of designation for peatland habitat but do not cover the whole catchment just the functioning unit which affects a site. The FEU also includes areas considered to be in restorable condition but degraded. The FEU should be used as a guiding perimeter when surveying a peatland site as the FEU may contain valuable buffering and linking habitat such as fen and swamp or wet woodland.

The FEU should be noted in the site description to demonstrate the how the surrounding landscape connects to the peatland. Ideally the condition and restorability of the FEU should be noted for reference in the site description. Adjacent habitats within the FEU should be considered as part of a sites designation provided they meet the relevant selection criteria for each specific habitat type.

References

Jones, M. (2017). **Visualising landscape-scale conservation: Methodology for mapping extant meres and mosses in the relevant national character area(s)**. Meres & Mosses Landscape Partnership Scheme. www.themeresandmosses.co.uk

4.11 Grassland guidelines

Sites of Biological Importance

Sites over 0.25ha referable to the following National Vegetation Classification (NVC) communities: **MG4, MG5, MG6, MG8, MG9, MG10, CG2, CG3, CG7, U1, U2, U3, U4, M22-26**.

OR

Sites over 0.25ha which score over 20 points on the following species checklist:

Biodiversity Alert Sites

Sites over 0.25ha which score between 14 and 19 on the following species checklist:

Table 8 Checklist of Grassland Species

Scientific Name	Common Name	present	O / LF	F or F+
Achillea millefolium	Yarrow		1	1
A ptarmica	Sneezewort		1	2
Ajuga reptans	Bugle		1	2
Alchemilla species	Ladies' Mantles	1	2	3
Angelica sylvestris	Wild Angelica		1	2
Anthoxanthum odoratum	Sweet Vernal-grass		2	2
Briza media	Quaking-grass	1	2	3
Calluna vulgaris	Heather		1	2
Caltha palustris	Marsh Marigold	1	2	3
Campanula rotundifolia	Harebell	1	2	3
Cardamine pratensis	Cuckoo-flower		1	2
C amara	Large Bitter-cress		1	2
Carex species	Sedges	1	2	2
Centaurea nigra	Common Knapweed		1	2
Cerastium fontanum	Common Mouse-ear		1	2
Cirsium palustre	Marsh Thistle		1	1
Conopodium majus	Pignut		1	2
Crepis capillaris	Smooth Hawk's-beard		1	2
Cynosurus cristatus	Crested Dogs-tail	1	1	2
Dactylorhiza fuchsii	Common Spotted-orchid	1	2	3
Dactylorhiza praetermissa	Southern Marsh-orchid	1	2	3
Deschampsia cespitosa	Tufted Hair-grass	1	1	
D. flexuosa	Wavy Hair-grass	1	2	2
Euphrasia species	Eyebrights	1	2	3

Filipendula ulmaria	Meadowsweet		1	1
Galium palustre	Common Marsh Bedstraw		1	2
Galium saxatile	Heath Bedstraw	1	2	3
Galium verum	Lady's Bedstraw	1	2	3
Geum rivale	Water Avens	1	2	3
Hieracium species	Hawkweeds		1	2
Hypochaeris radicata	Cat's-ear		1	2
Juncus species	Rushes		1	2
Knautia arvensis	Field Scabious	1	2	3
Lathyrus pratensis	Meadow Vetchling		1	2
Leontodon autumnalis	Autumnal Hawkbit		1	2
Leucanthemum vulgare	Ox-eye Daisy	1	2	2
Linum catharticum	Fairy Flax		1	2
Listera ovata	Common Twayblade	1	2	3
Lotus corniculatus	Common Bird's-foot-trefoil		1	2
Lotus pedunculatus	Large Bird's-foot-trefoil		1	3
Luzula campestris	Field Wood-rush	1	2	2
Luzula. multiflora	Heath Wood-rush	1	2	2
Lychnis flos-cuculi	Ragged Robin	1	2	3
Mentha aquatica	Water Mint		1	2
Myosotis scorpioides	Water Forget-me-not		1	2
Pilosella officinarum	Mouse-ear Hawkweed		1	2
Pimpinella major	Greater Burnet-saxifrage	1	2	3
Pimpinella saxifraga	Burnet-saxifrage	1	2	3
Plantago lanceolata	Ribwort Plantain		1	1
Polygala species	Milkwort species	1	2	3
Potentilla erecta	Tormentil		1	2
Primula veris	Cowslip	1	2	3
Primula vulgaris	Primrose	1	2	3
Prunella vulgaris	Selfheal		1	2
Pulicaria dysenterica	Fleabane		1	2
Ranunculus acris	Meadow Buttercup		1	2
Ranunculus bulbosus	Bulbous Buttercup	1	2	3
Ranunculus flammula	Lesser Spearwort		1	3
Rhinanthus minor	Yellow-rattle	1	2	3
Rumex acetosa spp. acetosa	Common Sorrel		1	1
Rumex acetosella	Sheep's sorrel		1	2
Sanguisorba minor	Salad Burnet	1	2	3
Sanguisorba officinalis	Great Burnet	1	2	3
Senecio aquaticus	Marsh Ragwort		1	1
Stachys officinalis	Betony	1	2	3
Stellaria uliginosa	Bog stitchwort		1	2
Succisa pratensis	Devil's-bit Scabious	1	2	3
Trifolium pratensis	Red Clover		1	1
Trisetum flavescens	Yellow Oat-grass	1	2	3
Vaccinium myrtillus	Bilberry		1	2
Valeriana dioica	Marsh Valerian	1	2	3
Valeriana officinalis	Common Valerian	1	2	3
Veronica officinalis	Heath Speedwell		1	2

Vicia cracca	Tufted Vetch		1	1
Viola palustris	Marsh Violet	1	2	3
Viola riviniana	Common Violet		1	2
All native species listed in Hawksford (annual update) as R or VR		2	3	4
Native species of scrub at between 2% and 10% cover score additional 2 points				
Bare ground (bluffs or scrapes) at between 1% and 5% cover score additional 2 points				
Marshes or flushes at between 2% and 10% cover score additional 2 points				

Hawksford, J. E. (annual update) *A checklist of the Flora of Staffordshire (revised annually – follow website link)*. http://bsbi.org/staffordshire.

4.12 Mixed Habitat and Structural Mosaics

This includes sites comprising of habitats that are individually or collectively of conservation value, but do not necessarily satisfy specific habitat selection guidelines.

Sites of Biological Importance

Sites of 0.5ha or more in size that support a combination of two or more individual habitats that meet at least 80% of the relevant selection guidelines for the habitat types.

Biodiversity Alert Sites

Any site between 0.1-0.5ha in size that supports a combination of two or more individual habitats that meet at least 80% of the relevant selection guidelines for the habitat types.

4.13 Other Habitats

Supplementary Habitats

Other habitats may be included as part of sites where they are thought to contribute as a nectar source or shelter for animal species. These sites may include single species dominated stands, but should not include sites solely dominated by invasive species such as Japanese Knotweed or bracken.

- Tall herb / ruderal habitats - these comprise diverse assemblages of species such as willowherbs (*Epilobium* species), nettles, poppies (*Papaver* species), melilots (*Melilotus* species). These are usually sparsely distributed over dry, nutrient poor soils.

4.14 Road Verges

Road verges are known to host a significant range of semi-natural habitats throughout the County. To designate a road verge as a SBI, each site requires assessment against one of the previously mentioned ecotype habitats such as grassland, woodland or heathland, or whichever habitat type forms the majority of the site. Where a site is not dominated by one distinct habitat type, see **4.12**.

A minimum length for the road verge is not specified, however, for continuous lengths in excess of 500m the verge should be subdivided at approximately 500m intervals using physical features such as road junctions, bridges or walls (the feature must be visible both on the ground and on maps). A species list and site description should be produced for each of the sub-sections.

Site of Biological Importance

A road verge site which scores the required total for the relevant habitat type as a SBI from the appropriate scoring list.

Biodiversity Alert Site

A road verge which meets the required total for the relevant habitat type as a BAS from the appropriate scoring list.

5 Species

5.1 Introduction

For species that are protected under British or European law sites and / alert areas will be identified on alert maps within the Staffordshire Ecological Record system. Site selection should therefore, be used to aid the conservation and / or enhancement of the species, rather than its protection. Of particular importance in this context is meta-population dynamics where a species, such as water vole may move between colonies and sites. In cases such as these a population may be dependant on a much larger area than is immediately apparent and site selection should allow for this.

Evidence of a SBAP species occurring on or inhabiting a site scores 1 point, e.g. nests, feeding remains, droppings, etc.

5.2 Mammals

Acceptable evidence of the presence of natural mammal populations (i.e. not re-introduced) or if re-introduced, established for 5 or more years. Evidence includes sightings of animals, their nests and in appropriate cases, faecal material. Sites maybe considered for inclusion based on records not more than 5 years old for all species concerned.
Site selection is based on regularly used breeding areas and/or territories. Generally, breeding should be confirmed for at least three years out of the previous five at time of selection within the area selected. For some species this may prove difficult, however, and for species that are in decline (e.g. water voles), or that are highly mobile (e.g. otters), other considerations may apply.

The following guidelines allow for this at the time of writing, but must be understood to be subject to possible frequent changes. Following selection, species should be recorded every five years to confirm status. Consideration should also be given to identifying areas utilised at other times of the year where these contribute to the essential habitat requirements of the species. Site selection must include a determination of the boundary of this area used by the species, and must allow for meta-population dynamics.

5.2.1 Water Vole (Arvicola terrestris)

Sites selection should include:

1. The stretch of watercourse or water body within which the colony is situated (recorded at optimum breeding time).
2. Where colonies are 1km or less apart and linked by watercourse/s then all colonies and links should be included within the site.
3. Water voles may also cross land so where colonies are 500m apart or less, even where there is no linking watercourse, they should be included in the same site.

Site boundaries should also be set to allow for the inclusion of:

- All bankside vegetation and associated potential foraging areas
- Burrows in current use
- Winter refuge areas (flooding)

A buffer zone of at least 50m either side of each colony, with a further buffer zone of 10m either side of the watercourse, should also be included around all such features.

Site boundaries should be mapped using clearly defined features, such as bridges, roads etc., within which the above parameters and measurements should fall.

5.2.2 Otter (*Lutra lutra*)

Confirmed breeding and resting sites are protected by both British and European law.

Site selection should include:

- Cover-providing habitat (holt sites, scrub, dense brambles, etc.) within 500m of areas of high otter activity. High otter activity can often be an indication of a breeding colony and will normally be evidenced by spraint mounds, although footprints and feeding remains are also often present.

A map showing areas where otter protection is considered necessary is available from Staffordshire Ecological Record.

5.2.3 Common Dormouse (*Muscardius avellanarius*)

Site selection should include any suitable blocks of habitat known to be used by the species and connecting habitats, such as hedges.

5.2.4 Yellow-necked Mouse (*Apodemus flavicollis*)

Site selection should include any suitable blocks of habitat known to be used by the species

5.2.5 Harvest Mouse (*Micromys minutus*)

Site selection should include any suitable blocks of habitat known to be used by the species.

5.2.6 Water shrew (*Neomys fodiens*)

Site selection should include any suitable blocks of habitat known to be used by the species.

Evidence of activities of any of the listed mammal species score 1 point

5.2.7 All Bats

If a site has a significant population of a notable species* we will look to protect areas of feeding habitat and maternity roosts for that population and create a zone around known bat roosts.

****species with five or less known maternity roosts in Staffordshire.***

5.3 Birds

Breeding should be confirmed for at least three years out of the previous five at time of selection. Following selection, species should be recorded every five years to confirm breeding status.

Sites of Biological Importance

- *Any site that regularly supports more than 0.5% of the total British non-breeding population of any wildfowl or wading bird.*

- *Any site which regularly supports a wild breeding population of certain bird species included in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).*

- *Any site which supports a regular breeding population of a rare or scarce Staffordshire breeding bird species.*

- *Any site of significant importance for species breeding in Staffordshire listed below.*

  Colonial nesting species
  Hirundines

- *Sites that are significant colonies of species in a Staffordshire context, significant groupings of breeding waders and significant wintering sites for wildfowl.*

- *Any site which supports a breeding bird assemblage with a total score, calculated from tables below, which equals or exceeds the threshold site index values shown in the table.*

Ornithological lists for key habitats

NB Index values are for breeding birds

Table 9 Bird List For Woodland

Grey Heron	3		Garden warbler	1	
Red Kite	5		Blackcap	1	
Goshawk	5		Wood warbler	3	
Sparrowhawk	2		Chiff chaff	1	
Buzzard	3		Goldcrest	1	
Hobby	4		Firecrest	5	
Woodcock	2		Spotted flycatcher	3	
Stock Dove	2		Pied flycatcher	3	
Tawny Owl	1		Long-tailed tit	1	
Long-eared owl	3		Marsh tit	5	
Nightjar	5		Willow tit	5	
Green woodpecker	2		Coal tit	1	
Great spotted woodpecker	2		Nuthatch	2	
Lesser spotted woodpecker	5		Treecreeper	1	
Tree pipit	2		Jay	1	
Redstart	3		Raven	5	
Hawfinch	4		Siskin	2	
Cuckoo	2		Redpoll	2	
Song thrush	2		Crossbill	3	
Woodlark	5		Bullfinch	3	
Index Value: 23			**Total score**		

Table 10 Bird List For Upland Habitats

Reed bunting	3		Redshank	2	
Teal	3		Goosander	3	
Hen harrier	5		Short-eared owl	5	
Buzzard	3		Whinchat	2	
Merlin	4		Stonechat	2	
Peregrine	4		Wheatear	2	
Red Grouse	2		Ring ouzel	5	
Black Grouse	5		Raven	5	
Golden Plover	5		Twite	5	
Dunlin	5		Common sandpiper	3	
Snipe	4		Grey partridge	3	
Curlew	3		Grey Wagtail	2	
Linnet	2		Dipper	2	
Index Value: 16			**Total score**		

Table 11 Bird List For Heathland

Hobby	4		Woodlark	5	
Skylark	3		Tree pipit	2	
Snipe	4		Whinchat	3	
Curlew	3		Stonechat	3	
Cuckoo	2		Grasshopper warbler	2	
Long-eared owl	3		Linnet	3	
Nightjar	5		Reed bunting	3	
			Grey partridge	3	
Index Value: 11			**Total score**		

Table 12 Bird List For Lowland Wet Grassland

Mute swan	1		Curlew	3	
Shelduck	2		Redshank	5	
Gadwall	4		Cuckoo	2	
Teal	3		Skylark	3	
Grey partridge	3		Yellow wagtail	4	
Garganey	5		Grasshopper warbler	2	
Shoveler	4		Sedge warbler	1	
Snipe	4		reed bunting	3	
Lapwing	5		barn owl	4	
Index Value: 10			**Total score**		

Table 13 Bird List For Fen

Little grebe	2		Snipe	4	
Bittern	5		Cuckoo	2	
Gadwall	4		Whinchat	2	
Garganey	5		Grasshopper warbler	2	
Shoveler	4		Sedge warbler	1	
Pochard	4		Reed warbler	2	
Teal	3		Reed bunting	3	
Water rail	3				
Index Value: 10			**Total score**		

(where this habitat occurs in combination with open water, use the open waters list instead.)

Table 14 **Bird List For Open Water**

Little grebe	2		Ringed plover	3	
Great crested grebe	2		Lapwing	5	
Black-necked grebe	5		Snipe	4	
Bittern	5		Redshank	5	
Grey heron	3		Common tern	3	
Mute swan	1		Cuckoo	2	
Shelduck	2		Kingfisher	3	
Gadwall	4		Yellow wagtail	4	
Teal	3		Grey wagtail	2	
Water rail	3		Grasshopper warbler	2	
Garganey	5		Sedge warbler	1	
Shoveler	4		Reed warbler	2	
Pochard	4		Reed bunting	3	
Tufted duck	2		Goosander	3	
Dipper	2		Common sandpiper	3	
Little ringed plover	4		Oystercatcher	2	
Index Value: 18			**Total score**		

Sights of 4 or more species from a relevant species list within a specific habitat scores 1 point.

5.4 Reptiles

Sites of Biological Importance

Any site which regularly supports a significant population of any native reptile. Presence should be confirmed for at least three years out of the previous five at time of selection. Following selection, species should be recorded every five years to confirm status.

This currently includes:

- Adder (*Vipera berus*)
- Grass Snake (*Natrix natrix*)
- Slow Worm (*Anguis fragilis*)
- Common Lizard (*Lacerta vivipera*)

Site boundaries should take account of the following habitats used by reptiles

- Basking sites
- Nesting sites
- Main Foraging areas
- Hibernation sites

5.5 Amphibians

Sites of Biological Importance

Any site that supports a good population of Great Crested Newts.
Any site which regularly supports five species of amphibian.
Any site with an amphibian species assemblage score of 7 or more.

Table 15 Species List For Amphibian Assessment

Species	Method	**Low Population**	**Good Population**	**Exceptional Population**
		Score 1	Score 2	Score 3
Great Crested Newt	Seen/netted in day Counted at night	<5 <10	5-50 10-100	>50 >100
Smooth Newt	Netted in day Counted at night	<10	10-100	>100
Palmate Newt	Netted in day Counted at night	<10	10-100	>100
Common Toad	Estimated Counted	<500 <100	500-5,000 100-1,000	>5,000 >1,000
Common Frog	Spawn Clumps Counted	<50	50-500	>500

For more info on this see Nature Conservancy Council (1989)[4]

Sites should include all water bodies known to be used by amphibian species where they are within 250m of each other and as long as there are no obvious barriers between them. In this instance all amphibian scores are totalled. Site boundaries should include:

- All aquatic water bodies known to support amphibians
- All suitable terrestrial habitat known, or likely to be used, in particular, newt hibernacula.

4. Nature Conservancy Council (1989). *Guidelines for the selection of biological Sites of Special Scientific Interest*. Nature Conservancy Council; Peterborough.

5.6 Invertebrates

5.6.1 Dragonflies

A dragonfly site should include its core breeding water body and any outlying habitat that is used for hunting when this area can be easily identified e.g. a small ruderal and scrubby habitat surrounded by improved grassland.

Sites of Biological Importance

All sites that support an established breeding population of any nationally scarce (notable) or Red Data Book species of *Odonata*.

All sites that support an established breeding population of *Odonata* which are rare or scarce in the county, i.e. species known from fewer than 10 localities, *but only where the county distribution of that species has been adequately recorded.*

Any site with an assemblage of 6 or more species of *Odonata* where these are established breeding populations.

5.6.2 Ground Nesting Solitary Bees & Wasps (SBW+)

(*This group includes any Hymenoptera species which digs brood chambers for their young* ***and*** *any insect species which are directly associated with them*)

An SBW+ site includes its core breeding ground and any outlying habitat which is used for hunting/foraging when this area can be easily identified e.g. a small ruderal and scrubby habitat surrounded by improved grassland or where its food plant/foraging area can be identified and located.

Sites of Biological Importance

All sites that supports an established breeding population of any nationally scarce (notable) or Red Data Book species of SBW+.

All sites that support an established breeding population of SBW+ which are rare or scarce in the county, i.e. species known from fewer than 10 localities, *but only where the county distribution of that species has been adequately recorded.*

Any site with an assemblage of 18 or more breeding species of SBW+.

Any site with an Archer index (1997)[5] score of 1.6 or over.

5. Archer, M.E. (1997) “Status and quality coding - part 2 & 3. BWARS Newsletter, Spring 1997, 4-5 & Autumn 1997, 8.

5.6.3 Butterflies and Moths

Any sites selected for butterfly interest must include:

- Areas containing larval foodplant
- Basking Areas and other suitable microhabitats known to be important for each species.

Sites of Biological Importance

Any sites that support an established breeding population of any nationally scarce (notable) and/or Red Data Book species.

All sites that support an established breeding population* of native species of any of the following:

1. Dark Green Fritillary (*Argynnis aglaja*)
2. Northern Brown Argus (*Aricia artaxerxes*)
3. Small Pearl Bordered Fritillary (*Boloria selene*)
4. Grizzled Skipper (*Pyrgus malvae*)
5. White-letter Hairstreak (*Strymonidia w-album*)

*Breeding should be confirmed for at least three years out of the previous five at time of selection. Following selection, species should be recorded every five years to confirm breeding status.

5.6.4 Other Invertebrates

Sites of Biological Importance

Any sites which support substantial breeding populations of White-clawed crayfish (1000 or more). These must be on easily identifiable stretches of streams/rivers or in pools and ponds.

Any sites that support an established breeding population of a species considered to be classed as RDB or Notable A. *The species must be non-synanthropic and proved to still be nationally scarce and proved to be breeding on site.*

All sites that support an established breeding population of native species which are rare or scarce in the county, i.e. species known from fewer than 10 localities, *but only where the county distribution of that species has been adequately recorded. (this may include wood ant, oil beetle, glow-worm etc)*

Sites that support an established breeding population of species that are known to be becoming increasingly scarce nationally through habitat loss and degradation, but are not yet scarce or rare in the county.

All sites supporting populations of species having 5% or more of their national distribution in the county.

Any sites which support an established breeding population of an invertebrate species which is specifically protected under the Habitats Directive and/or listed in Schedule 5 of the Wildlife & Countryside Act 1981 (as amended).

5.7 Vascular Plants

Sites of Biological Importance

Any sites that support an established population of a species considered to be classed as Uncommon, Rare or Very Rare (and not introduced) in the Hawksford (2017) checklist (see **4.1** for reference).

All sites supporting populations of species having 5% or more of their national distribution in the county.

Any sites which support an established breeding population of vascular plants which is specifically protected under the Habitats Directive and/or listed in Schedule 8 of the Wildlife & Countryside Act 1981 (as amended). *The species must be non-synanthropic and not introduced.*

5.8 Non-vascular Plants

Including Stoneworts, Algae, Lichens, Mosses and Liverworts.

Sites of Biological Importance

Any sites which support an established population of non-vascular plants which is specifically protected under the Habitats Directive and/or listed in Schedule 8 of the Wildlife & Countryside Act 1981 (as amended).

Any sites that support an established population of a species considered to be classed as Nationally Scarce. *The species must be non-synanthropic and not introduced.*

5.9 Fungi

Sites of Biological Importance

Any sites which support an established population of fungi which is specifically protected under the Habitats Directive and/or listed in Schedule 8 of the Wildlife & Countryside Act 1981 (as amended).

Any sites that support an established population of a species considered to be classed as Nationally Scarce. *The species must be non-synanthropic and not introduced.*

Appendix 1 SBI Criteria Definitions

Status	Recorder Code	Definition	
Site of Biological Importance (SBI)	QSBI1	A site attaining the SBI criteria under the published guidelines and surveyed/checked within the last 10 years	**Local WildLife Sites**
Natural Heritage Site	QNHS	Used for SBIs in Stoke as defined in the Stoke-on-Trent Nature Conservation Strategy	
Retained SBI or Retained BAS	QRSBI…	A site which attained the relevant grading (1 or 2) under the published guidelines at the time of survey, which was either over 10 years ago, or has not subsequently been surveyed under current guidelines, but is considered likely to pass	
Biodiversity Alert Site (BAS)	QSBI2	A site attaining the BAS criteria under the published guidelines and surveyed/checked within the last 10 years	
Potential SBI	QPSBI	A site surveyed under the current published guidelines which has not yet been assessed to ascertain its grade	
Area of Wildlife Interest	QAWI	Used for SBIs in Stoke, defined by the SOTES 1982-84 and subsequent surveys, now obsolete and replaced by NHS	
Rejected SBI	QSBIR	A site surveyed under the current published guidelines which failed to attain the required grade (i.e. less than grade 2). This can also include an historical grade if previously surveyed.	
Historic SBI	QHSBI…	A site attaining the relevant grade (1 or 2) under previous guidelines, but not attaining this grade under the current guidelines. (can also be a current SBI at a different grade or part of a current SBI if the boundary is drastically different)	
Site for Protected or Endangered Species	QSPES	A site with a defined boundary which does not attain any grading under current guidelines, but does support a significant population of a protected, endangered or BAP target species (this can occasionally have an undefined boundary for species requiring a 'buffer' (e.g. great crested newt)	
Species Interest Only	QSIO	This is to be used for sites erroneously graded in the past, which are not 'sites' but in fact only biological records (e.g. "Sweet Cicely growing in verge at this point"). The historical grading should also be retained	
Otters & Rivers Site	QO	A site surveyed for the presence of otters or water vole, whether positive or not – this *Ad Hoc* type of status is primarily only as a pointer to the work carried out on the site. Other similar stati may be established if required, but confer no value to the site	
Part of an existing SBI	QSBIP	The site has either been subsumed within a current SBI, or it is a division of the site (sub-site) decided by the surveyors. The site holds the status of the parent site, but it is not tagged to avoid 'double counting'	
Descheduled SBI	QHSBID…	Following work on the last SBI survey, this status is reinstated, and used to indicate the date at which an SBI ceases to be protected – this must be accompanied by the 'Historical SBI' grade as well	

The following gradings which exist in the system should be phased out in favour of one of those above:

Biodiversity Target Species Site	QBTS	'Transfer to 'Site for Protected or Endangered Species'

Destroyed SBI	QXSBI…	Transfer to relevant Historic status – information on destruction should be included in 'Site History' – *Might be worth keeping this status?*
"Ungraded" & "Provisional"		These 'additions' should be avoided in preference for 'Potential', the provisional grading details should be entered in comments

Notes: *1 National gradings have not been included in this listing because they are not decided by the Grading Committee.*
2 Geological gradings are not included here, but should undergo the same review and standardisation of definition, but the Staffordshire RIGS Group should be responsible for this procedure.

Appendix 2 Minimum Requirements for Survey and/or Site Designation

1. Site Name
2. Administrative Area; District & Local Parish
3. Central Grid Reference for Site
4. Altitude of Site
5. Date of Survey
6. Name of Surveyor
7. Conservation Status e.g. Environmental/Countryside Stewardship Status, Ancient Woodland, LNR, Common Land
8. Landowner and Tenant contact Details; Full Name, Postal Address & Contact Telephone Number
9. List of Habitat Types Present, Including BAP Priority Habitat Types
10. Individual Habitat Sizes (Hectares)
11. Site Description
12. Representative Species List with associated abundances on DAFOR Scale (for floral species) and Status (for faunal species).
13. Map Identifying Site Boundary
14. Phase 1 Survey Map of Site

Appendix 3 Example of Site Monitoring Form

Staffordshire Sites of Biological Importance
Site Monitoring Form

Site Code _____ **Previous Grade** _____

Site Name _____

Date of Previous Survey _____

Date of Current Survey _____ **Surveyor/s** _____

Site Boundary Same As Previous Survey *(please indicate)*

YES ☐ ***NO*** ☐

If *NO*, please comment on changes

Habitat Map Same As Previous Survey *(please indicate)*

YES ☐ ***NO*** ☐

Probable Cause of Change

Inappropriate management	☐	**Access/Recreation**	☐
Appropriate Management	☐	**Service Operations**	☐
Vandalism	☐	**Agricultural Operations**	☐
Development	☐	**Other (please specify below)**	☐

Photograph Taken ***YES*** ☐ ***NO*** ☐

Site in CSS/ESS ***YES*** ☐ ***NO*** ☐

Notes

Appendix 4 Modified HEGS survey form

STAFFORDSHIRE HEDGE RECORD AND EVALUATION FORM

Hedge No.: **Site:** **Date:**

Surveyor/s: **Grid Reference:**

1. Recently Laid or Coppiced: YES/NO (if yes, score 7 and ignore criteria 2 to 4 below)

	SCORE:	1	2	3	4
2. Height (exclude bank):		0–1m	1–2m	2–4m	4m+
3. Width:		0–1m	1–2m	2–3m	3m+
4. Average Cross-Section:					

5. Standard Trees
Species Present:

No. of Mature Trees/Pollards:

No. of Young Trees:

6. Length (in metres):

7. Mature Standards/100m	NIL	<1	1<3	3<5	>5
8. Young Standards/100m	NIL	<1	1<3	3<5	>5

STRUCTURAL SCORE

9. Percentage Gaps		30%+	30-10%	10-0%	no gaps
10. No. of End Connections	NIL	1	2	3	4

CONNECTIVITY SCORE

11. HEDGE CANOPY SPECIES

Combined Total of Tree and Shrub Species:

12. Native Species Dominant (Exotic spp dominant - score nil)	NIL	1-2spp	mixed

13. Total No. of Tree & Shrub Spp.	1-4	5-7	8-9	10+

DIVERSITY SCORE

14. Hedgebank/Lynchet	NIL	0–½m	½–1m	1m+
15. Ditch	NIL	on 1 side		on 2 sides
16. Grass Verge (2m+ wide)	NIL			

GRADE

ASSOCIATED FEATURES SCORE

Hedgerow Ground Flora Scoring Species

Acer campestre	F+	1	*Filipendula ulmaria*	F+	1	*Pimpinella saxifraga*	Present	2
Achillea ptarmica	Present	2	*Fragaria vesca*	O+	1	*Polypodium vulgare agg*	Present	1
Adoxa moshatellina	Present	2	*Frangula alnus*	Present	3	*Polystichum setiferum*	Present	1
Agrimonia eupatoria	O+	1	*Fraxinus excelsior*	F+	1	*Populus nigra ssp betulifolia*	Present	3
Ajuga reptans	O+	1	*Galium mollugao agg*	Present	1	*Potentilla erecta*	O+	1
Alchemilla filicaulis ssp. vestita	Present	2	*Galium odoratum*	Present	2	*Primula veris*	Present	2
Alchemilla glabra	Present	2	*Galium palustre*	F+	1	*Primula vulgaris*	O+	2
Alchemilla vulgaris agg	Present	2	*Galium saxatile*	Present	1	*Prunus avium*	Present	2
Alchemilla xanthochlora	Present	2	*Galium verum*	Present	1	*Prunus padus*	Present	2
Allium ursinum	O+	1	*Geranium pratense*	Present	1	*Pulicaria dysenterica*	O+	1
Alnus glutinosa	O+	1	*Geum rivale*	Present	2	*Quercus petrea*	Present	1
Anemone nemorosa	O+	2	*Hieracium sp*	Present	2	*Quercus robur*	F+	1
Apium nodiflorum	O+	1	*Humlus luplus*	O+	1	*Rhamnus catharticus*	Present	3
Asplenium trichomanes	Present	2	*Hyacinthoides non-scriptea*	O+	2	*Ribes rubrum*	Present	1
Athyrium filix-femina	O+	1	*Iris pseudoacorus*	O+	1	*Rosa sp*	O+	2
Blechnum spicant	Present	2	*Juncus sp*	O+	1	*Rubus idaeus*	O+	1
Briza media	Present	2	*Knautia arvensis*	Present	2	*Salix sp*	O+	1
Bryonia dioica	F+	1	*Lamiastrum galebdolon*	O+	2	*Sanguisorba minor ssp. minor*	Present	2
Calluna vulgaris	Present	2	*Lathyrus pratensis*	O+	1	*Sanguisorba officinalis*	O+	1
Caltha palustris	Present	1	*Leontodon autumnalis*	O+	1	*Scrophularia auriculata*	O+	1
Campanula latifloia	Present	2	*Leontodon hispidus*	Present	2	*Sorbus aucuparia*	F+	1
Campanula rotundifolia	O+	1	*Leucanthemum vulgare*	O+	1	*Sorbus torminalis*	Present	3
Cardamine amara	O+	1	*Ligustrum vulgare*	Present	2	*Stachys officinalis*	O+	1
Carex sp	Present	2	*Linum catharticum*	Present	2	*Stachys palustris*	Present	2
Centaurea nigra	O+	1	*Lonicera periclymenum*	F+	1	*Stellaria holostea*	O+	1
Cerrato claviculata	O+	1	*Lotus corniculatus*	O+	1	*Succisa pratensis*	Present	2
Chrysoplenium oppositifolium	O+	1	*Lotus pedunculatus*	O+	1	*Tamus communis*	O+	1
Circaea lutetiana	O+	2	*Luzula sp*	Present	1	*Taxus baccata*	Present	2
Cornus sanguinea	Present	3	*Lychnis flos-cuculi*	O+	1	*Tilia cordata*	Present	3
Corylus avellana	F+	1	*Lycopus europaeus*	O+	1	*Tilia platyphyllos*	Present	3
Cruciata laevipes	O+	1	*Lysimachia nemorum*	O+	1	*Ulex europaeus*	O+	1
Cytisus scoparius ssp. scoparius	Present	1	*Lysimachia nummularia*	O+	1	*Ulex gallii*	Present	2
Dactylorhiza fuchsii	Present	3	*Malus sylvestris*	Present	2	*Ulmus glabra*	O+	1
Danthonia decumbens	Present	2	*Melica uniflora*	Present	2	*Ulmus sp*	Present	2
Dryopteris affinis	Present	1	*Mentha aquatica*	O+	1	*Vaccinium myrtillus*	Present	2
Elocharis palustris	Present	2	*Mercuralis perennis*	O+	1	*Valeriana dioica*	Present	2
Elymus caninus	Present	2	*Milium effusum*	Present	2	*Valeriana officinalis*	O+	1
Equisetum sp (not *arvense*)	Present	1	*Oxalis acetosella*	O+	1	*Veronica beccabunga*	O+	1
Erica cinerea	Present	2	*Petasites hybridus*	O+	1	*Veronica montana*	O+	1
Erica tetralix	Present	2	*Phyllitis scolopendrium*	Present	1	*Veronica officinalis*	Present	1
Euonymus europaeus	Present	3	*Pilosella officinarum*	O+	1	*Viburnum opulus*	Present	2
Euphrasia sp	Present	2	*Pimpinella major*	Present	1	*Viola palustris*	Present	2
						Viola riviniana	O+	1
						Viola odorata	Present	2

In addition, any species listed as rare or very rare in Hopkins (1996) scores 3 points

Notes/Notable Species (continue on separate sheet, but only if absolutely necessary)

Total Species Score

Adjacent Habitat Types (JNCC Phase 1)

Hedge Position & Management

New hedge	Cut/Trimmed	Fence/Wall	Parish Boundary
Old Laid	Unmanaged	Garden Boundary	Track/Roadside

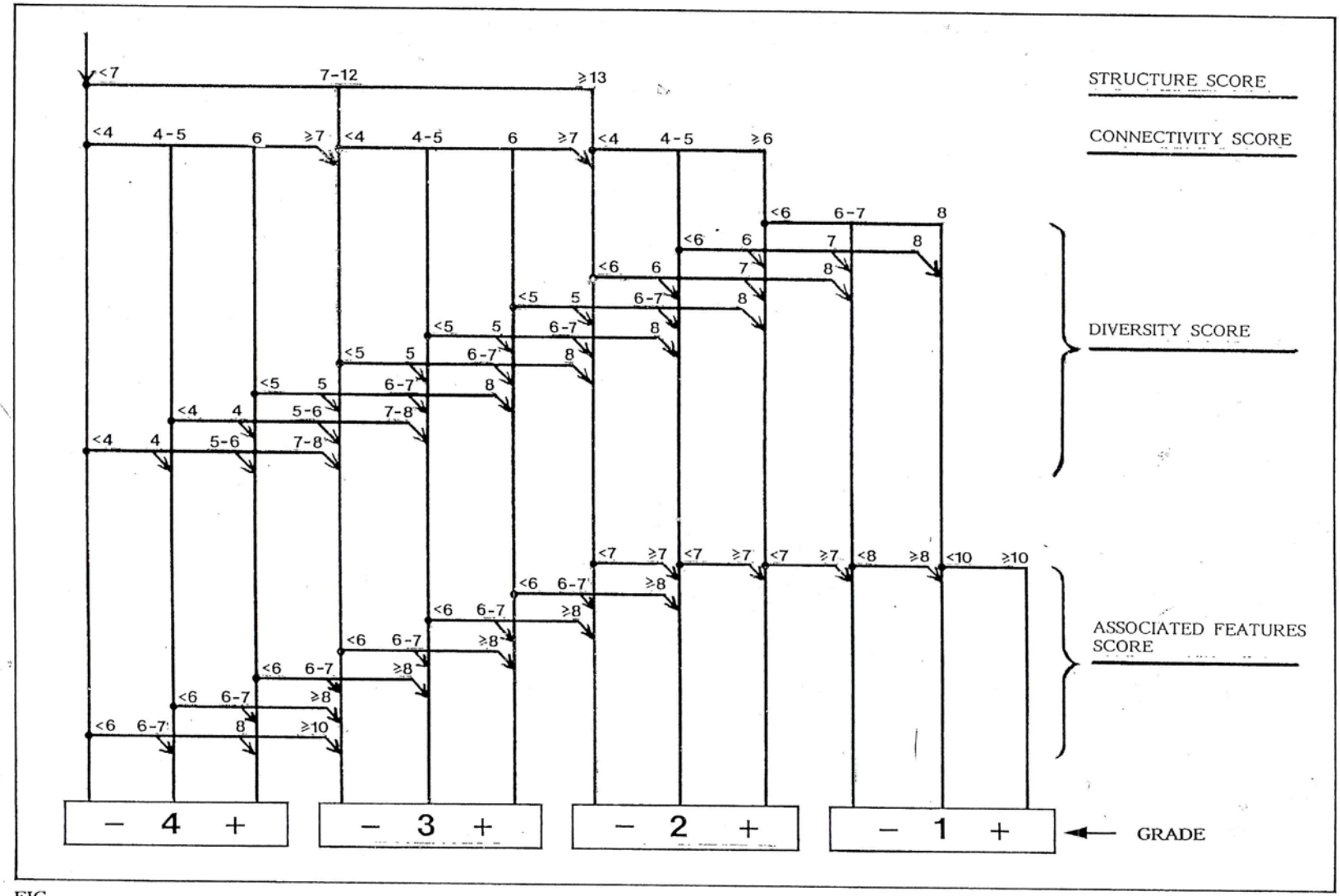


FIG.

Appendix 5 PSYM survey form

Pond PSYM Fieldsheet

Site and sample details		Grid ref.
Site name		
Location		
Weather		
Site landowner details		
Survey date	Surveyor(s)	
Notes		

Environmental Data

	Altitude (m)	pH		
	Shade: % pond overhung	% emergent		plant cover
	Inflow (absent = 0, present = 1)	Pond area		(m^2)
	% of pond margin grazed			

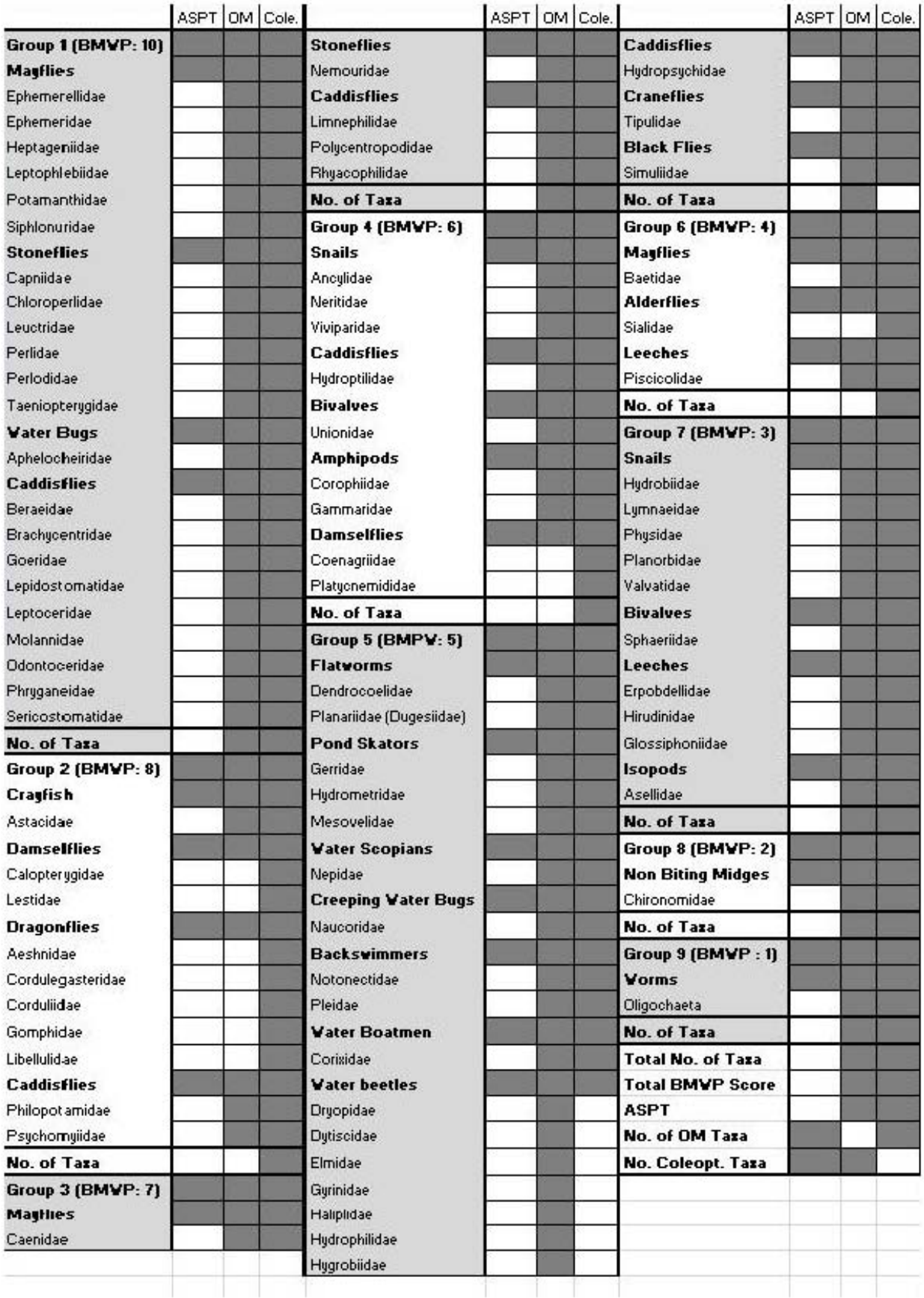
Sketch of pond

Pond base: categorise into one of three groups: 1=0%-32%, 2=33%-66%, 3=67%-100%

Clay/silt _____ Sand, gravel, cobbles _____ Bed rock _____

Peat _____ Other _____

Site Description:



	ASPT	OM	Cole.
Group 1 (BMVP: 10)			
Mayflies			
Ephemerellidae			
Ephemeridae			
Heptageniidae			
Leptophlebiidae			
Potamanthidae			
Siphlonuridae			
Stoneflies			
Capniidae			
Chloroperlidae			
Leuctridae			
Perlidae			
Perlodidae			
Taeniopterygidae			
Water Bugs			
Aphelocheiridae			
Caddisflies			
Beraeidae			
Brachycentridae			
Goeridae			
Lepidostomatidae			
Leptoceridae			
Molannidae			
Odontoceridae			
Phryganeidae			
Sericostomatidae			
No. of Taxa			
Group 2 (BMVP: 8)			
Crayfish			
Astacidae			
Damselflies			
Calopterygidae			
Lestidae			
Dragonflies			
Aeshnidae			
Cordulegasteridae			
Corduliidae			
Gomphidae			
Libellulidae			
Caddisflies			
Philopotamidae			
Psychomyiidae			
No. of Taxa			
Group 3 (BMVP: 7)			
Mayflies			
Caenidae			

	ASPT	OM	Cole.
Stoneflies			
Nemouridae			
Caddisflies			
Limnephilidae			
Polycentropodidae			
Rhyacophilidae			
No. of Taxa			
Group 4 (BMVP: 6)			
Snails			
Ancylidae			
Neritidae			
Viviparidae			
Caddisflies			
Hydroptilidae			
Bivalves			
Unionidae			
Amphipods			
Corophiidae			
Gammaridae			
Damselflies			
Coenagriidae			
Platycnemididae			
No. of Taxa			
Group 5 (BMPV: 5)			
Flatworms			
Dendrocoelidae			
Planariidae (Dugesiidae)			
Pond Skators			
Gerridae			
Hydrometridae			
Mesovelidae			
Water Scopians			
Nepidae			
Creeping Water Bugs			
Naucoridae			
Backswimmers			
Notonectidae			
Pleidae			
Water Boatmen			
Corixidae			
Water beetles			
Dryopidae			
Dytiscidae			
Elmidae			
Gyrinidae			
Haliplidae			
Hydrophilidae			
Hygrobiidae			

	ASPT	OM	Cole.
Caddisflies			
Hydropsychidae			
Craneflies			
Tipulidae			
Black Flies			
Simuliidae			
No. of Taxa			
Group 6 (BMVP: 4)			
Mayflies			
Baetidae			
Alderflies			
Sialidae			
Leeches			
Piscicolidae			
No. of Taxa			
Group 7 (BMVP: 3)			
Snails			
Hydrobiidae			
Lymnaeidae			
Physidae			
Planorbidae			
Valvatidae			
Bivalves			
Sphaeriidae			
Leeches			
Erpobdellidae			
Hirudinidae			
Glossiphoniidae			
Isopods			
Asellidae			
No. of Taxa			
Group 8 (BMVP: 2)			
Non Biting Midges			
Chironomidae			
No. of Taxa			
Group 9 (BMVP : 1)			
Worms			
Oligochaeta			
No. of Taxa			
Total No. of Taxa			
Total BMVP Score			
ASPT			
No. of OM Taxa			
No. Coleopt. Taxa			

Plant recording sheet (score through each species present)

RS = Rarity Score, TRS = Trophic Ranking Score

RS	TRS	Emergent plants
1		Achillea ptarmica
1		Acorus calamus
1		Agrostis canina
1	*LP*	Agrostis stolonifera
32		Alisma gramineum
2		Alisma lanceolatum
1	9	Alisma plantago-aquatica
2		Alopecurus aequalis
4		Alopecurus borealis
1		Alopecurus geniculatus
2		Anagallis tenella
2		Andromeda polifolia
1		Angelica archangelica
1		Angelica sylvestris
2		Apium graveolens
1	10	Apium nodiflorum
32		Apium repens
2		Baldellia ranunculoides
2	10	Berula erecta
2		Bidens cernua
1		Bidens connata
1		Bidens frondosa
2		Bidens tripartita
2		Blysmus compressus
2		Bolboschoenus maritimus
2*		Butomus umbellatus
2		Calamagrostis canescens
2		Calamagrostis epigejos
8		Calamagrostis purpurea
8		Calamagrostis stricta
16		Calamogrostis scotica
1		Calla palustris
1	7	Caltha palustris
1		Cardamine amara
1		Cardamine pratensis
2		Carex acuta
1	10	Carex acutiformis
4		Carex appropinquata
2		Carex aquatilis
2		Carex curta
2		Carex diandra
1		Carex disticha
1		Carex echinata
2	10	Carex elata
4		Carex elongata
1		Carex flacca
1		Carex hostiana
2		Carex laevigata
2	4	Carex lasiocarpa
2	4	Carex limosa
1	5	Carex nigra
1		Carex oedocarpa
1		Carex otrubae
1		Carex panicea
2	10	Carex paniculata
1		Carex pendula
2	10	Carex pseudocyperus
1		Carex pulicaris
1	10	Carex riparia
1	5.3	Carex rostrata
2		Carex spicata
2		Carex vesicaria
1		Carex viridula
16		Carex vulpina
1		Carex sp.
2		Catabrosa aquatica
4		Cicuta virosa
2		Cirsium dissectum
1		Cirsium palustre
2		Cladium mariscus
1		Conium maculatum
1		Crassula helmsii
1		Crepis paludosa
16		Cyperus fuscus
4*		Cyperus longus
2		Dactylorhiza sp (undet.)
32		Damasonium alisma
1		Deschampsia cespitosa
2		Drosera anglica
1		Drosera binata
1		Drosera capensis
2		Drosera intermedia
1		Drosera rotundifolia
16		Dryopteris cristata
2		Eleocharis acicularis
8		Eleocharis austriaca
2		Eleocharis multicaulis
1	*LP*	Eleocharis palustris
2		Eleocharis quinqueflora
2		Eleocharis uniglumis
2		Epilobium alsinifolium
2		Epilobium anagallidifolium
1		Epilobium brunnescens
1		Epilobium ciliatum

RS	TRS	
1		Epilobium hirsutum
1		Epilobium obscurum
1		Epilobium palustre
1		Epilobium parviflorum
2		Epilobium tetragonum
2		Epipactis palustris
1	*LP*	Equisetum fluviatile
1		Equisetum palustre
1		Erica tetralix
1	2.5	Eriophorum angustifolium
16		Eriophorum gracile
2		Eriophorum latifolium
1		Eriophorum vaginatum
1		Eupatorium cannabinum
1		Filipendula ulmaria
2		Galium boreale
8		Galium constrictum
1		Galium palustre
2		Galium uliginosum
1		Geum rivale
2		Glyceria declinata
1	*LP*	Glyceria fluitans
1	10	Glyceria maxima
2		Glyceria notata
1		Gnaphalium uliginosum
1	*LP*	Hydrocotyle vulgaris
2		Hypericum elodes
1		Hypericum tetrapterum
4		Hypericum undulatum
2		Impatiens capensis
1		Impatiens glandulifera
4*		Impatiens noli-tangere
1	*LP*	Iris pseudacorus
1		Isolepis setacea
1		Juncus acutiflorus
1		Juncus articulatus
1		Juncus bufonius agg.
1	5.3	Juncus bulbosus
2		Juncus compressus
1		Juncus conglomeratus
1	*LP*	Juncus effusus
2		Juncus foliosus
1		Juncus inflexus
32		Juncus pygmaeus
2		Juncus subnodulosus
4		Lathyrus palustris
32		Leersia oryzoides
32		Liparis loeselii
1		Lotus pedunculatus
1		Luzula luzuloides
2		Luzula sylvatica
1		Lychnis flos-cuculi
1		Lycopus europaeus
1		Lysimachia nummularia
1		Lysimachia terrestris
4		Lysimachia thyrsiflora
2		Lysimachia vulgaris
16		Lythrum hyssopifolium
2		Lythrum portula
1		Lythrum salicaria
1	7.3	Mentha aquatica
16		Mentha pulegium
1	5.3	Menyanthes trifoliata
1		Mimulus guttatus
1		Mimulus luteus
16		Minuartia stricta
1		Molinia caerulea
1		Montia fontana
1	7.7	Myosotis laxa
1	9	Myosotis scorpioides
1		Myosotis secunda
4		Myosotis stolonifera
1		Myosotis sp (undet.).
2		Myosoton aquaticum
1		Myrica gale
1		Narthecium ossifragum
2		Oenanthe aquatica
1		Oenanthe crocata
2		Oenanthe fistulosa
2		Oenanthe fluviatilis
2		Oenanthe lachenalii
2		Oenanthe pimpinelloides
4		Oenanthe silaifolia
2		Osmunda regalis
2		Parnassia palustris
1		Pedicularis palustris
1	10	Persicaria hydropiper
1		Persicaria maculosa
2		Persicaria minor
4		Persicaria mitis
1		Petasites hybridus
1		Petasites japonicus
4		Peucedanum palustre
1	8.5	Phalaris arundinacea

RS	TRS	
1	7.3	Phragmites australis
4	5.5	Pilularia globulifera
2		Pinguicula lusitanica
1		Pinguicula vulgaris
1		Potentilla erecta
1	5.3	Potentilla palustris
1		Pulicaria dysenterica
16		Pulicaria vulgaris
1		Ranunculus ficaria
1	*LP*	Ranunculus flammula
2	10	Ranunculus hederaceus
2*		Ranunculus lingua
2		Ranunculus omiophyllus
32		Ranunculus ophioglossifolius
32		Ranunculus reptans
1	10	Ranunculus sceleratus
2		Rhynchospora alba
4		Rhynchospora fusca
2		Rorippa amphibia
8		Rorripa islandica
2	10	Rorippa microphylla
1	10	Rorippa nasturtium-aquaticum
1	10	Rorippa (undet.).
1		Rorippa palustris
2	10	Rumex hydrolapathum
2		Rumex maritimus
2		Rumex palustris
1		Sagina procumbens
1		Sagittaria subulata
2		Samolus valerandi
2	7.7	Schoenoplectus lacustris
32		Schoenoplectus pungens
2		Schoenoplectus tabernaemontani
32		Schoenoplectus triqueter
16		Schoenus ferrugineus
2		Schoenus nigricans
16		Scorzonera humilis
1		Scrophularia auriculata
1		Scutellaria galericulata
1		Senecio aquaticus
1		Senecio fluviatilis
32		Senecio paludosus
4		Sium latifolium
1	10	Solanum dulcamara
4		Sonchus palustris
1	8.5	Sparganium erectum
1		Stachys palustris
2		Stellaria palustris
1		Stellaria uliginosa
1		Symphytum officinale
16		Teucrium scordium
2		Thalictrum flavum
4		Thelypteris palustris
2		Tofieldia pusilla
1		Trichophorum cespitosum
1		Triglochin palustre
2	10	Typha angustifolia
1	8.5	Typha latifolia
2		Valeriana dioica
1		Vallisneria spiralis
1		Veronica anagallis-aquatica
1	10	Veronica beccaburga
2		Veronica catenata
1	5.5	Veronica scutellata
1		Veronica sp. (undet.)
1		Viola palustris
32		Viola persicifolia
1		Unknown exotic

		Floating-leaved plants
1		Azolla filiculoides
2		Hydrocharis morsus-ranae
1		Hydrocotyle ranunculoides
2		Lemna gibba
1	9	Lemna minor
1		Lemna minuta
1	10	Lemna trisulca
4		Luronium natans
1		Menyanthes trifoliata
1		Nuphar advena
2	8.5	Nuphar lutea
4	7	Nuphar pumila
2*	6.7	Nymphaea alba
1		Nymphaea sp. (exotic)
4*		Nymphoides peltata
1	9	Persicaria amphibia
1	*LP*	Potamogeton natans
1	3.7	Potamogeton polygonifolius
2		Riccia fluitans
2		Ricciocarpus natans
2		Spirodela polyrhiza
4		Wolffia arrhiza

* = uncommon species often introduced to sites (see Preston *et al.* 2002 for details), if so score species as 1.

RS	TRS	Submerged plants
2	6.3	Apium inundatum
1		Aponogeton distachyos
1		Cabomba caroliniana
2		Callitriche brutia
1	6.3	Callitriche hamulata
2	8.5	Callitriche hermaphroditica
2		Callitriche obtusangula
2		Callitriche platycarpa
1	7.3	Callitriche stagnalis
4		Callitriche truncata
1		C. stagnalis/platycarpa agg.
1		C. hamulata/brutia agg.
1		Callitriche sp. (undet.)
2	10	Ceratophyllum demersum
2		Ceratophyllum submersum
2	7.3	Chara sp.
1		Egeria densa
4	7	Elatine hexandra
4		Elatine hydropiper
2		Eleogiton fluitans
1		Elodea callitrichoides
1	7.3	Elodea canadensis
1	10	Elodea nuttallii
8		Eriocaulon aquaticum
1	6.3	Fontinalis antipyretica
2		Groenlandia densa
2	7.7	Hippuris vulgaris
2		Hottonia palustris
4		Isoetes echinospora
2	5	Isoetes lacustris
1		Lagarosiphon major
2	6.7	Littorella uniflora
2	5	Lobelia dortmanna
8		Ludwigia palustris
1	6.7	Myriophyllum alterniflorum
1		Myriophyllum aquaticum
2	9	Myriophyllum spicatum
4		Myriophyllum verticillatum
4		Najas flexilis
2	6.7	Nitella sp.
2		Oenanthe fluviatilis
16		Potamogeton acutifolius
2	5.5	Potamogeton alpinus
2	7.3	Potamogeton berchtoldii
4		Potamogeton coloratus
4		Potamogeton compressus
1	10	Potamogeton crispus
16		Potamogeton epihydrus
4	10	Potamogeton filiformis
2	10	Potamogeton friesii
2	7	Potamogeton gramineus
2	10	Potamogeton lucens
8		Potamogeton nodosus
2	8	Potamogeton obtusifolius
1	10	Potamogeton pectinatus
2	7.3	Potamogeton perfoliatus
2	8.5	Potamogeton praelongus
2	9	Potamogeton pusillus
8		Potamogeton rutilus
4	10	Potamogeton trichoides
2	10	Ranunculus aquatilis
2	10	Ranunculus baudotii
2	10	Ranunculus circinatus
2		Ranunculus fluitans
2	7	Ranunculus peltatus
2	8.5	Ranunculus penicillatus
2	8.5	Ranunculus trichophyllus
16		Ranunculus tripartitus
1		Ranunculus sp. (undet.)
1		Sagittaria latifolia
1		Sagittaria rigida
2		Sagittaria sagittifolia
2	4	Sparganium angustifolium
1	10	Sparganium emersum
2		Sparganium natans
1	2.5	Sphagnum sp.
4*		Stratiotes aloides
2	4	Subularia aquatica
		Tolypella sp.
2		Utricularia australis
2	4	Utricularia intermedia
2	4	Utricularia minor
2	5	Utricularia vulgaris
1		Vallisneria spiralis
2	10	Zannichellia palustris

	Number of emergent & submerged species
	Number of uncommon species (with a rarity score of 2 or more)
	Trophic Ranking Score

LP = species exhibiting little nutrient preference