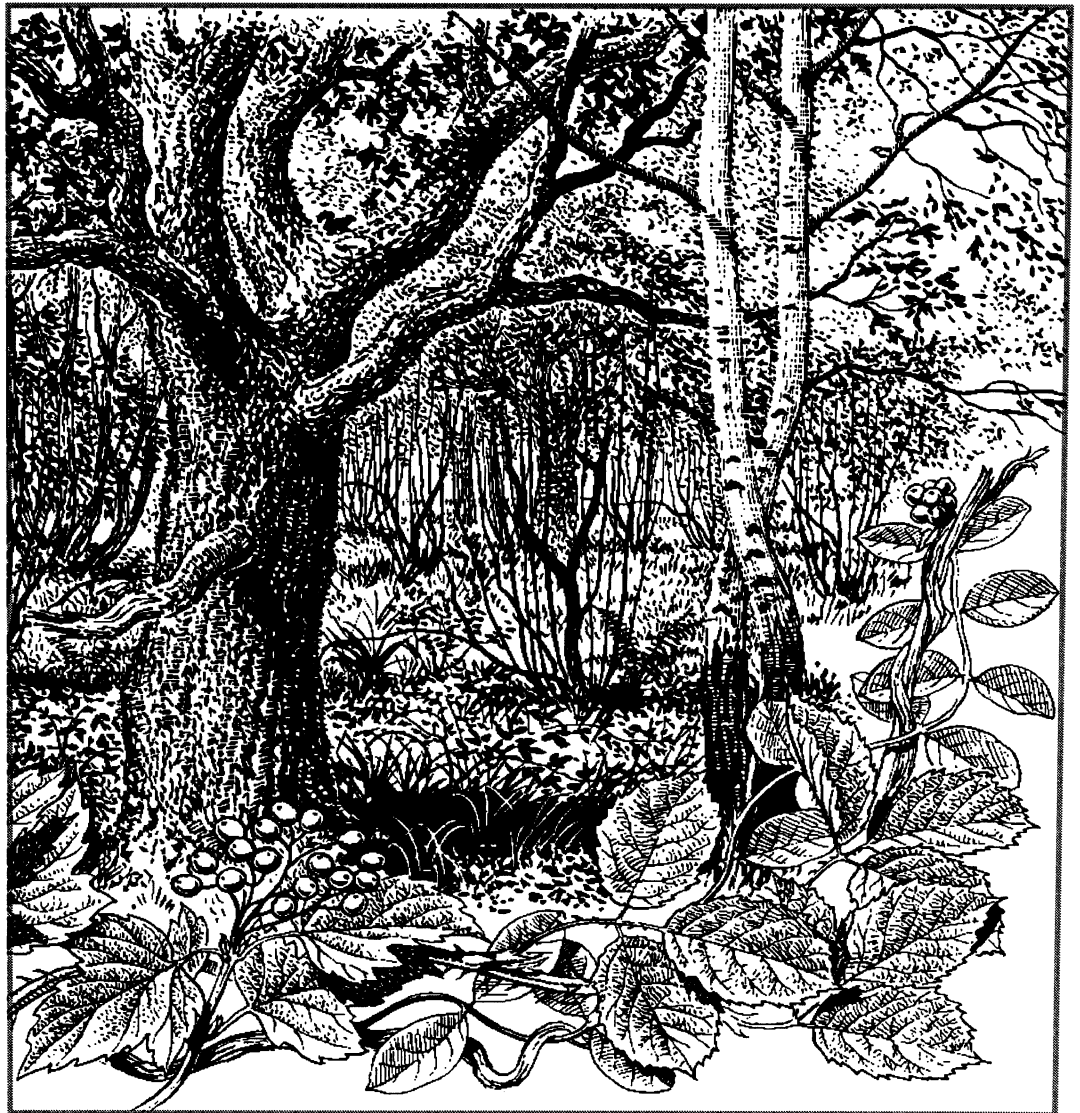


Wood pasture and parkland habitat action plan: progress report 2000

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English Nature Research Reports

Number 396

**Wood pasture and parkland habitat action plan:
Progress report 2000**

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Preface

The Lowland Wood-pasture and Parkland Habitat Action Plan is aimed at promoting and co-ordinating conservation work on this habitat across the UK. It is led by English Nature, but the work is done by a wide range of other government and non-government bodies. A meeting was held on 7 July 2000 to review progress since formal publication of the plan in 1998. This summarises that meeting but also includes a draft “work plan” with proposals for how the main action in the Habitat Action Plan might be taken forward. Comments on this are sought and a proforma for making these is included in Appendix 6.

For those who were at the meeting, I apologise for the delay in producing the report and for any misrepresentation of the speakers. The delay has been due to staff changes and other work pressures beyond my control. I have attempted to update things where possible.

Keith Kirby
English Nature

Acknowledgements

I wish to thank particularly Rachel Thomas for her work on this plan and in steering the Veteran Trees Initiative (which addresses many of the necessary actions) to a successful conclusion. Within English Nature Roger Key, Christine Reid and Jeanette Hall also had a major input. Outside of the organisation there are too many to mention, but many were at the July meeting. Thanks to all of you.

Summary

Brief summaries of activity in England, Scotland and Wales were presented at the meeting on 7 July 2000. A lot is going on but these reports are undoubtedly incomplete. We need to improve the way that we collate what is going on if we are to report fully on progress. Very little has happened to date in Northern Ireland, so no report was presented.

Although the plan title is "Lowland" Wood-pastures and Parkland recent work has established that there are equivalent sites in the uplands that should be included which are not already covered by Upland Oak, Upland Ash or Native Pinewood plans. A "Definitions" sub-group has been set up to explore this further.

Many counties/districts have not been surveyed in detail for the occurrence of wood-pastures and parkland. The Staffordshire Wildlife Trust report (due early 2001) on their work will provide ideas and guidance for others planning such work.

At a UK level a data-base is being developed linked to the National Biodiversity Network which will allow someone interested in a particular site to find out what else is held (for example on its historical value, lichens or invertebrates) and where. Contact Roger Key (English Nature, Peterborough).

The links between the lowland wood-pasture and parkland plan and requirements of key species groups need to be developed more. For saproxylic invertebrates progress is being made via a contract with CABI. Four areas are being considered: species as indicators; the role and importance of nectar sources; dead wood-invertebrate-fungal interactions; abiotic factors and their influence on invertebrates.

Non-biological interests need to be incorporated more with the Habitat Action Plan. Various data sources have been identified that should be linked to national data-base. A sub-group should meet to explore how to progress these issues in the New Year.

The Veteran Trees Initiative publications on management grants and safety responsibilities have been published (and are on English Nature's website www.english-nature.org.uk) and well received. Amendments and suggestions for improvements if/when they are updated should be lodged with English Nature.

The Ancient Tree Forum has set itself up as an independent charity to promote the needs and care of veteran trees. It is continuing the demonstration days/workshops started by the Veteran Tree Initiative.

Forest Enterprise holds large areas of wood-pasture, most notably the New Forest. Extensive restoration work is planned/underway, involving both management of individual trees and restoring grazing regimes.

National Trust are developing their wood-pasture and parkland programme, involving both work at individual site level (eg Felbrigg, Hatfield, Kingston Lacey) as well as survey and research projects, notably into grazing regimes.

In England Countryside Stewardship grant can be used for work on historic parkland. Their potential to deliver Habitat Action Plan targets needs further development.

Discussions have been held about a possible Heritage Lottery Bid. A contract should be let to collect further ideas and information before Christmas.

A work plan needs to be developed and a draft is available for consultations.

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1. Introduction

- 1.1 The UK Biodiversity Action Plan led to the development of individual Action Plans for habitats that were considered to be of particularly high nature conservation value. The plan for Lowland Wood-pasture and Parkland was formally published in 1998. The plan provided a broad description of the habitat, factors that had led to its decline in extent or quality, targets for its recovery and actions that should lead to those targets being achieved. The targets and actions are summarised in Appendix 1.
- 1.2 As part of the Biodiversity Action Plan process a government department or agency has been asked to lead on each habitat - for wood-pasture and parkland this is English Nature. However, the actions and targets can only be delivered through the work of a wide range of other bodies, both government departments and voluntary organisations, and private landowners. For wood-pasture and parkland there is the additional need to ensure that the very high cultural, historical and landscape values of these areas are not compromised in the pursuit of delivering the biodiversity targets.
- 1.3 In this report we have tried to do two things. Firstly we have summarised some of the work and developments of the last year that were reported at a meeting of the Plan Advisory Group on 7 July 2000. The programme and list of attendees are given in Appendix 2. Secondly, we have taken the targets and action in the Plan and re-shaped them in a form that makes it clearer what projects need to be done and how we might recognise whether or not we are making progress. Comments on this draft 'work programme' are sought (see proforma in Appendix 6) by the end of January 2001.

Progress and problems (1999-2000) by country

Summary

Brief summaries of activity in England, Scotland and Wales were presented at the meeting on 7 July 2000. A lot is going on but these reports are undoubtedly incomplete. We need to improve the way that we collate what is going on if we are to report fully on progress. Very little has happened to date in Northern Ireland, so no report was presented.

2. England

(Presented by Helen Stace, English Nature)

- 2.1 This report is incomplete but gives a flavour of the range of activity. It is biased towards work in which English Nature has had an involvement, but does bring in some material from other bodies. The numbers in brackets indicate the action in the plan to which the reported activity is relevant.
- 2.2 Various English Nature teams now have lists of which SSSIs contain parkland/wood-pasture and further sites are being considered, eg Croft Castle (Herefordshire) (5.2.1). Dixton Wood (Gloucestershire) is being put forward as a new Special Area of Conservation (5.2.2). Restoration work for land outside the current National Nature Reserve at Moccas Park has been put forward under Countryside Stewardship (5.2.7) and major restoration proposals are being carried out at Windsor Park, involving conifer and rhododendron removal, deer fencing and clearance around veteran trees (5.2.6). At Dunham Massey the National Trust have an application under Countryside Stewardship for restoration planting (5.2.7). Eastnor Park is also going for stewardship. At Croft Castle joint work by the National Trust and Forest Enterprise is underway to clear around veteran trees left within plantations.
- 2.3 The Cumbria Local Biodiversity Action Plan encourages provision of advice to public and tree surgeons. In Dorset a leaflet for landowners is being developed along with a Parkland Management Day in October; seeds from veteran trees are being collected and will be grown on in collaboration with a local agricultural college (5.3.3).
- 2.4 In the Lake District the National Trust are compiling inventories of veteran trees on their properties; in Somerset 30 county wildlife sites for veteran trees have been identified; as part of a county wildlife audit in Dorset the Wayside Trees Project (1999-2001) has identified those of exceptional value for lichens (5.5.1). Lichen surveys are being carried out in Borrowdale and Ullswater (Cumbria); lichen and invertebrate surveys at Melbury Park and Lulworth Park, Dorset (5.5.3). There was a veteran tree project in Somerset (1996-8) and SERC have followed this up with management advice to owners. Veteran tree tagging has been progressed in various sites, eg Bredon Hill, Dixton, Moccas and Croft (5.5.4).
- 2.5 Wood-pasture and parkland has been highlighted in various local Biodiversity Action Plans, for example Dorset, Wiltshire, Cumbria, Gloucestershire/Hereford/Worcestershire, and has been flagged up in some Regional audits, eg East Midlands.

2.1.6 Some issues that came up in collecting views include:

- low uptake on Countryside Stewardship because of perceived bureaucracy of 'special project' approach on parkland;
- difficulty of identifying non-statutory wood-pasture and parkland sites;
- lack of county tree wardens/tree officers in some counties;
- different degrees of support from national bodies in different parts of the country;
- need for more liaison over wood-pasture and parkland with forestry 'professionals', eg ICF, RICS and landowning bodies, eg CLA.

3. Scotland

3.1 When the Habitat Action Plan was being developed the assumption was that the main areas were in the lowlands and that little occurred in Scotland. This view has been challenged by more recent work (see later paper by Peter Quelch). There is, however, a need to raise awareness. A meeting of interested parties has been held and another is planned for November. There may be more interest and opportunity in Scotland to integrate wood-pasture with mainstream agriculture because much of it is based on extensive grazing systems anyway. At present, however, there is a risk of wood-pasture falling between the incentives provided by the Forestry Commission and the Scottish Executive Rural Affairs Department. In the Borders veteran trees are being mapped on GIS. Aerial photographs are used to locate concentrations of such trees. A particular issue in Scotland is veteran aspen; 11 sites in particular have been identified as very important for their invertebrates.

4. Wales

4.1 Parkland/Ancient Tree Training Days. In 1999 CCW, FC Wales and the Ancient Tree Forum collaborated to hold a training day at Dinefwr Castle (Carmarthenshire), a National Trust property with a number of ancient trees in parkland. The day was attended by approximately 30 people, from CCW, FC, FE, National Trust, local authorities and other organisations. A second event has been arranged, for North Wales. This will be held on 26 September at Chirk Castle (another National Trust property). Cadw, Welsh Historic Monuments, hope to be involved in the Chirk day and have an input on maintaining the integrity of designed landscapes.

4.2 CCW: Orchards and Parkland Trees Scheme. This grant scheme ended in March 2000, having run for three years. During that time a number of parkland schemes were funded. Pressure on CCW's grants budget prevented the scheme being extended, but we will be looking to see whether any alternative sources of funding can be found.

4.3 Comments were sought on the lowland wood pasture/parkland tree elements of several LBAPs earlier this year. Two issues were noted:

- a lack of knowledge about wood-pasture sites, so that LBAPs looked only at parklands;
- the possibility that in areas with long established traditional orchards, that some orchards with special nature conservation significance should be considered within the scope of the lowland wood-pasture and parkland HAP. Within Wales, Monmouthshire and parts of the Wye Valley may contain orchards which could be considered relevant to LBAPs.

4.4 The priorities for the Lowland wood-pasture and parkland trees HAP work-plan within CCW in the next year are:

- to identify more lowland wood-pasture sites - currently only the Great Wood at Gregynog, woodland in the Elan Valley and the Punchbowl have been identified as wood-pasture;
- to develop a database of parkland and lowland wood-pasture sites in Wales. Some information already exists from work commissioned by CCW and from the Cadw Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales (see also later section on database development).

Definitions and extent of the resource

Summary

Although the plan title is “Lowland” Wood-pastures and Parkland recent work has established that there are equivalent sites in the uplands that should be included, which are not already covered by Upland Oak, Upland Ash or Native Pinewood plans. A “Definitions” sub-group has been set up to explore this further.

Many counties/districts have not been surveyed in detail for the occurrence of wood-pastures and parkland. The Staffordshire Wildlife Trust report (due early 2001) on their work will provide ideas and guidance for others planning such work.

At a national level a data-base is being developed linked to the National Biodiversity Network which will allow someone interested in a particular site to find out what else is held (for example on its historical value, lichens or invertebrates) and where.

5. Definitions - including wood-pasture in Scotland

(Presented by Peter Quelch)

5.1 The published definition was drawn up with typical lowland examples of wood pasture and parkland in mind. It includes sites derived from:

- Medieval forests;
- Medieval deerparks;
- wooded commons;
- parks and pastures with trees;
- designed landscapes (those which include pre-1800 trees);
- infilled wood pasture;
- wood pasture partly converted to other land-uses.

The latter two categories comprise wood pasture sites in altered or poor condition, which are, however, capable of restoration.

It specifically excludes:

- Upland sheep-grazed closed-canopy oak woodland;
- Caledonian pine forest;
- designed landscapes and parks with 19th century origins or later, with none of the above characteristics.

- 5.2 The characteristic features of all wood pastures are summarised in Box 1 and the benefits of wood pasture to wildlife, and as a wider land-use, are given in Boxes 2 and 3 respectively. The emphasis is on wood pasture as a structure, and as a separate land-use, involving farm livestock grazing in the maintenance of the habitat. This grazing is the key difference between woodland and wood pasture. Both can be grazed, but the very structure and character of wood pasture depends on more or less constant grazing. This is as true today as it has been historically.
- 5.3 Deer grazing is very relevant to wood pastures in Scotland. Numbers of red deer can be so high that some upland wood pastures are maintained in that condition as much by deer as by farm livestock. Indeed many pinewoods of pasture woodland structure only ever have deer grazing them. This is not a new occurrence - many upland wood pastures in Scotland, eg Glenfinglas, have developed from previous royal hunting forests, which held deer, boar and wolf, as well as tenants' livestock and ponies. Likewise many lowland wood pastures have survived on the site of medieval deer and white cattle parks, eg Cadzow, Dalkeith, or Cumloden Deerpark in Galloway.
- 5.4 Light grazing in woodland can be beneficial to ground flora or to other species groups while heavy grazing can be a seriously damaging factor, depending on a woodland's growth stage, but in no way is grazing an essential component of most woodland's management.
- 5.5 Since wood pastures are indeed grazing maintained habitats, then it is logical to include upland examples of this habitat within the HAP resource. This is preferable in terms of inventory, advisory services, management guidelines, and incentive schemes, whereby it is much simpler to deal with all or any wood pastures without having to decide whether they are of upland or lowland character. In Scotland it is possible to find a range of wood pasture sites which span the range from lowland, to the foothills, to obviously upland, and to the treeline itself in mountain areas. Upland wood pasture sites are found not only in Scotland, but also in England.
- 5.6 In discussions on Peter Quelch's presentation it was agreed that the activities of the plan should not be confined to the lowlands. The key was identifying the appropriate management for any particular site. The bureaucratic niceties of which Action Plan these were then recorded under were secondary. The importance of understanding site history (and the need for more research in this area) was stressed.
- 5.7 A sub-group on Definitions was set up to agree a practical set of working definitions for different types of wood-pasture (both upland and lowland) to guide implementation of the Action Plan).

Current membership of the group is Neil Sanderson, Richard Smithers, Ted Green, Keith Alexander, Steve Clifton, Keith Kirby. A draft paper on its deliberations will be circulated to the rest of the Advisory Group.

Box 1. Wood pasture - characteristic features

- Trees of open grown character (with wide deep crowns and short tapered stems that have not developed within a closed woodland canopy).
- Ancient (veteran) trees and old-growth features (rot hollows etc).
- Wide but irregular spacing, with clumping at times.
- Natural tree and shrub species mix, often with rare or unusual species.
- Uneven aged structure (ideally).
- Lack of previous planting (as far as anyone can tell).
- Lower proportion of oak than might at first be expected.
- Obviously pollarded trees on some sites.
- Mixed flora of woodland, grassland, heathland.
- Unenclosed, ie no simple walled enclosures around the wood.
- Natural treeline often a feature of the top edge of the wood.
- Maidens or pollards, rather than extensive regular coppice.
- Often rich in archaeology, including settlements and field systems.
- Remote location.
- Unimproved agriculturally.
- Lichens - rich in old-growth indicator species of lichen.

Box 2. Wood pasture - wildlife benefits

- Excellent continuity of habitat for epiphytic lichens.
- Sheltered grassland flora for butterflies, and woodland cover for moths.
- Animal dung as insect habitat.
- Undisturbed habitat for fungi of unimproved pastures and of woodlands.
- Flora of grassland, heathland and woodland on one site.
- Rarer trees and shrubs in a natural mix, eg aspen, juniper, Arran whitebeams.
- Open woodlands favours own suite of birds, eg black grouse.
- Open broadleaved woods of small seeded species favour red squirrels.
- A linkage habitat between semi-natural grasslands and woodland.

Box 3. Wood pasture - land use benefits

- Sheltered grazing at low elevation in winter.
- Organic food system, eg for free-range organic beef.
- Valuable to farm tenants, not counted as woodland in agri-grants.
- Good deer habitat.
- Good for sporting and hunting.
- Open woods also favoured for recreation.
- Water and soil protection.
- This can benefit fisheries and public water supplies.
- Archaeology maintained visible and protected from disturbance.
- Attractive cultural or historic landscape.
- Visually acceptable buffer zone between woodlands and pastoral land.
- Locks up carbon within long-lived trees.

Box 4. Inventory of wood pasture in Scotland - criteria for inclusion of core sites

Essential features

- Veteran trees - at least some present, dead or alive.
- Trees mainly of open grown character.
- Less than 20% canopy cover over the gross area of the site (otherwise counted as 'woodland' in all other main woodland inventories - avoid duplication on inventories).
- Unenclosed by simple woodland protection dykes (if enclosed in an upland situation probably just low stocking impoverished woodland). Note that ex-medieval deerparks may have park pales or dykes, and these obviously do count as wood pastures.
- No minimum stocking %, or minimum patch size for this habitat is proposed.
- In mosaic with semi-natural grassland or heathland (some have improved grassland, eg Cadzow).
- Context of a distinctive historic landscape (albeit hard to define).

Bonus features

- Deadwood, standing or fallen.
- Evidence of previous pollarding.,
- Good archaeology.
- Medieval dykes, pales, earthworks.
- Trees and shrubs surviving up to a distinct treeline.
- Linkages to montane scrub communities.
- The site also contains other tree refugia in ravines, gullies, riparian zones, crags or islands in association with the wood pasture.

Box 4. Inventory of wood pasture in Scotland - criteria for inclusion of core sites

- Presence of rarer native trees and shrubs.
- Good specialist species reports, eg lichens, saproxylic invertebrates, bryophytes, butterflies, birds.
- Evidence of continuity in old growth habitat.
- A wider age class structure including tree regeneration and young growth patches.
- A landowner willing to keep up management by controlled grazing.
- Potential for deer control without simply enclosing in deer fences.

Box 5. Range of potential types of wood pastures in Scotland

Broadly the wood pasture types are the equivalents of woodland types, as defined by Forestry Commission's Guide. Types classification or the main HAP types (but with perhaps fewer examples in wet woods).

- Lowland mixed broadleaves (mainly oak and ash, plus parkland beech/syc).
- Upland oak.
- Upland birch (including wet birch).
- Naive pinewood.
- Slope alderwood.
- Upland mixed ash/hazel/elm.

Also a few other distinctive grazed woodland/scrub types, eg:

- Hawthorn savannah.
- Juniper scrub.

6. County surveys

(Presented by John Webb, Staffordshire Wildlife Trust)

- 6.1 Like many other counties there is no overview of the distribution of wood-pasture and parkland sites in Staffordshire. Even where examples were known there were no criteria for incorporating them into the county wildlife sites system. A project was set up therefore to address these issues.
- 6.2 There is no simple way of defining the boundaries of many wood-pasture and parkland sites. Some have clear historical boundaries but the biological interest may now be confined to only a small area, eg where over much of a parkland the trees have all been felled and the ground ploughed to create arable fields. In other instances the biological interest in the form of the veteran trees in hedges etc may extend to varying degrees beyond any obvious site boundary. Staffordshire Wildlife Trust have therefor taken a pragmatic approach, using historical information but also current state, to define sites. Full results will be available for about 1200 ha in 2001.

- 6.3 Information on nectar sources and existing entomological surveys has been pulled together as well as details of the veteran trees themselves. A digital camera has been a useful aid in surveys.
- 6.4 As a pragmatic first cut only sites with more than 10 veteran trees have been put forward as county wildlife sites. This generated much discussion because sites with fewer veterans but with a long continuity of veteran trees on site might be more important biologically than sites with a higher number but less historical continuity. In some cases important invertebrate populations could survive for a while in stumps. Other aspects of wood-pasture (eg the ground flora and below ground components) could survive even in the complete absence of veteran trees.
- 6.5 These points were accepted and no criteria should be applied to define county wildlife sites uncritically. It was also agreed that a good population of veteran trees should be eligible for SSSI designation, even without supporting species justification (usually invertebrate or lichen assemblages). A case to this effect is being made to the Joint Nature Conservation Committee for an amendment to the SSSI Guidelines. Even if an amendment is made then there will be some sort of minimum number threshold - sites with only a handful of veteran trees are not likely to be selected as SSSIs.
- 6.6 A key message from the discussions was the need to link historical (and cultural/landscape) values to the biological in any site assessment.

7. National (UK) parkland and wood-pasture database

(Presentation by George Boobyer and Dominic Tantram)

- 7.1 Early in the Veteran Tree Initiative it was recognised that numerous different and only partially overlapping lists of parks and wood-pastures existed: that produced by Harding and Rose in the late 1970s; Countryside Agency's review of parks; English Heritage's Historic Parks and Gardens list; Keith Alexander's list of sites important for saproxylic invertebrates. A way of cross-linking these was needed and a contract has been let to create a database to do this (specification in Appendix 3).
- 7.2 Phase 1 of the project has been to design the system and collect the background information on the main potential sources of data via consultation with a wide range of partners (Appendix 4). The second phase over the next six months involves incorporating various trial data-sets. Full population of the data-base is scheduled for Financial Year 2001/2. The database is part of the National Biodiversity Network development.
- 7.3 The potential for developing a parallel but linked Veteran Trees Database around the Recorder 2000 software is still being explored.

Links to species and non-biological interests

Summary

The links between the lowland wood-pasture and parkland plan and requirements of key species groups need to be developed more. For saproxylic invertebrates progress is being made via a contract with CABI. Four areas are being considered: species as indicators; the role and importance of nectar sources; dead wood-invertebrate-fungal interactions; abiotic factors and their influence on invertebrates.

Non-biological interests need to be incorporated more with the Habitat Action Plan. Various data sources have been identified that should be linked to national data-base. A sub-group should meet to explore how to progress these issues in the New Year.

8. Saproxylic species

(Presentation by Oliver Cheeseman)

8.1 The UK Biodiversity Action Plan encompasses a number of species with an association with dead wood (micro)habitats, across a variety of taxa. Lowland wood-pasture and parkland is clearly one of a range of habitat types important for such species.

8.2 Even within the invertebrate realm, the BAP covers a diversity of species. A number of organisations are leading on saproxylic invertebrate work, including the People's Trust for Endangered Species and Birmingham University, where a PhD project on sampling methods and dispersal ecology of saproxylics is in progress (contact Anna Juvonen-Lettington/Andrew Pullin).

8.3 CABI Bioscience is engaged on a project which focuses on the conservation needs of a group of 12 saproxylic Coleoptera:

Ampedus nigerrimus, *Ampedus ruficeps*, *Ampedus rufipennis*, *Elater ferrugineus*,
Lacon querceus, *Limoniscus violaceus*, *Megapenthes lugens* (Elateridae);
Dryophthorus corticalis (Curculionidae/Dryophthoridae);
Eucnemis capucina (Eucnemidae);
Gnorimus variabilis (Scarabaeidae);
Hypebaeus flavipes (Melyridae);
Gastrallus imarginatus (Anobiidae).

8.4 However, the extreme rarity of many of these species precludes research methods based on destructive sampling of the veteran trees (the most obvious approach), as this might cause disturbance which would threaten the survival of the few extant populations. Consequently, the project takes a wider view, seeking to clarify aspects of general saproxylic invertebrate ecology, with a particular emphasis on the target species listed above. Four areas in particular are being considered:

- a. issues relating to the target species;
- b. issues relating to nectar sources;
- c. issues relating to dead wood/fungus/invertebrate interactions;

d. issues relating to abiotic factors and their influence on dead wood microhabitats.

8.5 An information review has been compiled, and a meeting was held in London earlier this year to discuss priorities for the project. Invitees to the meeting included leading coleopterists, specialists in other invertebrate taxa, mycologists, and site managers. Notes arising from this meeting are given in Appendix 5.

8.6 Key needs are to:

- identify flagship species for promotional work, eg as People's Trust for Endangered Species have used stag beetle;
- identify species for site monitoring programmes;
- identify indicator species or suites of species;
- identify species which will help our understanding of site management requirements;
- establish whether nectar sources really are critical or simply foci for collection; how are the species using the resource;
- research the ecological interactions between dead wood, fungi and invertebrates;
- establish better communication between site managers and species specialists;
- establish the extent to which species can move between sites and colonise new areas, which are really immobile and which are simply limited by very specific and rare habitat requirements.

8.7 Related to the above is a PhD being done by Anna Juvonen-Lettington who is researching non-invasive field techniques to assess the quality of habitats for saproxylic invertebrates. In particular she aims to explore issues of within and between site fragmentation as far as it affects these species.

8.8 A conference on saproxylic invertebrates is being held at Sparsholt College, Hampshire in 2001 (14-16 August). Provisional title: 'Conservation of saproxylic invertebrates with special reference to *Limoniscus violaceus*, *Gnorimus nobilis*, *G. variabilis* and *Lucanus cervus* , jointly organised by People's Trust for Endangered Species and English Nature.

9. Non-biological interests of parkland and wood-pasture

(Presented by Jennifer White)

9.1 There is a need to progress work on the non-biological (mainly landscape and historic values associated with wood-pasture and parkland. There are already a number of data-sources that are readily available. The Countryside Commission (now Agency),

for example, as part of Countryside Character Map preparation compared the 1918 Ordnance Survey maps representation of parks with their representation on the Land Ranger Series. DETR Land Cover Data (from the various ITE Countryside Surveys) might be another source. Cadw and English Heritage have listings of historic gardens and parks, with often additional biological survey information collected as part of the management planning process. The Garden History Society is exploring the economic value of parks and gardens as part of a bid for government support for such sites. At York there is a national database on historic gardens and various county gardens trusts have local records.

- 9.2 Della Hooke pointed out that there are various records for medieval parks. Not all of these exist as parks now, but some elements, eg veteran trees in hedgerows may survive and could form the nucleus for restoration work
- 9.3 There would be value in a small meeting of those specifically interested in the non-biological values of parkland, with the aim of identifying how best these can be incorporated into the Habitat Action Plan. English Nature will explore hosting this in the New Year.

Progress on management and advice

Summary

The Veteran Trees Initiative publications on management grants and safety responsibilities have been published (and are on English Nature's website: www.english-nature.org.uk) and generally well received. Amendments and suggestions for improvements if/when they are updated should be lodged with English Nature.

The Ancient Tree Forum has set itself up as an independent charity to promote the needs and care of veteran trees. It is continuing the demonstration days/workshops started by the Veteran Tree Initiative.

Forest Enterprise holds large areas of wood-pasture, most notably the New Forest. Extensive restoration work is planned/underway, involving both management of individual trees and restoring grazing regimes.

National Trust are developing their wood-pasture and parkland programme, involving both work at individual site level (eg Felbrigg, Hatfield, Kingston Lacey) as well as survey and research projects, notably into grazing regimes.

10. *Veteran Tree Management Handbook* and other VTI publications

10.1 The Veteran Tree Initiative ended in March 2000. As well as helping to raise the profile of veteran trees generally the initiative organised a major conference on parkland in 1998. The final outputs then came in a rush early in 2000:

- slide pack;
- safety booklet;
- grants booklet;
- future for veteran trees leaflet;
- management handbook (£15);
- Moccas Park book.

The above should be available from English Nature's publication distributors Telelink, PO Box 100, Fareham, Hampshire PO14 2SX (but as of autumn 2000 the *Future for Veteran Trees* leaflet was out of print - no decision yet on a reprint). In addition they are also available on English Nature's website: www.english-nature.org.uk

10.2 The whole series has generally been well received in reviews, but in particular the *Veteran Trees Management Handbook* has attracted much attention both in the UK and abroad. However, it is not all-embracing. Updates will be needed.

10.3 Areas where developments are thought likely:

- How useful is the 'decision tree' on when to manage veteran trees?
- What does the associated wildlife actually need (see earlier comments on species, section 8).

- Relatively little input so far on trees along rivers.
- Uncertainties over effects of management of surrounding land, eg effects of pesticides, fertilizers and veterinary products.
- What area of buffer habitat is it worth creating around veteran trees that currently are surrounded by arable or improved grass?
- Need to shift the focus to near veterans, as the next generation.

11. Ancient Tree Forum

(Presentation by Vikki Forbes, ATF/National Trust)

11.1 The Ancient Tree Forum is now a registered charity. The Ancient Tree Forum and the Woodland Trust are working together in promoting the conservation of ancient trees. The idea is that The Woodland Trust already has the infrastructure set up and the ATF can piggy back on that, in exchange for providing advice and a good network of professionals that the WT would like to link into.

11.2 The aims of the ATF are as follows:

We believe there should be no further avoidable loss of ancient trees through development pressure, agricultural clearance, mismanagement or poor practice.

We want to see ancient trees properly managed. This will require research and education in management techniques for ancient trees and their surroundings.

We want to see the development of a succession of future ancient trees, properly identified, protected and managed as part of a new cultural landscape, in sympathy with modern society and reflecting our values as well as reflecting those of the past.

We believe it is vital to build a greater awareness and understanding of the value and importance of ancient trees. The part that ancient trees play as a host to a specialised range of wildlife and their importance as part of the cultural landscape and social history of the UK is not widely appreciated. One of the ways in which ancient trees will be protected and cared for is in developing understanding of their importance and concern for their future, particularly amongst landowners. In order to achieve this there need to be changes in land use and practice that respect the needs of ancient trees and the wildlife they support.

11.3 To achieve our aims we want to ensure:

- availability, dissemination and exchange of information;
- incentives for positive action; and
- protection of ancient trees individually and within woodland.

11.4 What are we doing?

- Web site (part-funded by English Nature) - with the Woodland Trust this provides a great source of information and allows for networking at any time with an active discussion page.
- Public affairs & policy influence - with the Woodland Trust we are raising the profile of ancient trees and ensuring they are considered in any new Government policy and encouraging government incentives for landowners.
- National & European links - visiting sites and making contacts in the UK and Europe ensuring a fuller understanding of the significance of the wood pasture in a European context and encouraging the sharing of knowledge. Visits and links so far have been made with Spain, Czech Republic, Sweden and France.
- Best practice development - following on from the VTI book encouraging research to further our knowledge of veteran tree management and to give us more data to lobby the funding agencies for longer term grants.
- Influencing key practitioners ICF, RFS, AA - to change values and techniques for risk management following on from the *VTI Risk and Responsibility* handbook.
- Training days - we are continuing with these and we have run some in France and the Czech Republic. The UK ones will be focussed on arboriculturists, foresters and FRCA/FWAG officers.
- Leaflet - to raise the profile with all professionals within nature conservation, forestry and arboriculture.
- Cross-fertilisation between NGOs - encouraging the exchange of ideas between organisations such as The Woodland Trust and The National Trust.
- Bibliography - compilation and coordination of a list of papers and books with information about ancient trees.
- Arboricultural techniques - encouraging new habitat techniques in arboriculture to improve habitat value of all trees including urban tree management.
- Field meetings - we are continuing with the field meetings which were the starting point of the Ancient Tree Forum. The free exchange of ideas, thoughts and opinions at those meetings have brought us to where we are now in less than 10 years.

12. Forest Enterprise work

(Presentation by Jonathan Spencer)

- 12.1 Forest Enterprise are the biggest single landholders of wood-pasture including not just the New Forest, but also, for example, the Forest of Dean, Savernake, parts of Sherwood, Croft Castle, Cannock Chase and Castle Hill (N. Yorks). Much of this is SSSI. A report on FE's activities in England is given in *GB Habitat Action Plan for lowland wood pastures on Forestry Commission land*. More work is, however, needed on the extent of the FE resource in Wales and Scotland.
- 12.2 The wood pasture sites managed by FE are all very idiosyncratic and the appropriate responses consequently very varied. These notes summarise the management issues and proposed restoration plans.

The New Forest. Implementation of the A&O Report recommendations. Extension of wood-pasture to at least an additional 300 hectares within the Statutory Inclosures planned within the FE Forest Design Plans. Biological survey and assessment is taking place under LIFE funding. Removal of exotics, management of holly is occurring under LIFE funding. A bid for further LIFE funds has been made.

The Forest of Dean. Implementation of the SSSI management plan for Speech House Oaks. Management of the c 1,000 hectares of grazed oak high forest as per Forest Design Plans. Consider with English Nature the potential SSSI status of the whole area of wood-pasture during period of this plan.

Savernake Forest. Implement conservation measures by conserving old/ancient trees and 50 ha grazing trial. In due course, and in the light of trial extend area under grazing management to c 300 hectares. Close monitoring of biological and management practicalities of the grazing trial.

Sherwood (Birklands). Implementation of the oakwoods restoration as planned. Consider with English Nature the status of the undesignated area of WP as potential SSSI during period of this plan.

Croft castle. Revise FDP in FY 1998-99 in light of this plan. Restore c 20 hectares rich in ancient oaks over next 10-20 years. Consider with English Nature the potential SSSI status of this area during life of this plan. Incorporate long term objective of restoring whole site to wood-pasture over next 100 years prior to return to NT at end of lease

Castle Hill and surrounds. Maintain SSSI area and ancient tree interest by freeing remaining trees from shade of adjacent plantation. Complete FDP for whole area restoring 75 hectares to ungrazed native wood-pasture over next 30-50 years. Consider with English Nature the potential for SSSI status of the undesignated areas during period of this plan.

Cannock Chase. Maintain existing ancient trees. Extend area to 10 ha contiguous native woodland.

13. National Trust Progress

(Paper tabled by Keith Alexander)

13.1 The National Trust has been contributing to the work of the HAP in a diversity of ways. Examples include (by action codings as listed in the HAP) the following:

- A major project is underway at Felbrigg Park in Norfolk to restore a derelict deer park; Grazing Animals Project and Ancient Tree Forum have already visited (5.2.5).
- A special project has been set up to investigate current livestock grazing practices in National Trust parks (5.3.1, 5.3.3, 5.5.2): the aim of the project is to identify the characteristics of stock grazing regimes and associated management in parklands that meet objectives of nature conservation, and, conversely, those which damage nature conservation interests.
- Maintenance pollarding of restored pollards has been initiated at Hatfield Forest (5.3.1, 5.3.3).
- A paper was presented to the meeting of the Group of Experts on the Invertebrates of the Berne Convention at Neuchatel in Switzerland in May. This reported on progress in the UK with the VTI and the new ATF/WT projects; examples of the VTI publications were distributed to delegates (5.4.1).
- The Trust has allocated a large sum of money for survey projects which contribute to the UK Biodiversity Action Plan (5.5.3).
- Projects relevant to this particular HAP and Action Point have included saproxylic invertebrate surveys at Hatfield Forest, Essex, Studley Royal, North Yorkshire, Whiddon Deer Park, Devon - this survey has already discovered a *Loricula* bug new to the UK list.
- Individual NT properties are also funding their own surveys, for example work at Kingston Lacy Oaks, Dorset has already revealed a new site for the RDB bracket fungus *Piptoporus quercinus*.
- Livestock Grazing Project (see above) (5.5.6).
- Another project is being set up to look at the use of de-wormers and other veterinary drugs, using a contract veterinarian (5.5.6).

Funding developments

Summary

In England Countryside Stewardship grant can be used for work on historic parkland. Their potential to deliver Habitat Action Plan targets needs further development.

Discussions have been held about a possible Heritage Lottery Bid. A contract should be let to collect further ideas and information before Christmas.

14. Countryside Stewardship

(Presentation by Fiona Gough)

- 14.1 FRCA is an executive agency of MAFF responsible for the technical delivery of agri-environment schemes such as Countryside Stewardship (for details see application pack). Under stewardship there are possibilities to pay for work in historic parks, traditional orchards, but also for work on veteran trees in hedgerows. In broad terms payments can be made to private owners and local authorities, but not English Nature or other exchequer-funded bodies.
- 14.2 Payment is for restoration of parkland, not for ongoing maintenance of working systems. Up to 80% of the costs of a management plan can be paid: this must cover non-biological as well as biodiversity issues. The scheme is discretionary: projects will be judged against criteria including whether the public will be able to enjoy the results; wildlife gain; evidence that restoration is feasible.
- 14.3 Potential works that might be covered:
- pasture management;
 - arable reversion;
 - grassland buffers round veteran trees;
 - tree planting;
 - pollarding/tree surgery;
 - fencing/water provision for stock;
 - access provision.
- 14.4 The budget in 1996 for Stewardship was £5 million, which has gone up to £8.5 million in 1999. Substantial new funds (to £15 million for first year costs) will come in over the next six years through the Rural Development Plans. There are 10,000 existing agreements but it is difficult to split these by habitat type to get a feel for how CS has been used for parkland. Agreements run for 10 years which is useful for planning veteran tree work.

- 14.5 In Wales the Tyr Gofal Scheme (whole farm, rather than habitat orientated) does have a parkland prescription. Orchards can be included.

15. Possible HLF Bid for wood-pasture and parkland

(Presentation by Keith Kirby)

- 15.1 The success of *Tomorrow's heathland heritage* made many people wonder whether something similar could be done for parkland and wood-pastures. Informal discussions with the Heritage Lottery Fund staff indicated that they would be interested in such a bid. Progress has not, however, been as straightforward as we thought.
- 15.2 HLF continue to be encouraging but, following a change of policy, are almost certainly not going to allocate a separate pot to wood-pastures in the way that they did for heathland. Rather they are looking for us to produce a 'framework' which they would then use for judging wood-pasture projects that came forward. Note that both the grassland and woodland bids, that are further advanced than parkland ideas, have been hit in the same way.
- 15.3 This time last year there was a strong feeling that finance for management and restoration was a limiting factor and that an HLF bid was the only significant new 'pot of money' that could be tapped in to. Since then Countryside Stewardship has been expanded (see previous section) and we need to explore more fully what this can cover in theory and practice, and how, if we still go for an HLF bid, it would mesh with Countryside Stewardship.
- 15.4 In some initial discussions last autumn between the agencies in England there were differences in approaches to what we might look for in an HLF bid. There seemed little point in going out to wider consultation until these were resolved, which they now have.
- 15.5 English Nature, Countryside Agency and English Heritage are therefore proposing the following approach. A contract will be let to:
- come out to the Advisory Group (and others) to see (a) what the broad extent of the resource is and (b) what could be done with increased funds;
 - assess whether the potential projects are ones that seem likely to attract HLF funding;
 - work with FRCA and others to explore the practical limits of Countryside Stewardship and what therefore HLF funds (or other sources) would need to cover;
 - draft the basis for an HLF framework bid around these which we will then put back to you.

We will then revise this in light of comments received for submission in summer 2001 if we have agreement that this is worth doing.

15.6 In discussion there was concern that action and activities should not be driven by HLF, but should follow the priorities in the Plan. Other funding sources should also be explored. On the other hand it was recognised that the cultural aspects of parkland made this a very attractive proposition for HLF.

Developing the HAP

Summary

A work plan needs to be developed and a draft is available for consultations.

16. Draft work plan

(Keith Kirby)

- 16.1 As part of the BAP bureaucracy the lead partner (English Nature) has to draw up a work plan for delivering the targets and actions within the published habitat action plan. I have looked at the various proformas being developed and do not find any of them particularly easy to work with. So here is my approach which may or may not be better.
- 16.2 For each of the target and action statements (see Appendix 1) within the plan I have produced a short statement of the outcome: ie if this is delivered what would we have in place that is not there now and how would we know if we have succeeded or not to know if we have succeeded or not.

So, for example:

4.1.1 Protect and maintain the current extent (10-2000 ha) and distribution of lowland wood-pasture and parkland in a favourable ecological condition

becomes output/income:

4.1.1 Estimate of current extent, distribution and condition of wood-pasture.

To assess whether we have achieved this or not we then need projects that will deliver:

- *National data-base (2002);*
- *county/local based surveys (2000 ongoing, but key counties covered by 2005).*

The projects then become the elements of the work programme to be taken forward by the partners in the HAP.

- 16.3 Similarly for the actions to support the above targets (section 5 of the plan)

Action:

5.1.1 Implement the conclusions of the 1994 review of Tree Preservation Orders (TPO), including amendments to the Town and Country Planning Act 1990, to offer appropriate protection to veteran/dead trees. (Action: DETR)

becomes the outcome:

5.1.1 VTs given sympathetic treatment under TPO system

with the following projects:

- *Part of 1994 review implemented 1999.*
- *Re-visit key remaining aspects (TPOs) 2001/2002 (link with 5.1.2, 5.1.3).*
- *Lobby for parliamentary time as necessary (2002).*

16.4 I think this makes it clearer what needs to be done and when it might fit into this programme.

16.5 The following pages represent the published action planning this format.

16.6 I would be interested in comments by the end of January on whether what you are doing fits in with this sort of structure. I will then convene a working group to pull together the comments.

Target No	Output/outcome	Projects	Comments
4.1.1	Estimate of current extent, distribution and condition of wood-pasture.	<ul style="list-style-type: none"> National data-base (2002) (various) County/local based surveys (2000 ongoing, but key counties covered by 2005). 	Surveys, restoration work, new creation are likely to be organised locally; in some cases on a site-by-site basis. The key requirements initially seem to be a way of recording where and what is going on, with a more targeted programme to fill gaps from 2003 onward.
4.1.2	An active programme of restoration work over at least 2,500 ha (2010).	<ul style="list-style-type: none"> Register of restoration work (2001). 	
4.1.3	500 ha of expansion of new wood-pasture initiated (2002).	<ul style="list-style-type: none"> Register of new work (2002). 	
Policy and legislation			
5.1.1	VTs given sympathetic treatment under TPO system.	<ul style="list-style-type: none"> Part of 1994 review implemented 1999. Revisit key remaining aspects (TPOs) 2001/2002 (link with 5.1.2, 5.1.3). Lobby for parliamentary time as necessary (2002). 	Further changes to TPOs will need the support of DETR for new legislation. Hard evidence is needed that veteran trees are being lost under the current rules <i>and</i> that a change of rules would reduce this loss.
5.1.2	VTs given special treatment under felling licences.	<ul style="list-style-type: none"> Review felling licence practice (2002/3). Lobby for change as needed (2003). 	Similar position to above, except that Forestry Commission need to be involved.
5.1.3	VTs given special treatment with respect to public liability/safety issues.	<ul style="list-style-type: none"> Review in light of outcome of CROW bill (2001/2). Lobby for change as needed (2002). 	The CROW bill may reduce the burden of liability on land-owners generally or at least provide precedent for doing so.
5.1.4	HSD Annex I category for wood-pastures etc.	<ul style="list-style-type: none"> In abeyance as no opportunity to alter Annex at present. 	
5.1.5	Support for VTs and woodpasture in incentive schemes.	<ul style="list-style-type: none"> Work on Stewardship (2000/01). Develop other sources of funds eg HLF (2001/02) Review of gaps in other schemes (2001/02). 	Increase in the monies available for Stewardship have changed the financial landscape - hence need to review. HLF may prove a useful additional source, but preparatory work needed.
5.1.6	CAP support for extensive pastoralism including wood pasture.	<ul style="list-style-type: none"> Review change to area based payments (2001/2). Input to mid-term review (2002/3). 	Not clear that there is much scope for wood-pasture in here; watching brief within other work on CAP.

5.1.7	Guidance about wood-pasture and VTs in PPGs and other planning documents.	<ul style="list-style-type: none"> ● Trees and woodland circular (2000/01). ● PPG9. 	Significant opportunities to modify these over the next year; discussions in England being organised via working groups of the England Forestry Forum. Position in Scotland Wales and NI?
5.1.8	Simplified procedures for fencing on commons.	<ul style="list-style-type: none"> ● Review policy and practice (2001/02). ● Seek to implement recommendations (2002 onward). (Link to 5.2.5) 	Mixed results from recent attempts to get fencing for conservation grazing on commons.
Site safeguard and management			
5.2.1	Adequate SSSI coverage of habitat/species assemblages.	<ul style="list-style-type: none"> ● Review of current coverage (2000/02), ● Identify gaps (2001/02). ● Programme for filling 2002 onward. 	Ongoing work on review of SSSI series by the agencies.
5.2.2	SAC list sites designated (2004).		
5.2.3	Increased funding for buying/managing sites.	<ul style="list-style-type: none"> ● Possible HLF bid (2000/01). ● Review other sources (2001/02) 	Work should not be funding-led, but there is a need to be aware of what different sources can offer.
5.2.4	Long-term integrated plans for key sites.	<ul style="list-style-type: none"> ● Model formats/procedures developed (2001/02). ● Register of uptake 2002 onward (link to 4.1.2, 4.1.3). 	The proposed register of sites where work is going on will form a basis for then developing model plans.
5.2.5	Re-establishment of grazing and new tree establishment.	<ul style="list-style-type: none"> ● Guidance on best practice on grazing restoration (2001/02). (Link to 5.1.8). 	Link to work of the Grazing Animals Project (GAP) and build on National Trust survey (2000/01)
5.2.6	Restoration of former wood-pasture on arable/plantation sites.	<ul style="list-style-type: none"> ● Guidance on restoration best practice (2001/02) (link to 4.1.2, 4.1.3). 	Use experience of work at Felbrigg, Burnham Beeches, Savernake etc.
5.2.7	Expansion of wood-pasture in targeted areas.	<ul style="list-style-type: none"> ● Guidance on target areas (2001/02). (Link to 4.1.3, 5.2.6). 	Use data-base and key species distributions to identify priority areas.
5.2.8	Integration of HAP with relevant species plans.	<ul style="list-style-type: none"> ● Review of links to SAPs (2001/02). ● Guidance on incorporating relevant species needs (2001 onward). 	Work on key species going on via Species Recovery Programme (particularly on saproxylics).

5.2.9	Translocation of key species where appropriate.	<ul style="list-style-type: none"> ● Review of relevance of translocation (2002/03). ● Programmes for translocation (2005 onward). 	Not clear whether this really is an appropriate activity.
Advisory			
5.3.1	Handbooks on best management practice.	<ul style="list-style-type: none"> ● Reprint VTI booklets as needed (2001/02). ● Review need for new guidance 2003/4 (see also 5.1.8, 5.2.4, 5.2.5, 5.2.6). 	Major distribution of VTI publications taking place at present.
5.3.2	Clear guidance on best practice <i>viz a viz</i> safety.	<ul style="list-style-type: none"> ● Distribute/reprint VTI Safety Guidance (2000 onward). ● Produce revised guidance notes 2003/4. 	
5.3.3	Training available on best practice with respect to wood-pasture management for site owners, managers, advisory staff.	<ul style="list-style-type: none"> ● Promotion of VTI and other literature to courses, colleges etc (2000 onward). ● Ongoing programme of field based demonstration days. ● Review uptake and progress (2002/3). 	ATF taking forward demonstration day programme.
International			
5.4.1	Estimates of European habitat extent and distribution.	<ul style="list-style-type: none"> ● Build networks (2000 onward). ● Review extent/distribution (2002/03). ● Conference on management and conservation (2004/05). 	Considerable links already exist at personal levels; build on these and fora such as international saproxylic conference in 2001; training course being organised by C.o.L. in 2001.
5.5.1	List of sites, sources and evaluation, linked to NBN (2002).	<ul style="list-style-type: none"> ● National database (2002). ● County-based surveys (2000 ongoing; key counties covered by 2005). (Also included in 4.1.1). 	Phase 1 of data-base build nearing completion; phase two to be started.

5.5.2	Standardised recording and condition assessment procedures available and being used.	<ul style="list-style-type: none"> Develop generalised condition assessment for wood pasture (2000/01) (see also 4.1.1). Promote recording and condition assessment (2001/02). Collate results and report (2002/03). 	Condition assessment being developed for woodland SSSIs; work on extension to wood-pastures and parkland needed.
5.5.3	Surveys of “underworked” sites by 2005.	<ul style="list-style-type: none"> Identify priorities for surveys (2001 onward). Survey programme for targeted sites (2002/05). 	Use information from data-base, county surveys etc.
5.5.4	VT recording results from SSSIs & Wildlife sites fed into NBN.	(Link to 5.5.2).	
5.5.5	Results from surveillance and monitoring fed into BAP reporting process.	<ul style="list-style-type: none"> Input to 2002 report (2002/03). Input to 2005 report (2005/06). 	Part of BAP bureaucracy
5.5.6	Expanded national research programme on wood-pasture and related topics.	<ul style="list-style-type: none"> Develop a port-folio of c15 potential MSc/Ph.D projects on key topics and circulate this to relevant institutions (2001/02). 	
Communications and publicity			
5.6.1	Increased awareness of importance and vulnerability of resource.	<ul style="list-style-type: none"> Regular series of articles, news releases (2-3 a year). (2000 onward). (Possible outlets: QJF, Tree News, EN magazine, F&BT, Timber Grower, Arboricultural Journal, Biodiversity News, Broadleaf, IEEM Bulletin, BES Bulletin, Heartwood). Establishment of web-page (2000/01). (Links to 5.3.1, 5.3.2, 5.3.3, 5.2.5, 5.2.6). Establish contact with relevant LBAP groups (2000/01). 	See ENACT Vol 8(3) Autumn 2000, as an example.
5.6.2	Increased awareness of VTs and their appropriate management.	<ul style="list-style-type: none"> (Effectively covered by 5.6.1, 5.3.2, 5.1.3, 5.3.3). 	

Appendix 1 Targets and actions from the plan

Targets

- 4.1.1 Protect and maintain the current extent (10-20,000 ha) and distribution of lowland wood-pasture and parkland in a favourable ecological condition.
- 4.1.2 Initiate in areas where examples of derelict wood-pasture and parkland occur a programme to restore 2,500 ha to favourable ecological condition by 2010.
- 4.1.3 By 2002 initiate the expansion of 500 ha of wood-pasture or parkland, in appropriate areas, to help reverse fragmentation and reduce the generation gap between veteran trees.

5. Proposed action with lead agencies

5.1 *Policy and legislation*

- 5.1.1 Implement the conclusions of the 1994 review of Tree Preservation Orders (TPO), including amendments to the Town and Country Planning Act 1990, to offer appropriate protection to veteran/dead trees. (Action: DETR)
- 5.1.2 Examine felling consent/licensing policy to consider whether additional protection for parkland, wood-pasture and individual veteran trees is needed. (Action: FA)
- 5.1.3 Examine whether improvements should be made in safety legislation, with respect to liability on owners in the event of injury or damage resulting from old trees, and its interpretation to reduce any unnecessary felling of trees on safety grounds. (Action: DETR, FA)
- 5.1.4 If Annex I of the EC Habitats Directive is revised ensure that it provides adequate coverage of UK parklands and wood-pasture habitats and species assemblages. (Action: DETR, JNCC)
- 5.1.5 When reviewing existing incentive schemes (eg Countryside Stewardship, Woodland Grant Scheme/Woodland Improvement Grants, ESAs, Coed Cymru) attempt to ensure they enable and encourage the most appropriate management of parklands and wood-pasture, with their ancient trees. (Action: CCW, EN, FA, MAFF, SNH, SOAEFD, WOAD)
- 5.1.6 Promote modification of the Common Agricultural Policy to recognise and promote extensive pastoral systems, including wood-pasture. (Action: CCW, DETR, EN, MAFF, SNH, SOAEFD, WOAD)
- 5.1.7 Provide specific guidance about parklands, wood-pasture and individual veteran trees in Planning Policy Guidance notes (PPGs) by 2001. (Action DETR, SNH, SOAEFD)

- 5.1.8 Review policy and practice regarding fencing of registered commons to allow reinstatement or control of grazing in wood-pasture commons, but without impediment to access by 2001. (Action: CC, DETR, FA, FE)
- 5.2 *Site safeguard and management*
- 5.2.1 Ensure that SSSI coverage of important lowland wood-pasture and parkland sites is adequate through periodic review of the series. (Action: CCW, DETR, EN, SNH, SOAEFD, WO)
- 5.2.2 By 2004 designate those lowland wood-pasture sites approved by the EC as SACs under the Habitats Directive. (Action: CCW, DETR, EN, JNCC, SNH, SOAEFD, WO)
- 5.2.3 Encourage applications to buy and manage appropriate sites from potential funding sources. (Action: CC, CCW, EH, EN, SNH)
- 5.2.4 Encourage the development and implementation by 2004 of long-term integrated management plans for conservation and use of parklands and wood-pastures through agreements with site owners and in partnership with statutory wildlife, landscape and heritage agencies. (Action: CC, CCW, EN, FA, MAFF, SNH, SOAEFD, WOAD)
- 5.2.5 Promote re-establishment of grazing where appropriate in derelict wood-pasture and encourage the development of subsequent generations of veteran trees in all sites. (Action: CCW, EN, MAFF, SNH, SOAEFD, WOAD)
- 5.2.6 Promote the restoration of wood-pasture and parkland where old trees remain in former sites that are now arable fields or forestry plantations. (Action: CCW, FE, MAFF, WOAD)
- 5.2.7 By 2002 initiate programmes to expand parklands and wood-pasture sites in targeted areas. (Action: CC, CCW, EH, EN, FA, SNH)
- 5.2.8 Contribute to the implementation of relevant priority species action plans, through the integration of management requirements and advice, in conjunction with relevant steering groups. (Action: CCW, EN, MAFF, SNH, SOAEFD, WO)
- 5.2.9 Consider (re)establishment of key species dependent on veteran trees via translocation. (Action: CCW, EN, FA, FE, SNH)
- 5.3 *Advisory*
- 5.3.1 Develop a handbook(s) on best practice in management of parklands and wood-pasture in relation to wildlife, heritage and landscape conservation. (Action: CCW, DETR, EN, FA, SNH)
- 5.3.2 Develop clear guidance on safety-related risk assessment and reasonable practice, in conjunction with relevant landowners and management groups. (Action: DETR, FA)

5.3.4 Encourage training in best practice in park and wood-pasture management for site owners, site managers, land-agents, foresters, arboriculturalists and also for advisors and incentive scheme managers. (Action: CCW, EN, FA, MAFF, SNH)

5.4 *International*

5.4.1 Develop links with European organisations and programmes, such as the European Forestry Institute, the European Environment Agency and the European Centre for Nature Conservation to obtain estimates of the extent and distribution of comparable and related habitats, and exchange experience on research and management, by 2000. (Action: CCW, EN, FA, JNCC, SNH)

5.5 *Monitoring and research*

5.5.1 Produce a comprehensive list of all parkland and wood-pasture sites with pointers to other data sources and evaluations relating to both the natural and cultural heritage of each site, by 2002. Make this information available, through a data catalogue linked to the National biodiversity Network. (Action: CC, CCW, EHS, EN, JNCC, SNH)

5.5.2 Develop and implement methods to assess the condition of wood-pastures and parkland by 2000 and encourage standardised recording and monitoring of tree population age structure, survivorship and condition at key sites across the country in order to identify site specific and general trends. (Action: CCW, EHS, EN, FC, SNH)

5.5.3 Undertake a programme of targeted surveys of the biological interest of sites where lack of information is impeding their appropriate management, by 2005.

5.5.4 Ensure veteran tree recording is reflected in SSSI and Wildlife Site reporting and is input, as it becomes available, into local record centres as part of the National Biodiversity Network initiative. (Action: CCW, EN, FC, JNCC, SNH)

5.5.5 Develop and implement appropriate surveillance and monitoring programmes to assess progress towards action plan targets. (Action: CCW, EN, JNCC, SNH)

5.5.6 Encourage research into parkland and wood-pasture flora, including trees, and fauna in relation to tree and pasture management, including interactions and with invertebrates, fungi, soils, ground water levels and grazing animals and population dynamic studies. Ensure such research is co-ordinated with cultural heritage research. (Action: CCW, EH, EN, FC, SNH)

5.6 *Communications and publicity*

5.6.1 Increase awareness of the national and international importance and vulnerability of wood-pasture and parklands by promotional literature and events and encourage celebration of parkland and wood-pastures via the arts and media. (Action: CCW, EH, EN, SNH)

5.6.2 Increase awareness of the value in protecting veteran trees where these may be threatened by felling, for safety reasons, and promote alternative solutions such as pollarding or tree surgery. (Action: CCW, EHS, EN, FA, LA, SNH)

Appendix 2 Advisory group meeting - 7 July 2000 - Programme and attendees

Agenda

AM

9:30	Introduction	Keith Kirby, EN
9:40	Progress in England	Helen Stace, EN
9:50	Progress in Scotland	Kate Holl, SNH
10:00	Progress in Wales	Hilary Miller, CCW
10:10	Parkland/Wood-Pasture database development	George Boobyer, Blue Bag
10:35	Parkland/Wood-Pasture survey methodology	John Webb, SWT
11:00	Links to saproxylic species work	Oliver Cheeseman, CABI
11:25	Upland wood-pasture	Peter Quelch, FE

PM

12:05	LUNCH (inc opportunity to network/database demo)	
1:30	Landscape and historical developments	Jennifer White, EH
1:55	Ancient Tree Forum development/Veteran Tree management	Vikki Forbes, NT/ Helen Read, CoL
2:20	Forest Enterprise restoration projects	Jonathan Spencer, FE
2:45	Countryside Stewardship Scheme	Fiona Gough, FRCA
3:10	Heritage Lottery Fund bid development	Keith Kirby, EN
3:30	Final discussion	led by Keith Kirby, EN
4:00	CLOSE	

Guest speakers

Helen Read	Corporate of London
Vikki Forbes	National Trust
Fiona Gough	Farming and Rural Conservation Agency
Peter Quelch	Forestry Commission
Hilary Miller	Countryside Council for Wales
Helen Stace	English Nature
Jennifer White	Countryside Agency
Oliver Cheeseman	CABI Bioscience
Keith Kirby	English Nature
Dominic Tantram	Blue Bag Ltd
George Boobyer	Blue Bag Ltd
Jonathan Spencer	Forestry Enterprise
Jonathan Webb	Staffordshire Wildlife Trust
Kate Holl	Scottish Natural Heritage

Attendees

Chris Reid	English Nature
Ted Green	Ancient Tree Forum
Roger Key	English Nature
Rob Green	The Countryside Agency
Carl Borges	English Nature
Alan Stubbs	Biodiversity Challenge
Mike Smith	Borders Forest Trust
Anna Juvonen-Lettington	University of Birmingham
Wanda Fojt	English Nature
Alethea Wilson	Leicestershire County Council
Jean Johnson	English Nature
Richard Smithers	The Woodland Trust
Fred Currie	Forestry Commission
Gillie Sargent	Bat Conservation Trust
Melanie Heath	English Nature
Raymond Uffen	JCCBI & British Entomological & Natural History Society
David Lambert	Garden History Society
Steve Clifton	English Nature
Neville Fay	Ancient Tree Forum
Neil Sanderson	British Lichen Survey
Paul Harding	Centre for Ecology and Hydrology
Nick Hodgetts	Joint Nature Conservation Committee
Dr Della Hooke	Society for Landscape History

Appendix 3. Lowland parkland and wood-pasture information source

Background

English Nature is Lead Partner for the UK Biodiversity Action Plan Habitat Action Plan for Lowland Wood-pasture and Parkland. The biological objectives for this habitat, more than any other listed under BAP, intertwine intimately with cultural and historical interests. There is an abundance of information on each of the subject areas of interest but it is largely fragmentary, incomplete and widely dispersed and uncatalogued. Integration of information on all aspects of the heritage interest of parkland and wood-pasture sites is needed to inform management planning, determine resource needs and target effort. A scoping study for the Lowland Wood-pasture & Parkland information system was undertaken by Mr C.J.T. Copp of Environmental Information Management. It included a data model compatible with that of the National Biodiversity Network (NBN) and access to the other sources of information via the JNCC NBN Gateway. This information Source represents a challenging development of the approach to methods of data access and data management within and between conservation agencies. Work on this phase of the project is funded jointly by English Nature and the Countryside Agency.

Aims/objectives of the project

To improve understanding of the resource of parkland and wood-pasture and to ensure an integrated approach to management for the various heritage interests, by:

- providing a single point of access to an integrated system of pointers to information sources, evaluations and management plans of the various heritage interests of parkland and wood-pasture sites;
- enabling a national overview of the resource of these habitats/landscapes, its extent and gaps in knowledge about it and issues affecting it.

To fulfill a requirement, under the UK Biodiversity Action Plan Habitat Action Plan for Lowland Wood-pasture & Parkland, to provide information upon which to integrate the various management objectives for sites.

The overall objective of phase I of the project is to complete a functional index and database with perhaps a single simple data source imported will give other partners a realistic view of what they are being asked to sign up to in a funding consortium to complete the project.

Methods

Within F/Ys 1999/2000 and 2000/2001, this includes:

- design and build of the Lowland Parkland and Wood-pasture Index and Lowland Parkland and Wood-pasture Database;
- the application should be able to communicate directly with data at partner organisations (see appendix for list). It should therefore have as much communicability as is practicable with relevant existing and imminent datasets;
- data sources to be investigated for indexing are given in the appendix to this annex. Exploratory approaches have already been made to holders of major datasets.

It is imperative that the software application and underlying data is designed from the outset to be *fully* compatible with English Nature's data strategy and Intranet system and with the National Biodiversity Network. The index should use the NBN Gateway technology as developed as part of the JNCC project.

Documentation of the index and database will be considered sufficient for a final report on the work.

Future phases of the contracted work

Further phases of the project will be:

1. Building an Internet module to connect the database to the data sources and enable reporting on the database.
2. Enabling spatial access and mapping of the data/documentation of the software and training in its use.
3. Population of the database from the partners data sources and longer term maintenance of the data. Two options are currently being considered for this:
 - in-house data storage on an English Nature server and fixed term appointment data officer to collate/enter data, followed by occasional part-time casual work to maintain and update the data catalogue;
 - use of an external data custodian on rolling programme of contracts initially to collate and then enter data and then maintain it up-to-date. Within this option is the possibility of housing the data with English Nature's existing Web and map information, or setting the catalogue/information system up as a separate entity.

Organisations with data on Lowland Park & Wood-pasture

*asterisked organisations are key end-users who must be included in consultation over the index and database

***English Nature** - NNRs, SSSIs and other statutory wildlife designations. (The English Nature Information Service - TENIS), Ancient Woodland Inventory and Grassland & Heathland Inventories (the latter inventories may have some overlap).

***English Heritage** - Register of Parks & Gardens of Special Historic Interest and Sites & Monuments Records.

***Countryside Agency** - have produced tables of digitised outlines of all sites identified as parkland by the Ordnance Survey in 1918 and recently, which could be aligned with site names within the York database and used as a basis for the initial data population within the database.

***Joint Nature Conservation Committee** - Lower Plants Sites Register (bryophytes & lichens). Overview of The Invertebrate Site Register (on AREV version of Recorder) although data maintenance is undertaken by EN, CCW and SNH. Contact point for NBN collect/collate software development.

***UK Database of Historic Parks and Gardens (at York University)** - has website indexing parks and gardens in whole UK and may form an invaluable interchange point between biodiversity and human heritage data sources for this habitat.

***National Trust** - biological information held by the Conservation Evaluation Team, Cirencester (who will be able to advise on the appropriate contacts for other sections of the National Trust with information on other heritage aspects of parks and wood pasture).

***Forestry Commission** - Wood-pasture sites.

***Corporation of London** - Data on a number of important pasture woodland sites, eg Burnham Beeches, Ashted Common & Epping Forest.

***Staffordshire Wildlife Trust** - An important pilot project surveying and documenting the biological interest of parks and wood-pastures in Staffordshire is being undertaken by the Trust in association with English Nature. There should be liaison between this project and the contractors of the Lowland Parkland and Wood Pasture index and database in order to exchange ideas and protocols and inform both the survey design and methodology and the design of the database.

***Scottish Natural Heritage** - Priority lichen, bryophyte, fungi and algal sites in Scotland database.

***Historic Scotland** - Inventory of Historic Gardens and Designed Landscapes.

***Countryside Council for Wales** - Registers of Parks and Gardens of Historic Interest in Wales. The Invertebrate Site Register has separate database of important parklands.

***Cadw** - They have not so far been contacted directly.

***Environment & Heritage Service (Northern Ireland)** - Data source on Historic Monuments.

***Crown Estates Commissioners** - Windsor Forest & Great Park & Dunster Park (Somerset).

The Royal Parks - There may be data on Richmond & Bushy Parks and other London Parks.

British Lichen Society

British Mycological Society

British Bryological Society

Biological Survey of Common Land - This includes wood-pasture commons and may be the primary source for data on this habitat.

Appendix 4. Lowland Parkland and Wood-pasture Information System

Background

Lowland Wood-pasture & Parkland is a priority habitat under the UK Biodiversity Action Plan (BAP) - it is an extremely important habitat for a wide variety of wildlife, including species of invertebrates and fungi that are also listed as priorities on the Plan. Parklands and wood-pastures are also exceptionally important for their landscape and historical heritage values. Many sites bear statutory designations and protection as Sites of Special Scientific Interest and Registered Landscapes.

English Nature is the Lead Partner for the Habitat Action Plan for Lowland Wood-pasture & Parkland. There is an abundance of information on each of the areas of interest but it is largely fragmentary, widely dispersed and uncatalogued. We all need integration of this information better to inform planning and site management, to determine resource needs and to target effort.

To that end, we are preparing a Web-based Information System to enable 'single point of entry' access to as much of that data as possible, either in summary or sometimes in its original form.

Work on the Information System is being undertaken by Environmental Information Management (EIM) and Blue-Bag Ltd. Our approach is to develop a data model compatible with the National Biodiversity Network (NBN) and to access the other sources of information via the Joint Nature Conservation Committee's (JNCC) NBN Gateway.

The end result will be an information system where it will be possible to find out which organisations have interest in any particular site, who holds what data on its wildlife and heritage features, how it has been evaluated and what statutory designations may apply. Additionally it will enable us to identify gaps in our knowledge and help circumvent possible conflicts with the aim of gaining a fully integrated approach to the management of parks and wood-pastures throughout the UK.

The Information Source is a new and challenging development of methods of data access and data management within and between conservation bodies and the 'outside world'. Work on this phase of the project is funded jointly by English Nature and the Countryside Agency.

We want to know about your data!

Work on the project is being phased. The web-based index and related database are now under development.

Many organisations hold and manage relevant data and also need access to summaries of other's holdings. The collection of 'metadata' - data about your data - is essential to evaluate the quantity, quality and nature of relevant information held by different organisations throughout the UK. The next phase of the project will be to gain access to the actual data.

The 'metadata' (summarising relevant data holdings) will be collated and will form an 'index' to information in the database, ultimately available over the Web.

The metadata is also needed to refine the development of the database itself. We would also like to acquire copies of some real data to put into the database for testing and demonstration purposes.

You may already have been contacted or been involved in the project - we hope that you will think that the project is worthwhile and that you will be able to spare the time to tell us about the data you hold.

With this information sheet you will receive a 'metadata proforma'. This form is essential to gather the basic metadata in a form compatible with the NBN and so link your data to the project. Guidance on how to complete this form is included and is also available from the project web site (see Contacts).

If you know of a potentially relevant data source or organisations not listed below please let us know - contact Dominic Tantram.

Core data-holding organisations

English Nature	Corporation of London
English Heritage	Crown Estates Commissioners
Scottish Natural Heritage	The Royal Parks
Historic Scotland	UK Database of Historic Parks and Gardens (at York University)
Countryside Council for Wales	Forestry Commission
CADW	The Wildlife Trusts
Environment & Heritage Service (Northern Ireland) Countryside Agency	British Lichen Society
Joint Nature Conservation Committee	British Mycological Society
Countryside Agency	British Bryological Society
National Trust	Biological Survey of Common Land

Contacts

For more information on the project contact the Project Officer: Dr Roger Key at English Nature, Tel. 01733 455000. roger.key@english-nature.org.uk

For enquiries related to the Metadata Collection exercise contact: Dominic Tantram at Blue-Bag Ltd, Tel. 01604 882 673. dominic@blue-bag.com

For ongoing information visit the project web site: www.ukwildlife.com/metadata/parks

Appendix 5. Notes arising from a meeting to discuss *Conservation of UK saproxylic invertebrates and their habitats (London, 23 March 2000)*

Meeting participants

Keith Alexander	Derek Lott
Roger Booth	Howard Mendel
Oliver Cheeseman	John Owen
Tony Drane	David Phillips
Peter Hammond	Clare Robb
Peter Holmes	Ian Sims
Steve Judd	Matt Smith
Anna Juvonen-Lettington	Alan Stubbs
Joan Kelley	Maurice Waterhouse
Roger Key	Paul Whitehead
Brian Levey	Imogen Wilde

1. Target species

Some useful discussion of the distribution and ecological requirements of some of the 12 (UK BAP) target species took place.

Given the huge numbers and diversity of saproxylic invertebrate species overall, a smaller group of nominated target species was seen as having potential value, in providing:

- 'Flagship' species, as a vehicle for promotion of saproxylic invertebrates in general;
- a basis for rapid and straightforward site monitoring and assessment;
- an 'umbrella' group, research on the ecological needs of which could produce valid, general recommendations (eg for best practice in site management).

In any of these areas, the challenge would be to render the task:

manageable (by reducing the number of species which have to be addressed, but meaningful (by not reducing the number of species so far that the target group becomes unrepresentative).

Different target groups might be appropriate for different tasks. The BAP group of 12 species of Coleoptera may not be by itself adequate for any of these purposes.

Can any small target group be adequate, particularly in relation to research? The potential for meaningful generalisations is confounded by the sheer number and diversity of species involved and, for example, differences in a species' ecology across its range - many British species are at the edge of their range here, and appear to display extreme specificity in their requirements. The ability to judge whether generalisations can realistically be made (let alone

determine which species are more or less representative of larger suites of species) is impeded by the lack of ecological information available.

Although many valuable observations have been made, little information is in the public domain. Species records are often accompanied by only vague descriptions of the locality from which a specimen was taken - for example, 'under bark' or 'in dead wood'.

Consequently, ecological understanding has not advanced as far as it might have done. It was clear that an important first step would be to agree a standard nomenclature for saproxylic microhabitats, and to promote its use amongst recorders.

Actions required

- A standard, precise nomenclature to be developed for saproxylic microhabitats.
- More precise ecological observations to be made when collecting species records.
- Formulation of manageable but meaningful groups of target saproxylic species to assist in promotion, site monitoring and assessment, or research towards site management recommendations.

2. The importance of nectar sources

It should be noted that for much of the discussion, nectar and pollen sources were treated as more or less synonymous.

This subject was discussed, initially at least, from the 'devil's advocate' position: nectar sources are thought of as ecologically important for saproxylic invertebrates, simply because flowers (notably hawthorn) have long been important foci for collecting the adult life-stages (particularly of beetles).

In support of this suggestion are the observations that:

- some sites appear to be very poor for nectar sources, but still support a good saproxylic fauna;
- at least some species have been successfully reared, and bred, without the opportunity to feed on nectar or pollen (although, in some cases, additional protein sources, including cheese, have been offered and accepted in the larval diet);
- the larval diet of predacious species is not protein poor (reducing the likelihood of a reliance on pollen feeding by adults, although adult beetles tend to be better adapted for pollen feeding than nectar feeding);
- some adult life-spans are very short, and adults may not need to feed at all.

Nonetheless, there appeared to be a persistent sense that nectar sources were important for saproxylic invertebrates. Although nectar sources may not be needed by certain species, their exploitation might still enhance development (pollen as protein), or dispersal potential (nectar as 'fuel'). Other species may use flowers as mating assemblage points as much as for

nutrition. The structural qualities of nectar plants may also be significant, in providing cover for certain species.

Hawthorn should not be the only nectar source considered important, and the potential importance of other sugar sources (honeydew, sap runs) was noted. The dispersal ability of saproxylic species may also be significant when it comes to developing management recommendations - if nectar sources are important, how close need they be to centres of population of saproxylic invertebrates to be of any use?

The need for better understanding in this area, not least to inform management strategies, was agreed.

Actions required

- Experimentation with captive populations of key species, to assess the influence of pollen/nectar on development.
- Investigation of the respective 'catch' from a range of nectar sources (and from night versus day), to assess which saproxylics are associated with which nectar sources in the field.

3. Dead wood/fungus/invertebrate interactions

This was seen as a key area, with fungi providing direct nutrition, or promoting favourable physical environments, for many saproxylic invertebrates. In some cases, fungus-insect associations may be highly specific, but in others (even in species such as *Limoniscus*, where rarity might imply such a specificity) this appears less likely. This species, and others, seems to be associated with generic wood mould, which is difficult to characterise in terms of its mycota. Bacteria may be important in such situations. Such cases also remind us that state of decay may be more important than the particular biota present and contributing to the decay.

The presence of particular fungi may also be important in the process of invertebrate colonisation of decaying wood, if their volatile secondary metabolites provide an olfactory oviposition cue for adult females. Very little is known about this, but there is a logic in females using olfactory (rather than visual) cues to locate concealed microhabitats. Although speculative, this might provide an answer to the apparent rarity of some key beetle species. Although relatively easy to raise in captivity, suggesting that suitable larval substrate is not limiting, the species may be reliant on highly specific oviposition cue which is lacking from many (otherwise suitable) microhabitats.

A major problem appeared to be difficulty in adequately describing microhabitats (cf. the need for standard nomenclature, see above). Although probably able to recognise a small range of conspicuous fungi on dead wood, an entomologist rarely has the identification skills of a field mycologist, and even tends to describe generic 'rots' in a different way. Without fruiting bodies, the presence of a particular fungus is very difficult for anyone to determine.

As with the invertebrate fauna, there tends to be a succession of fungi occurring through the decay process. Many species may be involved, and the presence/absence of particular species

may, as with other invertebrates, be highly sensitive to the biotic and abiotic environment. Some fungi, like invertebrates, may be at the edge of their range in the UK.

The development of techniques to create 'artificial' habitats for saproxylic invertebrates was discussed, particularly in relation to Maurice Waterhouse's work on log piles and ring-barked sycamore. The presence of cavities in log piles, and holes drilled in water-runs down the trunk of ring-barked sycamore, appear to promote fungal colonisation and consequently populations of saproxylic invertebrates.

Actions required

- Improve communication between entomologists and mycologists, and raise entomologists' abilities to interpret fungi and fungal activity (cf. the need for standard nomenclature, see above).
- Elucidation of the role of specific (suites of) fungi in creating favourable conditions for saproxylic invertebrates, towards the development of valid management recommendations (including the manipulation of 'artificial' habitats).

4. The importance of abiotic factors

As with issues relating to the biotic environment in decaying wood (see above), there was general agreement that physical conditions are critical for many species, which may have narrow ranges of tolerance, but the ecological details are very poorly understood. Physical variables are often interrelated, and further interrelated with biotic variables. For the sake of structure, some general headings are used below.

Moisture/humidity

- May be critical in determining the suitability of a micro habitat for many species (supported by captive rearing, which may require very precise conditions).
- Very different conditions, across a wide range, are favoured by different species.
- Some species specialise on thoroughly wet substrates (as do some fungi).
- In the wood decay process, fungal activity may produce significant amounts of water.

pH

- Can be influenced by fungal activity (tending to acidify the substrate).

Temperature

- Likely to be important in influencing development times.

Sun

- As a broad generalisation, the fauna of dead wood in sun might be of preferential interest to coleopterists.
- Some aculeates appear to favour tree trunks in the sun (although others are found in shaded conditions, and presence/absence of bark may be just as important).

Shade

- As a broad generalisation, the fauna of dead wood in shade might be of preferential interest to dipterists.

Elevation

- There are differences in ground-level versus canopy communities of saproxylics.

The physical environment, and invertebrate community, supported by an isolated tree will be different from that supported by a tree in a forest situation. In a forest situation, local environments may become much more stable in their physical characteristics as one moves away from the forest edge. This indicates, for example, one potential impact of management to 'open up' a woodland habitat.

The role of physical factors in justifying the re-erection of recently fallen or felled trees was discussed at some length. However, firm conclusions were lacking. Experimentation was seen as a logical means of assessing the value (and ecological correlates) of this technique.

Actions required

- Experimentation to determine the importance of abiotic factors in rendering decaying wood suitable (or otherwise) for saproxylic invertebrates, towards more informed management recommendations.

Appendix 6. Proforma for commenting on Work Plan

1. Name & Address
2. Organisation
3. Particular interests in wood-pasture/parkland

.....

(a) Format

4. Does the format make it easier to understand what projects/tasks are needed to deliver the published targets and actions?

.....

5. Are there improvements you can suggest?

.....

.....

(b) Content

6. Do you feel that the targets and actions can be delivered by the projects listed?

.....

7. If not, what additional projects are needed? (Please give details in a similar format, if possible, to the Draft Plan in Section 16)

.....

.....

.....

(c) Your contribution

8. Are you working on tasks/projects that are contributing to the Habitat Action Plan that English Nature may not be aware of? Please give details below.

.....

.....

.....

Any comments or contributions by 31/1/01 to Keith Kirby, English Nature, Northminster House, Peterborough PE1 1UA. e-mail: keith.kirby@english-nature.org.uk