# THE DISTRICT COUNCIL OF WREKIN

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# TELFORD GREEN NETWORK NATURE CONSERVATION ASSESSMENT

For: The District Council of Wrekin

By: Penny Anderson Associates 52 Lower Lane Chinley Stockport SK12 6BD

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## 1. **INTRODUCTION**

#### The Remit

- 1.1 This consultancy was commissioned in October 1989 by the District Council of Wrekin to provide an evaluation of the areas of nature conservation interest in Telford New Town. As part of this process, a consistent and comprehensive data base was to be produced which provided a summary of the information available for each site in a systematic fashion.
- 1.2 Objective criteria were then to be devised and applied to the data base so that sites could be classified as of higher or lower value. This site evaluation constitutes part of the process being conducted by the District Council of Wrekin to develop a Green Network in the Local Plan for the New Town.
- 1.3 Subsequent to the site evaluation exercise, this consultancy was commissioned to conduct a field survey of 27 areas which had been identified as potential sites of wildlife interest, or which inadequate information had been available for a confident evaluation. These sites are identified on Table 5, and the results of the survey incorporated into this report and the data base.

## The Report

- 1.4 This report describes the process of, first, the establishment of the data base, and secondly, the development of the criteria and their application for the grading operation. The data base itself is provided as separate data sheets in a ring binder, one for each site on which information was available. The criteria and grading are included on these sheets.
- 1.5 Additional information representing stages in the analysis and evaluation is also represented in separate documents, and reference to these is made, where appropriate, in the report.
- 1.6 The remit also requested advice on any sites or areas for which problems, or creative conservation measures have been identified. All have been analysed in the context of the nature of their surrounds and location in relation to areas of development, an unsystematic mixture of comments are provided, added as text files on the data base. These comments are systematic for the sites surveyed in detail in 1990.

# 2. <u>COMPILATION OF THE DATA BASE</u>

#### The Approach

- 2.1 In order to be able to evaluate a wildlife site, a number of characteristics need to have been recorded or assessed. In the collection of records for the descriptive part of the data base, this need for particular information has influenced the approach taken and the questions asked. Furthermore, a computer-based data base, and the application of a set of objective criteria require that equivalent information is available for each site.
- 2.2 With this in mind, a variety of organisations have been approached, publications scoured, and data accumulated from local authority information. Appendix I lists the main sources of records and their quality. Ideally, the information required should provide:
  - i) A site map so that site boundaries are defined.
  - ii) Species lists for the site as defined. Full, or representative lists of characteristic and important plant species would be needed. Information on any animals would be useful for most sites, but essential where a site was purported to be of importance for certain animal groups.
  - iii) A habitat sketch map and species lists for each habitat or major community.
  - iv) An accompanying indication of the relative abundance of at least the main plant species.
  - v) Notes on the physical features, pattern and diversity of each habitat type.

All of this information ideally is needed as the basis of an evaluation. Under our first remit, due to a combination of inappropriate season and inadequate survey time, sites could not be properly surveyed as part of this evaluation, and thus it had to be largely dependent on the information already available. The quality of the data, however, proved to be variable, and did not consistently produce the ideal information base as set out above. As a consequence, the ideal approach had to be modified to accommodate the data being collated. Subsequently, field work in 1990 has provided this essential information for approximately a quarter of the sites. The following paragraphs set out the progression of data collection, collation and synthesis.

#### The Habitat Map

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- 2.3 The field by field data, produced on a computer print-out by the Telford Nature Conservation Project has enabled the preparation of a large-scale habitat map for the New Town area. This is presented as Fig.11, and has been updated from this 1985-86 survey on an overlay by reference to a nearly complete set of aerial photographs. Unfortunately, the aerial photographic coverage of the town is incomplete in the most recent runs. Photographs for the NW sector were taken in May 1989 at a scale of 1:8000. These are of good quality. The central western area was photographed in June 1988 at 1:11,600, whilst the most recent eastern area photographs were taken in May 1986 at 1:8000. Unfortunately, there is a narrow strip of about 0.5km lying centrally from north to south which is not covered by any of the photographs.
- 2.4 The habitat map has been overlain with the sites selected by the Shropshire Wildlife Trust (SWT) as of wildlife value (Fig.2). This comprises the sites they have already identified as Prime Sites (PS) of ecological importance, and Sites of Ecological Value (SOEV) which are of lower interest.
- 2.5 This combined information presents an immediate display of the ecological nature of Telford. It is useful to judge a variety of attributes relevant to the evaluation. For example:
  - i) The relative extent of the sites the SWT consider to be of higher value (as distinct from the general background landscaping and mosaic of the countryside) which helps assess how well-endowed Telford is for interesting wildlife habitats.
  - ii) The relative abundance of the different main habitat types so that the rarer ones can be identified.
  - iii) The geographical context of the better habitats in relation to development, other habitats or agricultural land. This assists in identifying the degree of isolation a site may suffer, and the need for buffer zones or corridors and links to other sites.
  - iv) The potential habitats and land that might be available to provide buffers, links and corridors around or from valuable sites within the Green Network.
  - v) The likelihood of there being land available for habitat creation in sensitive areas where constriction, isolation or fragmentation has occurred or could happen.

Where the figures comprise large-scale maps of Telford, they are presented separately from this report.

- 2.6 It is unfortunate that the field by field survey was not designed to yield more information. Some plants are listed for a few areas, but these tend to be aliens, or peculiar species on a site are included rather than those that are the key ones to convey the ecological character of the area.
- 2.7 Since there is no report to accompany the survey, no information has been found providing guidelines on how habitats were defined in this field by field survey. As a result, apart from providing additional species on a few lists obtained from elsewhere, the survey is most valuable in providing a basic habitat map of Telford New Town.
- 2.8 Originally, the evaluation of the sites was to be confined to the area of the draft Green Network as prepared in October 1989. However, it was felt important first to ascertain whether there were any habitats omitted, which were not already destined for future development, which needed to be included in the Green Network. Furthermore, the need for buffers, corridors and links might have stretched beyond the draft Green Network area. In the event, this proved to be a useful approach since the area of the Green Network has been redefined and expanded significantly since this project commenced.
- 2.9 Whilst assessing the information mapped, the possible and probable location and extent of the future Green Network was continually kept in mind.
- 2.10 As well as examining the habitat map within the context of the Green Network drafts, an overlay has also been prepared (Fig.3) which shows all the areas already allocated for housing or industry. These areas would be automatically excluded from the Green Network. Potential conflict has emerged between one site of known wildlife importance and future development. This is at Randley Valley (Site 108) which consists possibly of ancient woodland with an attractive network of old, thick hedges. Measures for minimising ecological damage during development are included in a text file of the data base (see below).

# Development of the Data Base

2.11 Collation of data from all other sources has combined species lists and information from the SWT, the Telford Nature Conservation Project, the Shropshire Badger Group, Shropshire Ornithological Society and the NCC Species Protection Officer. On the whole, the same wildlife areas, but with often differing boundaries, have been surveyed, sometimes on up to seven occasions between 1977 and 1989. This suggests that the more important areas for wildlife are known and have been surveyed. However, by cross referencing these sites with the aerial photographs, and as a result of field survey, a few additional areas were noted that warranted a full survey and evaluation. The majority have been surveyed in the second stage of this evaluation. All the sites are shown on Fig.4.

- 2.12 Table 1 (attached at the end of this report) lists all the sites. These include Prime Sites, Sites of Ecological Value, and a number of other areas for which some information is available, but which had not previously been evaluated. A handful of sites have been included which lie beyond Telford's boundaries, but which help first, to place Telford's sites into context, and second, to ensure corridors within the Telford area are provided to link with them. There are other habitats around Telford which have not been Table 1 tabulates the dates and groups for which records included. are available for all the sites. For ease of reference, the sites are numbered and these numbers are used consistently throughout the data base (Table 6 provides the sites in alphabetical order for cross reference).
- 2.13 The information presented in Table 1 shows immediately that some sites have been recorded more often than others, that certain animal groups, eg. butterflies have been recorded more on some sites than elsewhere, but also that not all sites have been covered. Records of numbers of different species in a group need to be interpreted carefully in relation to the habitat potential and which species have been recorded since some are common and widespread, while others characterise important sites. In particular it needs to be noted that amphibians and bats are considered to be substantially under-recorded.
- 2.14 The next stage in data collation has been the amalgamation of all plant species recorded (since these are more likely to have been systematically recorded than animals) onto species sheets. The different recording dates have been separated with a colour code, and any comments derived from the data added to the sheets. Thus, if a site appeared to alter between recording dates, a comment has been noted on the sheet. The site boundaries adopted incorporate the largest area surveyed and known to exist currently over the whole of the records since maps of the sites are seldom included with the species lists. Further comments on the general character of the site, and any notable features are also summarised on the sheets. These sheets are provided in a separate bundle. Since the lists are in Latin and are unqualified, they will need careful interpretation and application by an experienced ecologist who is familiar with the ecological implications of the presence or absence of different species.
- 2.15 The species lists are probably not comprehensive for every site, despite often repeated sampling. Site surveys conducted specifically for this project have found additional plant species on some sites, even in a January visit. Since some of these species are usually regarded as typical of long-established habitats, and were noticeable, rather than represented by an odd plant, they must have been overlooked in previous surveys. For the sites surveyed as part of this project (some 25%), the species data provides a sound basis for evaluation. For some other sites, the species lists are less complete but adequate to give a picture of the nature and quality of the site.

- 2.16 The outcome of these deficiencies is that total richness of any site (and richness is an important criterion in the evaluation) cannot be judged by comparing species totals for equivalent habitat types. Instead, to gain an impression of the character of the flora, the number of characteristic woodland, grassland and wetland plants have been scored for each site. These are presented in Tables 2-4, and overlays have been provided with the separate bundle of site species lists. They have been derived from a number of sources, and modified to fit the Shropshire context as follow:
  - i) Woodland - This list is based on the "Amplitude" column on Table 5 in Ratcliffe (1977) which lists species which are exclusively or mainly found in woodland. It includes only the field layer species and omits the species which are not expected in Telford because of their natural geographical disturbance (eg. Scottish species). Some species such as fly honeysuckle, have also been omitted because The Flora of Shropshire (Sinker et al, 1985) comments that they are only planted or naturalised in the county. Several additions have also been made to Ratcliffe's (1977) list either because they are listed as indicators of ancient woodland in Peterken (1974) or Rackham (1980) or because personal experience suggests that they are mostly confined to woodland. Six tree and shrub species have been included because they tend to be indicators of long-established woodland when they occur, these include hazel, maple, small- and large- leaved lime (limes of hybrid or dubious origin have not been scored), wild service and Midland hawthorn. It should also be noted that some species on this list are not strictly confined to woodland but when they occur in woodland/scrub habitats it tends to be of high quality (eg. early purple orchid). Some species also persist in grassland or wetland when woodland has been Occasionally, therefore, woodland species are cleared. present when there is no woodland on the site. In total there are 67 species on the woodland/scrub list.
  - ii) <u>The grassland</u> list includes species which, through extensive experience, are predominantly found in grasslands. More catholic species which are also found in other habitats have been omitted. This list has been compiled by reference to the *Shropshire Flora* (Sinker *et al*, 1985) and species which do not occur in the county or in the Telford region have been omitted. It needs to be noted that the list includes species which are found in all the different types of grassland (eg. acidic, calcareous or neutral) but that some grassland types are intrinsically richer in species than others. The list contains 93 species.
  - iii) <u>The wetland</u> list has been assembled by reference to the Shropshire Flora (Sinker et al 1985). It includes species which are found only in wetland habitats including open water, marsh, marginal or emergent vegetation or in wet grassland. Some of the species which are not known in the Telford area have been omitted. This list contains 143 species, some of which, however, may not occur in Telford.

Interpretation of these lists needs to be undertaken with care 2.17 first because habitats on acidic soils tend to support fewer species than those on neutral or base-rich soils, but may be Secondly, equally valuable sites. straight comparison of numbers of species needs to take the short-comings of the survey data into consideration, thirdly, the absence of good scores may reflect a site important for another habitat such as heathland, rather than simply a species-poor site, and fourthly, a few species are found on more than one list, so the totals presented cannot necessarily be added together. However, use of the lists does exclude the catholic, non-diagnostic and alien species so that the main habitats of the site can be identified.

#### The Computer Data Base

2.18 The approach outlined above has led to the selection of relevant fields to present the basic habitat description in the computerised data base. Numerous functional categories are included to incorporate site name and number, the grid reference, parish, owner and area. Appendix III provides instructions on how to complete the data base for each site, but some amplification of the definitions would be useful here.

# i) <u>Site Name</u>

This is the name provided by the Shropshire Wildlife Trust, or that adopted during the current survey. They mostly relate to the geographical location of the site. A site has been defined as the area for which information is available or which has already been identified by SWT. It had been hoped to adopt an ecological unit as a site, to include not only the areas of known ecological value, but also adjacent habitats that for various reasons it would be advantageous to incorporate. However, for many sites, since so little information is available for these additional areas, they are shown on Fig.4 and discussed under buffer zones in section 4, but have had to be excluded from the data base for the moment.

## ii) <u>Site Number</u>

A unique site number has been given to all the sites of ecological interest, irrespective of their quality. Table 5 provides a complete list of the sites by number order, whilst Table 6 reorders these alphabetically for ease of reference.

# iii) <u>Grid Reference</u>

This is taken either from the middle of the site, at either end for linear sites, or provides the 4 figure grid squares covered by a larger site.

# iv) <u>Parish</u>

The parish or parishes in which the site lies is provided in this field.

# v) <u>Owner</u>

Where known this is given, but may need to be extended in the future to accommodate tenants, lesees or agents, and will require correction when TDC no longer owns sites.

vi) <u>Area</u>

There are two area fields, one for the exact hectarage of a site if known and a second which provides an area code in size classes. Although the area is sometimes provided on the records obtained from the SWT, it is not always clear to which area the measurement relates. Since there was insufficient time to re-calculate the extent of each site, and since in addition the boundaries on some need to be checked in the field, the actual hectarage has not been provided unless it is clear it is correct. The sites which have been surveyed during 1990 all have areas provided. Where the actual area is unclear the second field is completed and the classes are defined in Appendix III. The length is given for a linear site.

#### vii) <u>Land Use</u>

This is a straightforward record of current land use on a site which might reveal how a site is being managed, or how important the wildlife status could be to the owner.

x) <u>The Main Habitats Present</u>

This section begins with a general site description which cannot be interrogated, to provide a feel for the area. The nature of these habitats is then listed in separate fields, which gives a feel for the type of habitat present and whether it is managed or not. The data base could be usefully improved here by providing approximate percentages or even the area of the site covered by each habitat type. Habitat maps for each site would be needed to assess these areas, but these are only available for the sites surveyed in 1990. Unfortunately, not all the habitat types can be differentiated on the aerial photographs, and therefore this could not be included systematically in this project.

- 2.19 An additional field needs to be inserted into the data base here to show when the site evaluation was last updated.
- 2.20 The next stage in the project is the evaluation of the sites for which information is available. The approach and methodology adopted are set out in the following section.

## 3. <u>THE EVALUATION</u>

#### <u>Current Status of the Sites</u>

- 3.1 The SWT have already classified most of the better wildlife sites of Telford into the highest quality sites, termed Prime Sites, and others of Ecological Value. The remainder of habitats have not been classified.
- 3.2 In total 21 Prime Sites and 61 Sites of Ecological Value have been selected by the SWT. Since their selection some of these sites have been lost, or reduced in size. Unfortunately, there is no report which provides the criteria against which this selection was made. Thus in planning terms, it is not immediately clear from the status the Trust has provided, what the merits of a site may be, how sensitive these are to particular planning proposals, and what the main features are which can be used to characterise the site and justify its grading.
- 3.3 A basic requirement of this project, therefore, was to develop a standardised set of criteria, against which the features of each site could be assessed as objectively as possible, and then to use these criteria to evaluate the habitats of Telford.
- 3.4 The starting point for this exercise has been the data collected for the Prime Sites, the Sites of Ecological Value and the other habitats. The initial project remit, and the unsuitable time of year mitigated against extensive fieldwork to cover any habitats of value which might have been missed in the extensive surveys already conducted by others. That such sites, previously unknown to local conservation organisations, are sometimes discovered is not necessarily a reflection of inadequate survey in the past. Areas out of sight and inaccessible, or managed in such a way that any interest is difficult to detect (for example when a grassland has been very heavily grazed) often come to light when conditions change. A few such sites were identified from the aerial photographs and subsequently surveyed in 1990.
- 3.5 In addition there were sites for which the available records are scanty or inadequate for evaluation, and other sites for which the species lists appeared to fall short of the expected number and variety. Field visits in winter, 1989-90 focused on some of these sites, and those where boundaries were unclear. These sites were not surveyed systematically at this time, but they were assessed, sometimes superficially, in order to provide a preliminary evaluation. The 1990 late summer survey collected detailed species lists for those sites for which information was particularly inadequate. Table 5 distinguishes between those sites visited but not surveyed in any detail in winter 1989-90 and those covered more thoroughly in summer 1990.

## The Criteria for Evaluation

- 3.6 A fairly standard set of criteria for ecological evaluation has been developed by Ratcliffe (1977). Although originally conceived for the selection of a national series of Sites of Special Scientific Interest (SSSIs), the criteria are widely used and adapted throughout the country in a national, county and more local context. Most of the criteria Ratcliffe selected relate to the inherent scientific qualities of a site. They are as follows:
  - a) Size - nature conservation value increases with size. Large sites in general contain more species and larger populations of animals and plants than small ones. Chance extinction of species, either as a result of natural or man-made factors, is reduced if a species is present in Some species require a large territory large numbers. size or home range, and consequently large sites are required to support reasonable populations.
  - b) Diversity and Richness - large numbers of species (richness), particularly when represented by large populations (diversity), are to be especially valued, so long as they are typical of the habitat conditions and not artificially produced. A high species diversity is usually also reflected by a high diversity of different communities which show variation matching the environmental conditions. The concept of species diversity contains elements of both the number and relative abundance of species; thus, a community in which, say, 20 species occur in equal amounts is more diverse than one in which one species dominates and the remaining 19 are uncommon. Some communities are, however, intrinsically species-poor and consequently diversity is not always very useful for site discrimination.
  - c) Permanence a site which has been occupied by a semi-natural habitat for a long time is usually more valuable than one which has only recently arisen. Ancient habitats and particularly those which have been subject to a uniform management regime, will have had the time to acquire rich assemblages of plants and animals. They are essentially non-recreatable.
  - d) Lack of modification the application of inappropriate management regimes, pollution or other damaging influences by man is deleterious to ecological quality. This includes the use of agricultural chemicals such as fertilisers or pesticides.
  - e) Naturalness There is probably very little natural habitat left in the Telford area but those least affected by man's activities are usually of greatest ecological value. Alien species can contribute to the richness of site but they detract from its naturalness and can lower its value if they supplant native ones.

- f) Rarity the presence of rare species adds to overall ecological value, especially when the habitat ranks highly on other criteria as well, and the rarity is represented by populations of a reasonable size. Rarity may be assessed on an international, national, regional, county or local scale. Habitat types too may be rare nationally or regionally.
- g) Position in an ecological unit the presence of other areas of semi-natural habitat adjacent or close to a site enhances the value of both habitats. The close proximity of different habitats allows for the existence of species which are particularly adapted for life at their interface. Each habitat also acts as a buffer zone for the other through which the impact of damaging external influences can be reduced.
- h) Potential the extent to which a site could realistically be enhanced by applying appropriate management regimes, or by habitat creation is an additional factor.
- 3.7 Ratcliffe (1977) also included fragility, typicalness and recorded history as other criteria. Fragility is difficult to gauge for many habitats, and affects not the intrinsic ecological interest so much as the ease by which a habitat can be managed and conserved. Fragile habitats tend to be those where extraneous factors are uncontrollable and liable to damage the communities. Water pollution or drainage originating beyond a site's boundary but which affects its quality, or severe trampling pressure to a sensitive ground flora in a woodland surrounded by housing might be good examples.
- 3.8 Typicalness to a certain extent contradicts rarity of habitat, community or species as important features. Nevertheless, SSSI selection seeks to identify the typical and characteristic habitat type so that a representative range can be identified. This is more difficult to judge on sites of lower standing since many have been affected deleteriously by various activities or features. Similarly, a site with a long recorded history is of greater consequence when selecting SSSIs than for areas of more local merit, and does not bear much relation necessarily with the scientific value.
- 3.9 The intrinsic value of a site to people in other words, how attractive particular habitats or species are to people was also included in Ratcliffe's list of criteria, but this is best now incorporated into a broader social value of a site which has more recently been developed in a number of urban nature conservation strategies (eg. GLC 1985). These embrace all the reasons why a site may be important to people:-

- a) Aesthetic appeal this is a very subjective criteria since it is dependant on the intrinsic appeal of a site and its inhabitants to people. Popular habitats and species are not necessarily those of greatest wildlife value as judged by the ecological criteria. This criteria needs to embrace the degree of pleasure and psychological wellbeing people gain from a site.
- b) Accessibility a site which is accessible is likely to have a greater social value than one which is not, but inaccessible sites will not be valueless since a view over or into them, or their ambience in the urban scene can be important.
- c) Proximity to urban areas a site may be of importance if it is close to residential or industrial areas because it is close to people. It is easier to enjoy such sites than isolated ones.
- d) Educational value the suitability of a site for formal or informal education will be important, and embraces questions of accessibility, or alternatively, potential use if access were available.

## Site Evaluation

- 3.10 These criteria have been adopted or adapted for use in a number of areas where habitats have been surveyed, evaluated and nature conservation strategies subsequently developed. This is the approach recommended in the Unitary Development Plan guidelines (NCC 1987), and already carried out in the former West Midlands, Manchester and Tyneside Metropolitan Counties, and in London. The system for using the criteria differs from place to place. Tn London, for example, (GLC 1985) each criteria was assessed subjectively, but based on extensive site surveying. Extra weighting was given to a site's richness, diversity, permanence, re-creatability and size. For sites of lower intrinsic ecological value, the social criteria often featured more highly. Sites are graded into those of Metropolitan value (which include SSSIs), two levels of District Importance, and local value.
- 3.11 In the development of Nature Conservation Strategies for different London Boroughs, the London Ecology Unit have paid special attention to wildlife corridors and areas of deficiency, where new habitats need to be created.
- 3.12 The Leicester City Ecology Strategy (Leicester City Council 1989) used the same sorts of criteria, awarded them points on each site, and graded sites A\*, A, B or C on the total number of points scored. The former greater Manchester Council adopted a double grading system. First a site was subjectively assessed as A, B or C against criteria for planning, habitat value and species value. Then it was scored using a points system for supporting criteria similar to those Ratcliffe (1977) proposed, and the total score used to support the subjective assessment.

- 3.13 For St. Helens (St. Helens Borough Council 1986), the habitats were divided into only two categories, but major corridors were included in the plan accompanying the Nature Conservation Policy document.
- 3.14 Other strategies have used the same, or a selection of, Ratcliffe's criteria, although how the evaluation is undertaken is not always clear from the published documents available.
- 3.15 It had been hoped to conduct a systematic evaluation of Telford's habitats by scoring each criterion, adding the scores together and grouping sites into different categories. However, the data available has proved inadequate for this approach. It is too inconsistent and incomplete, even with the additional records collected in the summer 1990, and it is not always clear for which area some of the data relates. Such methods do hold inherent problems though of clearly defining the different levels of each score when the data is comparative and not quantitative, and of trying to quantify comparisons of disparate features. For example, the total or characteristic species in a wooded site are not directly comparable with the number in a contrastive grassland There is the added danger that quantitative scores merely site. add false respectability to subjectively derived definitions, and in fact camouflage the more useful careful scrutiny of features in an ecological context.
- 3.16 The only sensible and practical way a scoring system can be applied is when all the sites have been systematically surveyed and recorded to an identical level of detail by the same person, or small group of equally well-experienced ecologists. This approach was therefore impossible in this assessment.
- 3.17 As a result of the above considerations, an evaluation process has been devised which reflects, as far as is practical, the criteria outlined in paragraphs 3.6 and 3.9. Appendix III provides instructions for completing the data base, but definitions and explanations of each criteria are given below.

## The Evaluation Method Adopted

- a) The Ecological Value
  - i) Topographic Origin
- 3.18 This category reveals something of the origin of the ground surface under the habitats which implies whether the site is likely to be on undisturbed topography or on man-made ground. Ground originating from the extractive industries (mostly coal mining in Telford) carries with it connotations of soil type, geological nature and a relatively recent, or secondary origin. In contrast, the landscaped areas may be on recently made ground, or on natural ground. However, they are habitats of recent origin, developed as part of the landscaping. The agricultural category covers mostly natural ground, and might include undisturbed soils in old grasslands, but is more likely

to be on soil altered by drainage, ploughing etc. Man-made water bodies are self explanatory, but may have been developed from a natural system. Largely natural drainage systems and long-established ponds would fall into the undisturbed class. This would also include other habitats outside agricultural land but which are on natural ground, eg. woodlands (possibly of all kinds), scrub, and any non-agricultural grasslands. This category would include ancient habitats. The "other" class might cover railway banks and additional types of made ground.

- 3.19 The relevance of this criterion is its relationship with the permanence or long-establishment, and the likely naturalness of a site. It provides clues to the possible longevity or origin of the habitats where further information on the subject is lacking. Habitats which have developed on secondarily developed ground, and from disturbed surfaces may be of considerable value, but are unlikely to be as rich and diverse as those which have been in situ for centuries, or even millennia. It sho be noted that the importance of such long-established sites It should is not necessarily reduced by regular management. Indeed many ancient woodlands have been subjected to a regular coppicing regime for centuries, and a particular flora and fauna has evolved adapted to the management. Similarly, long-established flower-rich grasslands are dependant on regular cropping for their continuation.
  - ii) Importance of Habitats
- 3.20 To assess the richness and diversity of habitats more precisely, information would be needed on the relative extent of the different habitats and communities, and on the habitat structure. Since this is largely lacking, the importance of habitats has been gauged instead from the checklists (already described in paragraph 2.14) of the characteristic woodland, grassland and wetland species (see Tables 2-4), and from the nature of other habitats present.
- 3.21 There are no definitive levels which qualify a habitat as of a particular value since the numbers present from a checklist will depend, amongst other things, on the extent of a habitat, the nature of the soil (more species may be found on base-rich compared with acidic soils), and the environmental variation within a habitat which might result in wet and dry areas, light and shaded patches, and variable soils. Scoring for these habitats must relate therefore to the relative contribution a habitat makes to the site.

iii) Importance of Species Groups

3.22 This furthers the assessment of richness of a site by considering the overall species lists in taxonomic groups. It attempts to take into account the ecological nature of the species on the lists in the evaluation process. Thus if the

plant list includes many aliens, and consists mostly of widely dispersed, common catholic species, it will be deemed as less important than an equal sized list of species more restricted in ecological amplitude (eg. to a particular habitat or soil type) and which characterise the habitat more clearly. A similar approach has been taken with the animal lists. An equivalent number of characteristic species, which includes most of those that might be expected in the habitats concerned is regarded as more important than a similar number of catholic, widely dispersed species. In many instances, the animal records are not sufficiently complete to permit such an assessment, but for example where bird or butterfly lists are available, good numbers of species characteristic of the habitats are highlighted compared with lists of ubiguitous species.

Although, much of this interpretation is subjective and based on extensive ecological experience, some guidelines have been The importance of flowering plants to a site is prepared. judged in relation to the totals given in the previous category. So little information is available for other plants, that a judgement on experience elsewhere is all that can be provided. For most vertebrates, either large populations of a few species, or a good range of species is required to merit importance. Α list of butterflies and odonata have been prepared showing the maximum likely to be found associated with different habitats (see Tables 7 and 8). The records have been judged against A low score due to inadequate recording cannot be these. taken as a detracting feature in the overall grading, but points to the need for further field work, confirmation of the scoring for this criteria, and possible alteration of the final grading if the results are significantly different.

iv) Notable Species

3.24 This identifies relatively rare species as far as possible in a national, county and Telford context. Nationally notable plants are those identified by NCC (1989) as occurring in less than 100 of the 3500 10 x 10km squares in the country. This definition was thought to be too limited to use in a Shropshire/Telford context as it would be equivalent to occurrence in only 1 10 x 10km² in Shropshire and 1 tetrad  $(2 \times 2km^2)$ in Telford. Reference to other floras, shows that a common level for notable species is taken as less than 5% of the squares in the county. The Flora of Shropshire (Sinker et al 1985) has defined rare species as those which occur in 1-3 10 x 10km<sup>2</sup>, the equivalent of 2-7% of the 10 x 10km<sup>2</sup> in the Shropshire Region. The latter consists of the county which has been squared off to include considerable areas of some adjacent counties plus 50 tetrads around the fringe which lie outside the squared off area (maps this area can be seen in Sinker et al 1985). of To avoid confusion, this rare category has been adopted as group A in the evaluation. However, when this definition of rarity was applied, the problem of species scattered throughout the county,

3.23

but in more than 3 10 x 10km squares, arose. It was felt necessary, therefore, to add an additional group of uncommon and notable species which occur in 5% or less (55 tetrads) of the recording units of the Shropshire Region. This is group B on Table 9.

- 3.25 An equivalent scaling down of occurrence in Telford has been achieved by the SWT, Telford branch. Notable species are those which occur in 1-2 tetrads, approximately 4-8% of the total tetrads in Telford. These are also listed as group C species on Table 9. It would seem that the Telford area is under-recorded for some species, and that some of the plants on this list may need to be omitted once a thorough survey has been undertaken. Alien species, which are not normally regarded as of conservation value, have been omitted.
- 3.26 As far as animals are concerned, the notable species have been confined to Nationally notable (as defined for invertebrates by Ball 1986), or those specially protected under the Wildlife and Countryside Act 1981 (or in the updated schedules in the quinquennial review), the Badger Act 1973, and the Wildlife and Countryside (Amendment) Act 1985. The total list of species recorded for Telford is presented in Table 10, and those present on each site are listed on a separate text file on the data base. The lack of notable animals needs to be seen very much as a reflection of under-recording rather than as an absence of species.
- 3.27 As well as notable species, interesting ones have been included in the text file at the end of the data base. This embraces first, species which do not quite qualify as notable species, but for which information available suggests they are of value in Telford. Secondly, species common elsewhere, but near the edge of their range in Telford are regarded as interesting. If adequate information were available on a national and county scale as for plants, many of these interesting animals are likely to fall into a County Notables category.

v) Importance for Geology/Geomorphology

3.28 Where information is available, this is recorded as present or absent. No survey for these features has been undertaken, so the records depend on comments provided by other experts.

vi) Damaging Features

3.29 This presents a measure of the modifications which might be damaging the ecological interest of a site, some of which may be reversible if appropriate management were introduced. Only presence or absence of a feature is included except for those sites surveyed during this project, but ideally the degree, extent and significance of damage needs to be ascertained.

- 3.30 Vandalism, such as cutting trees down, may vary in impact. Similarly, water pollution could be from a variety of sources and of different severity which would affect the water life differentially. Tipping of waste, old furniture, etc. is combined in this field with litter, and has a varying effect on the wildlife depending on the area covered. Recreational damage is related to intensive trampling which can destroy sensitive herbaceous plants, or to regular disturbance which could reduce both wintering and breeding bird numbers.
- 3.31 Invasive species which detract from the ecological value of a site usually include sycamore, rhododendron, Himalayan Balsam and Japanese knotweed. The extent of damage will relate to the degree of dominance by these or other alien species, but since some spread rapidly, the potential damage could be severe too.
- 3.32 Deleterious management, such as the application of fertilizers to species-rich grassland, or the replacement of semi-natural woodland with a plantation detract from wildlife value, but equally, lack of suitable management like mowing or grazing grasslands detracts from the site's value.
- 3.33 The nature of these features, where known, is expanded in a text file.

#### vii) Linkages

- 3.34 The degree to which the site is contiguous with other habitats, or is linked by corridors of vegetation to other sites is assessed under this heading. No linkage indicates a totally isolated site within urban/residential zones or within an intensive agricultural area. These are usually sites which would benefit from having links developed.
- 3.35 A weak link exists where the site is connected via a hedgerow or other linear network only, or where other habitats of value for dispersal for the site's species, only abut on one side.
- 3.36 A moderate link occurs where links or contiguous habitats encircle at least half of the site's perimeter, whereas a strong link entails nearly or total encapsulation by other habitats, or by significant contiguity with the same kind of habitat (bearing in mind that eg. grassland species can only disperse through an equivalent habitat). This criteria is judged from the habitat map and the field survey. Main roads and a busy railway have been construed as major barriers in the habitat network.
- 3.37 The degree of linkage and contiguity provides a measure, first, of the position in an ecological unit whereby a well-developed ecotone between habitats provides opportunities for a greater number of species. Secondly, it gauges the degree of isolation of a site, and the existence of, or need for dispersal corridors of the most appropriate habitat type and, finally, it

demonstrates the extent of, or possible need for, buffer habitats around a site. This needs to be viewed in relation to the fragility of a site, a criteria Ratcliffe (1977) used, but for which inadequate information is available to judge in this project.

viii) Potential Ecological Value

- 3.38 This can only be determined for those sites which have been visited, or where management recommendations are available. The potential operations are elaborated in a text file. Where this is not completed in the data base it suggests that further site assessment is required. It needs to be noted that the greater the potential on a poor site, the better the habitats could be, but that a good site may have little potential for improvement. Thus, a site with a high potential is not necessarily better than one with a low potential.
- 3.39 The kinds of potential ecological measures which are included in this criteria are:
  - i) Diversification of grasslands by adding flowers.
  - ii) Introduction of more suitable management techniques.
  - iii) Adding a ground flora to landscaped or plantation woodland.
  - iv) Clearance of rubbish/tipped material.
  - v) Clearance of ponds which are filled up with plant material.
  - vi) Removal of other damaging features.

Realising this potential may not always be in the powers of the Council, even if they own, or will own the site. Sometimes cooperation with others (eg. the Water Authority) may be required, or with a local community to engender a respectful and caring attitude to a site.

b) The Social Value

i) Aesthetic Appeal

3.40 The attractiveness of the site as wildlife habitats to people is assessed rather subjectively, by considering people's known preferences for different plant and animal groups, and for particular habitats or configurations, structures or patterns in them or between them. For example, people tend to like pretty flowers, birds, most mammals, butterflies and dragonflies. The public image of frogs and bats is improving, and trees have always been revered. However, as habitats, individual big trees, and woodlands with a varied structure and age of specimens, and which are open and attractive to walk in, are preferred to dense plantations. Similarly, the edge of water (whether stream, pond or canal) is popular compared with extensive areas of ecologically dull grassland. Heathland is favoured for its traditional late summer colour, whereas dense scrub is inhospitable and unattractive (see Wager 1964 for further information).

3.41 The aesthetic appeal of the site has been classified based on the preceding review, but the quality can only be regarded as provisional for those sites not visited and, where in doubt, this feature has not been assessed.

ii) Accessibility

- 3.42 This is divided into limited, moderate and high in relation to both the extent of official and *de facto* access onto and in the site. Where a site has not been visited, some signs of unofficial paths can be detected on the aerial photographs, but otherwise reliance has to be placed on O.S. maps and Wrekin's recreational information.
- 3.43 A high degree of accessibility does not necessarily mean free access all over the site and, indeed, this could be damaging to the wildlife interest; but rather, it relates to a good network of paths and tracks to or on the site. It should be noted that sites can still be important as part of people's visual arena in their daily lives without access being available. Nevertheless, access provides them with additional experiences of the site.

iii) Proximity to People

3.44 This too is subjectively assessed as limited, moderate or high, and is related to how close the site is to major urban and residential areas. A limited site would be greater than a short walk (eg. 1km) from current or potential major urban or suburban areas. A moderate site would lie within 1km of people on at least half of its perimeter, whilst a high site would he surrounded by development within 1km. 1km has been chosen as both a reasonable distance to walk to a site, and also as the distance the London Ecology Unit (GLC 1985) suggest as the maximum that people should live from a wildlife site to be able to gain regular benefit from it.

iv) Educational Value

- 3.45 In its widest sense, education can include not only formal field study, wildlife, historic and environmental aspects of a site, but also informal study when site users might be stimulated to learn or investigate by seeing something which interests them. Some habitats are better suited to this type of use than others, either because of their diversity, and the increased chances of seeing attractive species, or by their relative simplicity where it is easier to understand how an ecological system functions. From an ecological viewpoint, however, there are also habitats which are very sensitive to extra use (eg. wet areas, ancient woodland ground flora) and where educational use with increased public pressure would be inappropriate.
- 3.46 A second element of educational use is the closeness to schools. Bearing in mind the cost and time to transport a class to a distant site, the maximum educational value is for a suitable

site within a short walking distance of a school. Where a site has not been visited for this project, and the information available is insufficient to gauge the other aspects, only the proximity to a school can be assessed. That a site may be in private hands and unavailable for educational use has not been taken into account since such a situation could change in the future through sale of the land, or some kind of agreement being established.

v) Amenity Value

- 3.47 This provides a measure of the existing amenity or informal recreational use of the site which is the only information readily available to reflect the attractiveness of the site as an amenity to local people.
  - c) The Conservation Value
- 3.48 The current status of the site as recognised by the NCC, Local Authority or Shropshire Wildlife Trust is provided. The new evaluation using the above criteria provides the overall grading as A, B, C or D. A four tier grading system matches that adopted in several other habitat evaluation schemes (eq. in London, Manchester, Leicester City), although the categories do not all share the same name or definition. If the top grade this would were to be confined to the best habitats in Telford, automatically fit into the context in the rest not of Shropshire. Instead, the A grade is considered to be of County or greater importance, and therefore covers SSSIs as well as sites of County Importance.
- 3.49 The grade B sites are then of value in a District context. They should include sites which are the best or good representatives or the only example of their type, but the information from which to judge this is not always adequate. Grade B sites should be important in the Wrekin District rather than just in Telford, but as little information has been collected on this wider context, this is difficult to assess sometimes. The grade A and B sites are important enough to be used as a principle or sole reason for refusal of planning permission.
- 3.50 Grade C sites are of more than local value ecologically, or may be particularly important for social reasons in an area devoid of better habitats. Grade D sites represent the general background mosaic or small reservoirs of wildlife habitats which support generally common species, often in secondary habitats, and with no especially distinguishing features. The wider countryside and townscape of improved pastures, recently created amenity grasslands and some landscaping areas would not qualify as graded sites.

- 3.51 grading mechanism has been derived from a The balanced evaluation of the criteria scored in the data base, against the background information for, and, where available, the results of the visit to, the site. As is customary in ecological evaluations, greater emphasis is placed on the attributes of site size, diversity and richness, signs of ancient or longestablished habitats, and rarity of habitat and species. Assessment of the other criteria are then used to qualify these and the overall process results in the grading. This is a process that can only be carried out by an experienced ecologist because the data base inevitably simplifies a complex situation, and the context of the site and its characteristics need to be kept in mind continuously. For example, the evidence for an ancient or long-established habitat tends to be circumstantial and accumulative from a number of strands which need to be identified and synthesised. Of the criteria, natural ground, some of the characteristic species, the land-use and speciesrichness all might suggest an old habitat.
- 3.52 Factors also taken into consideration in the evaluation (but which can not be quantified, are not consistently known and therefore not in the data base), include the relative extent of the different habitats on a site, and the relative rarity of the habitats in Telford and Shropshire (as gleaned from Sinker *et al* 1986 and SWT 1989). Examples of how different grades have been reached are outlined below (3.55).
- 3.53 On the whole, evaluation of the inherent ecological value of a site, and its social value are complementary. However, for the higher grade sites, the intrinsic ecological merits will be of greater import, whatever the social value. Sites of verv high social value but lower inherent ecological quality cannot be grade A sites, but are more usually grade C or even D ones. There may well be C or D ecological sites in areas where there is a deficiency of other sites accessible to the public, which warrant upgrading to B or C simply because of the dearth of equivalent areas. Grades have been confidently given to 104 sites based on the data available, or collected in the field survey. Additional information on selected aspects, for example amphibians, dragonflies, birds etc. could result in a change of value of some 27 sites which have therefore been given 11 sites are ungraded due to a variety of provisional grades. factors. All sites and grades are listed in Table 5.
- 3.54 There are a number of D sites, possibly including Eyton Farm Coppice described above which may not even merit site status, and if not also functional as a buffer or corridor, should be dropped from the site register. As a result of the summer 1990 survey, 3 sites have been deleted from the A-D graded system. However, since some information is available for them, they have been retained in the database but identified by an X grade.

Loamhole Dingle + Rope Walk Meadow - Grade A

3.55 This site scores highly because it is large, is dominated mostly by ancient and recent spontaneous woodland, and includes a good variety of other habitats, including an old hay meadow. It also supports a high number of woodland and grassland species, compared with other sites, and a moderate number of wetland plants. The vascular flora is very rich, but other groups are probably under-recorded. The notable species include ancient woodland and long-established meadow plants. The site is not isolated. This information would be sufficient to justify a grade A status, but additional information substantiates it there are two old hay meadows, one of which is particularly diverse, and such habitats are rare not only in Telford but nationally (NCC 1984).

Wynne's + Vane Coppice - Grade B

3.56 These two woods comprise a site of District rather than County value because together they are of medium size, they are ancient woodland, but have been damaged by a conifer plantation although they still support a high number of woodland species. There are a more limited range of habitats than in the A site, and only 2 notable plants. The animal life is not recorded, and is likely to be of moderate interest in such a site. The site is not isolated and is of moderate value to local people. It just qualifies as a B site, but could be improved by suitable management.

Admaston Railway Line - Grade C

3.57 This is a long, narrow site with a good variety of secondarily developed habitats, but which are not markedly rich in characteristic species. There are no animal records, although a good selection of generally common species might be expected. It supports only 4 notable plants, but is of relatively high value to people. This combination of features qualifies it as a C site.

Eyton Farm Coppice - Grade D

- 3.58 This is a small, sycamore plantation set within intensive agriculture, which has no distinguishing features. It is included as a D grade because of its proximity to a similar but slightly richer site (Long Pit Coppice), and the fact that it will support some common and widespread species (small mammals, a few birds and invertebrates etc) which will make it a better habitat than the surrounding fields, in an area not endowed with many wildlife sites.
- 3.59 Evaluation of this sample shows the emphasis given to some features, and the need to take characteristics into consideration other than those presented in abbreviated form in the data base. Where possible, important contributory features are described in the text file.

The Data Set

- 3.60 Sheets containing the data base details are presented in a separate file, and divided into
  - i) Extant sites in Telford D C area.
  - Sites totally outside Telford D C area for which information was available, and which need to be considered in relation to corridors etc.
  - iii) Sites which have been lost. This last group forms the first part of the historical context described in paragraph 4.2.
- 3.61 Section 4 considers how this data base can be interrogated, its incorporation into the Green Network, and measures for improving habitats.

#### 4. <u>APPLICATION OF THE DATA BASE</u>

#### i) Interrogation of the Data Base

- 4.1 Once the data base is computerised by Wrekin, it would be a straightforward operation to interrogate it to provide valuable information to support and assist in finalising the site grading. This would be made even more constructive once the data base is completed fully, for example, when the actual area of each site is entered rather than an area class. The kinds of questions which need to be explored might include the following:
  - i) How many of each habitat type are there in Telford? This would help identify which are the rarest, which then needs to be incorporated into the site grading.
  - ii) The question above could be refined by calculating the area of each habitat type, but this would only be possible once the habitats on a site had been properly mapped and measured. An idea of the total hectarage of each habitat type, and their % cover within Telford, would provide a better measure of the relative scarcity of different types. Currently, the rarest types of habitat calcareous grassland, flower-rich meadows, heathland and marsh can be gauged by reference to the site data sheets and to the informataion presented in the Shropshire Flora (Sinker et al 1985), but further analysis would be facilitated by using the data base.
  - iii) This kind of investigation can then be refined further by calculating the number and area of sites with different qualities - with important plant or animal assemblages, on man-made or natural ground, affected or not by damaging activities, and so on. This would provide a better picture of the areas of value of a particular habitat type.
  - iv) All kinds of other cross-referencing would also help provide a broader picture of the wildlife habitats in Telford. This could vary from, for example, what are the types of habitats most accessible or attractive to people, or of most educational value, and how does this compare with the full range in the Town, to how many sites and of what habitat type have records for selected animal groups? Such analyses might be of value in the planning process when new educational sites or access arrangements are being provided, or when identifying priority areas for future survey work.
  - v) It would be important to know what the ranking of habitat number and area of different grades was, so that priority could be given to safeguarding and managing rare ones, or creating new complementary ones. The planning process can also be aided by having information on ecological grades in relation to educational or other social values, or to

damaging features and potential value. It would also be easy to cross-reference sites, habitats, grades and notable species of different sites. Which habitats or sites contain particular numbers of species? Such information assists in the decision-making process in allocating resources for conservation, management, site enhancement, recreational or amenity use, etc.

- 4.2 It will be most important that the data base is regularly up-dated, preferably by regular re-survey, but also as additional information becomes available on the animal groups in particular. Re-running various analyses then enables the historical context to be identified. It would be important to ascertain, for example, the rate of habitat loss or damage, the types of habitats or sites affected (close to, or isolated from residential areas, heavily used or not, in a particular parish or area, etc.).
- 4.3 Such interrogation of the data base provides the raw material from which a description of the "state of the art" of habitat distribution, quality and nature can be prepared. This information could form the foundation of a nature conservation strategy. It would help highlight priority action areas in terms of habitat conservation, management and enhancement. It would enable policies to be formed which sought to expand particular habitats or the access or enjoyment of them in specified areas (for example, by exploring how many sites important for people lay in each parish, and comparing this with population densities). The historical perspective, when it is conducted, can direct energies towards developing a strategy which protects the more vulnerable sites or habitats.
- 4.4 The further possibilities for interrogation of the data base are considerable. Its potential as a useful tool in the planning process is significant.
  - ii) <u>Developing the Green Network</u>

The Graded Sites

- 4.5 The data base has been used, as directed in the remit of this project, to provide the justification for the ecological element of the proposed Green Network. The sites graded A and B are considered to be of high value within the Green Network. These are shown on Fig.4. They each have sufficiently high quality attributes to enable an ecological case to be made in their defence against alternative, destructive land uses. The strength of the arguments, though, would vary according to the value of the site within Telford, the County or wider context.
- 4.6 By cross-referencing Fig.4 with the overlay Fig.2, it can be seen that nearly all the SWT Prime Sites, as well as the SSSIs, are incorporated into the Grade A and B sites, although they are not all of equal interest. The data base summarises the differences.

However, if only these sites were included in the Green Network on their inherent qualities, it can be seen that many would be isolated, separated from others by varying distances, vulnerable sometimes because of their small size, or narrow sections.

4.7 The grade C and D sites have also been included in the Green Network. Their intrinsic ecological interest would be unlikely to be high enough to provide cogent arguments against their individual loss. However, most also function as buffers or corridors to or between other areas, and thus have an enhanced role in a Green Network compared with their own merits if they were considered in isolation. The C sites in particular, and the better D sites too often act as stepping stones in, or enlarged beads on the necklace of corridors which constitute an enhanced reservoir of species able in many cases to disperse along the linkages between other sites.

## Buffers and Corridors

- 4.8 Ecological theories of island biogeography equate isolated habitats to islands in the sea. These are considered to lose and gain species as a function of first their size, and secondly their distances from other islands or the mainland. Thus, small islands are thought to lose species more quickly than large ones, and those close to other land gain them faster than more distant ones. Application of this theory to habitat islands has to be tempered with consideration of the ecological and biological requirements of the species involved. Many species are well adapted for widespread dispersal - but these tend to be the catholic, common and widespread plants and animals. Rosebay willowherb, dandelion, sycamore and similar types of species are typical of plants in this group, whereas blackbird, chaffinch and robin, and butterflies like peacock, small tortoiseshell and red admiral, are more opportunistic examples of animals.
- 4.9 There are, though, a wide variety of plants and animals which are more sedentary or less capable of dispersal which either spread only very slowly and for short distances at a time, or require their preferred habitat in which to move. Many plants, for example, spread vegetatively, or disperse seeds only a few centimetres or metres at a time. Some birds, mammals and many invertebrates are remarkably faithful to small areas and disperse little or at only certain periods in their life cycles (for example, young mammals and more sedentary birds often spread out when parents drive them out of their territories).
- 4.10 The effect of isolation and reduced dispersal on the richness and diversity of a habitat and on the genetics of populations, is of great concern to wildlife conservationists. There is evidence that links and corridors between like habitats are important thoroughfares for a wide variety of species. These factors have stimulated those who have developed nature conservation strategies

to incorporate extensive wildlife corridors to link habitats, to bring them right into urban centres, and to make them more accessible to the public. The same approach is not only entirely relevant to Telford, but also eminently suited to the town since it is so well endowed with existing green space. The process of selecting appropriate areas has taken the following pattern.

- 4.11 The nature and degree of isolation of the graded sites has been considered, and adjacent habitats identified which might fulfil a number of functions which could include one or more of the following:
  - i) A buffer to protect a valuable area by absorbing potential or current damaging levels of trampling, disturbance or other deleterious activity.
  - ii) A buffer to broaden or enlarge narrow or small habitats so that they are less vulnerable to damaging activities (eg. drainage, tipping).
  - iii) A similar expansion so that small populations can increase and be less vulnerable to the effects of isolation and small size.
  - iv) A broadening or enlarging of sites to make them more practical corridors for species (for example, some need a wider belt of woodland or shrubs to move from wood to wood than a hedge network affords).
  - v) The provision of corridors as far as possible to include areas of similar ecological character to those that are being linked.
  - vi) The provision of sites which might be accessible to people, either to increase those available for public enjoyment where few exist, or to reduce pressure on nearby more sensitive areas.
- 4.12 The identification of sites to cater for these requirements has been derived from an amalgamation of field survey, and reference to the habitat map, the overlays prepared, the data available and interpretation of the aerial photographs. Several categories are shown on Fig.4. First, there are some areas which fulfil many of the functions described above for buffers or corridors, but for which there are indications of possibly a higher ecological value. These areas need to be surveyed and assessed, and decisions taken in the light of the results as to whether they might qualify as a graded site, or are needed just as a buffer or corridor. None of these ungraded areas have adequate information from which to judge their value at present, and although some have been viewed superficially, often from a distance, during the field work for this project, none have been surveyed.

- The main buffers and corridors identified on Fig.4 are those which 4.13 are of little or restricted intrinsic ecological merit, but which fulfil one or more of the functions outlined in 4.11 above. The areas of restricted wildlife interest consist mostly of landscaped areas of tree and shrub planting. Some areas of spontaneous scrub development are also included. For the most part, these areas are relatively recently developed with some wildlife potential in their own right, although realisation of this often depends on the implementation of measures to improve them. The woodland and shrub planting provides useful corridors between older and more valuable woodlands, as between Vane and Wynne's Coppices, or Blists Hill and Sutton Wood. It also acts as a buffer to protect sites and enlarge the available habitat for the more widespread species such as on the northern edge of Lloyd's Coppice. A number of areas of possible ecological value also function as a buffer to expand narrow sites, as along Horsehay railway line. As many of the landscaped areas mature, they could become more valuable for wildlife, particularly if appropriate management techniques were applied (see 4.25 et seg).
- The third category of buffer/corridor areas identified on Fig.4 are 4.14 species-poor grasslands of little inherent wildlife value, but which provide useful buffers to protect sensitive areas and absorb recreational pressure which could damage them. For example, the grasslands around Madeley Court or those included around Priorslee Flash fulfill this function. Equivalent grasslands elsewhere are excluded where they do not perform any of the functions of a buffer or corridor. They may, of course, have an important recreation or amenity function, and be included in the Green Network for reasons other than their wildlife value.
- 4.15 Most of the buffer grasslands are playing fields or amenity grassland, but some agriculturally improved grassland is also included. Many of these areas, especially the amenity grassland, have the potential for enhancement to improve their wildlife value. Those around Homer Lake, Priorslee Lake, for example, or the grazed fields along the Nedge Valley and those between Madeley Wood and Lloyd's Coppice, are good examples. Improvements would he particularly valuable where the sites have been selected to buffer and protect small or narrow grassland, marsh or wetland sites, where they link other grassland sites, and where habitats they surround are otherwise isolated and vulnerable. Orleton Marsh (Site 5) is isolated, and no obvious buffer is apparent, but if any of the surrounding fields were available, then the creation of more ponds, marsh and flower-rich grassland would be very beneficial. Techniques for such improvement are expanded in 4.22 et seq.
- 4.16 Great care has been taken in selecting the buffer areas and corridors to ensure links with habitats beyond Telford DC's boundary. In fact, there are few areas where this can be achieved because much of Telford is surrounded by agriculturally improved land of little wildlife interest. Nevertheless, Wrekin and Ercall Wood, the SSSI on the western edge of Telford DC's area, connects

with Limekiln Wood astride the boundary, while the latter and Lawley New Works are continuous with Short Wood outside the TDC area. In the south, there are more connections across and south of the Gorge. Benthall Edge Wood, a second SSSI, lies across the boundary, and extends into Vineyards, whilst east of Coalford, the side of the valley is continuous with woodland east of Ironbridge Road and west to Haycop.

- 4.17 On the east, one of the three small woods of Dodmoors lies astride the TDC boundary, but all three are close enough to facilitate dispersal of some species. New links need to be forged to extend sites like the Nedge Valley out eastwards into the surrounding area.
- 4.18 The buffers shown on Fig.4, as well as the graded sites would all be expected to be incorporated into the Green Network on ecological The buffer and corridors are justified by the linkages grounds. and protection they provide to other sites. Protecting these areas will be dependent on arguments based on their ecological value, their role in linking and buffering sites, and their social or educational values. They may also, of course, play important amenity, landscape and general recreational roles which would all help support any case for protection. However, it is likely that the poorer sites of little intrinsic wildlife interest, and no other landscape, recreational, etc. value, would be difficult to defend if other ecological functions (buffers, etc.) are not obviously important. In these cases, development might be acceptable if alternative corridors or buffers can be provided, or if ecological gains can be acquired elsewhere, for example, by improving other existing sites or creating good quality new ones.
- 4.19 There are some further areas within the TDC area which would function well as a narrow network of linkages. These are the fairly dense hedgerow networks north-west of Lightmoor and at Hortonwood. Some of these hedges are dense, tall, and/or longestablished (Coxhill & Charles, 1988). The best hedges at Lightmoor have been selected as graded sites and the remainder described on the data sheet. The hedgerows of Hortonwood are described in Appendix II. Some consideration needs to be given to whether lower value hedges can be included in the Green Network purely on ecological grounds, or whether additional landscape, historical and amenity qualities would assist in qualifying them for inclusion.
- 4.20 It may be possible, or desirable, once the ecological quality of all the buffers and corridors has been determined, to divide these areas into different categories within the Green Network. The Nature Conservation Strategy for Tyne and Wear (NCC 1988), for example, distinguishes between strategic wildlife corridors, local wildlife corridors and wildlife links. The first are those of particular significance, which tend to be the longest, contain important habitats, and generally cover open space and agricultural land. Local wildlife corridors are more restricted and link rural and urban areas within each district. These include significant areas of urban green space, as well as important wildlife sites,

but on a smaller scale than their strategic counterpart. Wildlife links are narrower, and are often restricted to corridors beside roads or railways, or follow streams or canals. These help form the more intricate web of wildlife movement.

4.21 A classification such as this would help direct attention to the areas where habitat creation is most needed to expand or establish corridors. It would place extra emphasis on the more important corridors and buffers but, conversely, might also be seen to devalue the minor links.

#### iii) <u>Improving the Green Network</u>

4.22 One of the criteria used in the site evaluation is potential value, which refers to the measures which could be taken to improve the wildlife value of a site. The measures include not only the application of appropriate management regimes, but also the improvement of habitats and creation of new ones using techniques being developed in various places at the moment. The basic methods which might be considered are outlined below, and elaborated in Appendix IV.

Habitat management and enhancement : woodland/shrubs

- 4.23 The principles of woodland habitat management to improve wildlife value can be summarised as:
  - i) The promotion of locally native trees and shrubs, and reduction of aliens as native ones support more invertebrates which form an important link in the food chain for many birds and other animals.
  - ii) The diversification of habitat structure by selective coppicing, creating glades, thinning, underplanting with suitable shrubs, and permitting natural regeneration where appropriate.
- 4.24 It would be particularly advantageous if the alien plantations both on pitmounds (eg. Paddock Mound, Dawley) and on ancient woodland sites (eg. Vane Coppice or Apley Park) were removed (possibly as a crop), and replaced with locally native trees and shrubs. This might qualify the sites for upgrading. Application of these principles to the plantations of even-aged, alien, or mixed species, especially the more recent planting, would improve their wildlife value significantly. Furthermore, when the plantations are sufficiently mature, and the light regime is more varied and adequate to permit development of a ground flora, it would be advantageous if locally native herbaceous species could be introduced to diversify the woodland character further and increase the areas' attractiveness visually.

#### <u>Habitat management and enhancement : grasslands</u>

- 4.25 Grasslands which are of the greatest value to wildlife are coincidentally the most attractive visually. They are those which are full of colourful flowers within a community of grasses and sedges. To support a plethora of flowers of different species, grasslands need to be on infertile soil so that the expression of competitiveness is restricted. In this way, the few highly vigorous species like couch grass, rosebay willowherb or stinging nettles are prevented from dominating the sward, and there is space for a greater diversity. Infertility can be induced by judicious cutting and clearing of the grassland, and by not applying fertilizers. In addition, the blanketing growth which remains at the end of a season on uncut grassland needs to be removed so that smaller, weaker species are not smothered.
- 4.26 Grassland management for wildlife relies on cutting, grazing or burning. Vigorous swards are best cut in late April and the cuttings removed if their height and competitiveness needs to be A second cut and clear after seeds are set in September reduced. leaves the site looking cared for and tidy for the winter, and removes the blanketing litter. Such treatment is being attempted at Widewater Meadow and Fletcher's Meadow, and could be considered However, because many invertebrates need the for Waxhill Meadow. protection of litter and taller vegetation to survive, leaving an uncut swathe of grassland beside any adjacent wooded habitats, provides both a suitable invertebrate environment and a valuable gradation or ecotone between the two areas.
- 4.27 Grazing needs to be controlled so that the sward is not poached, (as in Lodge Field) which both destroys the existing sward, and allows unwanted plants like ragwort or docks to invade. The ideal grazing level should be light enough to permit the full development of flowers and fruits, but heavy enough to control the more vigorous grasses. Attaining this balance is not easy.
- 4.28 Burning is unlikely to be an appropriate management tool in many of Telford's grasslands, and is more likely to occur as an unwanted corollary of vandalism. Grasslands burnt whilst dormant will not suffer significant damage, and indeed, this can be a useful means of removing blanketing dead material. In summer, though, it is very damaging to the animal life in particular. Areas likely to suffer from summer fires need protection by carefully planned alternative management measures.
- 4.29 Amenity grasslands are often very dull ecologically, and would be much more attractive to wildlife and people if more flowers could be added, for example in parts of the Town Park. The species-poor grasslands at Dot Hill would also benefit from enrichment. Methods for achieving this are presented in Appendix IV, and essentially include adding seed, potted plants or insetting turves. The most appropriate areas for such introductions are those which are not on very fertile soils or dominated by potentially tall, competitive

species. Furthermore, areas which are not used for games or picnics, but which form the backdrop to recreational areas, the wider back of roadside verges, and other landscaped areas, are most suitable for treatment. It is always important to maintain their edges regularly by mowing to provide a well-designed setting for the taller meadow.

4.30 Such improvements would encourage much greater numbers of invertebrates such as butterflies, and thus increase not only the wildlife value but also the visual attraction of a site.

Habitat management and enhancement : wetlands

- 4.31 Wetland management usually entails control of vigorous species like reedmace (*Typha*) which are prone to choke open water in ponds and canals, as in Lawley Swamp. Big trees like crack willow may need to be pollarded, and others reduced where they shade small water bodies (eg. the small pools at Dothill) since a heavy input of leaf litter and shade reduce aquatic plants and animals. Some wetlands have completely silted up (eg. Chockley's Drive, and Upper Forge Boring Mill Pond) and need re-excavating.
- 4.32 Marshes may need to be mown and the arisings cleared to reduce dominance by a few species and the loss of richness and diversity. Trees and shrubs may need to be cleared to safeguard marshes since they are one of the most restricted habitats in Telford now (SWT 1989) - a trend which is mirrored in the rest of lowland Britain.
- 4.33 Wetland enhancement depends very much on the practicalities of introducing a well structured water-marsh cross section. Water needs to be shallow and sheltered from wave action at the edge of larger water bodies so that locally native marginal emergent, and aquatic rooted species can be established. It is essential to have submerged aquatics in open water bodies to oxygenate the water and provide niches for a variety of animals. Where ponds or lakes do not embody this horizontal variation, shores will need to be made more shallow in places, and islands introduced. Priorslee Lake would benefit from more habitat improvement, as would Trench and Middle Pool, and the lake in Apley Park.
- 4.34 Species-poor marshes might be enhanced by adding potted plants of suitable species, or possibly sowing with seed, depending on the vigour and current composition of the sward. Aqueduct Marsh and Lawley Swamp would benefit from such treatment.
- 4.35 New wetlands might be created in wildlife areas close to or within school playing fields, in parks or other amenity areas, and within landscaping associated with future development. If the principles of ecological habitat creation are applied (see Appendix IV), and wetlands are created in the corridors which link others then the maximum benefit for wildlife can be achieved. A design guide based on this chapter and Appendix IV, could be prepared for future developers to assist in this objective.

# Habitat management and enhancement : heathland

- 4.36 Most of the heathland in Telford seems to be the product of recent spontaneous regeneration on abandoned acid, infertile ground, often associated with the coal extraction industry, or cuttings and embankments of roads and railways. For the most part these areas are species-poor, not just as a natural consequence of the nature of the environment, but also as a result of low rates of colonisation of other typical heathland species. The habitats could be diversified by adding more of the typical species found on Shropshire heathland such as bilberry, cowberry, bell heather, and in wetter areas, cross-leaved heath. Herbaceous plants of acid grasslands such as heath milkwort, tormentil, and heath bedstraw might also be implanted.
- 4.37 Management of heather areas needs to take account of the natural growth cycle of about 30-40 years of heather plants, its adaptation to recovery after fire, and its low competitive ability. Where grassland plants are tending to choke out the heather, occasional cutting and clearing will be needed, or even tightly controlled burning where this is not a dangerous management tool. In some areas, occasional (eg. once every 20-30 years) clearance of a small patch so that recolonisation can begin again, might be attempted since heather regenerates mostly by seed on bare ground.
- 4.38 Finally, the creation of more extensive areas of heathland on acid infertile soils or on existing acid grasslands, during future derelict land restoration or in landscaping programmes would present an exciting challenge particularly since a substantial area of heather has recently been lost in Telford. The various methods available for such habitat creation are outlined in Appendix IV.

# <u>Habitat creation : general principles</u>

- 4.39 Although details are provided on creating various habitats (Appendix IV), there are a number of principles which, if observed, would result in the maximum benefits for wildlife and the landscape:
  - i) First, it is usually better to conserve existing habitats if they consist of native species and have developed some wildlife interest, and then enhance and expand them sensitively rather than clear them away and begin again. This is particularly relevant on abandoned, derelict land where grant-aid may be available for reclamation and restoration. The main reasons for this principle are that many native plants are unavailable as commercial seed or plants; the locally existing ones will be of the appropriate genetic composition; the existing vegetation will have some age variation, will have taken time to develop and is likely to be richer than anything that could be instantly recreated, and the increasing isolation of habitats means that some of the species may not be able to recolonise after further disturbance (this applies to plants and animals).

- ii) It is always best to use plants not only native to the Telford area, but also suited to the nature of the soils available - in particular the nutrient status, pH, baserichness, water relations and soil type. The creation of distinctive communities on different soil types gives character to an area and distinguishes it from the adjacent, geographically and ecologically different areas. This results in habitat and landscape diversity.
- iii) The most appropriate habitats for an area will be those suited to the *in situ* soils - thus marsh or wetland plants are best planted in an ill-drained site which avoids any need for drainage.
- iv) In addition, new habitats need to function as buffers and links for adjacent areas (as described in 4.11), and thus expansion of nearby habitat suites, rather than the creation of something different would often be the optimum option.

# 4.40 iv) <u>Conclusions</u>

The data base and its evaluation provides the framework for the ecological component of the Green Network. Most of the sites have been graded with confidence, but a few need further work to confirm provisional evaluations. Buffers and corridors have been selected to enhance and protect graded sites, and may be integral to the Green Network on other criteria. Further ecological evaluation of these could be undertaken after supplementary fieldwork. The following section summarises the contents of this report and its recommendations.
## 5. <u>SUMMARY AND RECOMMENDATIONS</u>

- 5.1 This project has sought to collate all the information available on the wildlife of Telford, evaluate it, and devise a computerised data base to store it for the District Council of Wrekin.
- 5.2 The quality of the data available has proved variable, with some sites recorded more thoroughly than others, mostly for their plants, but with little information collected so far for animals. This variability of records has resulted in the need to use more qualitative and subjective methods of evaluation than had been hoped, but these methods are widely used in ecological evaluation elsewhere, and their adoption does not undermine the assessment in any way.
- 5.3 The sites which, together, will support most of the wildlife of Telford, have been evaluated against a standard, widely used set of criteria:-
  - the extent of the area
  - its richness and diversity
  - its permanence
  - its lack of modification
  - its naturalness
  - the rarity of species or habitats
  - its position in an ecological unit
  - its potential value
  - its intrinsic value for people based on its aesthetic appeal, accessibility, proximity to people, and educational value.
- 5.4 As far as possible, sites have been graded A to D against these criteria. For a minority of sites, a provisional grading is provided. Grade A sites are regarded as of County or higher value and include SSSIs. B graded sites are of District value and important to Telford. C sites are of lower intrinsic value, but still support habitats and species of interest in Telford, and may often be of high social and educational value. Grade D sites provide reservoirs of more common species, but generally have few distinguishing features.
- 5.5 It is considered that grade A and B sites would be defensible against other land-uses by arguments on their inherent ecological qualities. For example, they may be ancient or long-established habitats, rich in species, with a number of notable plants and animals, a rare habitat type, be relatively unmodified and undamaged by human activities, and be continuous with other habitats. A cogent ecological argument is less likely to be possible to protect grade C and D sites unless other aspects (such as landscape, recreation, amenity, etc.), or their role as buffers or corridors to better habitats are also considered.

- 5.6 It is recommended that all the graded sites are incorporated into the Green Network. Some additional sites have also been identified for which inadequate information is available for their grading, but for which the available clues suggest they would merit the status of a graded site. These need to be properly surveyed.
- 5.7 By themselves, many of these sites would be isolated, and sometimes vulnerable to damaging activities. Therefore, a network of buffers and corridors have been devised which fulfil one or more functions. These include linking sites, expanding the size of small ones to increase the viability of populations and protect them from damaging operations or disturbance, and widening existing corridors.
- 5.8 Fig.4 shows the distribution and extent of the graded sites, and the buffers and corridors selected to protect them. The buffers and corridors comprise, first, a more ecologically valuable element mostly of landscaped and planted areas, whilst a second group consists largely of improved or amenity grassland or agricultural fields. In many instances, habitat enhancement or creation would increase the value not only of some of the graded sites, but also of the buffers and corridors. Advice is provided on appropriate techniques for habitat management and creation, and guidelines in the report and on the data base indicate where this might be most applicable.
- 5.9 The ecological evaluation conducted, and the provision of the detailed data base, provide the basis for the development of the future Nature Conservation Strategy for Telford. By interrogating the data base in a number of ways, the essence of the distribution, nature, pattern and value of the wildlife habitats of Telford can be assessed. This would be a valuable subsequent stage in the assessment of the wildlife resource in Telford.
- 5.10 It is clear that the A, B and C graded sites are all worthy of inclusion in the Green Network, although the exact grading of some needs verification. Most D sites also merit site status, but those provisionally graded will need to be reviewed against further field survey to determine whether they should be C or D graded, or better suited to being a buffer or part of a corridor rather than a separate site of ecological value. There is no uncertainty concerning the need for the buffers and corridors as shown on Fig.4, but for the most part their quality is unknown and needs to be investigated, and, where necessary, enhanced. It is possible, as discovered during the 1990 summer surveying, that new sites worthy of grading are included in those parts of the high grade buffer which have not been surveyed.

- 5.11 When management and enhancement measures are planned, most sites which have not been surveyed in 1990 will need to be assessed in detail to select the most appropriate procedures and areas. The more important sites will require management plans, some of which are being prepared by the SWT.
- 5.12 This project provides the base-line data for the development of policies directed towards nature coservation and establishes the future historical context of the wildlife habitats in Telford.

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# KEY TO THE ABBREVIATIONS USED IN TABLE 1.

# <u>Habitats</u>

Mxd.	=	Mixed, deciduous and coniferous species
Dec.	=	Deciduous species
Ald.	=	Alder
Wil.	=	Willow

# <u>Plant lists + Birds</u>

(?)	=	No date	given
*	=	Records	from 1990

# <u>Other</u>

Am.	=	Amphibians
Ins.	=	Insects
Aq.Inv	Ξ	Aquatic invertebrates
G/hopp.	=	Grasshoppers
Lich.	=	Lichens
Inv.	=	Invertebrates
Rep.	=	Reptiles
Moll.	=	Molluscs
Bry.	=	Bryophytes (mosses and liverworts)
Orth.	=	Orthoptera
Gr.snake	=	Grass snake

# <u>Mammals</u>

B.vole	=	Bank vole
C.shrew	=	Common shrew
Rab.	=	Rabbits
Gr. Squir.	=	Grey squirrel
Red Squir.	=	Red squirrel
+	=	Species not specified

# <u>Birds</u>

В	=	Bred
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# <u>Reports</u>

MR	=	Management recommendations
PA	=	Planning applications
SSSI	=	Site of Special Scientific Interest - notification
нс	=	Habitat creation

#### TABLE 1. INFORMATION AVAILABLE FOR THE SITES

SITE	MAJOR HABITATS	OTHER HABITATS		PLANT LISTS	5								
			77-80	834567	89	LEPID	ODON	OTHER	MAMMALS	82/3	BIRDS 84 85	86 87/	8 etc
1. Dothill Park 645128	Ponds	Rough Grassland, Scrub Marsh, Headgerow	+ (?)	++ ++	+			Аq. Ілv -5	4 bat sp. Others	25 22		23 15+ 67 67	+ (877) Mir (86)
2. Eyton Farm Coppice 648139	Woodland-Deciduous		+(77)										
3. Long Pit Coppice 648142	Woodland-Deciduous		+(77)										
4. New Plantation - Wellington 655126	Woodland-Coniferous	Dry ditch	+(77)		*								
5. Orleton Marsh 639115	Marsh	Hedgerows			+								
6. Ketley Bank 694101	Heath, Grassland, Woodland	Scrub		+	*	1		Moll - l 3 spp. bee				8#	
7. Rough Pits Wood 642138	Woodland-Deciduous	Small pools, glades	+(77)										
8. Admaston Railway 631146-640120	Grassland, scrub, wet ditch	Alder Carr		+ +	+								MR (88)
9. Admaston Spa 637131	Pool		•			10	4						
10. Apley Castle 655134	Woodland (Mixed) and Pools	Græssland	+(77) +(80)	+	+	12	4	Ins-2 Am-1 Fungi-3		46		67	+ (86) MR, PA
<pre>11. Upper Forge - Boring Mill Pond 669042</pre>	Woodland-Deciduous and Pool		+(76)	+									+ (85) MR (85)
12. Wynne's and Vane Coppice 669052	Woodland-Deciduous	Scrub	+(77)	+	+			+	Fox				+, MR (88)
12.1 Vane Coppice Extra 672051	Woodland-Deciduous	Grassland, Tall herbs			*	1		Ant bills				5*	
13. Moreton Coppice & Simpsons Pool 669072	Woodland-Deciduous	Pool	+(77) +( <b>79-</b> 81)	+	+	4	4	Aq.inv. Fish-4	+	14			+, MR (88)
l4. Lawley-Smalley Bill 666084	Woodland-Deciduous			+									MR PA
15. Lawley Furnace 668093	Woodland-Deciduous	Gorse Scrub/Stream Tall Herbs/Pond	+ (?)	+ + +	+	21		Fungi-6 Lich Ins-4	Dormouse	33	15		MR
16. Lawley Swamp	Marsh			+									

660920

SITE	MAJOR HABITATS	OTHER HABITATS		PLA	NT I	ISTS	S		0001	000000	MALAATC		8 TD00		DEDADTC
			77-80	83	45	67	89	relin	UJUN	UTHER	CLAPPINE C	82/3	84 8	5 86 87,	/8 etc
17. Lawley New Works 666088	Scrub, Grassland	Wet Areas					+	4		Fungi-6	+ 5-0thers	3		35	5
18. Captain's Coppice 667046	Woodland-Deciduous	Scrub	+(77)		+		+			Fungi-2				1	+
19. Hollyhead Bank 690106	Scrub, Grassland	Planted woodland, Heath, Hedges					*	6			Shrew			31	K
20. Leegomery Small Woods 665127	Woodland-Mixed Deciduous	Hedge, Pond, Ditch, Stream	+(77)									15		78	3 MR (86)
21. Loamhole Dingle & Rope Walk Meadow 663056	Woodland-Deciduous	Stream Meadow (unimproved)	+(77)	+	+ +	+ +	+	6		Ins-5 Fungi	+			38	3 SSSI +, MR (85)
21.1 Lydebrook Dingle 658065	Woodland Deciduous	Rock Face, Marsh		+	+		+	5		Fungi		15			+
22. Lightmoor 645128	Wet Meadows Woodland	Stream, Marsh, Hedges, Heather Banks, Scrub	+(80)		+ +	+ +	+ +	32	13	Inv-78 Am-0 Rep-3 Ants	6 +	7+17	63		+, MR (87)
22.1 Lightmoor Extra 675056	Grasslands, Woodland	Scrub					*	3			Gr. Squin	•			
23. Footridge Wombridge 688112	Rough Grassland Scrub, Woodland	Planted Trees	•				*	3	1					64	MR (86)
24. Tweedale Woods 703051	Woodland-Mixed	Scrub, Grassland Heath	+(77)		+	+	+	6(83)	2	3 sp. Rep Ins	B. Vole Red Squin	14			+, MR (86)
25. Halesfield Marsh North 707048	Marsh - Grassland			+				12	2			11			
26. Upper Furbace Pool 665049	Pool	Woodland	+(77)												
27. Ketley Flood Meadows 668113	Wet Grassland	Hedge, Scrub			+										
28. Gittens Drive Aqueduct 692056	Rough Grassland, Typha marsh	Scrub, Hedge, Bracken				+		1			Fox			5	5 + (87) MR (87)
29. Telford Hospital 655127	Improved Grassland	Pond, Woodland, Tall herbs					*								+
30. Short Wood Wellington 658095	Woodland-Mixed Deciduous	Open areas with Bracken & Bramble			+	+ +					+			3	+ (86), PA
31. Hortonwood 686140	Hedges	Pond, Woodland, Grassland					*	7	1	Inv-3, Rab Fox		34		2	L PA

SITE	MAJOR HABITATS	OTHER HABITATS	77-80	PLANT 83 4	LIS7	rs 789	LEPID	odon	other	MAMMALS	82/3	BIRDS 84 85	86 87/8	REP e	ORTS tc
32. Hinkshay Field Studies Area 695072	Pools, Oak Woodland & Scrub, Grassland	Heathland Canal remnant	+(?79)	+	+ + +	+	10	3	Fungi Rep Aq.Inv Am	Squirrel Rab.,Bats	23			MR	+, (83)
33. Station Road Donnington 708143	Grassland on old industrial site	Hedges, Scrub		+		*			Вгу-З						HC
34. Phoenix Pit Mounds, Dosely Holt 681062	Birch Woodland,Acid Grassland,Heathland	Scrub, Hedges, Pool & Bog		+	+	+	8	1	Fish-l Frog, Ant	+			3	MR	+, (84)
34.1 Dawley Deep Fields 689061	Woodland-Mixed	Reath, Scrub			+ +	+	8		Lizards					MR	(86)
35. Paddock Mound Dawley 687072	Woodland-Coniferous	Reathland	+(77)		+ +	+								MR	+, (87)
36. Beverley Pitmound 688108	Reathland	Planted Trees Bracken				+			Inv-9					MR	(88)
37. Paddock Mound Ketley -Pottersbank 682108	Grassland, Scrub Woodland	Pools, Tall Herbs Canal	+(77)		+ 4	• +								PA MR	(81) (86)
38. Limekiln Woods 652096	Ancient Woodland	Limestone Grassland Scrub	+	+ +	+ + +	• +	8	6 10(83)	Fish-3 Am-2 Rep	3 Bat sp. +	30 39 ?		14	MR	(87), +
39. Pool Hill 680073	Hawthorn/Gorse Scrub	Heather, Grassland, Tall Herbs, Woodland, Paol	•			*	9	1					11*		+
39.1 Pool Hill South 681067	Grassland, Scrub	Hedges				*	6						3*		
40. New Hadley 684114	Scrub, Grassland	Heathland, Marsh Hedge			+ +		12						1	+,	MR
41. Widewaters Meadow Lightmoor 684058	2 Hay Meadows with adjacent Pool	Thick Shrubs & Trees Marsh (Canal relic)	+ (?)	+ +	+ +	+	13	10	Inv-9 Rep		24			MR	(86)
42. Middle Pool Trench 688118	Pool, Reed Marsh Dry Grassland		+ (?)	+	+	+	9	3	Aq. inv-16 Fish Ins	Bank Vole	19	15	15	MR	+, (83)
43. Langley Fields 693075	Reathland	Woodland, Pools Sallow Scrub, Grass		+	+		10	6	Ants,Am-2 Gr.snake		7			+ MR	(83) (84)
44. Trench Pool 687124	Pool, Woodland Reedmace		+ (?)	+	+	+		1	Aq. inv-8 Am Fish		14			I	MR
45. Stirchley Marsh 705063	Marsh	Stream, Hedgerows			+		13(83/4) 3(88)	6	2 Newt sp Moll Fish					86	MR & 88
46. New Pool-Castlefield (Bypass) 672049	Mxd.Dec.Woodland, Poo Streams Ald./Wil.Carr	1		+	+	+			Aq.Inv.		17			MR	+, (88)

	SITE	MAJOR HABITATS	OTHER HABITATS		PLAN	T LIS	TS	LEPID	ODON	OTHER	MAMMALS		BIRD	S		REPORTS
				77-80	83 4	56	789					82/3	84	85 86	87/8	etc
	47. Dawley Bank 683085	Grassland	Hedgerow, Scrub Mature Trees		+			2				5				MR (83)
	48. Stoney Hill 667061	Acid/Base Rich Revegetated Spoil Tip	Pools, Scrub, Heather Moss & Lichen Heath	+ (81/2)	) +	+ +	+	18	9	Ins-5 Rep-3 Bry-31 Am-4	2 + 4 Rabbit	12		21		MR + (89)
	49. Stirchley Grange Pitmound & Pond 702071	Oak/Birch Woodland Lake & Grassland	Heathland	+ (?)	+	+ +	+ +		3	Am-3 Rep-2		17	14	5	F	L/scape lans(83)
	50. Admaston Stream 638139-636113	Stream with trees	Woodland				*	1	1		Rabbits				8*	
	51. Cannongates, Oakengates 698105	Ruderals, Scrub, Grassland			+		*	1							4*	
	52. Madeley Court 694094	Woodland (mixed)	Pool, Stream, Marsh overgrown Grassland	+(77) + (?)	+	+	+	4	3	Fungi, Rep Fish, Ins Aq. Inv		32		39		+, MR (86)
	53. Station Fields, Oakengates 696107	Acid Grassland, Scrub	Wetland	+ (?)	+			13	2			17				+, MR (83)
	54. Great Hay Stream & Woodland. 702031-703023	Ancient Woodland, Stream	Pools				*	1	2	Aq. Inv. Fish					2*	
	55. Admaston-Shifnal Railway Line 629128-724083												:	25		
:	56. Wellington Road Trench 697133	Grassland	Hedge-Lined Stream		+		*						5			+
	57. Horsehay Railway 676081-683054	Scrub/Small Trees	Heather/Grassland				+ *	9		Moll - 6	Fox				8*	
:	58. Southall Road Pitmound 692064	Woodland, Meadow- (Tall Herb Community)	Neather in open Glades, Pond	+ (77)	+	+ + ·	+ +	18	5	2 Newt sp. Frogs						MR (86)
•	59. Lincoln Hill 669038	Woodland-Ancient Grassland-Calcareous	Rock Faces				+ +									SSSI Notific.
1	60. Aqueduct Marsh 691054	Willow/Alder Carr	Rough Grassland, Scrub			+										MR (86)
	61. Hill Top Village 691096	Grassland,Orchard, Pools,Stream,Scrub			+		+ +	12	3	Aq. Inv Inv-4	C.Shrew B.Vole Fox	L C	10			+, MR (64)
	62. Hoo Farm 693150	Woodland (mixed)	Grassland, Pond Hedges		+		+				Rabbits	32			33 48	MR& HC

SITE	MAJOR HABITATS	OTHER HABITATS		PLAN	T LI	STS											
			77-80	83 4	56	7	89	LEPID	ODON	OTHER	MAMMALS	82/3	81H 84	05 85	86	37/8	etc
63. Wrockwardine Wood 701115	Woodland-Deciduous Heatbland	Scrub	+ (77) + (?)	+	+ +	+	+	12		Ins-7 Moll-1	6 species		9			38	MR, +
64. Lee Dingle 693036	Woodland-Deciduous		+ (77)		+		+										MIR
64.1. Lee Dingle Meadow 694038	Meadow		+ (?)	+	÷		+	9	1	Orth-1							
65. Meadow Pit Mound 689041	Woodland-Coniferous	Unimproved Rough Grass Acid Grassland	+ (77)				+	5		Ins-3			9				+, MR
56. Dawley Castle Woods 689061	Woodland-Mixed, Deciduous	Pools, Glades	+ (77) + (?)		+		+	2		Ins-2		9					+, MR
67. River Severn 660038-702021	River		+ (?)				+		5 3 bre	Inv-2	+					8	MR + (78)
68. Riverbank & Ladywood Bridge, 677033	l River Bank, Woodl <b>and-</b> Deciduous	Grassland				+	*		1		Rabbits					9*	
69. Lodge Field 672038	Grassland, Scrub, Pond						+			Inv-3	+	18	4		17	1	
70. Madeley Wood 681036	Woodland	Heather Glades Acid Flushes	+ (77)		+		t	2		Inv-9							MR
71. Haycop, Broseley 679020	Unimproved Grassland Woodland	Heathland, Scrub, Marsh Hedgerow, Stream			+			20		Ins-2				28B 13		-	+Mar (85)
72. Borrow Pit 683054	Ruderals, Scrub, Ponds	Wet area			+ +				6								MR
73. Ketley Hell/ Red Hill 678107	Woodland, Pond, Scrub	Grassland	+ (?)	+			*	5	2	Am-3 Rep-1	8 species + Bats	33				6#	PA (83) MR
74. Doseley Quarry 675068	Pool & Scrub		•	+				10	4	Ins-4 Newt & Fro	<b>(</b>	8				S	SSI Geol +
75. The Beeches 676038	Ponds											18	4		17		
76. Rough Park & Castle Green 675045	Woodland Unimproved Meadows				+ +	-	ł										MR (84) PA (89)
77. Oilhouse Coppice 675050	Woodland-Mixed, Deciduous	Pool, Heatber, Glades	+(77)		+	+ -	ł			+							+, MR (88)
78. Newdale-Ketley Railway Line 676097	Grassland, Hedges			+ +	+ +	+ ·	+ +	18	3	Ins-2 Am-3 Fungi	3 spp.	13				21	MR(84) +(87)

	SITE	MAJOR HABITATS	OTHER HABITATS		PLAN	T L	ISTS										
				77-80	83 4	5	<b>57</b> 8	39	LKPID	ODON	OTHER	MAMMALS	82/3	BIR 84	DS 85	86 87/	REPORTS 8 etc
	79. Ladywood 675032	Woodland-Deciduous	Pond	+(79) +(77)	+		+ +	•				+					+ MR
	80. Coalbrookdale Sculpture Park 673051	Woodland-Deciduous, Grassland	Scrub					*	6			Rabbits					PA (87)
	81. Dale Coppice 672045	Woodland-Mixed		+	+	-	F		13		Fungi-8 Inv-1		23				+
	82. Coalbrookdale Churchyard 670045	Grassland	Gravestones with lichen flora				+										MR(83)
	83. Workhouse Coppice 670030	Oak Woodland, Wet- Rough Grassland		+(82)													PA(83) PA(85)
:	84. Castlefields Marsh 686054	Wet Alder Woodland, Marsh(part disturbed)	Small Shallow Pools, Stream		+	4	+ +	+		2				13			MR(87) Monitoring
	85. Heath Hill 678078	Bracken, Scrub	Tall herbs, Heather	+(79) + (?)		4	• + +		7	1	3 mosses	Rabbits					MR(88)
:	86. Benthall Wood and Quarry 660034	Calcareous Grassland Woodland Deciduous	Scrub	+(73) +(77) +(79)	+	+ +	• + +		12	5	Ins-3 Fungi-5 Moll-12	+				1	SSSI Expt. results of MP
1	87. Tagg's Rough 726088	Oak Woodland		•	+												PA(84) MR
1	88. Pipers/Hem Coppice 715054 & 717058	Woodland-Mixed, Deciduous	Planted species-rich Grassland	+(77)	+			+					9	8			MR, +
ŧ	89. National Standard 713058	Willow Scrub, Grassland	Small Pond		+	+			6	1				5 2B	1	8 1 B	MR(86), +
9	90. Halesfield West Pitmound 711054	Woodland-Mixed Deciduous		+(77)	+		+		1		Fungi-4			2			+, MR
9	91. Blists Hill 695033	Woodland-Mixed Scrub	Canal, (disused)	+(77) + (?)	+	+	+		7	5	Fungi-2 Newt Frog	5 Species	20				+, MR
ę	92. Priorslee Lake 725096	Reservoir	Scrub, Gressland		+	+	+		9(83) 6(88)	4(83) 1(88)	Ins-3 Aq. Inv	Water- Vole	16 8B	23	12		+(83) MR
2	93. Priorslee Flash & Pitmounds 711080	Grassland,Scrub,Pool Woodland-Deciduous	Stream, Stonewall	+(77)	+	+	+ +		6		Fungi-3 Ins-3 Inv-1			6			+(84),MR (84) (86)
ę	94. Dawes Bower 720117	Woodland-Mixed, Deciduous	Stream, Wet areas, Hedgerows	+(77)	+		+	+			Fungi-5					1	MR(88)
S	95. Lloyds Coppice 686033	Woodland-Mixed	Scrub, Grassland, Small Pools	+(77)	+	+	+ +		12	3	Ins-3 Rep Moll Fungi	+	16	10		17 36-	+ MR,for Night-

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SITE	MAJOR HABITATS	OTHER HABITATS		PL	.ANT	LIST	s									
			77-80	83	4	567	89	LEPID	ODON	OTHER	MAMMALS	82/3	BIRI 84	DS 85	86 87,	REPORTS /8 etc
96. Nedge Hill 718073	Grassland, Scrub	Woodland, Hedges, Pond Drainage Ditch		+	+	+	+ +	20(83) 22(84)	3	Ins-6 Fungi Frog	10 spp.	51B +10	57			+, MR(83) PA(85)
97. Halesfield Marsh 712041	Wet Grassland & Marsh				+			12(83)+2 15(83)	2	Ins-2		11 1B				MR (84)
98. Holmer Lake 708058	Rough Grassland, Lake		+(77)		+	+		12	4	Fungi-l Toad Ins-l		10	11			
99. Muxton Marsh 716134	Unimproved Grassland, Fen, Willow Carr	Woodland		+	+	+ +	+	4 8(88)	1	Ins-4,Frog Newt Rep			10	11	6 2B	SSSI,+(87) PA(89)
100. Granville Ponds 718123	Ponds, Scrub, Grassland	Beath, Woodland				+ +	+ *	3	4	Frog	Rabbits				41	MR(86)
101. Mineral Line North 719124-716131	Disused railway line, Scrub, Grassland	Woodland, Heath		+		+	*	11(83)	1		Here			10	41	r.
101.1 Mineral Line South 709117-718120	Disused railway line, Scrub, Grassland	Woodland, Heath		+		+	*	11(83)	1					10	61	r
102. Muxton Bridge Colliery 722133	Woodland-Mixed Deciduous	Disused Railway, Mineral Workings, Canal Embankment	+(77)		+	+	+	3(84) 2(85) 2(88)		Ins-3+4 Inv-1 Fungi-2			10	8	2	+
103. Tub Engine Pitmound 711122	Woodland	Scrub	+(77) + (?)			+		3(85)		Inv-5				7		
104. Waxhill Barnyard 719129	Woodland-Deciduous, Scrub, Grassland						+ *									
105. St. Georges 711112	Woodland, Grassland	Scrub, Ponds				+	+ +									MR
105.1 The Rookery 709115	Scrub, Heath, Grassland	Woodland					*	1							14	r
106. Donnington Central Hall 705125	Mixed Deciduous Wet Scrub, Scrub	Pioneer species, Grassland, Pond	+(82)	+		+	+	9(83) 3(88)	1(83)	Y.M.Ant, Aq.Inv-3 Inv-8	Fox Holes	5 3B	18		26 (89	5 Ecol(83) 9) MR(86), MR (89)
106.1. Donnington Wood Misc. 715125	Unknown	Unknown	+(81/2)			+ +		23(83)	1	Inv-8, Rep Fis-1, Am		4				
107. Sutton Wood 707022	Ancient semi-natural Woodland, mixed Plantation		+ (?) +(79)				+			Rep-1		27			21	+, MR
107.1 Sutton Wood Meadows 705021	Grassland- unimproved	Hedgerow, Spring	+(73)		+		+	6(83)	4(83)	Inv-8,Am-1 Rep-1						MR (88)

	SITE	MAJOR HABITATS	OTHER HABITATS		PLANT LISTS					TO ODON OTHER						
				77-80	83	45	67	89	LEPID	ODON	OTHER	MAMMALS	82/3	BIRDS 84 85	86 87/1	REPORTS 3 etc
	108. Randley Valley inc. R.Brook & R.Pitmound 713074	Mixed Deciduous Woodland, Stream	Grassland Wetland	+(77)	+		+?	?	2(86) 4(88)	2(86)	Fungi	Shrew	28(83	)		+ (87) MR(86,89)
	109. Horsehay Pool 674073	Pool		+ (?) +(79)		+	+				Frog Toad Newt		18			+ (84) MR (86)
	110. Golden Bear Marsh 707120	Marsh/Wet Meadow (Former ponds)	Hedges				+ +									MIR (87)
	<pre>111. Allscott Settling   Ponds 602130</pre>	Ponds,Reed Bed,River Grassland, Scrub	Ruderals	+ (?) +(82)		+			14(84)	3(84)	Frog, Toad Ins-2		147 (?83)	39		SSSI (birds)
	112. Vineyards 650027	Limestone Grassland			+				12(83)	2(83)	Ins-5					MR(83)
	113. The Dodmoors 720065	Woodland-Mixed Deciduous		+ (?)												+
	114. Stafford Park 13 712088	Marsh		+ (?)				+								PA(88)
	115. Stafford Park Pools 724086	Ponds, Marsh Willow Woodland	Hedgerow, Scrub Grassland		+		+			2			15	5		MR(83) MR(86)
	116. Snedshill Pool 701097	Pool with Emergent Vegetation			+			+ *	. 1		Fish	Rabbits Hare			2*	
	117. Town Park-Blue Pool 702077	Pool, Marsh, Calcareous Grassland	Scrub	+(79)	+	+	+ +	+		11	Aq.Inv,Am Rep-1,Fish		6 3(79)			+ Expt Results
	118. Town Park-Watch Group Site 697072	Grassland	Scrub, Stream		-	+ +			21			Rare		7		+(84) MR(84)
	ll9. Town Park-Stirchley Chimneys 701074	Woodland (Secondary) Grassland	Ruderals	•	+	+					Moll-3			8		MR
:	120.Town Park-Fletchers Pool & Meadow 700073	Pool, Wet Grassland Woodland	Stream	+(74) + (?)		+	+ +	+	10	1	Inv-2				5?	MR (88)
1	121. Town Park-Withy Pool 698081	Lake	Woodland Hedge	+ (?) +(79)		+.		+			Fish-7		4			
1	122. Town Park-Randlay Pool 702078	Old Reservoir-good emergent vegetation	Woodland	+(79) +(77) + (?)	+	+ -	+	+	3	2	Fish-2/5 Ins-6 Aq.inv-2	Rabbit Fox Moles		8		MR
:	123. Town Park-Spout & Mound. 696083	Scrub/Heather, Improved Grassland		+(79)				*	2						2*	

SITE	MAJOR HABITATS	OTHER HABITATS		PLANT		PLANT LISTS		IPDID	0001				DIDDC		DEDODTS
			77-80	83 4	567	89	LEFID	ODOR	UINER	MAPPIALO	82/3	B1 85	86 87/8	etc	
123.1 Hollywell Mound 697078	Heathland, Scrub	Woodland, Grassland				*	2						7*		
124. Town Park Wetland 698070	Grassland, Stream	Scrub, Woodland				*	5	1					2*		
125. Town Park- Miscellaneous 700078	Wooded Pitmounds, Pools, Grassland	Heather, Scrub Hedgerows, Stream	+(77) +(79)	+	+		28	14 12	Атр-4 Rep-2,Ins-6 Moll-6	Bat-3 sp Fox,Rab Weasel	,	25 3		PA, +	
126. Stafford Park Woodland. 713082	Ancient Woodland					*				Rabbits			3*		
127. Wellington Junction Fields. 663117	Abandoned Field	Hedge, Stream, Scrub				*	5	1		Rabbits			4*		
128. Mossey Green 689101	Woodland, Grassland	Hedge, Scrub, Ruderals				*	6		Insects - 2				2*		
129. Woodside Pitmound 684043	Woodland-Deciduous, Scrub	Grassland, Heath, Wetland				*	1			Rabbits			7*		
130. Station Hill, St. Georges. 701109	Woodland-Coniferous, Grassland, Heath					*	3		Black Ants						
131. Red Lake 684103	Reath, Woodland, Scrub, Grassland	Ponds, Hedges	-			*	4						7*		
132. Shrubbery Road, Red Lake. 686104	Woodland, Grassland	Scrub, Heath, Hedges, Ditch				*	3			Rabbits			5*		
133. Trench Branch Canal 675127	Wetland	Scrub, Hedges, Tall Herbs, Grassland				*	3		Aq. Invert - 1	Shrew, +, Rabbit			3*		
134. Donnington Wood 715115	Woodland-Deciduous Scrub, Heath	Pond, Ditch				*	4			Rabbit, + Gr. Squir			8*		
135. Donnington Pitmounds. 716129	Woodland-Deciduous, Scrub, Grassland	Ponds, Ditches Hedges				*	2	5		Rabbits			5*		
136. Lodgebank Pitmounds 721124	Woodland-Deciduous Scrub, Grassland	Hedges				*	1						3*		
<pre>137. Granville Pitmound 712124</pre>	Scrub, Grassland	Marsh, Ditch, Heath				*	6						5*		
138. North Lightmoor 674070-671057	Woodlands, Hedges	Scrub, Grassland				*				Gr. Squir	••		6*		

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SITE	MAJOR HABITATS	OTHER HABITATS	PLANT LISTS		LEPID	OBON	ATTER	MANATE		DIDR			DEDODTE	
			77-80	83456789		BL IN	NORO	UINER	CALINITALS	82/3	84	3 85	86 87/8	etc
139. Norton Pools & Hedges. 688144-692139	Pools, Hedges	Scrub, Grassland		*		1	1							
140. Hortonwood Wood 690142	Ancient Woodland			*		1							3*	
141. Norton Drain 678141-691139	Drain	Grassland, Scrub		*		3			Rabbits				5*	
142. Hem Valley 714069-718061	Stream, Grassland, Woodland	Scrub, Hedges												+

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## TABLE 2. WOODLAND INDICATOR SPECIES

#### Latin Name

English Name

Acer campestre Adoxa moschatellina Allium ursinum Anemone nemorosa Arum maculatum Bromus ramosus Calamintha sylvatica Campanula latifolia Campanula trachelium Carex pendula Carex remota Carex strigosa Carex svlvatica Circaea lutetiana Convallaria majalis Corydalis claviculata Corylus avellana Crataegus laevigata Daphne laureola Dipsacus pilosus Dryopteris carthusiana Elymus caninus *Epipactis helleborine* Epipactis purpurata Equisetum sylvaticum Equisetum telmateia Euphorbia amygdaloides Festuca altissima Galium odoratum

Geum urbanum Hordelymus europaeus Hyacinthoides non-scripta Lamiastrum galeobdolon Lathraea squamaria Listera ovata Luzula pilosa Luzula sylvatica Lysimachia nemorum Melica uniflora Mercurialis perennis Milium effusum Monotropa hypopitys Myosotis sylvatica Neottia nidus-avis Field maple Moschatel Ramsons Wood anemone Lord's-and-ladies Wood brome Common calamint Large bellflower Nettle-leaved bellflower Pendulous sedge Remote sedge Thin-spiked wood sedge Wood sedge Enchanter's nightshade Lily-of-the-vallev White climbing fumitory Hazel Midland hawthorn Spurge laurel Small teasel Narrow buckler-fern Bearded couch-grass Broad helleborine Violet helleborine Wood horsetail Giant horsetail Wood spurge Wood fescue Sweet woodruff Wood avens Wood barley Bluebell Yellow archangel Toothwort Twayblade Hairy woodrush Greater woodrush Yellow pimpernel Wood melick Dog's mercury Wood millet Yellow bird's-nest Wood forget-me-not Bird's-nest orchid

Comments

Fairly rich substrata Esp. on basic soils Esp. on base rich soil Usually calc. soil Usually on clay soils Base-rich soils On clayey soils Mainly on limestone Acid soils Mainly on calc. soils Mainly on calc. soils Acid soils On calc. soils On rich, light soils On calc. or base-rich soils Often on calc. soils Base-rich soils Acid soils On more base-rich soil Esp. beech & pine woods Esp. on humus-rich calc. soils

# TABLE 2. Contd...

Early purple orchid	Mainly on base-rich soil		
Wood sorrel			
Herb Paris	Calc. soils		
Wood poa			
Solomon's seal			
Hard shield-fern			
Soft shield-fern			
Primrose			
Goldilocks			
Blackcurrant			
Redcurrant			
Gooseberry			
Red-veined dock			
Sanicle			
Wild service tree	Usually on clay soils		
Small-leaved lime	Esp. on limestone		
Large-leaved lime	Calc. or base-rich soils		
Wood speedwell			
Wood vetch			
<i>Viola reichenbachiana</i> Pale wood violet			
	Early purple orchid Wood sorrel Herb Paris Wood poa Solomon's seal Hard shield-fern Soft shield-fern Primrose Goldilocks Blackcurrant Redcurrant Gooseberry Red-veined dock Sanicle Wild service tree Small-leaved lime Large-leaved lime Wood speedwell Wood vetch Pale wood violet		

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Abbreviations:	Calc.	-	Calcareous
	Esp.	-	Especially

#### TABLE 3. GRASSLAND INDICATOR SPECIES

#### Latin Name

#### English Name

Achillea ptarmica Acinos arvensis Agrimonia eupatoria Agrimonia procera Agrostis canina agg. Agrostis canina Agrostis capillaris Alchemilla agg. Alchemilla filicaulis ssp.vestita Allium vineale Anacamptis pyramidalis Anthyllis vulneraria Avenula pubescens Blackstonia perfoliata Briza media Campanula rotundifolia Cardamine pratensis Carex binervis Carex caryophyllea Carex demissa Carex flacca Carex hirta Carex nigra Carex ovalis Carex panicea Carex pilulifera Carex spicata Carlina vulgaris Centaurea nigra Centaurea scabiosa Centaurium erythraea Cirsium palustre Clinopodium vulgare Colchichum autumnale Conopodium majus Dactylorhiza fuchsii Dactylorhiza incarnata Dactylorhiza praetermissa Danthonia decumbens Daucus carota Deschampsia flexuosa **Erigeron** acer Eriophorum angustifolium Euphrasia agg. Festuca ovina *Galium saxatile* Galium verum

Sneezewort Basil-thyme Agrimony Fragrant agrimony Brown bent-grass agg. Brown bent-grass Common bent Lady's mantle agg. Lady's mantle

Crow garlic Pyramidal orchid Kidney-vetch Hairy oat

Yellow-wort Quaking-grass Harebell Cuckooflower Green-ribbed sedge Spring sedge Common yellow sedge Glaucous sedge Hairy sedge Common sedge Oval sedge Carnation sedge Pill sedge Spiked sedge Carline thistle Lesser knapweed Greater knapweed Common centaury Marsh thistle Wild basil Autumn crocus Pignut Common spotted orchid Early marsh orchid Southern marsh orchid Heath grass Wild carrot Wavy hair-grass Blue fleabane Common cotton-grass Eyebright agg. Sheep's fescue Heath bedstraw Lady's bedstraw

#### Comments

Damp soils Dry,usually calc.soils

Light, rather acid soils

On chalk or limestone

Usually on chalk or limestone Calc. soils

Often on poor soils

Mainly acid soils

On moderately acid soil

Chalk & limestone

Esp. on calc. soils

Usually on calc. soils On basic & neutral soil

Wetter soils Base-rich peat Acid soils Part. on chalk Acid soils Esp. on calc. soils Wet acid places

Acid soils

TABLE 3. Contd....

## Latin Name

Genista tinctoria Gentianella amarella Geranium pratense Hieracium pilosella Hordeum secalinum Hydrocotyle vulgaris Hypericum hirsutum Hypericum maculatum Hypericum perforatum Hypericum pulchrum Hypochaeris radicata Juncus squarrosus Knautia arvensis Leontodon autumnalis Leontodon hispidus Leucanthemum vulgare Lotus corniculatus Lotus uliginosus Luzula campestris Luzula multiflora Lychnis flos-cuculi Ononis repens Ophioglossum vulgatum Ophrys apifera Orchis mascula Orchis morio Pedicularis sylvatica Plantago media Platanthera bifolia Platanthera chlorantha Polygala serpyllifolia

Polygala vulgaris Potentilla erecta Primula veris Pulicaria dysenterica Rhinanthus minor Sanguisorba minor Sanguisorba officinalis Saxifraga granulata Scabiosa columbaria Silaum silaus Stachys officinalis Stellaria graminea Succisa pratensis Thymus praecox Triglochin palustris

Abbreviations: Calc. - Calcareous Esp. - Especially

English Name Comments Dyer's greenweed Felwort Usually calc. soils Meadow crane'sbill Mouse-eared hawkweed Meadow barley Marsh Pennywort Wet, usually acid soil Hairy St. John's wort Mainly basic soils Imperforate St.John's wort Perforate St.John's wort Slender St. John's wort On non-calc. soils Common cat's ear Heath rush Wet, acid soils Field scabious Autumnal hawkbit Rough hawkbit Esp. on calc. soils Ox-eye daisy Bird's-foot trefoil Greater bird's-foot trefoil Field woodrush Many-headed woodrush Ragged robin Damp soils Restharrow Adder's tongue Damp soils Bee orchid Calc. soils Early purple orchid Mainly on base-rich soil Green-winged orchid Esp. on calc. soils Lousewort Hoary plantain On base-rich soils Lesser butterfly orchid Great butterfly orchid On base-rich soils Thyme-leaved milkwort Usually on lime-free soils Common milkwort Common tormentil Esp. on light acid soil Cowslip Fleabane Yellow-rattle Salad burnet Great burnet Damp soils Meadow saxifrage Basic & neutral soil Small scabious Dry, calc. soils Pepper saxifrage Betony Lesser stitchwort Esp. on light sandy soil Devil's-bit scabious Wild thyme Dry soils Marsh arrow-grass Marshes

#### TABLE 4. WETLAND INDICATOR SPECIES

Latin Name

## English Name

Acorus calamus Alisma lanceolatum Alisma plantago-aquatica Alopecurus aequalis Anagallis tenella Andromeda polifolia Angelica sylvestris Apium inundatum Apium nodiflorum Azolla filiculoides Berula erecta

Achillea ptarmica

Bidens tripartita Blysmus compressus Butomus umbellatus Callitriche agg. Callitriche hamulata

Bidens cernua

Callitriche hermaphroditica Water starwort Callitriche obtusangula Callitriche platycarpa

Callitriche stagnalis

Caltha palustris Cardamine amara Cardamine pratensis

Carex acuta Carex acutiformis

Carex curta Carex demissa

Carex disticha Carex echinata Carex nigra Carex paniculata

Carex pseudocyperus

Carex riparia

Carex rostrata

Sneezewort Sweet Flag Narrow-leaved water plantain Water plantain

Orange foxtail Bog pimpernel

Bog rosemary Angelica

Fool's watercress

Narrow-leaved water-parsnip Ditches.marshes Nodding bur-marigold

Trifid bur-marigold Broad blysmus Flowering rush Water starwort agg. Water starwort

Water starwort Water starwort

Water starwort

Kingcup Large bittercress Cuckoo flower

Slender tufted sedge Lesser pond sedge

White sedge Common yellow sedge

Brown sedge Star sedge Common sedge Greater tussock sedge Cyperus sedge Great pond sedge Bottle sedge

Comments

Damp meadows, marshes In shallow water

In shallow water, by slow flowing rivers Damp places Damp grassy & peaty places, bogs Bogs Damp places, fens Lakes, ponds, ditches Ditches, shallow ponds Ditches.etc. Esp. where water stands only in winter Marshy places Shallow water Lakes, pools, ditches & on mud Lakes, streams Ponds, ditches, lakes Ponds, ditches, streams, and on mud Ponds, ditches, streams, mud, etc. Marshes Mainly on peat Damp grassland.by streams Ponds, dykes, marshes Slow flowing rivers. ponds, fens Mires, wet places Damp, acid-neutral peat or clay soils Marshes Wet heath.bog Bogs, wet places Wet, peaty, base-rich soils By slow-flowing rivers, ditches etc. By slow-flowing rivers, ponds etc. Wet peaty places, in water

## TABLE 4. Contd....

#### Latin Name

Carex vesicaria Catabrosa aquatica Ceratophyllum demersum Cirsium palustre Cyperus longus Eleocharis palustris Elodea canadensis Epilobium hirsutum Epilobium palustre

Eriophorum angustifolium Filipendula ulmaria Galium elongatum Galium palustre agg. Galium palustre

Galium uliginosum Glyceria declinata

Glyceria fluitans

Glyceria maxima

*Glyceria x pedicellata Glyceria plicata* 

Groenlandia densa

Hottonia palustris Hydrocotyle vulgaris Hypericum tetrapterum

Iris pseudacorus

Isoetes lacustris Juncus acutiflorus

*Juncus articulatus Juncus bulbosus Juncus conglomeratus Juncus effusus* 

Juncus inflexus

Lemna gibba Lemna minor Lemna polyrhiza Lemna trisulca Lotus uliginosus

#### English Name

Bladder sedge Water whorl-grass Hornwort Marsh thistle Galingale Common spike-rush Canadian pondweed Great hairy willowherb Marsh willowherb

Common cotton-grass Meadow sweet Great marsh bedstraw Marsh bedstraw agg. Lesser marsh bedstraw

Fen bedstraw Flote-grass

Flote-grass

Reed-grass

#### Flote-grass

Water violet Marsh pennywort Square-stemmed St.John's wort Yellow flag

Quill-wort Sharp-flowered rush

Jointed rush Bulbous rush Conglomerate rush Soft rush

#### Hard rush

Gibbous duckweed Duckweed Great duckweed Ivy-leaved duckweed Large bird's-foot trefoil

#### Comments

Wet woods, swampy places Shallow streams, ditches Ponds, ditches, streams Wet places Marshes Marshes, ditches Ponds, canals, rivers Marshes, etc. Calcifuge, marshes, acid fens Wet acid places Marshes, fens, wet woods Reed swamps Marshes etc. with intermittent standing water Trampled margins of ponds, usually Stagnant or slowflowing water Reed-swamp, river-banks, etc. Slow-flowing rivers Stagnant or slow flowing water Clear swift streams, ditches, ponds Ponds, ditches Marshes Damp meadows, marshes Marshes, shallow water, swampy woods Nutrient-poor lakes Wet meadows, moorland & swampy woods Wet ground Acid soils Acid soils Wet pastures, bogs, damp woods Damp pastures, on heavy base-rich soils Still water Still water Still water Still water

Damp grassy places

## TABLE 4. Contd....

Latin Name	English Name
Lychnis flos-cuculi	Ragged robin
Lycopus europaeus	Gypsywort
Lysimachia vulgaris	Yellow loosestrife
Lythrum salicaria	Purple loosestrife
Mentha aquatica	Water mint
Menyanthes trifoliata	Bogbean
Myosotis laxa	Water forget-me-not
Myosotis scorpioides	Water forget-me-not
Myosotis secunda	Water forget-me-not
Myosoton aguaticum	Water chickweed
Myriophyllum alterniflorum	Alternate-flowered water-milfoil
Myriophyllum spicatum	Spiked water-milfoil
Narthecium ossifragum	Bog asphodel
Nasturtium microphyllum	One-rowed water-cress
Nasturtium officinale	Green water-cress
Nasturtium officinale agg.	Water-cress aggregate
Nasturtium officinale x	Brown water-cress
microphyllum	
Nuphar lutea	Yellow water-lily
Nymphaea alba	White water-lily
Nymphoides peltata	Fringed water-lily
Oenanthe aquatica	Fine-leaved water dropwort
Oenanthe crocata	Hemlock water dropwort
Oenanthe fistulosa	Tubular water dropwort
Pedicularis sylvatica	Lousewort
Phalaris arundinacea	Reed-grass
Phragmites australis	Reed
Polygonum amphibium	Amphibious bistort
Potamogeton alpinus	Reddish pondweed
Potamogeton berchtoldii	Small pondweed
Potamogeton crispus	Curled pondweed
Potamogeton friesii	Flat-stalked pondweed
Potamogeton natans	Broad-leaved pondweed
Potamogeton obtusifolius	Grassy pondweed
rotamogeton pectinatus	rennel-leaved pondweed

#### Comments

Damp grassland, marshes, damp woods, etc. River banks, marshes Fens, beside rivers Rivers, lakes, reedswamps Marshes, wet woods, ponds, streams Ponds, lakes, wetter bogs Damp places Wet places Wet non-calc. soils Marshes, fens, ditches, streamsides, etc. Lakes, streams, ditches Esp. in calc. water Bogs, wet heaths, moors wet acid places on mountains Streams etc. with moving water Streams etc. with moving water Cultivated Lakes, ponds, streams Lakes, ponds Ponds.slow rivers Slow flowing or stagnant water Wet places Marshes, shallow water Damp heaths, moors, bogs Wet places Swamps, shallow water Pools, canals, banks by water Lakes, ditches etc., esp. in acid water Lakes, canals, etc. Lakes, canals, etc. Lakes, canals etc. on muddy substratum Lakes.ponds,rivers,usu. in water less than lm. Lakes, ponds, streams etc. Ponds, rivers, canals, etc esp.in base-rich or brackish water

#### Latin Name

Potamogeton perfoliatus Potentilla palustris

Pulicaria dysenterica Ranunculus aquatilis agg. Ranunculus aquatilis Ranunculus circinatus

Ranunculus flammula Ranunculus fluitans

Ranunculus hederaceus Ranunculus lingua Ranunculus omiophyllus

Ranunculus peltatus Ranunculus penicillatus Ranunculus sceleratus Ranunculus trichophyllus

Rorippa amphibia Rorippa palustris

Rorippa sylvestris

Rumex hydrolapathum

Rumex palustris

Schoenoplectus lacustris Scrophularia auriculata

Scutellaria galericulata Senecio aquaticus Sparganium emersum Sparganium erectum Stellaria alsine

Stellaria palustris Triglochin palustris Typha angustifolia

Typha latifolia

Valeriana dioica Marsh valerian Valeriana officinalis Valerian

Veronica beccabunga

English Name

Perfoliate pondweed Marsh cinquefoil

Fleabane Water-crowfoot agg. Water-crowfoot Stiff-leaved watercrowfoot

Lesser spearwort Long-leaved watercrowfoot Ivy-leaved water-crowfoot Great spearwort Lenormand's water-crowfoot

Common water-crowfoot Water-crowfoot species Celery-leaved crowfoot Short-leaved watercrowfoot Great yellow-cress Marsh yellow-cress

Creeping yellow-cress

Great water dock

Marsh dock

Bulrush Water betony/figwort

Common skull-cap Marsh ragwort Unbranched bur-reed Bur-reed Bog stitchwort

Marsh stitchwort Marsh arrow-grass Lesser reedmace

Great reedmace

*Veronica anagallis-aquatica* Water speedwell

Brooklime

## Comments

Lakes, ponds etc. Fens, marshes, bogs, wet heaths Marshes, wet meadows, etc. Ponds, ditches, streams Ditches, canals, slow streams with high min. content Wet places Rapidly flowing streams and rivers On mud &in shallow water Marshes, fens Non-calc. streams, muddy places Lakes, ponds, slow streams Fast flowing streams Damp mud, pond edges etc. Ponds, ditches, slow steams By ponds, ditches, streams Moist places, esp. with standing water in winter Moist ground with water standing in winter Wet places, shallow water Bare muddy gound beside lakes and rivers Rivers, ditches, pools Edge of ponds, streams wet meadows Edges of streams, in fens Marshes, wet meadows etc. In shallow water Margins of rivers etc. Streamsides, flushes, wet tracks, woodland rides Marshes, base-rich fens Marshes Reedswamp, edge of ponds, canals, etc. Reedswamp, edge of ponds, canals, etc. Wet places Rough grassy places Ponds, streams, wet meadows & on wet mud Streams, ponds marshes, wet meadows

# TABLE 4. Contd....

Latin Name	English Name	Comments						
Veronica catenata	Pink water speedwell	Ponds,streams,wet meadows & on wet mud						
Veronica scutellata	Marsh speedwell	Ponds,bogs,wet meadows, often on acid soil						
Viola palustris	Marsh violet	Bogs,fens marshes,wet heaths						
Wahlenbergia hederacea	Ivy-leaved bellflower	Damp & peaty places						
Zannichellia palustris	Horned pondweed	Rivers, streams, pools of fresh or brackish water						

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Abbreviations:	Calc. =	Calcareous
	Esp. =	Especially
	Moun. =	Mountain
	Usu. =	Usually
	Min. =	Mineral

#### TABLE 5. SITE STATUS AND LOCATION

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<u>Ref</u> .	<u>Site Name</u>	Grid Ref.	<u>SWT</u> <u>Status</u>	<u>Spp</u> . List	<u>Sites</u> <u>Outsid</u> Visited Telfor	e <u>New</u> d <u>Grade</u>	Comments
1.	Dothill	645128	PS	+	+	A - 1	
2.	Byton Farm Coppice	648139		+		D - 1	
3.	Long Pit Coppice	648142		+		D - 1	
4.	New Plantation Wellington	655126		+	*	D - 1	
5.	Orleton Marsh	639115		+		D - 2	
6.	Ketley Bank	694101		+	*	c - 1	B. J. J. J. Land allowed
7.	Rough Pits Wood	642138		+	+	D - 1	Boundaries have been altered
8.	Admaston Railway Line	631140-640120	SOEV	+	+	C - I	1
9.	Admaston Spa	637131	60 <b>0</b> 1	+	+ *	~ <sup>-</sup> 1	rost to development
10.	Apley Castle	655134	SORA	+	+		
11.	Upper Forge/Boring Mill pond	669042		÷.	+		
12.	Wynne's & Vane Coppice	672051	Part PS	+	•	8 - 1 8 - 1	Possibly include in Wynne's & Vane Connice
12.1	Vane Coppice Extra	672031	Part Pa	Ť	*		rossibly include in wime s a vane oppice
13.	Moreton Coppice & Simpsons Fool	003072	DOGA	т Т	+	n - 2	Not a full species list
14.	Lawley Smalley All	66900 <del>1</del>	SOEV	Ŧ	•	c - 1	Roundaries may have altered
10.		666002	3051	. I		D - 2	
10.	ranjan Nari Merika	666092		÷	<b>.</b>	C - 2	
19	Captain's Coppice	667046	29	+	r	в – ї	
10.	Kallubaad Bank	690106	15	÷	*	$\overline{c}$ - $\overline{1}$	
20	Leaderarte-Small Woods	665127		+	•	D - 2	
20.	Leegomery-Small woods	L 663056	Part SSSI	÷		Ā - Ī	
21.	Indebrook Dingle a Rope Main Meado	658065		÷		<b>Ä</b> – Î	
22	Lightmoor	645128	Part PS	+	+	Bp - 2	
22.1	Lightmoor Extra	675056	101010	+	*	$C_{\rm D} - 2$	Possibly include in Lightmoor 22
22.1	Footridge Wombridge	688112		+	*	c - 1	•••••••
23.	Tuesdala Woods	703051	PS	+	•	B - 1	
25	Heleafield Marsh North	707048		+	*	Ср – 2	
26	lipper Euroace Pool	665049		÷	+	Dp - 2	
27	Ketley Flood Mendows	668113		+	+	Cp - 2	
28	Gittens Drive Aqueduct	692056		+		D - 2	
29.	Telford Hospital	655127		+	*	x - 1	
30.	Short Wood, Wellington	658095	PS	+	+	Cp - 2	
31.	Bortomand	686140	• •	+	* *	x - 1	See Appendix II for information
32.	Rinkshav Field Studies	695072	Part PS	+	+	B - 1	
33.	Station Road Donnington	708143		+	*	X - 1	Site boundaries have changed
34.	Phoenix Pitmounds/Dosely Holt	681062	SOEV	+		C - 2	
34.1	Dawley Deep Fields	689061	SOEV	+		C - 1	
35.	Paddock Mound Dawley	687072	SOEV	+		Dp - 2	
36.	Beverley Pitmound	688107	SOEV	+	+	$D_P - 1$	Possibly a rare <i>Sorbus</i> present
37.	Paddock Mound Ketley, Pottersbank	682108	SOEV	+	+	C - 1	
38.	Limekiln Woods	652096	PS	+		A - 1	Most of site outside Telford
39.	Pool Hill	680073		+	*	C - 2	
39.1	Pool Hill South	681067		+	*	D ~ 1	

TABLE 5. Contd....

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<u>Ref</u> .	Site Name	Grid Ref.	<u>SWT</u> <u>Status</u>	<u>Spp</u> . List	<u>Sites</u> Visited	<u>Outside</u> Telford	<u>New</u> Grade	Comments
40	New Hadley	684114	SOEV	+			(n - 2	
41	Widewaters Meadow. Lightmoor	684058	PS	+	+		n - 1	
42	Middle Pool Trench	688118	SORV	÷	+		c - 2	
43	Langley Fields	693075	SOEV	÷	+		$D_{\rm D} - 2$	Reclaimed as playing fields
44.	Trench Pool	687124	SOEV	÷	+		c - 1	Accidimed as playing fiolas
45.	Stirchley Marsh	705063	0001	÷	•		D - 2	
46.	New Pool Castlefields (Oilhouse)	672049		+			$\bar{n}_{p} - 2$	
47.	Dawley Bank	683085		÷	+		D ~ 2	
48.	Stoney Hill	667061	PS	+	•		Ā — Ī	
49.	Stirchley Grange	702071	SOEV	+	+		B - 1	
50.	Admeston Streem	638139-636113		+	*		$\overline{c} - \overline{1}$	
51.	Cannon Gate, Oakengates	698105		+	*		$\tilde{\mathbf{D}} = \tilde{\mathbf{I}}$	Boundaries have been altered
52.	Madeley Court	694049	PS	+	+		B - 1	
53.	Station Fields, Oakengates	696107		+	+		D <sub>P</sub> → 2	Boundaries have been altered
54.	Great Hay Stream & Woodland	702031-703023		+	*		B – 1	
55.	Admaston/Shifnal Railway	629128-724083		_			- 3	
56.	Wellington Road Trench	697133		+	*		x – ī	
57.	Horsehay Railway	676081-683054		+	*		c - 1	
58.	Southell Road Pitmound	692064	PS	+	-		B - Î	
59.	Lincoln Hill	669038	SSSI Geol	+			Ā ~ Ī	
60.	Aqueduct Marsh	691054		+			D - 2	
61.	Hill Top Village	691096		+	+		D - 1	Boundaries have been altered
62.	Hoo Farm	693150	SOEV	+	+		ē - ī	
63.	Wrockwardine Wood	701115	PS	+			B - 1	
64.	Lee Dingle	693036	SOEV	+	+		c – ī	
64.1	Lee Dingle Mendow	694038		+	+		D - 2	Boundary may have altered
65.	Meadow Pitmound	689041	SORV	+			$\overline{D} - \overline{2}$	
66.	Dawley Castle Pitmounds	689061	SOEV	+			c - 2	
67.	River Severn	660038-702021	PS	+			Å – 1	
68.	Riverbank & Ladywood Bridge	677033	• •	+	*		c - 2	
69.	Lodge Field	672038	SOEV	+	+		$\tilde{D} - \tilde{Z}$	
70.	Madelev Wood	681036	SOEV	+			D - 2	
71.	Наусор	679020	PS ?	+		+	B - 1	Outside Telford
72.	Borrow Pit (Lightmoor)	683054		+	+		Dp - 2	Part of site recently landscaped
73.	Ketley Hall/Red Hill	678107		+	*		n – 2	
74.	Doseley Querry	675068	SSSI Geol	-		*	~ 3	Being filled in, 1989
75.	Beeches	676038		-	+		Do - 2	
76.	Rough Park & Castle Green	675045	Part SOEV	+			$C_p - 2$	
77.	Oilhouse Coppice	675050	Part PS	+			B - 1	
78.	Newdale & Ketley Railway	676097	SOEV	+	+		B - 1	
79.	Ladywood	675032	Part PS	+			B - 1	
80.	Sculpture Park	673051	SOEV	+	*		D – 1	
81.	Dale Coppice	672045	PS	+			$B - \overline{1}$	
82.	Coelbrookdale Churchyard	670045		+			Cp - 2	
83.	Workhouse Coppice	670030	PS	+		+	Bp - 2	Outside Telford

TABLE 5. Contd....

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<u>Ref</u> .	<u>Site Name</u>	Grid Ref.	<u>SWT</u> <u>Status</u>	<u>Spp</u> . <u>List</u>	<u>Sites</u> <u>Visited</u>	<u>Outside</u> Telford	<u>New</u> <u>Grade</u>	Countents
84.	Castlefields Marsh (Bypass)	686054	SORV	+			Cp - 2	Disturbed 1987
85.	Heath Hill	678078	SOEV	+	+		C - 1	
86.	Benthall Edge Wood	660034	SSSI	+			A - 1	Mainly outside Telford
87.	Tagg's Rough	726088		+		+	$D_P - 2$	Outside Telford
88.	Pipers/Hem Coppice	715054/717058	SOEV	+			C - 1	
89.	National Standard	713058		+	+		C - 1	
90.	Halesfield West	711054	SOEV	+	+		$D_P - 2$	
91.	Blists Hill	695033	PS	+			B - 1	
92.	Priorslee Lake	725096	SOEV	+	+		c - 1	
93.	Priorslee Flash & Pitmounds	711080	SOEV	+	+		<u>, c</u> - 1	
94.	Dawes Bower	720117	PS	+	+		B - 1	
95.	Lloyds Coppice	686033	PS	+			A - 1	
96.	Nedge Hill	718073	SOEV	+			Cp - 2	Industrial campus proposals
97.	Halesfield Marsh	712041	SOEV	+		*		Lost to development in 1980
98.	Holmer Lake	708058	SOEV	+	+		c - 1	a 11
99.	Muxton Marsh	716134	SSSI	+			A - 1	Small part lost in 1989
100.	Granville Ponds	718123	PS	+	*		B - 2	
101.	Mineral Line, North	719124-716131	Part PS	+	*		c - 1	
101.1	Mineral Line, South	709117-718120	Part PS	+	*		C - I	
102.	Muxton Marsh Collery	722133	Part PS	+			c - 2	Revealed a base alternal
103.	Tub Engine Pitmound	711122		+			D - 2	Boundaries have altered
104.	Waxhill & Barnyard	719129	Part PS	+	*		<u> </u>	Record-star have alterned
105.	St. Georges	711112	Part PS	+	+		C - 2	Boundaries have altered
105.1	The Rookery	709115	PS	+	Ŧ			Reundanias have altered
106.	Donnington Central Hall	705125	PS	+		+	B - 2	Anone may have here lost
106.1	Donnington Wood Misc	715125		+		*	- 2	Areas may have been lost
107.	Sutton Woods	707022	SOEV	+			8 - 1	
107.1	Sutton Wood Meadows	705021	SORA	+			BP - 2	
108.	Randlay Valley	713074	PS	+	+		$\Lambda - 1$	
109.	Horsehay Pool	674073	SOLV	+	÷	<b>.</b>	U - 1	City last to douglamment 1987
110.	Golden Bear Marsh	707120	Part PS	+		*		Site lost to development 1557
111.	Allscott Settling Ponds	602130	5551 00	n +		+	A - 1	
112.	Vineyards	550027	P5	+		+	Ap = 2	
113.	Domoors	720000		Ŧ			Cp - 2	Lost to dovelopment
114.	Stallord Park 13	712000		Ŧ	+	•	n _ 1	bost to development
115.	Starford Park Pools	724000		Ŧ	+		D = 1	
110.	Snedshill Pools	701097	DC	Ŧ	• •			
117.	Town Park Blue Pool	102011	Fa	Ŧ	+			
110.	Town Fark Watch Group Site	701074	SORV	- -	- -		c - 2	
113.	Town Fark Stirchiey Chimneys	701074	Dort DC	÷	÷		R - 1	
120.	Town Fark Fletchers root & meddo	# 700073	DC Jait FS				c - 1	
141.	Town Fark Hitly FOOI Town Dark Pandlay Pool	702078	PS	Ť	+		$\tilde{c}$ - 1	
122.	Town Fair Ranuidy FOOI Town Park Spout Mound	696083	SOFV	÷	ź		n – 1	
123.	Town Fark Hollywell Mound	697078	5461	÷	ž		c - 1	
123.1	Town Fark Wetland	698070		+	±		n – 1	
127.	Town Park Miscellaneous	700078		•	· <b>-</b>	*	D - 1	
169.	TAUN LUTY GITACELLUNCOUS	(00010				•		

TABLE 5. Contd....

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<u>Ref</u> .	<u>Site Name</u>	<u>Grid Ref</u> .	<u>SWT</u> <u>Status</u>	<u>Spp</u> . <u>List</u>	<u>Sites</u> <u>Visited</u>	<u>Outside</u> Telford	<u>New</u> <u>Grade</u>	Comments
126.	Stafford Park Woodland	713082		+	*		B - 1	
127.	Wellington Junction Fields	663117		+	*		D - 1	
128.	Mossey Green	689101		+	*		D - 1	Part of site being developed.
129.	Woodside Pitmound	684043		+	*		C - 1	
130.	Station Hill, St. Georges	701109		+	*		D - 1	
131.	Red Lake	684103		+	*		D - 1	
132.	Shrubbery Road, Red Lake	686104		+	*		D - 1	
133.	Trench Branch Canal	675127		+	*	Part	Cp - 2	
134.	Donnington Wood	715115	PS	+	*		B - 2	
135.	Donnington Pitmounds	716129	Part PS	+	*		C - 2	
136.	Lodgebank Pitmounds	721124	Part PS	+	*		D - 1	
137.	Granville Pitmounds	712124		+	*		C - 1	
138.	North Lightmoor	674070-671057	Part PS	+	*		C - 1	
139.	Horton Pools & Hedge	688144~692139		+	*		Cp - 2	
140.	Hortonwood Wood	690142		+	*		B - 1	
141.	Horton Drain	678141-691139		+	*	Part	c - 1	
142.	Hem Valley	714069-718061			*		Cp - 2	

Site status in *italics* indicates the previous status.

The Outside Telford column also includes the sites not on Fig. 4, these are indicated by \*. Reasons for their exclusion are given on the relevant sheets of the data base.

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Sites surveyed in 1990 are indicated by \* in the Sites Visited column.

New Grades: 1 = confident evaluation

2 = more data preferred for full evaluation 3 = more data essential

# TABLE 6.THE NUMBER OF INDICATOR SPECIES IN DIFFERENT HABITATS AND NOTABLE<br/>SPECIES FOR EACH SITE.

\_\_\_\_\_

		Number			Number	
		Indicator Species			Notable	
					<u>Species</u>	
Ref.	Site Name	Woodland	Wetland	Grassland		
8.	Admaston Railway Line	2	12	8	4	
55.	Admaston/Shifnal Railway	No spe	cies list		Ō	
9.	Admaston Spa	Not ev	aluated		_	
50.	Admaston Stream	8	15	3	0	
111.	Allscott settling ponds	-	23	4	1	
10.	Aplev Castle	14	15	7	10	
60.	Aqueduct Marsh	_	6	1	10	
75.	Beeches	No sne	cies list	*	õ	
86.	Benthall Edge Wood	40	10	37	22	
36.	Beverley Pitmound	1	-	37	22	
91.	Blists Hill	19	20	10	0	
72	Borrow Pit (Lightmoor)	10	20 14	19	0	
51	Cannon Gate Oakengates	1	14	0	1	
18	Cantain's Connice	26	_	3	1	
84	Castlefielde March (Bypace)	20	25	16	3	
82	Coalbrookdale Churchward	5	25	10	2	
81	Dale Connice	. J . J	-	,	4	
94	Daves Bower	2ú 19	4	9	2	
47	Dawley Bank	12	o	1	0	
66	Dawley Castle Ditmounds	1	-		0	
3/1 1	Dawley Castle Fitmounds	1	9	10	2	
112	Dodmoors	1	T	11	0	
106	Donnington Control Holl	4	-	-	0	
106 1	Donnington Viggelleneeus	1	13	18	8	
135	Donnington Ritrounda	13	40	44	20	
137	Donnington Wood	D	14	13	1	
74.		4	12	12	· 1	
1 1	Doseley Quarry	0	0	0	0	
1.	Dotaili Futon Form Conning	7	43	17	19	
4.	Eyton Farm Coppice	2	-	2	0	
43. 20	rootriage, wombriage	2	_	7	0	
40.	Gittens Drive Aqueduct	1	9	5	0	
110.	Golden Bear Marsh	Not ev	aluated		-	
100	Granville Pitmound	0	7	10	0	
100.	Granville Ponds	2	20	17	3	
54.	Great Hay Stream & Woodland	19	21	5	3	
97.	Halestield Marsh	Not ev	aluated		-	
25.	Halesfield Marsh North	0	13	7	3	
90.	Halesfield West	6	-	8	0	
71.	Наусор	7	7	10	2	
85.	Heath Hill	3	10	11	0	
142.	Hem Valley	No spe	cies list		-	
61.	Hill Top Village	1	14	7	0	
32.	Hinkshay	8	26	20	10	
19.	HOIlyhead Bank	2	4	10	0	

TABLE 6. Contd....

		<u>Number</u> Indicator Species			<u>Number</u> Notable Species
Ref.	Site Name	Woodlar	nd Wetland	Grassland	
98.	Holmer Lake	4	21	3	2
62.	Hoo Farm	3	$\overline{21}$	15	3
109.	Horsehay Pool	3	17	8	3
57.	Horsehay Railway	6	_	16	2
141.	Horton Drain	1	16	14	õ
139.	Horton Pools & Hedge	4	19	6	ő
31.	Hortonwood	7	13	6	1
140.	Hortonwood Wood	8	20	-	ō
6.	Ketlev Bank	õ	0	Q	1
27.	Ketley Flood Meadows	2	5	2	0
73.	Ketlev Hall/Red Hill	$\frac{1}{2}$	3 7	วี	0
79.	Ladywood	22	, 4	8	4
43.	Langlev Fields	-	7	8	- -
14.	Lawley, Smalley Hill	No	nacios list	0	0
15.	Lawley Furnace	9		13	1
16.	Lawley Swamp	-	, 1	15	1
17.	Lawley New Works	5	5	2	1
64.	Lee Dingle	15	1	2	1
64.1	Lee Dingle Meadow	13 7	7		1
20.	Leegomery Small Woods	8	3	- 14	1
22.	Lightmoor	28	5 79	27	17
22.1	Lightmoor Extra	20 5	20 5	27 15	1
38.	Limekiln Woods	30	14	10	10
59.	Lincoln Hill	18	14	33	19
95	Llovds Coppice	21	0	2J 17	9
21	Loambole Dingle & Pone Walk Meade	ο₩ 30 JT	2	17	o c
69	Lodge Field	JW 30	44 C	41	0
136	Lodgehank Pitmounde	1	0	12	
3	Long Pit Coppige	2	1	/	0
21 1	Lydebrook Dinglo	3 10	16	-	0
52	Madalay Court	29 C	10	10	8
70	Madeley Coult	0	16	11	/
65	Madeley Hood Mandau Ditmound	5	3	10	0
12	Middle Pool Trench	0	2	5	1
101	Minoral Line North	-	18	10	3
101.1	Mineral Line, North	0	3	17	1
12	Monoton Compise & Ginneans Deel	1	2	14	1
100	Morecon coppice & Simpsons Pool	19	16	5	6
102	Muston Bridge Colliers	I	-		0
102.	Muxton Manah	6	1	5	1
77. 80	Muxion Marsn National Standard	8	36	28	13
07.	National Stangard Nodao Hill	-	11	19	7
70. 70	Neuge RIII Noudalo ( Kotlou Deilusu	8	16	13	2
10.	New Hadjer New Hadjer	14	11	22	5
30.	ием цаптел	1	6	8	0

TABLE 6. Contd....

		India	<u>Number</u> Indicator Species		
Ref.	Site Name	Woodland	Wetland	Grassland	
4.	New Plantation Wellington	0	-	-	0
46.	New Pool Castlefields (Oilhouse)	8	10	3	2
138.	North Lightmoor	6	2	2	ō
77.	Oilhouse Coppice	18	8	$1\bar{4}$	2
5.	Orleton Marsh	-	11	_	0
35.	Paddock Mound Dawley	2		13	Õ
37.	Paddock Mound Ketley, Pottersban	k –	10	16	3
34.	Phoenix Pit Mounds/Doselv Holt	2	19	12	1
88.	Pipers/Hem Coppice	15	6	4	1
39.	Pool Hill	0	3	5	Ō
39.1	Pool Hill South	1	2	10	Õ
92.	Priorslee Lake	-	19	10	2
93.	Priorslee Flash & Pitmounds	8	24	19	5
108.	Randlav Vallev	10	24	10	10
131.	Red Lake	1	20	20 11	10
67.	River Severn	25	59 59	14	1 25
68.	Riverbank & Ladywood Bridge	2J 9	10	24 0	23
105.1	Rookerv	0 1	14	10	4
76.	Rough Park & Castle Green	-	1	10	0
7.	Rough Pite Wood	2	5 1	14	1
80	Sculnture Park	2	1	~	0
30	Short Wood Wellington	16	1	8	0
132	Shrubbery Road Red Lake	10	4	1	I.
116	Snedshill Pool	1	د ۱۰	9	1
58	Southall Boad Ditmound	0	10	2	2
114	Southall Road Filmound	3	11	13	3
115	Stafford Park Poole	NOT EV	aluated		-
126	Stafford Park Woodland	2	11	4	0
120. 52	Station Fields Oskenster	1	-	-	· 0
120	Station Hill Ch. George	0	3	7	0
22	Station Read Depairment	-	3	10	0
105	Station Road Donnington	0	1	8	0
105.	St. Georges	I	18	11	2
47.	Stirchley Grange	٦	34	23	9
40.	Stirchiey Marsh Storey Will	-	9	-	1
40.	Stoney Hill	3	14	22	10
107.1	Sutton Woods	28	2	8	3
10/.1	Sulton wood meadows	_	11	19	2
87.	Tagg's Rough	5	1	-	0
29.	Tellord Hospital	1	1	5	0
11/.	TOWN Park Blue Pool	5	24	20	6
118.	Watch Group Site	-	6	7	0
119.	Stirchley Chimneys	2	17	17	2
120.	Fletchers Pool & Meador	¥ 2	28	23	6
141.	" Withy Pool	6	28	6	3
122.	" Randlay Pool	8	28	10	5

TABLE 6. Contd....

		<u>Number</u> <u>Indicator Species</u>			<u>Number</u> <u>Notable</u> <u>Species</u>	
Ref.	Site Name		Woodland	Wetland	Grassland	
123.	Town Park Spout M	lound	2	1	8	0
123.1	" Hollywe	ell Mound	0	4	6	1
124.	" Wetland	1	1	9	9	0
125.	" Miscell	aneous	8	10	14	0
133.	Trench Branch Car	nal	1	21	4	2
44.	Trench Pool		4	21	3	3
103.	Tub Engine Pitmou	ınd	4	5	4	2
24.	Tweedale Wood		7	10	11	3
11.	Upper Forge/Borin	ng Mill Pond	-	5	-	1
26.	Upper Furnace Poo	01	1	3	1	0
12.1	Vane Coppice Extr	ra	11	1	3	1
112.	Vineyards		2	1	25	8
104.	Waxhill & Barnya	rd	2	2	18	1
127.	Wellington Juncti	ion Fields	2	7	10	0
56.	Wellington Road 1	ſrench	0	2	5	0
41.	Widewaters Meadow	, Lightmoor	6	31	21	9
129.	Woodside Pitmound	1	1	4	7	0
83.	Workhouse Coppice	9	-	7	11	1
63.	Wrockwardine Wood	1	11	5	20	6
12.	Wynnes & Vane Cop	ppice	23	-	9	3

## <u>Habitat</u>

Status<sup>1</sup> Status in G.B<sup>2</sup>

# TABLE 7. Butterflica which occur in the Shropshire Area

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	Habitat	<u>Status1</u>	Status in G.B <sup>2</sup>
Small skipper	Grassland.	Comon	Common except extreme N.England and Scotland.
Large skipper	Grassland, rough ground woodland rides.	Common	Common
Dingy skipper	Grassland with bird's-foot trefoil woodland rides, heaths.	Scattered	Local but widespread.
Grizzled skipper	Grassland, open woodland rides.	Rare	Locally frequent S.E. of Humber to N. Wales.
Wood white	Coppice wood, open rides, glades.	Rare	Very local central and S.W.England Nb.
Clouded yellow	Grassland + legumes.	Rare	Migrant.
Brimstone	Open woods, bushy growth, wetlands, hedges with buckthorn.	Scarce	Widespread S.B. of Humber to S. Wales.
Large white	Brassica crops, crucifer in any habitat.	Common	Common
Small white	Brassica crops, crucifer in any habitat	Common	Common
Green-veined white	Lanes, woods, damp meadows.	Common	Counson
Orange Tip	Lanes, hedges, wood edges, damp meadows, marshes.	Common	Common
Green hairstr <del>ea</del> k	Calcareous grassland, heath & moor, scruby grassland.	Scarce	Locally common
Purple hairstreak	Deciduous cak woodland.	Scarce	Common in South, scarce in North
White-letter hairstreak	Blm in woods, hedges, gardens, single tree.	Scarce	Local
Small copper	Sorrel in grassland.	Common	Common
Small blue	Calcareous grassland.	Very rare	Local, mostly in central S.England
Brown argus	Calcareous grassland.	Very rare	Local, mostly S. Britain
Common blue	Grassland & bird's-foot trefoil.	Common	Common
Nolly blue	Sunny rides/glades in woods, hedges, parks.	Locally common	Common, mostly in S. Britain
White admiral	Woodland + honeysuckle.	Rare	Locally common central S. of England
Rcd admiral	Any in sun, + nettles.	Common	Constaon
Painted lady	Grassland, lanes.	Fairly common	Соящол
Small tortoiseshell	Any + nettles in sun.	Common	Common
Peacock	Any + nettles in aun.	Common	Common
Сопла	Woods, hedges.	Fairly common	Common in S. half of G.B.
Small pearl-bordered fritillary	Open woods + violets, heaths.	Scarce	Widespread, declining

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## TABLE 7. Contd. Butterflies which occur in the Shropshire Area

<u>Rebitnt</u>	<u>Status</u> <sup>1</sup>	<u>Status in G.B<sup>2</sup></u>
Woods + violets.	Rare	Wid <del>es</del> pread, local
Woods.	Rare	Rare, declining
Unimproved grassland.	Rare	Widespread, declining
Woods.	Rare	S./S.W. Britain, declining
Hoods.	Common	Common S. half Eng. + Wales
Hedgea, verges, grassland.	Common	Common
licaths, calcareous grassland.	Rare	Widespread, local especially consts
lledges, lane edges, woods.	Common	Common S. half of Eng.
Grassland, heaths, wood edges, hedges.	Common	Common
Unimproved grasslands, heaths.	Common	Соливоп
Shady places, woods.	Locally common	Common Wales, Eng. except N. & N.W.
	Habitat Woods + violets. Woods. Unimproved grassland. Woods. Woods. Hedges, verges, grassland. Hedges, verges, grassland. Hedges, lane edges, woods. Grassland, heaths, wood edges, hedges. Unimproved grasslands, heaths.	HabitatStatus1Moods + violets.RareWoods.RareUnimproved grassland.RareWoods.CommonMoods.CommonHedges, verges, grassland.CommonIleaths, calcareous grassland.RareIledges, lane edges, woods.CommonUnimproved grasslands, heaths.CommonUnimproved grasslands, heaths.Common

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Status in Shropshire<sup>1</sup> area, and GB<sup>2</sup> as judged from the distribution map in Heath *et al* (1984). Nb = present in only  $31-100 = 10 \times 10 \text{ km}^2$  (Ball 1986)

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## TABLE 8. THE DRAGONFLIES AND DAMSELFLIES THAT OCCUR IN THE SHROPSHIRE AREA

Latin	Rnglish	Preferred Adult Habitat <sup>1</sup>	<u>Status</u> <sup>2</sup>	<u>National Status</u> <sup>3</sup>
Platycnewis pennipes	White-legged damselfly.	Clean streams, rivers, well vegetated.	Rare	Locally com., S. + Midland counties.
Brythromma najas	Red-eyed damselfly.	Waterlilies in pond/lake, marginal vegetation.	Rare	Locally com. Midlands & S.E.
Coenagrion puella	Azure damselfly.	Water meadows, reedy camals, ditches, ponds,	Uncommon	Common Eng. & Wales.
Coenagrion pulchellum	Variable damselfly.	Water meadows, dykes, hedged/grassy lanes.	Rare	Declining, scattered E. of Humber to Gower + Angelsev.
Enallagma cyathigerum	Common blue damselfly.	Large lakes, ponds, canals, streams + veg.	Common	Widely distributed.
Pyrrhosoma nymphula	Large red damselfly.	Slow streams, canals, lakes, marshes, hogs.	Locally common	Common, widely distributed.
Ischnura elegans	Blue-tailed damselfly.	Sedgy ditches, canals, lakes, ponds, slow streams.	Common	Common except uplands.
Lestes sponsa	Emerald damselfly.	Canals, ditches, bogs, nonds, lakes + rushes.	Rare	Widespread, scattered.
Calopteryx splendens	Banded demoiselle.	Slow moving streams + muddy bottom.	Uncommon	Com. in parts of S.& Midland Rng. + Wales.
Calopteryx virgo	Beautiful demoiselle.	Fast, clear streams + pebbles.	Rare	Com. S.W.Eng. + Wales.
Gomphus vulgatissimus	Club-tailed dragonfly.	Stream/river.	Rare	A few places along Thames, Wye, Severn, & in Sussex,
Aeshna cyanea	Southern hawker.	Hedges, lanes, woods, ponds.	Common	V.com. S.Counties + Midlands.
Aeshna grandis	Brown hawker.	Pond/canal, stream.	Locally common	V.com. much of England.
Aeshna mixta	The migrant hawker	Ponds & amongst reeds.	Rare	Common in South + East.
Anax imperator	The Emperor dragonfly.	Large pools or canals.	Rare	Not uncommon in S. Counties of Britain.
Cordulegaster boltonii	Golden ringed dragonfly.	Streams + away from water.	Rare	In W. + N. of Britain.
Libellula depressa	Broad backed chaser.	Bushes/reeds by ponds.	Uncomon	F.com. S.Counties Eng.& Wales.
Libellula quadrimaculata	Four spotted chaser.	Boggy pools, ponds.	Uncommon	Widely distributed, but scattered.
Sympetrum danae	Black darter.	Marshy spots, peat bogs, by heather.	Uncommon	Widely distributed, not in some B. & Midland counties.
Sympetrum sanguineum	Ruddy darter.	Rushy, reedy ponds, vegetated ditches.	Rare	S.E. of Humber to Severn mostly.
Sympetrum striolatum	Common darter.	Ponds, woods, bare ground.	Uncommon	Common.

 Where adults may be seen.
 <sup>2</sup> Abundance taken from Hammond (1983), relates to the Shropshire region and is a judgement on the number of records in the area shown on the distribution maps.

<sup>3</sup> Taken from Hammond (1983)

Key: v. = very

.

com. = common

f. = fairly

#### TABLE 9. RARE AND NOTABLE VASCULAR PLANTS

#### **Species**

<u>English Name</u>

Status in the Shropshire Region<sup>2</sup>

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#### Group A Species which are very rare in the Shropshire Region<sup>2</sup>

3 or less 10 x 10 km squares, post 1970 dots in Sinker et al. (1985)

Diphasiastrum alpinum	Alpine clubmoss	Very rare, one tetrad
Huperzia selago	Fir clubmoss	Very rare, decreasing and endangered; 2 tetrads
Lycopodium clavatum	Stag's-horn clubmoss	Rare; 4 tetrads
Alisma lanceolatum	Narrow-leaved water-plantain	Very rare, thought to only occur at Blists Hill canal
Festuca altissima	Wood fescue	Rare but under-recorded, 5 tetrads
Hordelymus europaeus	Wood barley	Local, 5 tetrads
Isoetes lacustris	Quillwort	Thought to be extinct
Myosurus minimus	Mousetail	Thought to be extinct
Ononis spinosa	Spiny restharrow	Only one tetrad shown in <i>Flora</i> , decreased

#### Group B Other species which are uncommon and notable in the Shropshire Region<sup>2</sup>

These species occur in 55 or less post-1970 tetrads (2 x 2 km squares) in Sinker et al. (1985)

Osmunda regalis	Royal fern	Rare, mainly lowland, decreasing & endangered, 7 tetrads.
Aconitum napellus	Monk's hood	Widespread but very sparse throughout, 30 tetrads
Anacamptis pyramidalis	Pyramidal orchid	Scarce but locally frequent in limestone areas, 21 tetrads
Anthyllis vulneraria	Kindney vetch	Declining and scarce, 18 tetrads
Apium inundatum	Lesser marsh-wort	Rare, 13 tetrads
Avenula pubescens	Hairy oat-grass	Very sparse except in a few limestone areas, 20 tetrads
Bromus erectus	Upright brome	Scattered but very locally frequent on Wenlock edge, 22 tetrads
Cardamine impatiens	Narrow-leaved bitter-cress	Rare, except near Church Stretton, 16 tetrads <sup>1</sup>
Carex acuta	Slender tuft sedge	Locally frequent along the banks of the Severn, 19 tetrads
Carex pilulifera	Pill sedge	Scattered, 34 tetrads
Carex riparia	Greater pond sedge	Locally frequent in the E, S and W parts of the plain, rare elsewhere, 55 tetrads
Carex strigosa	Thin-spiked wood-sedge	Locally frequent in some areas, sparse elsewhere, 26 tetrads
Carex vesicaria	Bladder sedge	Local or sparse, 41 tetrads
Carlina vulgaris	Carline thistle	Local and sparse except in some limestone areas, 48 tetrads
Catabrosa aquatica	Whorl grass	Local in the north, rare in the south, 34 tetrads
Centaurea scabiosa	Greater knapweed	Locally frequent, but sparse in some areas, 47 tetrads
Cerastium arvense	Field mouse-ear	Very sparse throughout the region
Ceratophyllum demersum	Rigid hornwort	Sparse except in the Montgomery Canal, 31 tetrads
Chenopodium polyspermum	Many-seeded goosefoot	Locally frequent in the central hills, sparse or absent elsewhere, 29 tetrads
Dactylorhiza incarnata	Barly marsh orchid	Rare, 8 tetrads
Dactylorhiza praetermissa	Southern marsh orchid	Sparse, most are hybrids, 11 tetrads
Dipsacus pilosus	Small teasel	Restricted distribution (especially the SE of the region), 45 tetrads
Epilobium tetragonum	Square-stalked willowherb	Sparse or under-recorded, 19 tetrads
Spipactis purpurata	Violet helleborine	Sparse and local, mostly in SE of region, 13 tetrads
Erica cinerea	Bell heather	Generally sparse except in some areas, 42 tetrads
Erigeron acer	Blue fleabane	Sparse except in the Oswestry uplands and Much Wenlock area, 25 tetrads
Genista anglica	Petty whin	Rare, 10 tetrads <sup>1</sup>
Gentianella amarella	Autumn gentian	Calcareous pastures locally frequent on limestone, 15 tetrads
Geranium columbinum	Long-stalked cranesbill	Rare, except in a few areas, 36 tetrads
Hieracium sabaudum	A hawkweed	Sparse except near Church Stretton and Pontesbury, 23 tetrads
Hieracium vulgatum	A hawkweed	Rather sparse, 7 tetrads
Hottonia palustris	Water violet	Sparse or absent except in NW and Shrewsbury areas, 31 tetrads
Hypericum androsaemum	Tutsan	Very rare in lowlands, sparse to locally frequent in some areas, 50 tetrads
Inula conyza	Ploughman's spikenard	Very locally frequent in some areas, otherwise scarce, 26 tetrads

#### TABLE 9. Contd....

#### Species

#### <u>English Name</u>

Status in the Shropshire Region<sup>2</sup>

Group B Contd....

Iris foetidissima Stinking iris Sometimes a garden escape, 10 tetrads Lamium hybridum Cut-leaved dead-nettle Recorded from a few localities. 8 tetrads Lathyrus sylvestris Narrow-leaved everlasting pea Scarce, except in a few areas, 11 tetrads<sup>1</sup> Lemna gibba Fat or gibbous duckweed Mostly along the Severn, 23 tetrads Lemna polyrhiza Greater duckweed Sparse to locally frequent in north lowlands, absent or rare elsewhere, 14 tetrads Lepidium campestre Field pepperwort Rare or locally sparse, 15 tetrads Linaria repens Common toadflax Local to sparse, 21 tetrads Monotropa hypopitys Yellow bird's-nest Very rare, 5 tetrads Myosotis ramosissima Barly forget-me-not Rare, except in the Bridgenorth area, 15 tetrads Myosotis sylvatica Wood forget-me-not Frequent in the Lower Severn Valley, sparse or over-looked elsewhere, 42 tetrads Nasturtium microphyllum Narrow-fruited watercress Mostly in the south, perhaps under-recorded, 32 tetrads Neottia nidus-avis Bird's-nest orchid Greatly decreased, 9 tetrads Oenanthe fistulosa Tubular water-dropwort Absent in the SE, sparse to locally frequent elsewhere, 42 tetrada Ophrys apifera Bee orchid Local in Oswestry uplands and Much Wenlock, very rare elsewhere, 13 tetrada Origanum vulgare Marjoram Sparse except locally in some upland areas, 34 tetrads Papaver argemone Prickly poppy Has declined, sparse on the Shropshire Plain, 26 tetrads Parietaria judaica Pellitory-of-the-wall Locally frequent in towns and villages in the lowlands, 51 tetrads Paris guadrifolia Herb paris Rare or local, 47 tetrads Picris bieracioides Hawkweed oxtongue Sparse, but locally frequent in some areas, 50 tetrada Plantago media Hoary plantain Commonest on the limestone, 53 tetrads Platanthera bifolia Lesser butterfly orchid Sparse, 11 tetrads Platanthera chlorantha Greater butterfly orchid Rare except in a few areas, 24 tetrads Poa compressa Flattened meadow-grass Locally frequent in Much Wenlock, sparse or absent elsewhere, 45 tetrads Potamogeton alpinus Red pondweed Rare, 8 tetrads Potamogeton friesii Flat-stalked pondweed Scarce except in some canal branches, 19 tetrads Potamogeton pectinatus Fennel pondweed Common in R. Severn and some other waterbodies, 44 tetrads Potamogeton perfoliatus Perfoliate pondweed Locally abundant in the R. Severn, scattered elsewhere, 50 tetrads Ranunculus lingua Greater spearwort Sparse and confined to the lowlands, 17 tetrads Ranunculus peltatus Common water crowfoot Mainly in the hills, 31 tetrads Ranunculus trichophyllus Thread-leaved water crowfoot Sparse in lowlands, very rare in the hills, 12 tetrada Rhamnus catharticus Purging buckthorn Very local to rare, 19 tetrads Rumex maritimus Golden dock Sparse, 20 tetrads Sagina nodosa Knotted pearlwort Rare, mainly upland, 8 tetrads Sagittaria sagittifolia Arrowhead A lowland species, especially frequent in the Severn. 22 tetrads Salix triandra Almond willow Possibly native, especially along R. Severn, 19 tetrads Sanguisorba minor Salad burnet Sparse except in some upland areas, 40 tetrads Sanguisorba officinalis Greater burnet Rather rare and decreasing, 10 tetrads Schoenoplectus lacustris Bulrush Scattered, 44 tetrads Sorbus torminalis Wild Service tree Generally sparse, except in some areas, 53 tetrads Teesdalia nudicaulis Shepherd's cress Generally scarce except in some upland areas, 43 tetrads Tilia platyphyllos Large-leaved lime Rare as a native, 15 tetrads Trifolium arvense Hare's foot clover Locally frequent in the east of the Region, rare elsewhere, 47 tetrads Trifolium micranthum Slender trefoil Sparse but probably under-recorded, 17 tetrads Trifolium striatum Knotted clover Sparse, 24 tetrads Typha angustifolia Lesser bulrush Locally frequent in central Salop plain, rare elsewhere, 43 tetrads Vaccinium vitis-idaea Cowberry Most frequent on the Stiperstones, rare elsewhere, 8 tetrads Verbascum nigrum Dark mullein Very local on waste ground, ll tetrada Viola hirta Hairy violet Sparse, except in some upland areas, 37 tetrads Viola lutea Mountain pansy Locally frequent in hill country, rare elsewhere. 38 tetrads Vulpia myuros Rat's tail fescue Sparse to locally frequent, 27 tetrads
#### TABLE 9. RARE AND NOTABLE VASCULAR PLANTS

#### Group C Species which are notable in Telford

These species occur in 2 or less tetrads in the Telford area

Latin

English

Asplenium adiantum-nigrum Asplenium ruta-muraria Asplenium trichomanes Equisetum fluviatile Ophioglossum vulgatum Oreopteris limbosperma Polypodium interjectum Polypodium vulgare agg. Allium ursinum Anthemis cotula Arctium lappa **Bidens** cernua Carex acutiformis Corex coryophylles Corex demissa Carex muricata ssp. lamprocarpa Carex panices Carex rostrata Chaenorhinum minus Chrysosplenium alternifolium Corydalis claviculata Crepis vesicaria Epilobium obscurum Epipactis helleborine Eriophorum angustifolium Frangula alous Galanthus nivalis Galium mollugo Geum rivale Hydrocotyle vulgare Isolepis setuces Lamium amplexicaule Lemna trisulca Melawpyrum pratense Mentha arvensis Montia fontana Myosotis laxa ssp. caespitosa Nymphaea alba Ornithopus perpusillus Pimpinelle saxifraga Polygonum bistorta Prunus padus Ranunculus aquatilis Ronunculus hederaceus Reseda lutea Ribes nigrum

Black spleenwort Wall rue Maidenhair spleenwort Water horsetail Adder's-tongue fern Mountain fern A polypody fern Common polypody ferus Ramsons Stinking chomomile Greater burdock Nodding bur-marigold Lesser pond acdge Spring sedge Common yellow sedge Prickly sedge Carnation sedge Bottle sedge Small tondflax Alternate-leaved golden saxifrage White climbing fumitory Bearded hawk's-beard Short-fruited willowherh Broad-leaved helleborine Common cotton grass Alder buckthorn Snowdrop Hedge bedstraw Water avens Marsh pennywort Bristle club-rush Henbit dead-nettle Ivy-leaved duckweed Common cow-wheat Corn mint Blinks Tufted forget-me-not White water-lily Bird's foot **Burnet** saxifrage Bistort Bird cherry Common water-crowfoot Ivy-leaved water-crowfoot Wild mignonette Black currant

TABLE 9. Contd....

Group C Contd....

These species occur in 2 or less tetrads in the Telford area

Latin

Segina apetala Selix aurite Scutellaria galericulata Senecio sylvaticus Senecio viscosus Sparganium emersum Stachys arvensis Stellaria neglecta Thymus preecox Triglochin palustris Valeriana dioica Valerianella locusta Veronica agrestis Veronica officinalis Veropica polita Veronica scutellata Vicia sylvatica Viala palustris Vulpia bromoides

English

Annual pearlwort Eared willow Skullcap Heath groundsel Sticky groundsel Unbranched bur-reed Field woundwort **Greater** chickweed Wild thyme Marsh arrow-grass Marsh valerinn Lomb's lettuce Green field speedwell Heath speedwell Grey field speedwell Marsh speedwell Wood vetch Marsh violet Squirrel tail fescue

1 Listed on SWT checklist of notable species for Telford, but no records for Telford shown in *the Flora* 

2 As defined in Ecological Flora of the Shropshire Region, Sinker et al. (1985)

# TABLE 10. NOTABLE ANIMALS FOUND IN TELFORD

# <u>Mammals</u>

All Bat species Badger Red Squirrel

### <u>Birds</u>

Crossbills Firecrest Green sandpiper Greenshank Hoopoe Kingfisher Little ringed plover Owl, barn Scaup

# Reptiles + Amphibians

Great crested newt

# **Invertebrates**

White legged damselfly Nb

#### SOURCES OF INFORMATION

#### 1. Ludlow Museum

A survey of Shropshire was undertaken in 1978/79 on which the Shropshire Flora is based and from which the the Prime Sites for nature conservation were extracted. This appears not to have covered the whole of the Telford area. The information available is in the form of habitat maps with a few record cards for specific sites. The record cards although listing the plant species present rarely give any indication of abundance, thus it is difficult to visualise the community described. These cards have been interleaved with the other data collected.

### 2. <u>Telford Nature Conservation Project</u> (TNCP)

The MSC team managed by Telford Development Corporation was based at Stirchley Grange from 1983 to 1988. The team has produced a range of material.

- i) The field by field survey of the open space in Telford took the form of a Phase I survey for the most part. The information is on the habitat types found in the area, their size, management and in a few cases major species, introduced species or unusual species are listed. As with the previous survey there is rarely any indication of the abundance of the species listed. This survey is useful in that it provides base line information on the habitat types in Telford.
- ii) The Project has also produced a number of reports on the various habitats in the Telford area. These reports put the habitats of Telford into a County perspective and give general descriptions and information about the sites within Telford, and on the management and history of some specific habitats.
- iii) In addition the TNCP has also produced reports on specific sites in Telford such as Stoney Hill, Ironbridge Bypass and others. These reports are useful in that they collate the previous records for the sites and set the information in context by including written descriptions.

The major problem with using the TNCP information for this project is that comprehensive records on sites is very patchy and frequently incomplete.

### 3. <u>Shropshire Wildlife Trust</u> (SWT)

i) The Trust has a large amount of information on sites. Much of this has been passed on from the TNCP after the MSC scheme was disbanded. Other information in the files is frequently on sites that have been lost or where development proposals have been put forward. The reason for this is that the Trust are consulted on the ecological/wildlife status of sites put forward for planning proposals. If little information is already available on the site it has to be collected in order to comment on any proposals. Because of the rate of development in Telford this aspect constitutes a significant proportion of its work.

- ii) The Trust also has records collected by Trust members. These are by nature very variable both in quality and in the areas covered. In some cases butterflies and moths may be thoroughly recorded in one part of the town as it is close to the recorder's home, whilst elsewhere there may be gaps in the records as no one has looked at these sites.
- iii) The Trust are at present preparing management briefs for the prime sites in Telford. These briefs outline the nature of the sites, species found on the sites and also incorporate much of the information that will be on the data base. The briefs are being written by using the information already collected by the Trust, combined with new site visits, and personal knowledge of the sites by the author. The process of producing the briefs is also in some cases resulting in new prime site boundaries due to changes around or within the site.

### 4. <u>Shropshire Badger Group</u>

The Group have allowed access to their records for Telford. There appear to be no known setts in the north of the town. The location of setts is confidential and not included in the data base. Therefore, if there is any mammal interest indicated on a site it may include badgers and the Group should be contacted for further information. Other sites could easily contain setts as yet unrecorded and as a general principle it would be advisable to seek the Group's advice on the likelihood of badgers being present on any development or landscaping site.

# 5. <u>British Coal Opencast Executive (BCOE)</u>

The BCOE have recently appointed a person to research into the effects of opencast operations on badger populations. The research will be based in the area to the west of Telford, close to the Wrekin, since that is where much of the coal reserve lies. The investigations into the movements of badgers in the western areas of Telford such as Lightmoor, and Lawley will be of value and importance to the Green Network. Use of information gathered will again be a sensitive issue. Because of the time scale involved in this study there has been little information available from this source to incorporate into the report. This needs to be persued in the future.

# 6. <u>Telford Development Corporation</u>

Contact has been made with both the Planning and Landscape departments. The information relevant to this project in terms of management of sites, planting schemes and any other site related information appears to be absent. It seems that other than mowing regimes, bulb planting, litter clearance and herbicide treatments there are no written management plans past or present for the open spaces the Corporation manages. There are at present management briefs being prepared by the Shropshire Wildlife Trust for the Prime Sites the Corporation owns.

#### 7. <u>Wrekin District Council (WDC)</u>

Contacts have been made in the Planning and Leisure departments. As with TDC there appears to be no useful information on the management of sites presently managed by the District Council within Telford. There is a management plan for Granville Country Park being prepared, however, more information needs to be accumulated before real progress can be made. The Wardens who have recently joined the Council provide a useful service to the area, both in terms of education and information as well as in practical problems. However, they do not collect information systematically and although they may have a considerable knowledge of on sites, the wildlife of a site, it is not quantitative.

#### 8. <u>Other Wildlife Organizations</u>

From discussions with the Telford branch of the Shropshire Wildlife Trust it would appear that there are few organisations other than the badger group and Shropshire Ornithological Society that would have information relevant to sites in Telford. This does not mean that other groups are not interested in the wildlife of Telford but rather that relevant information would not be available from them.

### 9. <u>Nature Conservancy Council</u>

- i) The NCC has species protection officers for specific regions. The officer who covers the Telford area is Dr. Catherine Turtle, who knows the area well as she was part of the TNCP team. She holds information on bat roosts, great crested newt ponds and barn owls for a large area, including Telford. This information has been incorporated into the data base. It must be noted that organisations such as the NCC frequently hear of sites only when they are under threat, their data are by no means a definitive record of the species distribution in the area.
- ii) Andrew Hearle the Assistant Regional Officer who covers the Telford area has been contacted during the preparation of the report and data base. His comments have been incorporated into the report. No specific information was provided through this source but discussions were useful when considering specific sites.

# 10. <u>Royal Society for the Protection of Birds</u> (RSPB)

This organisation has no information on sites of interest within Telford. Telford is covered by the Midlands Regional Office which encompasses a large area, and much of its attention is focused on the birds of the North Staffordshire moorlands. As the RSPB have no sites of note in Telford it can be assumed that these wildlife sites are not nationally important for their bird life.

# 11. <u>Shropshire Ornithological Society</u> (SOS)

The Society was approached to ascertain what information was available for important sites for birds in Telford. Water bodies were of particular interest as several of those in Telford may be important to birds. Other information from the TNCP Breeding Bird Survey and more recent Wintering Bird Surveys has also been used to obtain more up-to-date information. The records of SOS are not computerised, and are compiled by species, rather than by site. To obtain information for sites, a laborious sorting of species records is needed. The result is a list of species for different classified into breeding species, sites. probably breeding, possibly breeding, winter visitors and scarce visitors. However dates and numbers of birds are not available. The records are of use to highlight particular sites or species of importance but there may be other sites of interest in Telford for which species lists have not yet been compiled, thus the exclusion of bird interest in the data base would well indicate a lack of site records rather than no interest.

# 12. <u>Useful Publications</u>

i) The Woodlands of Telford New Town; Their History, Variation & Conservation, 1987, Tobin et al. Field Studies Council.

This shows the variation of woodland stands, the ground flora and environmental features of the different woodlands.

 The Distribution of Woodland Plant Species in some Shropshire Hedgerows, D R Helliwell, Biol. Cons. (7) 1975.

A study of hedgerows revealed that woodland plant species do not spread readily through the network of hedges.

iii) Shropshire Flora, Sinker et al 1985.

#### A DESCRIPTION OF THE SEMI-NATURAL HABITATS AT HORTONWOOD

- A2.1 The area has a complex network of hedgerows often with associated ditches. As the fields enclosed by the hedgerow system are due to be developed it was felt that the whole area could not be called a site and drawn on the map (Fig.4) without further explanation. In addition, if the site had been graded on the map as a single unit it would have given a false impression of the ecological significance.
- A2.2 The survey was undertaken at a time when major earthworks had started on the site. Several hedges have been breached to allow access to different parts of the site and some new roads have been laid. Because of the activity on the site there were certain hedges which could not be surveyed safely. These are not numbered on the accompanying figure as no value could be attributed to them. Observations from a distance suggest that on the whole these hedges are of low value, frequently dominated by hawthorn.
- A2.3 There are signs that some of the fields to the east of the site were only semi-improved with many common grassland species present. A detailed survey was not undertaken though as planning permission has already been given for development.

<u>The Hedges</u>

A2.4 <u>High Value Hedges</u>

Hedges classified as high value are those which show signs of long establishment as evidenced bv their species composition (Pollard, 1974). Field maple and hazel are indicative of old hedges, while hedges containing woodland herbs such as dog's mercury tend to be relics of former woodland and are usually long Hedges which have a good mix of native woody species established. are also generally older hedges. Hedges dominated by hawthorn with only one or two additional woody species are generally more recent being characteristic of nineteenth century enclosure hedges. High value hedges will also have a good structure with few gaps. Thev will, therefore, provide good cover for small mammals in the hedge bottom and be valuable for birds.

<u>H2</u> is a managed hedge dominated by hawthorn with occasional blackberry and, more rarely, field maple, hazel and ash. Ivy is abundant in the hedge bottom while the adjoining roadside verge supports a mix of coarse grasses and ruderals particularly couch grass, rat-tail plantain and shepherd's purse. The hedge has a good structure and is approximately 1.5m high. A gap approximately 2m wide occurs at its western end, isolating the only hazel bush from the rest of the hedge.

H11 is an unmanaged hedge with a mix of mature trees and tall shrubs which borders the western side of Horton Lane. Dogwood, hawthorn, spindle and blackberry all occur frequently. Goat willow, hop, field maple, woody nightshade, common lime and lilac are common in some stretches of the hedge while other species are found occasionally. Ivy occurs in the hedge bottom. The associated verge is largely dominated by tall coarse grasses such as false oat-grass and couch grass, but quite a range of additional species are also present some of which occur frequently in some parts of the verge. They include meadowsweet, great hairy water mint and cinquefoil. willowherb, comfrey, The hedge generally has a good structure consisting of a mix of mature trees tall shrubs. and Occasional gaps are now to be found in the central stretch of the hedge which are a consequence of the current construction work, while the most southerly section tends to have some mature trees (mainly sycamore and ash) between which there is a barbed wire fence. A mix of bracken, blackberry and hops grows on the hedge bank in these gaps.

The hedge on the eastern side of Horton Lane also contains a H12 mix of shrubs and mature trees with hawthorn, blackberry, field maple, dogwood, alder and hazel all frequent. Other species less commonly seen include common oak, wych elm, holly, ash and a rose species. Laburnum is rare. This is an introduced species often grown in gardens which has become naturalised. The roadside verge alongside the hedge has a mix of grasses, particularly false oatgrass, cock's foot and couch grass accompanied by a variety of herbs. Nettles, meadowsweet, creeping thistle, tufted vetch and silverweed are each conspicuous in some parts. The hedge has a good structure although there are now some gaps in the central section resulting from the current construction work. In the most southern part there are two gaps where the hedge bank is dominated by bracken or bracken and blackberry.

<u>H23</u> The southern section of this hedge has a good structure and a good species complement. Alder, oak, elm, goat willow, hawthorn, poplar, dogwood, blackthorn and ash all occur in a very short section. Some of the oak, poplar and ash are mature trees taller than the hedge. The ground flora here is also fairly rich with wood false brome and dog's mercury. North of the junction with H24 the hedge becomes thinner, with more willow and alder trees, whilst the hawthorn and blackthorn disappears. Great hairy willowherb, ground ivy, hedge garlic and cow parsley were recorded from this section.

<u>H24</u> is a good, thick hedge with many tree and shrub species recorded. Hawthorn and blackthorn are dominant with oak, ash, field maple and alder all growing as trees above the hedge height and also present in the hedge. Hazel and dogwood are also frequently recorded. The average hedge height is approximately 6 metres tall. The ground flora includes dog's mercury and stitchwort with more common species such as ground ivy.

#### A2.5 <u>The Intermediate Value Hedges</u>

The hedges of intermediate value show signs of long-establishment but have a relatively poor structure. Their structure could however be improved by suitable management, such as planting of locally native species to bridge gaps and coppicing to encourage growth at the bottom of the hedge. More recent hedges which have a good structure and would be particularly valuable for birds and other animals have also been classified as of intermediate value.

<u>H3</u> is a short length of hedge dominated by hawthorn which is now unmanaged although it has been laid at some time in the past. Hop is locally frequent. Although it is continuous, it is very thin, particularly towards the bottom, and provides few opportunities for nesting birds or cover for small mammals. Dog's mercury is however abundant in the hedge bottom. A narrow verge adjoins the hedge on the roadside where couch grass is particularly abundant. A variety of common herbs are also present though none are frequent.

H4 and H4a were continuous but a stretch approximately 20m long has been removed recently towards the northern end. Both parts are unmanaged and contain a mix of trees and shrubs. Hawthorn is abundant but additional species include crab apple, field maple and blackthorn. The hedges run along a ditch which is dry at present and unvegetated, although ivy occurs on the bank of H4a. A stand of nettles is situated next to H4a on the field edge. Woodv nightshade is also frequent here. Several gaps occur along the southern part of H4, and the structure of both hedges is generally The short fragmented portion of the hedge H4a would rather poor. be worthy of retention especially if it could be linked to other existing hedges which may be retained in the new development area by suitable planting.

<u>H5 and H5a</u> were also continuous running along a ditch but have been severed by recent construction works. They are unmanaged, tall and contain a mix of mature trees and shrubs, particularly hawthorn but also field maple, hazel, blackthorn, holly, ash, crack willow and oak. Ivy and blackberry grow in the hedge bottom but there are few additional species. The associated ditch is dry and has no aquatic vegetation.

<u>**H6**</u> is a tall, unmanaged hedge dominated by blackthorn with frequent hawthorn and occasional mature trees of crack willow and oak. Blackberry and a rose species are also present although there is no vegetation in the hedge bottom. The hedge is continuous and generally has a good structure.

<u>H7</u> is rather gappy. It is not managed and is now tall, but rather thin at the bottom. Blackthorn is abundant and hawthorn frequent. Holly, crack willow and common oak all occur occasionally though there is no vegetation in the hedge bottom. <u>H9</u> is unmanaged but has a good structure for most of its length, being tall and bushy down to ground level. It consists of a mix of blackthorn and hawthorn with frequent blackberry and more rarely mature common oak trees and a rose species. There is little vegetation in the hedge bottom, principally ivy.

<u>H13</u> is a tall, unmanaged hedge with a good structure, although part has now been removed due to recent construction work. It is dominated by hawthorn but also includes frequent blackthorn and, more occasionally, crab apple, field maple, common oak and ash. It runs along a wet ditch but there is little vegetation in the hedge bottom and the water in the ditch is being polluted by run-off from the adjacent construction site.

**<u>H14</u>** is dominated by hawthorn but also includes an occasional mature common oak tree and some hazel. Elder is rare. The hedge is tall and for the most part is continuous although it is rather thin at the bottom.

<u>H19</u> A very short stretch of this hedge is left intact adjoining the woodland block (site 140). Hawthorn, blackthorn, bramble and spindle are frequent with occasional oak and rose. The hedge is unmanaged at present and probably would have been a high value hedge if it had not been partially destroyed. There is a ditch running the length of the hedge and continuing into the woodland. The ditch is dry and contains great hairy willowherb and angelica which are indicative of damp conditions.

<u>**H20**</u> is a hawthorn-dominated hedge but with a good structure, and a good range of other shrub species present. The hedge is approximately 4 metres tall and thick with only a few gaps. The blackthorn clumps make the hedge impenetrable in many areas. Hazel, holly, oak and ash are also all found in the hedgerow. A ditch again follows the hedge although this is dry with no wetland species present.

<u>**H22</u>** Again this is a hawthorn-dominated hedge but with a good section of other shrubs. Blackthorn is abundant, oak and hazel are frequent whilst rose, crab apple, goat willow and field maple are occasionally noted. There are some gaps in the hedge which have been made stock-proof by the use of barbed wire. There is a mature oak tree overtopping the hedge. No ground flora was recorded.</u>

<u>H25</u> is dominated by hawthorn and blackthorn with occasional oak, alder and ash. This is a tall 4-6m hedge with a good structure but no ground flora and a relatively poor species mix.

<u>H26</u> is a willow-dominated hedge. Crack willow is present as mature trees within the hedge. Hawthorn, spindle, alder and hazel were also noted. The drain accompanying the hedge was dry and overgrown with great hairy willowherb, hogweed, nettles, broadleaved dock, bittersweet and frequent hedge bindweed. <u>H26a</u> was once part of H26, but this section has been severed by the creation of a new road. Crack willow, hawthorn, blackthorn, hazel, alder, rose, ash, oak and dogwood all occur in this stretch. Several of the tree species stand above the general hedge which is about 4 metres tall with occasional gaps. The drain is again dry but not as overgrown as in the H26 section. Bittersweet, hedge garlic, wood dock and great hairy willowherb occur along the line of the drain. The mature willows add to the aesthetic appeal of the hedge and also the wildlife value.

<u>H27</u> is a hawthorn-dominated hedge with locally frequent hazel and blackthorn. Sycamore, ash, oak and rose are also noted. There is no ground flora other than bramble, nettle and false oat-grass. This is a good, thick hedge with a reasonable structure. Some oak trees have matured above the hedge level.

<u>**H28</u>** Initially a double hedge, there are sections, especially to</u> the east where the hedge degenerates to a single line. The structure is variable and includes with many trees of ash, oak and alder. The high number of trees in the hedge adds to the aesthetic appeal and screening potential of the hedge. Other shrub species found include hawthorn, which is frequent, sycamore, hazel, willows, holly, elm, field maple, apple, alder, rose and The ground flora is dominated by bracken, bramble, blackthorn. nettles and false oat-grass with several other tall herbs present. The value of the hedge has been reduced due to the loss of a section to a new road.

<u>H31</u> The eastern section of the hedge is thin and gappy, and dominated by hawthorn. This section is of little value. However, the major section of the hedge contains several shrub species and is taller, about 4 metres high, and is of a better structure. Dogwood and spindle were found in this section with oak and ash frequently higher than the hedge.

#### A2.6 Low Value Hedges

Low value hedges are generally species-poor and have a poor structure, with many gaps.

<u>H1</u> is dominated by hawthorn with few additional species. It is unmanaged and is rather open at ground level. Several gaps occur along its length. Ivy is abundant in the hedge bottom while the associated verge has frequent cow parsley, nettles and couch grass.

 $\underline{H8}$  is unmanaged and rather gappy. It consists principally of hawthorn and common oak with occasional blackthorn, rose and blackberry. There is little vegetation in the hedge bottom.

 $\underline{H10}$  is unmanaged and dominated by hawthorn. There are few additional species and it has a rather poor structure.

H15 & H16 are unmanaged hedges dominated by hawthorn.

<u>H18</u> is also unmanaged, dominated by hawthorn and has a particularly poor structure with many gaps.

<u>H21</u> is a short 6 metre section of a hawthorn hedge. Rose scrub is found to the southern side. Bramble and nettle are the only ground flora associated with the hedge. The rest of the hedge was destroyed when a road was constructed in this area.

<u>H29</u> is a thin, fragmented hedge retained in an area with industrial units. The hedge is dominated by hawthorn with oak, some of which are mature trees.

 $\underline{H30}$  is hawthorn-dominated with some blackthorn and hazel. Crack willow, oak and alder occur as mature trees in the hedge. There are gaps and spaces in the lower section of the hedge which detract from its value.

- A2.7 A brief survey of hedges, drains and woodlands to the south-east of the site, between Hortonwood 33 and 37, and in the area between Hortonwood 37 and the Central Ordnance Depot revealed nothing that was worthy of note. The area has been developed with the subsequent loss of many of the habitats still indicated on the map. Many of the hedges have been destroyed or reduced to single trees which are not of significant ecological interest.
- A2.8 All the high value hedges need to be retained in the future development of the site. The intermediate value hedges should also, where possible, be retained. Their retention would not only maintain the wildlife value of the area, but would also provide instant valuable screens to the future industrial units, and retain the visual impact of the site. Elsewhere in the industrialised sections to the south of Hortonwood occasional trees or hedges have been retained and unquestionably soften the visual impact of the factory units. The lower value hedges can act as the core for additional tree planting.

#### The Woodlands

A2.9 <u>T1 and T2</u> The embankment which runs parallel to the main drain, and that next to the adjoining drain (T1 and T2 respectively) have been planted with trees. A mix of species of both native trees and shrubs such as silver birch, field maple and hawthorn and nonnative trees such as sycamore, white poplar and Italian alder has been used. There is little vegetation below the trees themselves which have been densely planted, except on their edges, but a narrow band of tall, rough grassland remains along the top of the embankment. This is dominated by false oat-grass accompanied by a variety of species including herb Robert, knapweed, cinquefoil and blackberry. Overall, these areas of tree planting hold little potential for wildlife. <u>T3</u> An area of ash and alder dominated woodland. Hawthorn was recorded frequently, and goat willow, elder and guelder rose were recorded as rare. The ground flora has abundant dog's mercury with frequent ground ivy, wood avens, hogweed and nettles. Remote sedge was rare on the site with hedge woundwort and cleavers occasionally. Despite the occurrence of two ancient woodland indicators the area was not thought to be worthy of a separate site status. Although it should be retained.

A2.10 The T1 and T2 woodlands are not under threat due to the development of the site as they have been created to act as sound and visual bufers. T3 is the only "natural" woodland in the area with the exception of site 140, and as such needs to be retained to add to habitat diversity.

#### Aquatic Habitats

#### A2.11 Ponds

<u>P1</u> is a small shallow depression in an improved pasture. It is without water and totally unvegetated other than for 3 mature alders and a hawthorn on its edge.

<u>P2</u> is a low lying area in a field corner. It may once have held open water, but is now completely dry and is occupied by a mixture of tall coarse grasses and herbs, particularly cock's foot, cow parsley and nettles. Two mature crack willow grow on the edge together with hawthorn and common oak.

<u>P3</u> This pond was dry at the time of the survey. There are quite a few wetland species associated with the area. Branched bur-reed, bittersweet, great hairy willowherb, water forget-me-not and lesser pond sedge were all recorded from the pond along with a variety of tall herbs such as wood dock, cow parsley, hogweed, nettles and mugwort. The site may be important as a breeding site for dragonflies and amphibians, but none were recorded on this visit.

<u>P4</u> is a small isolated pond very close to a newly constructed road across the site. A few bushes of willow, hawthorn, and oak surround the pond on its south side. Wetland species include; bittersweet, celery-leaved buttercup, lesser pond sedge, hairy sedge, sharp-flowered rush, water plantain, gipsywort, brooklime, hard and soft rushes, water betony and great hairy willowherb. This is an interesting, if small, pond. What effect the road will have on the drainage and level of water in the pond is unknown. The site would benefit from being deepened and widened at its western end. Sowing of wild flower seed onto the road embankment would add to the value of this small area rather than a seed mix dominated by rye-grass.

<u>P5</u> This pond site no longer exists.

A2.12 Of the ponds examined, only ponds P3 and P4 have any wildlife value. It would appear that P4 is to be retained as the road construction adjacent could easily have included infilling it. The problem for the future is what effect the drainage of the area will have on the level of water in the pond and its overall viability as a wildlife habitat.

# Conclusions and Recommendations

A2.13 Accepting that the site is to be developed as an industrial complex, most of the present habitats could be incorporated into the landscape proposals. There would also be a considerable potential for extending certain habitats and creating new ones in sympathy with the area's ecological character.



# Fig. A2.1 The semi-natural habitats of Hortonwood

#### DATA BASE FIELD DEFINITIONS AND KEYWORDS

This Appendix contains information about each of the data base Fields and provides acceptable keywords and instructions for entering data in each Field. Field names are given in *italics* and keywords are shown in UPPER CASE. Each data base record contains the following fields for each site:

#### <u>Field</u>

#### DESCRIPTION

- 1) Site Name: Enter the site name adopted in this project.
- 2) Site number: sub-sites are indexed at level 0.1, 0.2 etc.
- 3a) Grid reference easting: a three digit integer (ie. nearest 100 metres), central GR.
- 3b) Grid reference northing: a three digit integer (ie. nearest 100 metres), central GR.
- 4a) Linear site GR: enter two, six-figure grid references to identify the extremities of a linear site. Leave blank if the site is not linear.
- 4b) 1km squares: enter a list of four digit grid references, separated by commas, indicating which 1 x 1 km grid squares the site falls into. Include all squares, irrespective of how little of the square is occupied by site.
- 5) Parish: enter the parish or parishes in which the site lies.
- 6) Owner: TDC/WDC/PRIVATE/SCC/UNKNOWN
- 7) Area: enter the size of site in hectares, or the length of the site in kilometres if the site is linear.
- 8) Area code: enter size class  $0 \le 1$ ha; 1 = 1-10 ha; 2 = 11-50 ha  $3 \ge 50$  ha
- 9) Land use: AMENITY/EXTRACTIVE INDUSTRY/AGRICULTURE/INDUSTRY/ GAME SPORTS/FORESTRY/OTHER (eg. Country Park or Nature Reserve)/NONE/UNKNOWN
- 10) General description: a succinct description of the general character of the site.

#### HABITATS

11) Woodland

d:	DECIDUOUS	SEMI-NATURAL	ANCIENT	
	CONIFEROUS	ALIEN	PLANTED	
	MIXED	вотн	SPONTANEOUS	COLONISATION
	UNKNOWN	UNKNOWN	UNKNOWN	

Column 1 is self-explanatory and describes whether the woodland consists of deciduous or coniferous tree species, or a mixture of both.

Column 2 describes the origin of the species which occur. For example, some stands are dominated by species such as Scot's pine, sycamore or beech, which are alien in the Shropshire area whereas others are termed semi-natural because they consist predominantly of locally native tree species.

Column 3 indicates the likely origins of the woodland. Ancient woodland, which is defined as woodland which existed in 1600, can either be inferred from cartographic or documentary evidence, or from biological data. Other woodlands can either be planted or can have arisen through spontaneous colonisation of woody species on unmanaged sites.

If possible, one keyword from each of the three columns is entered for each separate block of woodland on the site. The different blocks of woodlands are separated by semi-colons and the three keywords for each block of woodland are separated by hyphens. The keywords are abbreviated to their first three letters. Thus, "Decsem-anc ; con-ali-pla" indicates two blocks of woodland, one of which consists of a deciduous, semi-natural community on an ancient site, and the other represents a planted, coniferous woodland of alien species. If one of the factors for a block of woodland is not known then enter unknown. Thus, "dec-unk-unk" indicates a block of deciduous woodland of unknown species composition or derivation.

- 12) Dominant species: enter the dominant species in English or the stand types as defined by Peterken (1981) or Rackham (1980). The different stands are separated by semi-colons and they are entered in the same order as the woodlands in Field 11. Co-dominance is indicated by hyphenation, thus ";ash-maple;" indicates a codominant community of these species, whereas ";ash maple;" means that the block of woodland contains two different stand types, one dominated by ash and the other by maple. Enter unknown (unk) for stands of unknown composition.
- 13) Scrub: enter the dominant species (in English), for each discrete stand if possible. Separate with semi-colons if more than one stand occurs.

14) Grassland: IMPROVED MANAGED NEUTRAL UNIMPROVED UNMANAGED ACIDIC UNKNOWN BOTH CALCICOLOUS UNKNOWN DAMP OTHER UNKNOWN

> Select one keyword from each of the three columns to describe each separate grassland community occurring on the site. Expand in the text file if necessary. Keywords are abbreviated to the first 5 letters in the database, with the exception of ACIDIC.

MON UNE	KNOWN SHEEF OTHER UNKNO	Y AMENITY UNKNOWN DWN
------------	-------------------------------	-----------------------------

If the grassland is managed then enter one of the keywords from column 1. Also enter one or more of the relevant keywords from columns 2 or 3.

16) Wetland: OPEN WATER POND LAKE MARSH FLOWING WATER STREAM RIVER DITCH CANAL OTHER

Enter the relevant keywords to describe the wetlands on the site.

17) Other habitats: Specify these and expand in the text file if considered necessary.

#### EVALUATION

18) Topographic origin: EXTRACTIVE INDUSTRY LANDSCAPING AGRICULTURAL MAN-MADE WATERBODY UNDISTURBED OTHER UNKNOWN

Select the appropriate keyword(s) to describe the origins of the land form on the site. Expand in text file if necessary.

<u>IMPORTANCE - HABITATS</u>

- 19) Woodland:
- 20) Woodland species:
- 21) Scrub:
- 22) Grassland:

- 23) Grassland species:
- 24) Wetland:
- 25) Wetland species:

Fields 19, 21, 22 and 24 - Enter the importance of the respective habitat type to the site. Code on a scale: 0 =small; 1 =moderate; 2 =great.

Fields 20, 23 and 25 - enter the number of characteristic species occurring on the site in these habitat categories; the characteristic species are defined in the Report.

26) Other habitats: specify any other habitats and illustrate coded importance (as Fields 19, 21, 22 and 24) in brackets.

**IMPORTANCE - SPECIES RICHNESS** 

- 27) Vascular plants: flowering plants and ferns
- 28) Bryophytes: mosses and liverworts (include lichens in this Field)
- 29) Fungi:
- 30) Birds:
- 31) Mammals:
- 32) Amphibians and reptiles:
- 33) Fish:
- 34) Lepidoptera: butterflies and moths
- 35) Odonata: dragonflies and damselflies
- *36) Other invertebrates:*

A score from the following scale is entered for each of the above groups in Fields 27-36:

- 0 no information available
- 1 current information inadequate
- 2 current information suggests small interest
- 3 current information suggests moderate interest
- 4 current information suggests great interest

The importance of a site for these groups can change over time, as management, land use or other factors change. The sources and dates of the information upon which these assessments are based are listed in the Report which accompanies this database.

### **IMPORTANCE - NOTABLE SPECIES**

- 37) Vascular plants: flowering plants and ferns
- 38) Other plants: mosses and liverworts (include lichens in this Field)
- 39) Birds:
- 40) Mammals:
- 41) Amphibians and reptiles:
- 42) Fish:
- 43) Lepidoptera: butterflies and moths
- 44) Odonata: dragonflies and damselflies
- 45) Other invertebrates:

Enter the number of notable species known to occur on the site. These are either defined in the Report, or are based on an expert on the relevant group. Data about the number of individuals concerned, date of recording and current status etc. can be incorporated in the text file.

46) Total notables: this is calculated as the sum of Fields 37-45.

OTHER FEATURES

- 47) Geology value: if the site holds any known geological or geomorphological interest then enter PRESENT, otherwise leave blank. Expand in text file if possible.
- 48) Damaging features: UNKNOWN NONE VANDALISM WATER POLLUTION TIPPING LITTER RECREATIONAL DAMAGE NO INFO INVASIVE SPECIES NO MANAGEMENT OTHER DELETERIOUS MANAGEMENT

Enter the relevant keyword(s). Expand in text file if necessary.

49) Linkage: NONE WEAK MODERATE STRONG UNKNOWN

A subjective assessment of the degree of linkage with other Green Network sites. Expand in text file if necessary.

50) Potential: LITTLE MINOR MODERATE GREAT UNKNOWN

This field gives a subjective description of the potential of the site for improvement. Expand in text file if necessary.

51) Aesthetic appeal: LIMITED MODERATE HIGH UNKNOWN

A subjective assessment, restricted to the sites that have been visited in the survey for the Report. Expand in text file if necessary.

- 52) Accessibility: LIMITED MODERATE HIGH UNKNOWN Expand in text file if necessary.
- 53) Proximity to people: LIMITED MODERATE HIGH UNKNOWN Expand in text file if necessary.
- 54) Educational potential: LIMITED MODERATE HIGH UNKNOWN Expand in text file if necessary.
- 55) Amenity use: FISHING WATER SPORTS INFORMAL RECREATION ORGANISED RECREATION OTHER UNKNOWN

Specify and expand in text file if other.

56) Conservation status: SSSI LNR SWT PS SWT SOEV OTHER

Specify and expand in text file if other.

57) Nature Conservation Value: A B C D

The composite nature conservation value of the site as assigned in this project. Sites with only provisional gradings are suffixed with a "-p", for example, "33-p".

58) Additional information:

This Field holds the name of a Text File that can contain supporting information for the site data base record. For example, it can amplify, or attempt to clarify, the information entered in the Site record. The Text File can also contain additional information, such as literature references to the site or species on the site, and lists the notable and interesting species.

We have adopted a field file-name convention for the Text File which consists of the site number plus an extension of ".SBT". This convention is related to the software used and alternative conventions may be more appropriate for other data base systems.

#### HABITAT ENHANCEMENT, CREATION AND MANAGEMENT: SOME GUIDELINES

The following notes provide some guidelines for both habitat enhancement and creation. For further information, reference should be made to the bibliography which contains several useful sources.

#### 1. <u>Improving Existing Grasslands</u>

The steps necessary to identify grasslands suitable for diversification are as follows:-

- a) Identify those parts of a site which are not heavily used, nor in direct line of access or on desire routes to other honeypots or features, and where grassland enhancement would look attractive, and be manageable (eg. the slope is not too steep to mow).
- b) From these areas, select sites which would tie in with flower-rich grasslands elsewhere on or off the site to provide linkages for grassland species.
- c) Consider the existing soils and vegetation. Rye-grass dominated, nutrient-enriched vigorously growing swards are difficult to convert. If these occupy just the area needed, then consider stripping the turf and top few centimetres of soil off (to sell?). The depth to be removed will depend on the depth and nature of the underlying subsoil. Diverse grasslands grow best on nutrient poor soils, but not those entirely lacking in minerals.
- d) The best areas to select are those on stressed soils (caused by drought, lack of nutrients or too much water).
- e) All sites need checking first to ascertain their current wildlife value. A good invertebrate or small mammal fauna, for example, may preclude removal of the blanketing litter layers.

Once selected, the area to be improved needs careful design. The edges should be sinuous and the curves tie in with other features. Ideally grassland should be backed to the north by scrub and then woodland. Some linking groups of shrubs could be incorporated to add visual interest but the practical problems of management need to be considered first, as well as the overall feel and impact of the space available in a design sense.

Selection of species is critical. The correct locally-native species, characteristic of the prevailing dryness or wetness, pH, soil texture and nutrient levels need to be selected as these are the ones which will survive, regenerate, and make a proper contribution to the developing sward, and which will support the local invertebrate populations. Only common species of the locality should be selected since the natural ecological limitations and tolerances of scarce species are rarely understood and therefore cannot be accommodated. The desirable species will be further restricted by the commercial availability of wild flower seed unless local seed is hand-collected and sown (which in itself would be a worthwhile project). Only native seed should be used from seed merchants which specify this. Foreign and agriculturally developed varieties are often markedly different to British stock, and may be ecologically inappropriate, for example, the agricultural form of bird'sfoot trefoil is a short lived, taller-growing variety which is not used significantly by common blue butterflies as a caterpillar food plant compared with the native variety.

The species selected need to reflect the vigour of the sward. If the grass growth is quite fast, strongly growing plants like knapweed, sorrel, red clover and ox-eye daisy could be used. Smaller growing plants would grow well in a less competitive grass matrix. Seed mixes should be made up individually rather than relying on pre-packed 'mixtures which usually contain inappropriate species.

There are several means of adding species to the sites selected.

- a) Potted plants grown by children, or in the Council's greenhouses using standard horticultural techniques, can be inserted into mown grassland. Cut the grass closely in early May when vigorous growth has started, remove all the cuttings, insert the plants. Cut subsequently at the end of the growing season when all the seeds have fallen (this is usually in September or even October). Remove all the cuttings to avoid a competitive blanketing effect. If the sward is too vigorous, mow once each April-May (but before the main bird breeding season to avoid killing skylark chicks, etc.) and remove cuttings. This reduces vigour, but precludes the insertion of early flowering plants such as cowslip (on dry, base-rich soil) or lady's smock (on marshy ground). Where vigorous potted plants are put into marshes or pond edges (eg. yellow iris, meadowsweet, purple loosestrife), mowing is unlikely to be necessary on a regular basis. Rather, occasional harvesting would maintain diversity.
- b) A grassland may already contain a number of broad-leaved herbs, but lack of management preclude their spread. If the grass is cut first in autumn, and all the dead material removed, native seed could become established. Annual cutting and removal of the litter each September or October, together with a cut in April or May to reduce vigour if necessary, would be all that is required.
- c) More species can be introduced by adding seed. The most effective way to achieve this is to mow (or graze) as closely as possible in September, remove all the cuttings, rotovate several times to obtain a reasonable tilth, add wild flower seed only (ie. no grasses) of the desired species at a rate equivalent approximately to 8kgs/ha (the amount depends on the sizes of the seeds; 8kgs assumes a commonly used ratio of 80% grass to 20% broad-leaved herbs and 30-35kgs/ha is a normally used amount of total seed). The sward then needs to be lightly rolled. Growth the following year will need to be controlled by mowing between 1 and maybe 4 times depending on the grass growth rates and establishment of the seed. Cuttings must be removed. In the second year, an early cut

and collect to control vigour (if necessary), and a late cut (and collect as hay) in September will then control the attractive haylike sward. On very stressed soils, even annual cutting may not be needed. This can only be gauged on site.

d) If the turf and top layers of the soil are removed, a flower + grass seed mix needs to be applied. Non-vigorous grass species (these are likely to have to be agricultural varieties) should be selected. The establishment procedure above, excluding rotovating needs to be observed.

Herbicides and fertilizers will not be needed in grassland creation unless there are problems with individual species such as broad-leaved dock. These need to be treated with a weed wipe, or by more regular mowing since few of the herbicides used to control specific species are monospecific, and tend to kill other broad-leaved species too.

Diversification of some of the many species-poor amenity grasslands improve the appearance and wildlife value of these sites.

#### Grassland Creation

The same principles and guide-lines as above need to be applied, but seed mixes of both grasses and wildflower seeds should be planted. Grass selection should be related to soil types and the required appearance. Common bent and fescues are likely to be the most useful species. Ryegrass should not be sown on the whole. Other non-competitive species also need to be selected. Few, however, are available as native strains at the moment. Seed mixes should be devised for each site dependent on environmental conditions, the height of sward required, and the predicted management regime.

Grazing of some of the more extensive areas of grassland might be considered as a viable alternative to mowing. Enclosures using hedges or fencing could be established. Young beef cattle, sheep or ponies might be used, but heavy animals, and heavy grazing need to be avoided. Grazed grasslands need to have a patchwork of short and tall herbage with flowers and seeds to be of most visual and wildlife appeal.

#### Grassland Management

Some grasslands may have lost diversity due to lack of management. On infertile sites, where many colonisation gaps occur, scrub invasion will need to be contained, and the grasslands cut and cleared annually, or possibly less frequently, depending on their vigour. On more fertile soils, an annual cut and clear in September after seeds have been shed should be adequate, but where growth is still vigorous, it can be contained by an additional late April cut and clear. Cutting any later is likely to damage ground nesting birds and various invertebrates, as well as limit early flowering plants. Stands of tall herbs need to be included in the design for these grassland areas since they support a different range of species.

#### 2. Pond Improvement

Many of the ponds are fringed and contain a limited variety of species. After proper survey, limited introductions could be considered, particularly in the recently created ponds and lakes rather than the longer-established ones. Submerged aquatic plants are especially important in providing oxygen in the water.

Marginal aquatics such as yellow iris, purple loosestrife and water mint could be used to diversify the species-poor communities which tend to be dominated by reedmace.

Only locally native species should be used, and some of these may be available during the clearance of choked waterbodies elsewhere in the Town.

#### Pond Creation

Pond creation can pay attention to the detail of profile, edge and shape which benefit wildlife. The following considerations may be appropriate:-

- i) Seek to create maximum physical diversity of habitat potential in relation to size of site, ie.:
  - a) An area of at least 20-25% of the surface area of water should be about 1-1.5m deep for safe winter hibernation/survival.
  - b) Very deep water (more than about 5-6m) has little value for wildlife - temperature inversions develop and stratification results.
  - c) Extensive shallows of 15cm or so of water are essential:
    - i) With little vegetation for ducklings to swim in out of danger of pike.
    - ii) With good submerged and emergent vegetation for other species.
  - d) Extensive shallows into the water area with stands of eg. reed (especially) (*Phragmites*), bur-reed (*Sparganium*) provide excellent habitat for birds, insects etc. Their spread can be limited by abruptly increasing water depth to 30-45cm at their edges and shelving the profile (but this might be dangerous if children are wading into the water).
  - e) Retention of some steep banks useful for kingfisher, or if it is soft material, for sand martins.
  - f) Fishermen need a level bank to sit on (reinforced tastefully if it is to be used regularly), and a short bank into the water with no reeds or marsh. Separate these items at the planning stage, therefore.

g) Leave the bottom as irregular as possible so detritus accumulates in patches, and different plants find their preferred niches.

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- h) Islands are invaluable and safer from terrestrial predators and people. Make islands as variable as the pond edges. They should be gently sloped to provide muddy bare loafing areas for moulting/non-breeding wildfowl, and bare, regularly flooded mud provides good feeding for waders. Islands can be bare and gravelly, grassy, or scrubby. Each will provide a different habitat. All three can be provided in larger water areas.
- Try to create marshes at appropriate points around water's edge, ie. waterlogged soil, preferably seasonally flooded in winter These and the shallows need to be kept away from public access.
- j) Try to create safe sandy or gravelly beaches, especially for the public, if the water area is big enough.
- k) Make the water's edge as sinuous as possible. The more bays, the more shelter, and the more wildfowl territories, so they cannot see each other. Develop marshes and shallows in bays rather than on promontories.
- Do not underestimate wave erosion. What is the predominant wind direction? Avoid long fetches. Wave erosion can mean high cost of reinforcement with concrete/stone etc. Do not plant emergent/marginal herbaceous vegetation where waves are expected.
- ii) Relate all these different areas to likely <u>visitor use</u>. Keep people off tall steep banks (because of the danger to people or the possibility of the edge breaking off), and away from shallows and marshes. If necessary, design specific educational access points using board walks, steps, etc. for pond-dipping.
- iii) <u>Planting</u> is vital to produce a good habitat and visually attractive pond.
  - a) Plant marsh plants into waterlogged ground around water eg. meadowsweet, ragged robin, rushes, various appropriate sedges, kingcup, water forget-me-not, water mint etc.
  - b) Plant water's-edge plants in selected sheltered shallows, eg. yellow iris, (beware of reedmace it spreads, but is attractive), water horsetail, lesser spearwort, watercress, amphibious bistort, water plantain, common clubrush, bulrush etc. Keep more aggressive plants in separate zones from smaller ones, or the latter will disappear.
  - c) Submerged plants with floating leaves occupy the zone 30-100cm deep beyond (b). Use, eg. pondweed (*Potamogeton natans*).

- d) Submerged aquatic plants are vital to provide oxygen. Put in eg. various, pondweeds, starwort spp. and water crowfoot (some have floating leaves too, and are very attractive).
- e) A large lake can accommodate tree planting at various places. Use dry ground/marsh/water's-edge species as appropriate down the bank to the water. In some areas, allow willows and alders to grow well into water to provide cover and shelter and restrict shore-use by people. If the water area is small, too many leaves cause oxygen deficiencies and anaerobic smells, so keep most trees away from the edge, and only on the northern sector to provide shelter for the many weak-flying insects.
- f) Can wild flower meadows/grassland grading away from the water be developed too? Many of the insects breeding in the water are terrestrial adults and need nectar and cover. The ecotone is very valuable, and needs to be made as wide as possible. A varied pond life (plant and animal - reed bunting, dragonflies, damselflies etc.) will be visually pleasing, too.
- iv) The desirable diversity needs to be related to the <u>size</u> of the water area. Everything mentioned cannot be accommodated in a very small water area.

#### 3. Woodland and Scrub

#### Habitat Enhancement

Semi-natural woodlands usually contain more shrubs than trees. The latter form a variable incomplete canopy layer which leaves space for shrubs of varying size. Many of the old plantations and recent planting in Telford is of dense mixtures of trees and shrubs with little ecological cohesion, whereas the spontaneous and older woodlands have distinct communities of semi-natural vegetation. The plantations, in particular, would benefit greatly from improvements.

- a) Woodland habitats are improved by having a variable pattern of light and shade on the ground. This can be achieved by incorporating glades, wide tracks and variable densities of planting in the design, or creating them by selective coppicing during management.
- b) One of the most important features of a woodland is its ground flora. Recently planted woodlands (that is those up to some 300 years old compared with ancient woodland) have a poor ground flora. Variable light patterns, as described above, will provide the potential for a more varied herbaceous layer than an homogeneously structured plantation of trees, but there is still a case for introducing appropriate species. This is best achieved by planting pot-grown plants of suitable species into an existing plantation woodland or by adding seed of suitable species where the ground cover is sparse. No introductions should be attempted though in

ancient woodlands. To be safe, diversifying the herb layer might be restricted to more recently planted woodland (eg. in the last 30-40 years) on sites which have not been wooded for a long time.

- c) Suitable species for introduction are those native to Shropshire and characteristic of the particular soils of the site. Only nonaggressive, common species should be considered so that a visually pleasing mixture can develop.
- d) Bird and bat boxes can be erected in mature woodland, on parkland trees and elsewhere. Children could be encouraged to participate in such a scheme.
- e) Tree planting in the past may now appear as an abrupt edge of trees with little shrub edge. Woodland planting can be enhanced by adding a mixture of locally native shrubs along and into the edge of tree belts.
- f) The structure of areas planted only with trees can be improved by selective group coppicing and the addition of native shrubs after any necessary thinning. Thinning by removing groups of maturing trees provides a glade effect where more shrubs and smaller trees can be introduced.
- g) By introducing the locally native trees and shrubs best suited to the ambient soils and water relations, distinctive communities can be developed which give character to an area and striking contrasts throughout the Town.

#### Woodland and Scrub Creation

As well as consideration of the above, woodland creation can incorporate other ecological requirements.

- a) More extensive woodland covering several acres can be designed. Some of the small patches of tree planting are too small to support many woodland animals.
- b) New planting should incorporate a sinuous border, and extra shrubs at the edge which grade into adjacent scrub or grassland. This provides the optimum edge habitat which is utilised by several specialist species.
- c) The tree and shrub communities should vary with the soil conditions so that wet soils support marshy woodland communities, and dry ones, a different assemblage. Variation of this kind ties the visual appearance to the topography and soils, makes ecological sense and presents a more attractive image.
- d) Scrub is a very important habitat for many animals. There are distinctive scrub birds and invertebrates. Scrub planting, using appropriate native shrubs (including gorse and broom) would be of great benefit. It should be of variable sizes, shapes, and distances apart, from groups of 2-3 plants, to quite extensive

patches of over half a hectare in size, set in grassland, fringing woodland or linking hedges.

e) Hedges are effectively linear lines of scrub. New hedges can link woodlands, scrub, other hedges, or parks and gardens where trees grow. They can fringe paths or canals, or be incorporated into the landscaping round new developments. Details on how these can best be established are provided in the BTCV handbook on Hedging. Hedges dominated by hawthorn, or incorporating several locally native species might be considered. They will need to be managed properly after planting.

#### 4. <u>Heathland</u>

Dwarf-shrub heath composed of heather, bilberry, bell-heather and grasses such as sheep's fescue and wavy hair-grass, once covered more substantial areas around and in Telford. Heathland is an extremely attractive habitat, but is vulnerable to both repeated burning on too short a cycle, and to heavy trampling. Heathland re-creation, therefore, should be limited to areas on dry, acid, sandy, nutrient-stressed soils, and safe from excessive use or disturbance. Heathland can be created as follows:-

- a) Sow the chosen area with a low quantity (20-50kg depending on the site and method of sowing) of a grass-seed mix comprising common bent (Highland variety), and sheep's fescue. Add wavy hair-grass if native seed can be obtained, and sow this in autumn since it is more viable then. Wavy hair-grass has been collected and sown on Cannock Chase in Staffordshire to repair bare ground. Existing sites in Telford, where wavy hair-grass is abundant, may provide a similar suitable seed source.
- b) Add by hand some seed and litter collected from under the canopy of existing heathland. This is a suitable project for community involvement since the litter has to be carefully collected by hand. Spread it thinly as soon as it is collected.
- c) Alternatively, use the heathland cuttings from creation of firebreaks eg. from Stiperstones National Nature Reserve. The area cut will provide material for twice the area of innoculation. Cutting heather in October, with the seed-containing capsules still on the plant, provides a valuable source of local heather seed, and a mulch which aids establishment. It may take 18 months or more for appreciable quantities of heather seed using this method to establish though.
- d) Species like broom and gorse can be established from seed, but need to be restricted to patches rather than spread throughout the heath.
- e) Other species like bilberry and cowberry would have to be introduced as potted plants as they do not establish readily from seed. They can be grown, with care, from cuttings, possibly using local material.

f) There may be some existing open bent-fescue swards which can be used to create heathland. In this case, a) above can be omitted, and b)-e) implemented.

Heathland needs management or else it tends to become invaded by trees. On the moors, heathland is burnt and/or grazed to maintain them, but this is unlikely to be practicable in Telford. Flail mowing can be used as a substitute and might be implemented on a patchwork cycle, mowing selected areas in the same way a moorland might be burnt on a 12-15 year cycle. The flailed material could be used as a new seed source for elsewhere if collected in October, or be blown into the adjacent vegetation. On particularly poor soils, tree invasion can be controlled and no other management used, leaving the heather to grow old naturally and regenerate itself. Such sites need to be located where the summer fire hazard is at a minimum.

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