biodiversity

ACTION PLAN FOR LEEDS

A VISION FOR BIODIVERSITY IN LEEDS

A range of habitats, characteristic of the landscapes of Leeds, supporting both typical and rare species, contributing to regional and national biodiversity and providing an attractive and sustainable natural environment for leisure, education and work

b i o d i v e r s i t y

ACTION PLAN FOR LEEDS

Foreword

Biodiversity is one of the buzz words associated with sustainable development. Whilst many people perceive biodiversity to be a 'good thing' a lot of uncertainty surrounds it - what, exactly, is it?

Put simply, biodiversity is the 'living' part of the environment. It is the wealth and variety of all living things, including animals, fungi, plants and micro-organisms.

Today, more people are getting actively involved in caring for their local environment than ever before. Enjoying and conserving wildlife is a major pastime for many and is even the focus of many people's holidays.

The challenge for any local biodiversity action plan is to forge the linkages between the policies and scientific evidence, requiring plans and programmes of action, and the deep concern and appreciation that so many people have for a healthy, attractive and sustainable natural environment.

This biodiversity action plan is about that challenge. It is not a treatise, pondering all aspects of biodiversity in Leeds. It is about action, about achieving real physical changes to conserve the natural environment around us, to halt the decline of key habitats and species, and make good past losses.

As much as the success of this plan will be measured by numbers of plants and animals or areas of habitat, it must also be assessed by the opportunities we have to enjoy countryside rich in wildlife and a city with accessible wild oases.

The challenge of this plan is not simply one to which conservationists, farmers and planners must respond. Through the implementation of the present detailed plans and the development of others, there will be opportunities for members of all the communities of Leeds to contribute to and achieve gains for their local environment and for themselves.

COUNCILLOR ELIZABETH MINKIN
Executive Member
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What is biodiversity?

The term 'biodiversity' has become commonly used in recent years, yet many people remain uncertain as to exactly what it means.

Put simply, biodiversity is the 'living' part of the environment.

It is the wealth and variety of all living things, including animals, fungi, plants and micro-organisms, but also the communities and habitats they form together. It includes not only the variety that exists between different species but also the variation and differences between individuals of the same species.

The species and habitats that make up global biodiversity represent vital natural resources because of the foodstuffs, medicines and materials they provide and the genetic resources offer. Even more fundamental is the role that living things play in regulating the atmosphere and climate and in breaking-down and recycling waste. The aesthetic and spiritual value of the living world is also important and there is wide acceptance of the obligation to pass on to future generations the natural wealth that we have inherited. In addition, there is a moral argument to conserve biodiversity for its own sake.

Biodiversity is not just about rare or threatened species and habitats - it is equally concerned with ensuring that widespread and common species remain an integral part of a sustainable natural environment.

Biodiversity in Leeds

The biodiversity of Leeds is a major component of the district's varied landscapes. From the limestone ridge in the east, to the open moorland in the north-west and the urban core of Leeds itself; each landscape supports its own distinctive habitats and species which contribute much to local distinctiveness and character.

These broad areas, which are characterised by different suites of habitats and species, extend beyond the Leeds district. English Nature, the government body responsible for nature conservation, has produced a map of such zones, or 'Natural Areas', for England as a whole and this provides a framework for identifying the local significance of particular species and habitats, putting them into a wider geographical context.

Within Leeds there are parts of four Natural Areas: the Coal Measures; the Southern Magnesian Limestone; the Pennine Dales Fringe; and the Southern Pennines. A brief profile of each of these Natural Areas in Leeds is given in section 2 together with a list of key features and notable species.

The National and International Contexts

Ultimately, the preparation of local Biodiversity Action Plans (BAPs) reflects the need for action that has been recognised at the international level.

Under Article 6A of the Convention on Biological Diversity, which the UK Government signed at the Earth Summit in Rio de Janeiro in June 1992, each Contracting Partner is required to 'develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity'.
In January 1994, the first UK Biodiversity Action Plan (UK BAP) was published as a major a step toward meeting this commitment.

The UK BAP outlined the scope of action within the UK, and by the UK abroad. It identified 59 broad targets to be pursued over 20 years. However, this document is not the final, definitive statement on biodiversity in the UK but serves as a starting point for an on-going process. Of particular significance is the development of action plans for individual species and habitats. The implementation of such plans and the achievement of their targets depends on local action. Local BAPs provide the mechanism for realising such action.

The UK Steering Group Report, published in 1995, identified a total of 1250 species, now categorised as of national 'conservation concern', with just over 400 of these classed as 'priority species'. These species lists and the lists of key habitats have been used in conjunction with the Natural Area profiles and other local survey information to identify priorities for action in Leeds. The initial tranche of action plans deals with some of these, including those where programmes of work are already well progressed; further species and habitats will be dealt with in later tranches.

Purpose of the BAP

Although 'biodiversity is a relatively new concept, much of the work involved in biodiversity action plans is already central to nature conservation in the UK. Biodiversity action plans provide a new, target-led focus for nature conservation and seek to include a wider range of active partners. As such, the BAP approach provides a new opportunity to pursue clearly defined targets for specific habitats and species through planned programmes of action.

The publication of the Biodiversity Action Plan for Leeds is the launch of an on-going process. Further tranches of action plans will be produced for local priority species and habitats, adding to the initial ten plans. The BAP will also be updated with progress on the implementation of the individual plans.

At the heart of the biodiversity process is recognition of the need to take positive, practical action to reverse declines in species and habitats and restore them as key elements in a healthy, diverse and sustainable environment, across rural and urban areas.

The Leeds BAP identifies the action that is needed and the role of lead agencies. The species and habitats identified are of national, regional or local importance, but all are of special significance within the Leeds area. For some, the proposed work will have an impact primarily on their condition or status. For others, there will be wider benefits for both people and wildlife, due to associated environmental improvements.

Biodiversity & Sustainability

Biodiversity is a vital component of a sustainable environment and therefore a key test of sustainable development.

Sustainable development can be regarded as having three complementary aspects: environmental, social and economic. Besides the environmental importance of biodiversity, it is also important for, and relevant to, social and economic interests.

There is an increasing appreciation of the benefits of contact with nature in terms of people's well-being, including health, emotional and developmental benefits. The use of the natural environment as a major component of education for sustainable development is also well established. In Leeds, the economic benefits of biodiversity are largely linked to the value of high quality environments, both where people live and where they work.

Setting priorities for action

A major role of the BAP is to maximise the effectiveness of resources. The species and habitats included are those for which action is needed where resources will have greatest effect. This does not mean that species and habitats not identified in the plan will be ignored. Rather, they will continue to form part of the wider remits of the Steering Group members.

Auditing is a key part of the process of identifying local priorities for biodiversity action. Audits of local biodiversity are inherently imperfect because of the number of species, the extent of the area to be assessed, and the dynamic nature of the environment. A good deal is already known about many aspects of biodiversity in Leeds. Phase I Habitat Survey, providing a broad overview of the habitats of the whole Leeds district, has been carried out twice, most recently in 1986/7. Many areas have subsequently been surveyed in more detail and information for key sites and habitats is periodically reviewed. A long tradition of natural history recording has culminated in a number of important publications, including the West Yorkshire Plant Atlas (1994)

and the Atlas of Breeding Birds in the Leeds Area 1987-1991(1994). In addition, the reports published by organisations such as the Yorkshire Naturalists' Union and the Leeds Birdwatchers' Club provide regular updates and summaries of records.

Where the local extent or status of priority habitats and species is unclear, survey and monitoring will be important elements of the appropriate local action plans.

National priority habitats and species that are found within the region are identified in the Biodiversity Audit of Yorkshire and the Humber (1999). Besides these, other, locally-occurring species are of importance because of the proportion of the national or regional populations they represent, or because of their geographical significance in a wider distribution.

Many species will benefit from action to conserve and restore key habitats. For example, many rare or scarce wildflower species will benefit from the management and conservation of magnesian limestone grassland, as will many insects and other invertebrates. However, in some instances, species are so rare (or even locally extinct), or are subject to such pressures, that additional, specific measures are required. This is true of the pasqueflower, which is unlikely to achieve a viable population again in Yorkshire without direct intervention to increase its numbers. It is also true of species such as thistle broomrape, which, although associated with magensian limestone, is generally found in rank grassland of low conservation value that is not a candidate for a habitat action plan.

Responsibilitioes & Resources

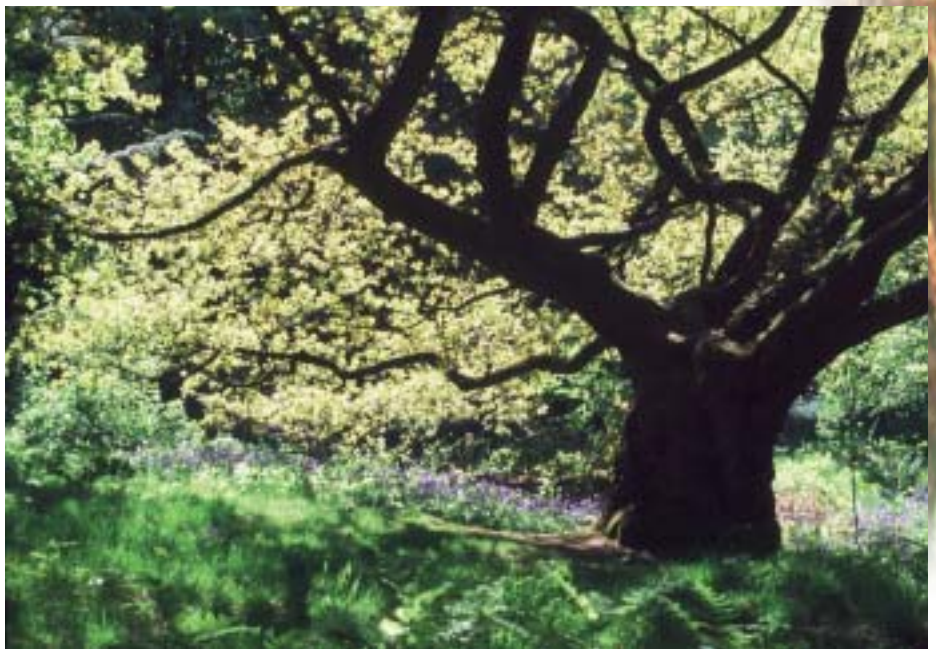
The development of a BAP for Leeds is not the start of an entirely new process. It is building upon a broad base of activity, including the wealth of community-based groups of local people working as volunteers to improve their local environment, and the fostering of sympathetic management of the farmed countryside through schemes such as Countryside Stewardship.

The challenge is to further develop the linkages between these initiatives and the setting and achievement of targets for biodiversity that are locally meaningful, as well as regionally and nationally relevant.

The BAP process involves a more empirical approach to measuring the success and progress of work on habitats and species. But allied with this must be a full appreciation of the significant, but often nebulous, benefits that achieving targets for biodiversity will bring.

To succeed, the BAP for Leeds must secure the resources for each consecutive tranche of plans. This will involve not only maximising the availability of resources from traditional sources, but engaging new partners, such as local businesses, in the biodiversity action process.

Ultimately, the BAP for Leeds is about local people achieving local action for their local wildlife.



Roles of the Steering Group Members

ENGLISH NATURE

English Nature is the statutory body that advises government and others on nature conservation. It has an involvement at a national level in drawing-up action plans for species and habitats identified as of national priority, and is acting as the lead body for some of these. English Nature sees Local Biodiversity Action Plans as playing a key role in the implementation of national plans, as well as raising local awareness of issues and setting targets for locally important species and habitats. English Nature is committed to the support of local biodiversity groups and has allocated officer time and some limited funds to the development of such groups in the region.

ENVIRONMENT AGENCY

The Environment Agency is committed to playing a full and active part in the implementation of the UK Biodiversity Action Plan. A wide range of Agency activities at both a national and local level contribute to Biodiversity Action Plan targets. These range from general environmental protection afforded by day to day regulatory operational and advisory activities, through to initiatives and projects with the specific objective of benefiting a particular species or habitat.

Strategic programmes of environmental protection and improvement will deliver benefits for biodiversity in general and for priority species such as the native Atlantic stream crayfish. More specifically the Agency undertakes a range of practical conservation measures, surveys and site enhancements, often in collaboration with others, to deliver particular requirements of individual species and habitat action plans, for example creation of reedbed habitats. The Agency also has an ongoing programme of R&D projects including studentships and PhD studies to address research needs identified in the action plans. Other work in support of BAPs includes raising awareness and the production of information leaflets.

LEEDS CITY COUNCIL

Leeds City Council has a direct role to play through the management of parks, open space and woodland across the district. It is responsible for a large proportion of the district's designated nature conservation sites, from internationally and nationally important sites to those of regional or local importance.

In carrying out its responsibilities as a local planning authority, the City Council is in a position to make a significant contribution to implementing the Biodiversity Action Plan for Leeds. Government Planning Policy Guidance (PPG9: Nature Conservation) requires nature conservation interests to be taken into account where relevant to local decisions. Nature conservation objectives are reflected in the Revised Draft Unitary Development Plan and can be a significant material consideration in determining many planning applications.

Site and species protection policies, negotiation as part of the development control process and the use of planning conditions and agreements all provide mechanisms to protect, manage and enhance existing habitats of wildlife importance and establish new areas for wildlife.

The City Council can also contribute to action for biodiversity through life-long learning and initiatives to achieve sustainable development in areas such as drainage, housing and development. Community planning provides an opportunity to build biodiversity into such work at the local level.

Planting at Golden Acre Park

Royal Society for the Protection of Birds (RSPB)

The RSPB has been greatly involved in the biodiversity process for many years. It is one of the six voluntary conservation bodies that comprised the Biodiversity Challenge Group, which published the first edition of Biodiversity Challenge in 1993 as a contribution to the production of the UK Biodiversity Action Plan, published by the Government in 1994. The RSPB is also closely involved in the Local Agenda 21 initiative and is part of the UK Biodiversity Steering Group. It provides the lead partner role for 26 UK BAP Species Action Plans: 24 bird, one invertebrate and one vascular plant species. Although the RSPB's work clearly has a bird focus, it embraces the requirements of all flora and fauna in policy and practice - most visibly through its reserves network.

Newton Ings, part of Fairburn Ings Nature Reserve

Yorkshire West Riding Farming and Wildlife Advisory Group (FWAG)

FWAG's role is to provide, free, first advisory visits to any landowner within the Leeds District that requests it, to discuss the conservation of wildlife and the landscape. It will do this by tailoring farm conservation advice to target the species and habitats set out in the Leeds Biodiversity Action Plan in key habitat areas such as the magnesian limestone, where a promotional flyer and farm walks have been used to encourage farm visits in key areas.

FWAG provides one-to-one, on-site advice, covering the whole farm, to help landowners identify opportunities for conservation on their holdings, guiding them through the process of appropriate grant applications if necessary.

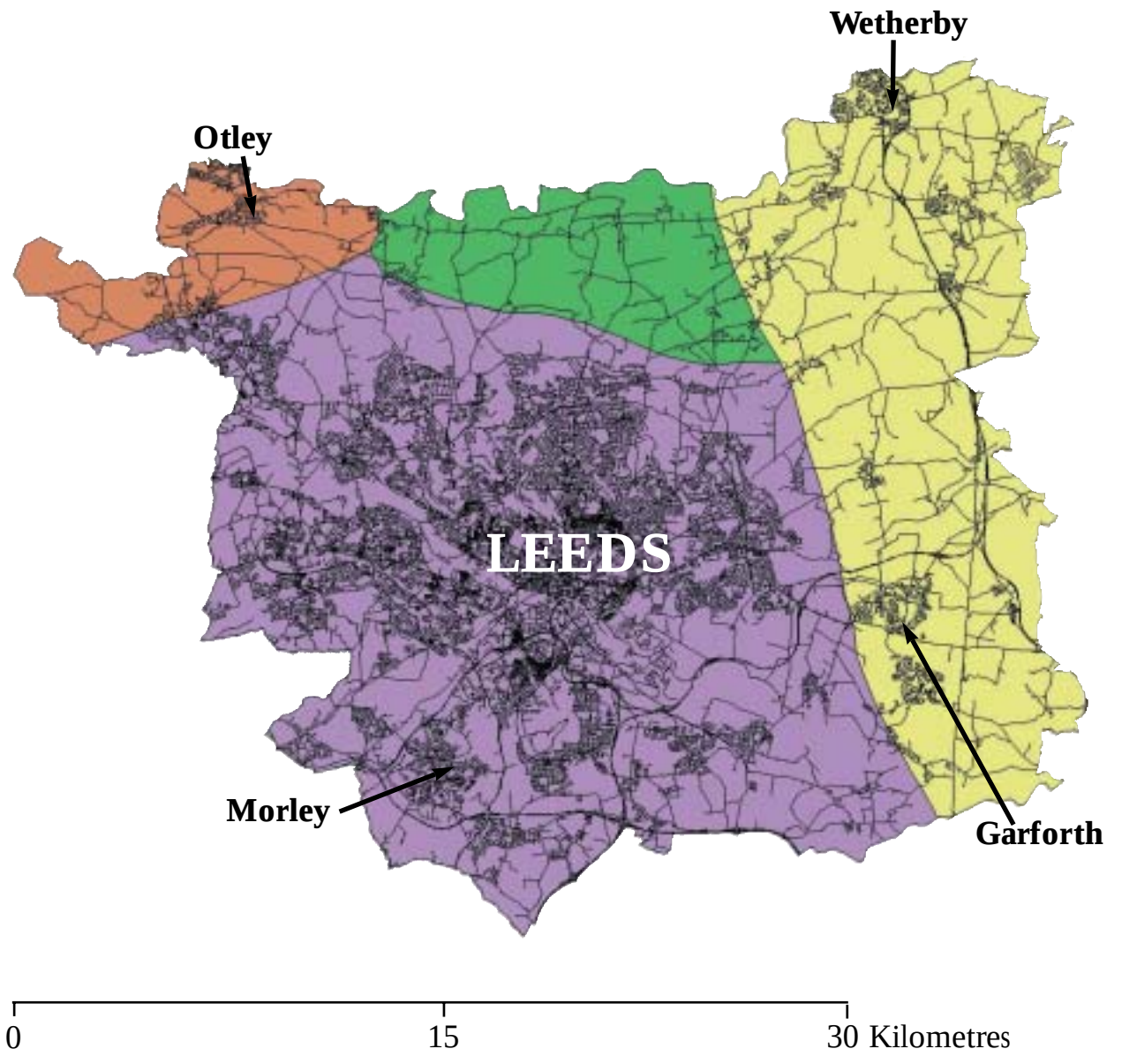
FWAG has a vital role to play in promoting the Leeds Biodiversity Action Plan in the wider countryside. Because of its charitable status and specialism in conservation advice to farmers, it is in a unique position to provide the advice necessary to help farmers implement the Plan on their land. Farmers are the main landusers of the wider countryside around Leeds and their support is crucial to the successful implementation of the Plan.

Statement of support

Ministry of Agriculture, Fisheries and Food

MAFF supports the National UK Biodiversity Action Plan and sees Local Plans as the means of delivery of the National Plan. MAFF's main means of delivery of biodiversity within the Leeds area will be through the Countryside Stewardship Scheme. Wherever possible Countryside Stewardship will aim to deliver BAP targets wherever these meet those of the Target Areas but it should be noted that the scheme is dependent upon voluntary uptake and fixed resources. Wherever possible, Countryside Stewardship will take into consideration Local Biodiversity issues where these do not differ widely from the aims of the Scheme or Nation al Biodiversity Action Plan. Biodiversity habitats or species now contribute towards the site scoring and evaluation of Countryside Stewardship applications and hence aid important sites in the selection process.

Natural Areas in the Leeds District



The Coal Measures Natural Area

The Coal Measures Natural Area stretches north from Nottinghamshire, covering the major coalfield areas of South and West Yorkshire. It is an economically important area with major conurbations including Sheffield, Barnsley, Wakefield and most of south, central and west Leeds. In Leeds, it covers Morley and Pudsey; the central Leeds conurbation and inner suburbs; Rothwell and Allerton Bywater.

Beyond the major conurbations, agriculture remains the main landuse. However, only small, isolated areas of flower-rich neutral grassland remain and the area's lowland wet grassland has similarly lost most of its botanical interest, due to agricultural improvement, or has disappeared entirely due to drainage works.

Because of its urban nature, the Natural Area is characterised by relict habitats and areas of encapsulated countryside, including heathland, ancient woodland and arable fields bounded by hedgerows. The Meanwood Valley, Middleton and Killingbeck all exemplify this in Leeds.

Streams sustain important populations of fish and aquatic invertebrates, such as Atlantic stream crayfish, (*Austropotamobius pallipes*), and birds such as dipper (*Cinclus cinclus*) and kingfisher (*Alcedo atthis*). Ponds, including field, garden and mill ponds, are particularly important for amphibia , but also for a range of aquatic invertebrates and plants.

Coal mining and the extraction of sand and gravel have resulted in the creation of extensive valley and subsidence wetlands throughout the Lower Aire Valley, such as at Fairburn Ings. These support internationally important numbers of wintering wildfowl as well as breeding birds and invertebrates such as dragonflies. They also offer opportunities for the creation of large areas of reedbed.

Parklands, of 'municipal' origin such as Roundhay, or estates such as Temple Newsam and Oulton Hall, often contain areas of relic habitats. They are particularly important for their expanses of open grassland with trees, which help define them, and especially for 'veteran' trees with their associated fungi, insects and other fauna.

The urban and suburban areas are particularly rich in exotic and cultivated species. Many of these are found within, or originate from, gardens, which can comprise a rich and complex variety of different habitats such as ponds, hedges, lawns and flower borders. Gardens provide significant areas of habitat for some species, including frog, hedgehog and pipistrelle bat. They are also important for 'common or garden' birds such as song thrush, bullfinch and spotted flycatcher, all of which are Priority Action species in the UK BAP. Other exotic species are associated with transport routes or the modified environments resulting from industrial activity.

Adel Moor

Broad Habitat Type	Key Features and Species Groups	Notable Species
Parkland	Permanent grasslands with veteran trees Deadwood beetles Deadwood flies Deadwood fungi Bats	
Woodland	Deadwood beetles Deadwood flies Bats Fungi	*Hordelymus europaeus* Wood barley *Orchis mascula* Early purple orchid *Meles meles* Badger
Wet woodland	Alder carr Sedge swamp Reedbed Ferns Coleoptera	
Valley and subsidence wetlands	Wintering wildfowl Breeding wildfowl Migrant waders Aquatic macrophytes Aquatic invertebrates Breeding waders Reptiles and amphibians	*Lutra lutra lutra* Otter *Arvicola terrestris* Water vole *Micromys minutus* Harvest mouse *Aythya ferina* Pochard *Rallus aquaticus* Water rail *Anas crecca* Teal *Anas strepera* Gadwall *Anas clypeata* Shoveler *Podiceps nigricollis* Black-necked grebe *Alcedo atthis* Kingfisher *Anas querquedula* Garganey *Cygnus cygnus* Whooper swan *Bufo bufo* Common toad *Natrix natrix* Grass snake
Lowland wet grassland		*Vanellus vanellus* Lapwing *Gallinago gallinago* Snipe *Tringa totanus* Redshank
Reedbeds	Invertebrates	*Arvicola terrestris* Otter *Lutra lutra lutra* Water vole *Micromys minutus* Harvest mouse *Neomys fodiens* Water shrew *Botaurus stellaris* Bittern

Broad Habitat Type	Key Features and Species Groups	Notable Species
		Circus aeroginosus Marsh harrier *Emberiza shoeniclus* Reed bunting *Anas querquedula* Garganey *Cettia cetti* Cetti's warbler *Locustella luscinioides* Savi's warbler *Locustella naevia* Grasshopper warbler *Panurus biarmicus* Bearded tit (reedling)
Canals	Pondweeds Freshwater sponges Freshwater molluscs Aquatic coleoptera Dragonflies and damselflies Mayflies Caddis flies Hoverflies	*Potamogeton trichoides* Hairlike pondweed
Rivers and streams	Fish	*Lutra lutra lutra* Otter *Arvicola terrestris* Water vole *Austopotamobius pallipes* Atlantic stream crayfish *Alcedo atthis* Kingfisher *Cinclus cinclus* Dipper
Heathland/acid grassland mosaic		*Lacerta vivipara* Common lizard *Saxicola ruberta* Whinchat
Neutral grassland	Diptera Coleoptera Hemiptera Lepidoptera	*Perdix perdix* Grey partridge *Saxicola ruberta* Whinchat *Tyto alba* Barn owl
Urban and post-industrial habitats	Lepidoptera Coleoptera Diptera Hemiptera	*Pipistrellus sp.* Pipistrelle bat *Phoenicurus ochurus* Black redstrat *Pyrrhula pyrrhula* Bullfinch *Turdus philomelos* Song thrush *Charadrius dubius* Little ringed plover

Broad Habitat Type	Key Features and Species Groups	Notable Species
Ponds	Amphibia Aquatic macrophytes Aquatic invertebrates	*Triturus cristatus* Great crested newt
Hedgerows and field margins	Birds	*Perdix perdix* Grey partridge *Carduelis cannabina* Linnet *Passer monantus* Tree sparrow *Lepus europaeus* Brown hare

Southern Magnesian Limestone Natural Area

The Southern Magnesian Limestone Natural Area is a long, narrow strip running from Nottingham, in the south, to Ripon, in the north, following the out-cropping ridge of magnesian limestone rock. In Leeds, this corresponds to the eastern part of the district and includes Ledston, Ledsham, Kippax, Barwick, Bramham, Boston Spa, Thorp Arch and Walton.

Its well-drained, fertile soils make it an agriculturally productive area, although this has led to large areas of former pasture being ploughed and put to arable use. Quarrying of the limestone and mining of the coal beneath have also left their impact.

The area is characterised by flower-rich, calcareous grasslands, such as at Townclose Hills, Kippax, with a variety of orchids and other, nationally scare plants. These include pasqueflower (*Pulsatilla vulgaris)* and dark red helleborine (*Epipactis atrorubens*). The grasslands are also important for invertebrates such as glow-worm *(Lampyris noctiluca)*.

On areas of drift overlying the limestone, soils tend to be neutral, with different grassland communities. A few sites with mesotrophic swards support populations of thistle broomrape (*Orobanche reticulata*) which, nationally, is almost entirely confined to the Southern Magnesian Limestone Natural Area.

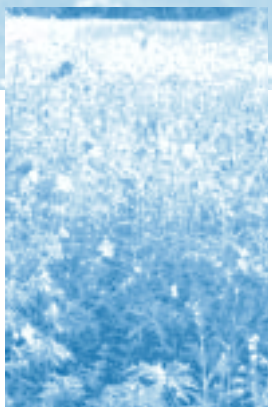
Scrub within the natural area is important for invertebrates and summer migrant birds such as turtle dove (*Streptopelia turtur*). Characteristic shrubs include dogwood (*Cornus sanguinea*), wild privet (*Ligustrum vulgare*) and spindle (*Euonymus europaeus*). The rarer alder buckthorn (*Frangula alnus*) is the foodplant of the brimstone butterfly's caterpillar.

Although much of the ancient semi-natural woodland within the Natural Area has been replanted and managed as mixed or coniferous plantations, much of the field layer of the former ash and field maple woodland is suppressed and could re-emerge given appropriate changes in management. Notable species include baneberry (*Actaea spicata*) and fingered sedge (*Carex digitata*).

Arable land makes up a significant proportion of the rural landscape. It is a key habitat for many farmland birds such corn bunting (*Miliaria calandra*), tree sparrow (*Passer montanus*) and skylark (*Alauda arvensis*). Changes in farming practices, including the autumn sowing of crops and the loss of winter stubbles, has had a dramatic impact on the populations of these species. Similarly, many cornfield annuals such as cornflower (*Centaurea cyanus*) and night-flowering catchfly *(Silene noctiflora*) have declined, with more effective cleaning of seed grain, the use of selective herbicides and high rates of nitrogen application all contributing.

Giant bellflower

Broad Habitat Type	Key Features and Species Groups	Notable Species
Woodland		*Actaea spicata* Baneberry *Carex digitata* Fingered sedge *Epipactis phyllanthes* Green-flowered helleborine *Epipactis youngiana* Young's helleborine *Gymnostomum calcarum* A moss *Helleborus foetidus* Stinking hellebore *Hordelymus europaeus* Wood barley *Satyrium w-album* White-letter hairstreak butterfly
Scrub	Invertebrates Summer migrant birds	*Berberis vulgaris* Barberry *Frangula alnus* Alder buckthorn *Streptopelia turtur* Turtle dove
Magnesian limestone grassland	Invertebrates	*Carex ericetorum* Rare spring-sedge *Epipactis atrorubens* Dark red helleborine *Linum perenne spp. Anglicum* Perennial flax *Orchis ustulata* Burnt orchid *Potentilla neumanniana* Spring cinquefoil *Pulsatilla vulgaris* Pasqueflower *Silene nutans* Nottingham catchfly
Neutral grassland		*Orobanche reticulata* Thistle broomrape
Ponds	Amphibia	*Triturus cristatus* Great crested newt
Hedgerows and field margins	Birds Cornfield annuals	*Lepus europaeus* Brown hare *Micromys minutus* Harvest mouse *Miliaria calandra* Corn bunting



The Pennine Dales Fringe Natural Area

The Pennine Dales Fringe Natural Area lies on the eastern flank of the Pennines. It is a narrow area, about 100km long, stretching from the northern outskirts of Leeds to north of Barnard Castle. It includes a number of market towns, with Harrogate the largest conurbation.

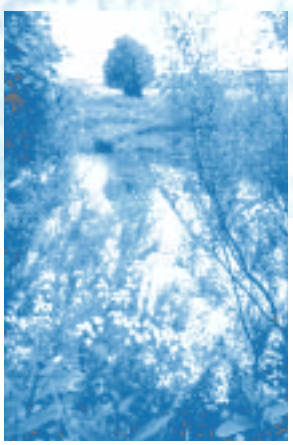
Farming is the major landuse with most of the area enclosed and only a little open moor. The area is well-wooded and forestry is also a significant landuse.

In Leeds, the Natural Area is bounded by Pool and Bramhope to the west and the district boundary, which is largely coincident with the River Wharfe, to the north. It includes Arthington and Harewood, but is one of the less populous areas of the Leeds district. Of the principal habitat types in the Natural Area, riparian, woodland and parkland habitats are the more significant in Leeds.

The River Wharfe is important for a range of wildlife from otter *(Lutra lutra lutra)* and water vole *(Arvicola terrestris*), to birds, such as kingfisher *(Alcedo atthis*) and goosander *(Mergus merganser)*, fish, such as grayling (*Thymallus thymallus*), and a wide variety of invertebrates, including Atlantic stream crayfish *(Austropotamobius pallipes*), banded demoiselle *(Calopteryx splendens)* and the fine lined pea mussel *(Pisidium tenuilineatum)*. The river also supports populations of scarce plants such as stream water-crowfoot *(Ranunculus penicillatus fluitans*), blue water-speedwell *(Veronica anagallis-aquatica*) and the rare Swedish pondweed *(Potamogeton x suecicus)*.

The Natural Area has also seen the recent return of the red kite *(Milvus milvus)* which disappeared from Yorkshire in the late nineteenth century as a result of persecution. Although occasional wandering kites have been spotted in the region in recent years, 23 kites were released in the summer of 1999 in the hope of re-establishing a third English breeding population.

Broad Habitat Type	Key Features and Species Groups	Notable Species
Rivers and streams	Salmonid fish Aquatic marcrophytes Diptera Coeloptera	*Lutra lutra lutra* Otter *Arvicola terrestris* Water vole *Myotis daubentoni* Daubenton's bat *Alcedo atthis* Kingfisher *Mergus merganser* Goosander *Thymallus thymallus* Grayling *Alosa sp.* Shad (a fish) *Lampetra fluviatilis* River lamprey *Lampetra planeri* Brook lamprey *Austopotamobius pallipes* Atlantic stream crayfish *Calyopteryx splendens* Banded demoiselle *Pisidium tenuilineatum* Fine lined pea mussel *Spiriverpa lunulata* A stilleto fliy
Parkland	Permanent grassland with veteran trees grasslands Deadwood beetles Deadwood flies Deadwood fungi Bats	*Milvus milvus* Red kite
Woodland	Deadwood beetles Deadwood flies Bats Fungi	*Quercusia quercus* Purple hairstreak butterfly *Phoenicurus phoenicurus* Common redstart



The Southern Pennines Natural Area

The Southern Pennines Natural Area comprises the gently sloping, wild, open plateaux of acid Millstone Grit rock, high above the urban areas of Manchester, Huddersfield, Burnley, Blackburn and Bradford. In Leeds it covers Hawksworth Moor, the northern side of Guiseley and Otley, stretching to Pool in the east.

It is an internationally important area, special for its heather moorland and the variety and rarity of the birds it supports. These include red grouse *(Lagopus lagopus scoticus*), merlin *(Falco columbarius)* and twite *(Carduelis flavirostris)*. The heather moorland is part of an extensive mosaic with wet heath, blanket bog and acidic grassland.

Reservoirs built in the uplands provide an additional habitat for some bird species.

Down-slope from the open moor, on more fertile soils, the land has been enclosed for winter grazing and summer hay crops. This 'inbye' is important for breeding birds such as curlew *(Numenius arquata)*, redshank *(Tringa totanus*), lapwing *(Vanellus vanellus)* and snipe *(Gallinago gallinago)* and many meadows still support colourful swards with ragged robin *(Lychnis flos-cuculi*) and cuckoo flower *(Cardamine pratensis)*, devil's bit scabious *(Succisa pratensis*), betony *(Stachys officinalis)* and pignut *(Conopodium majus)*.

Clough woodlands provide suitably humid environments for lush growths of ferns and mosses, including the Killarney fern *(Trichomanes speciosum)*.

Although the Leeds district has only a small area of the Southern Pennines Natural Area within its boundary, it includes part of the South Pennine Moors Site of Special Scientific Interest and Special Protection Area. This is an extensive area of international importance and, within Leeds, adds significantly to the diversity of habitats and species.

Broad Habitat Type	Key Features and Species Groups	Notable Species
Blanket bog	Breeding birds Coleoptera Arthropods	*Pluvialis apricaria* Golden plover *Numenius arquata* Curlew *Gallinago gallinago* Snipe
Heathland/ acid grassland mosaic	Coleoptera Tipulids	*Lycopodium clavatum* Stag's-horn clubmoss *Carduelis flavirostris* Twite *Lagopus lagpous scoticus* Red grouse *Pluvialis apricaria* Golden plover *Numenius arquata* Curlew *Callophrys rubi* Green hairstreak butterfly *Lepus europaeus* Brown hare
Reservoirs	Breeding wildfowl Wintering wildfowl Breeding waders Migrant waders	
Inbye		*Numenius arquata* Curlew *Tringa totanus* Redshank *Vanellus vanellus* Lapwing *Gallinago gallinago* Snipe
Clough woodland	Ferns Bryophytes	*Trichomanes speciosum* Killarney fern

H A B I T A T
a c t i o n p l a n s

MAGNESIAN LIMESTONE GRASSLAND

REEDBED

LOWLAND WET GRASSLAND

HEDGEROW AND
FIELD MARGIN

H A B I T A T
a c t i o n p l a n s

Magnesian Limestone Grassland

CURRENT STATUS

Importance

Magnesian limestone grassland is a type of calcareous grassland which occurs in England on the narrow band of magnesian limestone stretching from Nottinghamshire to the River Tyne. Unimproved grasslands found on magnesian limestone are similar to those on chalks and other limestone, being rich in plant and invertebrate species.

Laid down during the Permian period (about 255 million years ago) when shallow seas covered the UK, the magnesian limestone outcrop has a long north-south axis and today lies on the climatic transition between the chalks and limestones of southern England and the Carboniferous limestones of the north and west. The intermediate climatic conditions are reflected in the habitats and species found on the magnesian limestone, which themselves differ between the southerly and the more northerly parts of the outcrop. Consequently, southern and northern species combine on the magnesian limestone to form an unusual assemblage; many species are at or near the limit of their ranges in Britain and many are nationally scarce or uncommon.

Trends

Unimproved magnesian limestone grassland is nationally scarce. Like other forms of lowland calcareous grassland, it has suffered a sharp decline in extent over the last 50 years. Agricultural intensification has been the main cause of loss, with remaining grasslands often restricted to steeper slopes that are less easily ploughed or improved for agriculture. Some magnesian limestone grassland also survives in and around old quarry workings, railway embankments, road verges and even as lawns within country estates.

The total amount of lowland calcareous grassland (of any type) in the UK has been estimated at 33,000-41,000 ha. The majority of this is chalk grassland found in southern and eastern England (some 25,000-32,000 ha) with much of the remainder being carboniferous limestone grassland. In contrast, there are probably no more than a few hundred hectares of magnesian limestone grassland, nationally.

Distribution and Habitat Area

This unique type of grassland is only found in a narrow band between Nottinghamshire and the River Tyne.

Within the Leeds district, there are approximately 34 ha of semi-improved magnesian limestone grassland, known from 15 sites, of which 12 are less than 3 ha in extent. Not only are most of the sites small, but they are generally isolated from each other, being scattered over a distance of more than 18 km north to south.

Table : magnesian limestone grasslands in Leeds (greater than 0.2 ha)

SITE	DESIGNATION	AREA (ha)
Kippax Hills		0.21
Thorpe Arch Disused Railway	SEGI	0.25
Lotherton Hall		0.34
Aberford Almhouses		0.40
Linton Common	SSSI	0.70
Wendel Hill Bank	SEGI	0.70
Kippax Meadows	SEGI	0.72
Hetchell Wood	SSSI	1.50
Madbanks *	SSSI	1.70
Roach Lime Hills	SSSI	2.00
Preston Hills	SEGI	2.19
Bramham Park	SEGI	2.31
Townclose Hills	SSSI	3.95
Ledsham Vale*	SSSI	4.50
Thorpe Arch Trading Estate	SEGI	12.15
TOTAL AREA		33.62

* both parts of Madbanks and Ledsham Banks Site of Special Scientific Interest

CURRENT FACTORS CAUSING LOSS OR DECLINE

Undergrazing

The decline of livestock farming is closely linked with the demise of magnesian limestone grasslands. The conversion of large areas of former pasture to arable use has been widespread, with many of the remaining grasslands being small sites on steep slopes with difficult access. Although cattle and sheep grazing remain the ideal form of management, horse grazing and hay cutting are important alternatives at some sites.

Development

Both direct and indirect development pressures affect magnesian limestone grassland. The direct pressures are from loss of grassland areas to built development such as housing, industrial or retail use. Where landowners may have long-term development aspirations, deliberate neglect of sites can occur with the intention of letting the grassland deteriorate to the extent that key species and habitat types are lost. Indirect pressures can include changing patterns of landuse (to the extent where agricultural holdings are no longer viable) and the impacts of increased recreational use.

Site management costs

Because remaining sites are small, and often on steep slopes with difficult terrain, site management tends to be labour intensive and relatively costly: recreational pressures can cause problems for the welfare of livestock and small-scale machinery and the manual collection and removal of grass is often the only option.

The loss of rare and scarce species

Certain sites have rare or scarce species in such small populations that only the slightest change in management or conditions may lead to their total disappearance. The small areas of sites and their isolation from each other limits the scope for the natural spread of species and heightens the importance of maintaining the remaining semi-improved grasslands in optimum condition.

Impacts of site use and misuse

Erosion from unmanaged access and the illegal use of motorbikes can have a significant impact on the small areas of grassland. Vandalism, arson, tipping and extensive dog-fouling can also damage sites significantly as well as increasing the costs of site management.

Inadequate financial incentives

The combination of the above factors makes the unit cost of conservation management for magnesian limestone sites considerably higher than for many other habitat types, especially those which remain more extensive, such as other types of calcareous grassland. Thus, schemes such as Countryside Stewardship alone do not always provide sufficient financial incentive for many landowners to commit themselves to long-term conservation management of magnesian limestone grassland sites.

CURRENT ACTION

Protection

There are five Sites of Special Scientific Interest in Leeds (including one Local Nature Reserve) which include magnesian limestone grassland, plus six Sites of Ecological or Geological Importance.

Management

Site Management Statements have been agreed for 4 of the SSSI . Three of the SEGI receive some conservation management.

Magnesian limestone grassland is a key Countryside Stewardship objective for West Yorkshire.

Action plans objectives and targets

Maintain and safeguard the current extent of magnesian limestone grassland.
Achieve favourable conservation status of all SSSI sites by 2003 and all non-SSSI sites with magnesian limestone grassland by 2005.
Increase the existing area of magnesian limestone grassland in Leeds by 50% by 2005, placing particular emphasis on linking and buffering existing sites to reduce fragmentation.
Ensure sustainable populations of key species on magnesian limestone grassland by 2008.

LINKS

Pasqueflower SAP

Townclose Hills Nature Reserve

PROPOSED ACTION

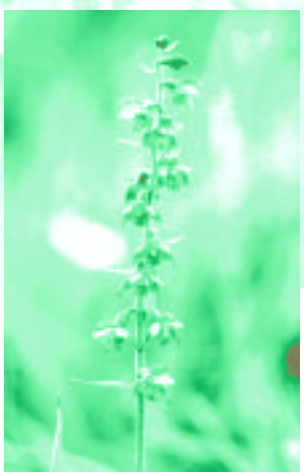
Policy	**Lead Agencies**	**Target Date**
Promote increased incentives for the magnesian limestone grasslands through schemes such as Countryside Stewardship	LCC; EN; FWAG	2001
Target funds for grassland restoration at key sites	EN; MAFF/FRCA; LCC	On-going
Site safeguard		
Review the coverage of SSSI designation to ensure that all existing calcareous grasslands over 0.5ha are designated SSSI.	EN	2002
Ensure the protection of all unimproved or semi-improved magnesian limestone grassland sites through the planning system, including through the close scrutiny of development which might have indirect impacts	LCC; EN	On-going
Support the acquisition of neglected magnesian grassland sites by organisations which will carry out necessary conservation management	LCC; EN	On-going
Ensure that all magnesian grassland sites are designated as statutory or non-statutory nature conservation sites	LCC	2001
Habitat management		
Ensure that all magnesian limestone grassland sites are managed appropriately to retain or restore their natural community diversity.	LCC, EN, FWAG, Landowners	2002
Ensure that management of magnesian grasslands incorporates consideration of key species.	LCC, EN, FWAG, Landowners	On-going
Identify opportunities for habitat restoration/creation, placing emphasis on linking existing primary grassland and integrating with mosaics of other habitats such as scrub, woodland and wetland/flushes/ponds.	LCC, EN, FWAG,	2002
Advisory		
Draw-up management prescriptions for all sites	EN; FWAG; LCC	2001
Organise demonstration training days.	FWAG; MAFF/ FRCA; landowners	Annually

PROPOSED ACTION (contined)

Future research and monitoring	**Lead Agencies**	**Target Date**
Identify key sites for targeting restoration work	MAFF/FRCA; LCC; EN	2002
Establish qualitative and quantitative monitoring of grassland at all key sites	EN; LCC	2002
Communications and publicity		
Raise public awareness of magnesian limestone grassland and the importance of this special habitat in the Leeds area.	LCC; EN; FWAG;	2000
Raise awareness of magnesian limestone grassland management and restoration issues among planners, landowners and managers.	LCC; EN; FWAG; MAFF/FRCA	2000
Promote interpretation and appropriate access.	EN; MAFF/FRCA; FWAG; LCC	On-going

Key to abbreviations

EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
MAFF/FRCA	Ministry of Agriculture, Fisheries and Food/ Farming and Rural Conservation Agency



Reedbed

CURRENT STATUS

Importance

Reedbeds are a scarce habitat in the UK. They support a large and distinctive breeding bird assemblage including three 'red-listed species' (bittern, marsh harrier and reed bunting) and eight 'amber-listed' species (Birds of Conservation Concern, 1996). For many of these species the UK is a stronghold. Reedbeds also support many passage, migrant and wintering bird species.

Reedbeds are important for mammals, especially the harvest mouse which uses its prehensile tail to move within the aerial zone of standing reed. High densities of water shrew can occur in reedbeds too, and sometimes water vole. Larger sites can be important for otter and deer also frequently use reedbeds, particularly when in close proximity to woodland.

Seven hundred invertebrate species have been found to be associated with reedbeds in the UK, of which 40 insect species are entirely dependent and 64 are partially dependent on reeds. All stages of succession of a reedbed support important invertebrate communities although diversity decreases with pure stands of wet reed. Moths are a particularly good example, with at least 9 species specific to reed and many more on either reed or other reedbed plants. Many species of beetle which are dependent on reeds too. Of those invertebrates dependent on reedbeds, five are Red Data Book species.

Trends

An unknown proportion of the reedbed resource has been left to 'succeed' to dry reedbed and scrub with the loss of important wet reedbed areas.

Many of the red and amber-listed breeding bird species dependent on reedbeds have declined by up to 50% over the last 25 years.

Distribution and Habitat Area

Nationally, there was an estimated total resource of only 5000 ha in 1994, with only around 50 sites covering 20 ha or more.

The Yorkshire and Humber Region accounts for about 400 ha of the national total. Within Leeds there is just 7 ha of reedbed, most of which is at Mickletown Ings SSSI.

CURRENT FACTORS CAUSING LOSS OR DECLINE

Water quality

The industrial and urban nature of the Leeds area has historically caused a reduction in water quality in most river catchments and floodplains. Whilst reed will grow well in nutrient-rich water and can tolerate high levels of other pollution, the aquatic environment of the reedbed in such conditions is species-poor.

Water quantity

Demand for water for domestic, agricultural and industrial uses has caused water deficits on many wetlands in the UK. The natural seral succession of reedbeds which results in their drying out, is accelerated by long-term water shortages arising from drainage and abstraction.

Flood defence

The flood embankments on rivers have reduced the frequency of flooding which has had an adverse impact on floodplain habitats such as reedbeds which are dependent on regular water inputs. In addition, the use of areas of floodplain for statutory flood storage can have detrimental affects on reedbed wildlife because of the lack of control on the timing and extent of flooding.

Neglect

Management is essential in order to retain the characteristic assemblages and diversity of a reedbed. Through lack of management, many existing reedbeds have dried out, which has in turn led to scrub encroachment and succession to woodland.

Habitat loss

The current, limited extent area of reedbeds is responsible to a large degree for the critically small populations of several reedbed-dependent species. Habitat loss is less of a threat than in the past but any further loss of habitat would have devastating effect.

Water-course management

Less of a threat than in the past, the drive to drain land and reduce flood risk can result in the loss of reedbeds.

CURRENT ACTION

Protection

Nationally, most of the more significant reedbeds are notified as SSSI's and many are notified as Wetlands of International Importance under the Ramsar Convention and as Special Protection Areas under the EC Birds Directive. Several of the larger reedbeds are managed as nature reserves by English Nature, the RSPB and the Wildlife Trusts.

Locally, Mickletown Ings, the largest existing area of reedbed in the Leeds district with just over 6 ha, is designated a SSSI.

Management

Conservation organisations throughout the UK, both statutory and non-statutory, have during the past five years been working to rehabilitate degraded reedbeds and to create new ones.

OBJECTIVES AND TARGETS

Local

Achieve a target of 100 ha of reedbed in good ecological condition, with at least 75% of this comprising blocks of at least 20 ha by 2020.

LINKS WITH OTHER ACTION PLANS

Harvest mouse SAP

Reedbed at Dolphin Beck Marsh

PROPOSED ACTION

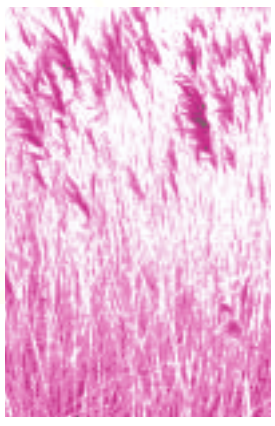
Policy	Lead Agency	Target Date
Reedbeds should be a preferred afteruse for mineral extraction sites in the Lower Aire Valley, especially between St Aidan's and Fairburn Ings.	LCC	On-going
Incorporate the restoration of floodplain habitats into the catchment management plans along with reedbed protection, management and creation	EA	2002
Site safeguard		
Ensure that the water quality is of a standard that will not adversely affect species diversity.	EA; Yorkshire Water; LCC	On-going
Habitat management		
Establish management regimes for reedbeds which have been restored or which require management.	EA; RSPB; FWAG; LCC	2001
Complete the establishment of a 5 ha reedbed at Fairburn Ings	RSPB; EA	2001
Establish a reedbed of at least 50 ha as part of the St Aidan's restoration scheme	RJB Mining; LCC	2008
Establish new reedbed as part of Rodley Nature	Rodley Nature Reserve Trust	2001
Dolphin Beck Marsh - rejuvenate existing reedbeds	LCC; EA	2002
Advisory		
Advise farmers and landowners as to the benefits of reedbeds to wildlife, appropriate management techniques and available grant schemes.	FWAG	On-going
Provide advice on reedbed treatment systems	EA; LCC	On-going
Future research and monitoring		
Assess the potential in terms of rehabilitation of existing reedbeds with a view to extending the area of reedbed where feasible.	LCC; EA	2001
Monitor the effects of changes in management on the flora and fauna, silt levels etc.	RSPB; LCC; EN	2001 and on-going

PROPOSED ACTION (Continued)

Policy	**Lead Agency**	**Target Date**
Investigate opportunities to create reedbeds to contribute to the national target for new reedbeds on land currently of low nature conservation interest of 1200ha by 2010 e.g.:		
a) Derelict industrial land in low-lying areas close to water supply	LCC; EA	2001
b) Open-cast and quarrying sites in floodplains where a reedbed could be created with an operating water table below that of the river to enable optimum water level conditions to be maintained.	LCC; EA	2000 and on-going
Monitor the effects of changes in management on the flora and fauna, silt levels etc.	RSPB; LCC; EN	2001 and on-going
Communications and publicity		
Any data from monitoring efforts should be made available at the national and European level to note the effectiveness of reedbed restoration overall, and the relative effectiveness of different techniques used.	LCC; EN; RSPB	2003 and on-going
Promote the importance of reedbeds to the local public through talks and local conservation interest groups.	RSPB; FWAG; EN; LCC	2000 and on-going
Liaise with other projects occurring throughout the country with regards reedbed restoration, creation and management.	RSPB; FWAG; LCC; EN	On-going

Key to abbreviations

EA	Environment Agency
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
RSPB	Royal Society for the Protection of Birds



Lowland wet grassland

CURRENT STATUS

Importance

Lowland wet grassland is seasonally flooded grassland found in lowland river valleys and is important for the flower-rich hay meadows which were once widespread and wintering and breeding populations of wildfowl and wading birds.

Nationally, most of the more significant wet grasslands are notified as Sites of Special Scientific Interest and many are notified as Wetland of International Importance under the Ramsar Convention and as SPAs under the EC Birds Directive. Several of the larger wet grasslands are managed as nature reserves by English Nature, the RSPB and the Wildlife Trusts. The RSPB's Lowland Wet Grassland Habitat Action Plan lists 13 top sites in the UK for breeding waders totalling 68,873 ha. All have statutory nature conservation designations conferred to them, eleven being of international importance. Such is the significance of the habitat in biodiversity terms that the UK Government has produced a costed action plan for coastal and floodplain grazing marsh in Biodiversity: The UK Steering Group Report (Volume 2: Action Plans).

Birds

Lowland wet grassland supports a diverse range of birds, both breeding and wintering. However, few species could be said to be truly characteristic of or dependent on the habitat, although, in the UK, certain species have a strong association with the habitat: (see table)

Plants

Lowland wet grassland is critically important for the species-rich Alopecurus pratensis - Sanguisorba officinalis MG4 grassland community. This is characteristic of seasonally flooded land with alluvial soils which has received traditional hay-meadow management. Because of extensive drainage and almost universal agricultural improvement of grasslands, this formally widespread plant community is now very localised and restricted in its distribution. Accordingly, this plant community is of national importance is listed in Appendix 1 of the EC Habitats Directive. Fairburn Ings supports a small area of 'remnant' MG4 which has potential for restoration.

Mammals

Wet grasslands are important for otter, water vole and for feeding bats such as pipistrelle and noctule, all of which are recorded in the Leeds district.

Invertebrates

Over a thousand nationally notable species have been recorded in wet grassland, about a quarter of which are Red Data species. Although the majority of invertebrates found in wet grassland can be found in other wetland habitats, wet grasslands are the stronghold for a number of species. The aquatic environment, mainly ditches, supports the majority of species. Fairburn Ings has more than 700 species of invertebrate, many associated with the wet grassland and related habitats.

Species	BoCC*	Criteria
Wintering		
Bewick's swan	Amber	>20% NW European population in UK
Whooper swan	Amber	>20% NW European population in UK
Shoveler	Amber	>20% NW European population in UK
Wigeon	Amber	>20% NW European population in UK
Teal	Amber	>20% NW European population in UK
Breeding		
Black-tailed godwit	Red	Five-year mean 0.2-300 breeding pairs
Garganey	Amber	Five-year mean 0.2-300 breeding pairs
Ruff	Amber	Five-year mean 0.2-300 breeding pairs
Snipe	Amber	25-49% decline in 25 years
Lapwing	Amber	>20% East Atlantic Flyway
Redshank	Amber	>20% East Atlantic Flyway
Curlew	Amber	>20% European breeding population in UK

***BoCC** - status given in 'Birds of Conservation Concern'

Fish, amphibians and reptiles

Fish species generally associated with lowland mesotrophic water bodies may be found in most wet-grassland sites e.g. pike, roach, tench, bream, and eel. Common frog and toad may use ditches and pools for spawning and, where water quality is suitable, smooth newt may be found. Grass snake is associated with wet grassland although it is rare in Leeds.

Trends

Lowland wet grassland is a habitat that has decreased markedly in extent, more than 40% since 1930. This has been primarily as a result of drainage and other agricultural improvements. The dramatic outright loss of wet grassland has now largely ceased. It has been replaced by a gradual decline in the quality of the remaining wet grassland habitat, as evidenced by declines in breeding waders. For example, in lowland England and Wales, snipe have disappeared from 60% and redshank from 40% of the area in which they once bred. Only 220,000 ha of lowland wet grassland remain in England and Wales from a historical resource of 1,200,000 ha.
Whilst 190,000 ha currently support breeding waders, only 20,000 ha are thought to be agriculturally 'unimproved',

Local status

No detailed survey of wet grassland has been under taken in the Leeds area. However, there are known to be several areas with grassland in river floodplains, notably the Lower Aire Valley and the River Wharfe floodplain in north of the district. The ings and flashes of the Lower Aire Valley support small numbers of breeding waders and there is evidence of remnant Alopecurus pratensis-Sanguisorba officinalis grassland(MG4 in the National Vegetation Classification) at Fairburn Ings Nature Reserve, which is managed by the RSPB and covers most of Fairburn and Newton Ings SSSI.

Table: designated nature conservation sites in Leeds

Site	Status
Fairburn and Newton Ings	SSSI
Mickletown Ings	SSSI
Allerton Bywater	SEGI
Allerton/Ledston Ings	SEGI
Newton Ings	SEGI
Swillington Park Lakes/Cockpit Round	SEGI
Lowther North	SEGI
Knotford Nook	SEGI
Junction and Island Oxbows	SEGI
St Aidan's North-West Lake	LNA
Leventhorpe Lagoon and Ings	LNA
Moseley Beck	LNA
Otley Sand and Gravel Pit	LNA

CURRENT FACTORS CAUSING LOSS OR DECLINE

Water quality - the industrial and urban nature of the Leeds area has historically, and to a lesser extent currently, caused a reduction in water quality in most river cacthments and floodplains. Nutrient-rich water is species poor and will result in the diminution of species diversity. Conversely it can support a large invertebrate biomass which is often important as a food source for breeding wader chicks. Water quality remains a cause for concern in the Aire catchment

Water quantity - demand for water for domestic, agricultural and industrial use has caused water deficits on many wetlands in the UK. Low soil water tables at critical times may provide unsuitable conditions for breeding waders, invertebrates and some wetland plants. Ultimately, dry grassland communities develop which no longer support the characteristic wildlife of floodplain grassland. Low flows and the impacts of abstraction remain an issue of concern in the Wharfe catchment.

Flood defence - the flood embankments on rivers has reduced the frequency of flooding which has had an adverse impact on floodplain habitats such as wet grasslands which are dependent on regular water inputs. MG4 grassland is particularly sensitive to this. In addition, the use of areas of floodplain for statutory flood storage can have detrimental affects on wet grassland wildlife because of the lack of control on timing and extent of flooding.

Habitat loss - although less of a threat than in the past, drainage and the conversion of permanent grassland to arable remains a potential threat. Lowland wet grassland is also subject to loss to sports pitches, golf courses and fishing ponds.

Neglect - many existing wet grasslands are deteriorating because of lack of management . In order to retain the characteristic assemblages and diversity of a wet grassland, management is essential.

CURRENT ACTION

Protection

There are two SSSI in Leeds which contain lowland wet grassland and Site Management Statements and Water Level Management Plans have been agreed for both.

In addition, a further 11 designated nature conservation sites also include areas of lowland wet grassland

Management

There are 86.26 ha of land managed in Leeds under the Countryside Stewardship Waterside Land category. However, changes in the coding of Stewardship agreements means that some wet grasslands may be coded a broader grassland category (totalling 225.98 ha)

OBJECTIVES AND TARGETS

Local

Maintain and safeguard existing areas of lowland wet grassland and ensure their effective management.

Enhance the floristic interest of any remnant areas or formerly species-rich grassland within designated sites

Survey the extent, quality and distribution of lowland wet grassland to derive an accurate baseline and set quantitative and qualitative targets for the HAP.

PROPOSED ACTION

Policy	**Lead agencies**	**Target Date**
Ensure that lowland wet grassland is given due regard in the implementation and review of the Local Environment Agency Plans for the Aire, Calder and Wharfe	EA	On-going
Promote lowland wet grassland as a preferred afteruse for the restoration of river valley minerals workings	LCC; EA; RSPB; EN	2000 and on-going
Identify opportunities for lowland wet grassland restoration within LEAPs or floodplain strategies	EA	
Site safeguard		
Ensure any impacts of development, abstraction and flood defence/storage schemes do not adversely affect the lowland wet grassland within any designated sites	LCC; EA; EN	On-going
Ensure that all significant areas of lowland wet grassland are designated as statutory or non-statutory nature conservation sites.	LCC; EN	2001 and on-going
Habitat management		
Explore and implement techniques to enhance the ecological interest of the remnant MG4 grassland at Fairburn Ings	RSPB; EN; EA; LCC	2002
Ensure a minimum of 20 ha of lowland wet grassland within the St Aidan's restoration scheme is realised	LCC; RJB Mining; RSPB; EA	2008
Advisory		
Provide advice to landowners on the management of lowland wet grassland, including through demonstration days	FWAG; RSPB; MAFF/FRCA	On-going
Future research and monitoring		
Establish better baseline information on the quality, extent and distribution of lowland wet grassland in Leeds	LCC; EA; EN	2002
Identify potential areas for the restoration of lowland wet grassland	LCC; EA	2003
Review the conflicts and opportunities for the conservation and restoration of lowland wet grassland within flood storage areas	EA; EN; RSPB; LCC	2002

PROPOSED ACTION (continued)

Policy	Lead agencies	Target Date
Communications and publicity		
Promote greater awareness of lowland wet grassland and its ecological importance among planners, land owners and drainage engineers.	LCC; EA; EN; RSPB; FWAG	2000 and on-going
Promote the value of lowland wet grassland as a component of sustainable catchment management	LCC; EA; EN	2000 and on-going

Key to abbreviations

EA	Environment Agency
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
MAFF/FRCA	Ministry of Agriculture, Fisheries and Food/ Farming and Rural Conservation Agency

Hedgerow and Field Margins

CURRENT STATUS

Importance

Although hedges vary enormously around the country, they generally consist of a line of shrubs, sometimes with trees and usually with a layer of herbaceous vegetation beneath. The field margin is that area at the edge of the cultivated field. It provides a transitional of 'buffer' zone between the crop and the hedge or field boundary, as well being of value to wildlife itself.
Hedges are still widely distributed in the UK and are home to a wide variety of wildlife, much of which is dependent on the mosaics of farmland habitats of which hedgerows are a vital part.

Plants

Ancient hedges often consist of a rich variety of shrub and tree species and may originate from early woodland clearances. Consequently they may also support a field layer of herbaceous plants that are associated with woodland. In Leeds, locally rare shrubs such as spindle and buckthorn are primarily found in hedges.
Field margins provide an important refuge for species that were once regarded as common weeds of arable crops, such as cornflower

Birds

A significant number of British birds, particularly many well-known farmland species, are dependent on hedgerows and field margins for food, shelter and nesting. These include linnet, song thrush and grey partridge.

Mammals

Hedges provide important habitat for many of our commoner small mammals, but also more locally distributed species such as harvest mouse. They also provide cover for larger species such as hare. Bats, such as pipistrelle, hunt their insect prey along hedges which effectively act as corridors, guiding their flight patterns across the landscape.

Invertebrates

Hedges with a wide range of woody and herbaceous species will support a greater variety of invertebrates than those which are dominated by a few species. However, even species-poor hedges can be important; the blossom of shrubs such a hawthorn provide a major source of food for nectar-feeding insects such as a hoverflies. This biomass will support other predatory species of invertebrate and vertebrate alike.

Local Status

There is little detailed recorded information about hedges in the Leeds district. Although hedges were recorded as part of the Phase I Habitat Surveys of Leeds carried out in 1978/9 and 1986/7, these did not include any qualitative information and no measurements or totals of hedgerow length were derived.
Through its work in implementing the Hedgerow Regulations, LCC's Department of Planning and Environment does carry out some survey work, although this is by its nature reactive and piecemeal. Undoubtedly, a large number of hedges will have been planted as part of Enclosure Acts, within the last 250 years. Most of these comprise a single or few shrub species and are usually dominated by hawthorn. In contrast, other hedges with more ancient origins often have a greater diversity of shrubs and other species.

In very broad terms, the upland fringes in the west of the district have a greater proportion of walls as field boundaries. Although hedges were once widespread in the east of the district, the productive, friable soils on the magnesian limestone favoured agricultural intensification and led to large-scale removal of hedges. Some of those which remain support field maple and other locally scarce shrubs such as buckthorn and spindle, whilst clematis, a climber found on calcareous soils, is near the northern edge of its range.
Hedges have also been engulfed by the growth of urban areas and can be found within pockets of encapsulated countryside. Survey work is essential to determine the extent, quality and distribution of hedges within the district.

CURRENT FACTORS CAUSING LOSS OR DECLINE

The reduction in the number and quality of hedges and field margins is considered to be one of the major causes of decline in many bird populations including the barn owl, grey partridge and skylark.

Hedgerow removal

Due to the increase in the size of machinery and

increasing financial pressures, many farmers have rationalised their hedgerow networks by removing a proportion of them to make the fields larger and more convenient to work.
Road construction and building developments have also played a significant role in the loss of hedges through removal.

Stock pressure and lack of management

Field drainage, the increased use of fertilisers and the development of higher yielding grass varieties has enabled farmers to support higher numbers of stock on their farms. Hedges and hedge bottoms are subject to higher grazing pressure as a consequence, which in turn has led to many hedges becoming open and bare at the base. This reduces the value of hedges for shelter and feeding. The reduction of farm labour and the increased use of barbed wire often means that hedges are not managed to keep them stock proof. Hedges are rarely layed or gapped-up as part of the day to day management of farms. Consequently, there has been a general decline in the habitat quality of hedges.

Hedge trimming regime

Nowadays, hedge trimming tends to take place in the late summer, just after harvest, when the tractor can run on the stubbles and the land is dry so that it does not create ruts. Trimming in late summer removes berries before the winter when they are needed for food particularly by birds and small mammals. Hedges are often trimmed annually as that the twigs are fairly young and easy to cut. Unfortunately, because hawthorn only flowers and berries on two-year old wood, this greatly reduces the amount of blossom and fruit that the hedge is able to produce.

Cultivating to the hedge bottom

To maximise the cropped area of the farm there has been a tendency in recent years to plough right up to the hedge, removing the valuable grass margin at the base of the hedge and making the hedge itself more vulnerable to spray and fertiliser drift.

Fertilisers and sprays

Fertiliser drift into hedges and field margins encourages the growth of the more common, vigorous weeds which can out-compete other, rarer species. These vigorous weeds can potentially invade the crop and, in turn, require control.
Herbicides remove the broad-leaved plants which many insects use as a larval food source and insecticides kill the insects themselves. These factors are thought to be the major cause in the reduction of grey partridge populations, which rely on the dense cover of margins as a nesting site and the insect larvae for feeding young chicks
Because of the widespread loss of hedgerows, the Hedgerow Regulations, 1997, were introduced, with the intention of protecting ìimportantî hedgerows. Whilst they do confer a degree of protection to hedges falling within the scope of the Regulations, and meeting one or more of the criteria, they do not provide comprehensive protection, nor do they address the key issues of neglect or over-intensive management. Many hedgerows in Leeds, including most within the urban environment, fall outside of the scope of the Regulations.
As a result there is still a need to prepare and implement this action plan.

OBJECTIVES AND TARGETS

To establish reliable estimates of hedgerow length in Leeds, together with information about their species composition and structure.

To identify areas with ancient and species rich hedges

Set targets for the replanting and renovation of hedges and lengths and areas of field margins

Improve hedgerow and field margin management

LINKS WITH OTHER ACTION PLANS

Harvest Mouse SAP
Pipistrelle SAP

PROPOSED ACTION

Policy	**Lead agencies**	**Target Date**
Enforce Hedgerow Regulations 1997 and press for changes to provide effective protection for locally important hedgerows	RSPB; FWAG; EN	On-going/2000
Ensure the protection of hedgerows, wherever possible, through the planning system; where hedges are retained or created as a result of development ensure that provision is made for long term sympathetic management	LCC	On-going
Site Safeguard		
Seek to protect local hedgerows through the use of the Hedgerow Regulations by pursuing and collating records of relevant species	LCC; local naturalists	2001 and on-going
Habitat management		
Promote the conservation management of hedgerows across farm holdings through the promotion of Whole Farm Plans	FWAG	On-going
Promote biennial trimming of hedges in late winter	FWAG	On-going
Advisory		
Provide advice on good hedgerow management practice	FWAG	On-going
Organise demonstration days	FWAG; farmers and landowners; MAFF/FRCA	Annually
Future research and monitoring		
Identify areas of the district where ancient or species-rich hedges can be found	LCC	2002
Investigate options for monitoring hedge loss	LCC; EN	2002
Communications and publicity		
Publicise sources of advice and grant aid for hedgerow management, including Countryside Stewardship	FWAG; MAFF/FRCA; EN; LCC	On-going
Develop a local 'best hedge' award	LCC; FWAG	2002

Key to abbreviations

EN	English Nature	FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council	MAFF/FRCA	Ministry of Agriculture, Fisheries and Food/ Farming and Rural Conservation Agency
		RSPB	Royal Society for the Protection of Birds

S P E C I E S
a c t i o n p l a n s

PASQUEFLOWER
Pulsatilla vulgaris

THISTLE BROOMRAPE
Orobanche reticulata

HARVEST MOUSE
Micromys minutus

PIPISTRELLE BAT
Pipistrellus spp.

ATLANTIC STREAM or WHITE-CLAWED CRAYFISH
Austropotamobius pallipes

GREAT CRESTED NEWT
Triturus cristatus

Pasqueflower
Pulsatilla vulgaris

CURRENT STATUS

Importance

The British population of the pasqueflower is of the subspecies *vulgaris* which is endemic to west and central Europe. It is a plant of characteristically species-rich grassland over shallow, calcareous soils. A long-lived perennial, it reproduces mainly vegetatively, with buds on the rhizome giving rise to daughter rosettes close to the mother plant.

Trends

Once found as far north as County Durham, the pasqueflower has been lost from many of its former localities mainly due to habitat destruction. There has been a steady decline of the species, with the number of 10 x 10 km squares dropping from 48 before 1970, to 19 after 1970 and only 18 since 1980. Since 1970, pasqueflower has only been recorded from 28 tetrads. It is classified as Nationally Scarce.

Distribution and population

Lees' 'Flora of West Yorkshire' (1888) described pasqueflower as 'once common, now almost extinct'. Today the Yorkshire population is reduced to a single plant at a site where the species has been known for over 250 years. This is, by far, the most northerly remaining locality for pasqueflower - its loss would result in a significant contraction of the species' already diminished range. Genetic differences are thought to exist between populations with the loss of local populations representing a loss of genetic diversity within the species.

Without cross-pollination, the viability of the seed from the remaining plant is likely to be negligible.

CURRENT FACTORS AFFECTING SPECIES/THREATS

Vulnerability to collectors or chance loss

Viability of current population. Although this species maintains itself primarily by vegetative means, seed offers the most practicable means of increasing the population and re-establishing the species at its past localities. Without cross-pollination, the viability of the seed from the remaining plant is likely to be negligible.

CURRENT ACTION

Protection

The last remaining Yorkshire plant is within a Site of Special Scientific Interest

Management

To date, recent management of the site has been favourable for the survival of the species.

However, the population, consisting of a single plant, remains at its most vulnerable. Direct management is vital to propagate further plants.

OBJECTIVES AND TARGETS

National
- there is no national action plan for this species.

Local
- to protect the existing plant at its last Yorkshire locality
- to re-establish a population that will be self-sustaining with the on-going management of the site
- to (re-)establish populations that will be self-sustaining at other appropriate sites

[The location of these sites will be kept confidential until new populations have been successfully established]

Targets

	PRESENT	5YEARS	10 YEARS
Number of individuals	1	50	400
Number of sites	1	2	4

LINKS TO OTHER ACTION PLANS

Magnesian Limestone Grassland HAP

Right: Cross-pollination work

PROPOSED ACTION

Policy	**Lead Agencies**	**Target Date**
Promote the conservation management of magnesian limestone grasslands	*[see Magnesian Limestone Grassland HAP]*	
Species and land management		
Ensure the long-term optimal management of the last site for pasqueflower in Yorkshire	EN;YWT	On-going
Cross-pollinate the remaining Yorkshire plant with pollen from closest remaining population in order to obtain seed. Grow-on plants from seed for planting.	EN; LCC; UoB	2000
Establish new plants on existing site	LCC; EN;YWT	2002
Ensure management of candidate sites for (re-)establishment	EN; LCC; FWAG	2004-9
(Re-)establish plants at other appropriate sites	LCC; EN; FWAG	2005-2010
Communication - advisory and promotional		
Promote work on the conservation of pasqueflower of limestone grasslands more generally.	LCC; EN	On-going
Publish details of techniques for propagating and establishing pasqueflower	UoB; LCC	2002-2005
Research and monitoring		
Research historic sites for pasqueflower and identify those which may be suitable for re-establishment	LCC; UoB; EN	2000-2001
Monitor re-established plants	LCC; EN	2002-2010

Key to abbreviations

EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
UoB	University of Bradford
YWT	Yorkshire Wildlife Trust

Thistle broomrape
Orobanche reticulata

CURRENT STATUS

Importance

Thistle broomrape is one of nine British broomrape species, seven of which are rare or nationally scarce, and all of which are unusual in that they are parasitic upon other plant species. As its name suggests, thistle broomrape is a parasite of thistles, especially creeping thistle (*C. arvense*) but also a number of other thistle species (*C. eriophorum*, *C. heterophyllum*, *C. palustre*, *C. vulgare*, *Carduus acanthoides*, and *C. nutans*).

Within Britain, thistle broomrape has a curious distribution, being found only in Yorkshire, hence its alternative name of Yorkshire broomrape. Widely distributed across central and eastern Europe, the Alps and the Balkans, it remains rare throughout its range. The taxonomy of the Orobanchaceae (the broomrape family) is far from clear and undisputed. Variation, particularly in the colour of thistle broomrape, has raised questions about its taxonomic status and its curious British distribution has led to speculation about its origin. However, a preliminary study on the genetic variation in British thistle broomrape (Rumsey 1999) indicates it to be of a single taxon, native in origin.

Trends

Thistle broomrape was recognised as a distinct species in the early part of the twentieth century and, unlike many other rare or scarce species, there is little historical data from which to determine longer-term trends in its distribution and abundance.

However, monitoring of key sites since 1991 has revealed characteristically large population fluctuations at individual sites over successive years.

In addition to the key sites which support the bulk of the population, there are a number of small, ephemeral populations along the banks of the rivers Ure and Wharfe

Distribution and Population

Thistle broomrape is nationally scarce in Britain and, because of its localised distribution, is additionally classified as 'near threatened'. It is largely restricted to the narrow band of magnesian limestone with the notable exception of a site on the chalk of the Yorkshire Wolds.

CURRENT FACTORS CAUSING LOSS OR DECLINE

The factors governing the species' distribution are, as yet, not fully understood. As with other broomrape species, it is still not known why thistle broomrape should remain so scarce and localised when its primary host is so common and widespread. Similarly, although the plant is largely confined to grassland over limestone or chalk, the vegetation it is most frequently found in is relatively rank neutral grassland (MG1a, Arrhenatherum elatioris sub-community Festuca rubra grassland) which is ubiquitous throughout lowland Britain.

One important factor is disturbance, which could facilitate seed coming into contact with thistle roots and thus the establishment of new plants. Where sites are neglected, the lack of management and the invasion of scrub and dense grasses may threaten the survival of a population.

CURRENT ACTION

Protection

The species is listed under Schedule 8 of the Wildlife and Countryside Act, 1981.
Three sites are designated SSSIs due to their important populations of thistle broomrape - Hook Moor (Leeds), Cow Cliff Pasture (N. Yorks.), and Ripon Parks (N.Yorks.). A further site, Ox Close Wood is designated a Site of Ecological or Geological Importance.

Management

Site Management Statements have been agreed for Hook Moor, Cow Cliff Pasture and Ripon Parks and these provide a mechanism for ensuring the conservation of thistle broomrape is duly considered as part of site management.

OBJECTIVES AND TARGETS

Due to the annual fluctuations of broomrape populations the targets below are arithmetic and demographic means calculated from broomrape spike numbers for the year stated and the two preceding years.

Key Sites	**1998 (actual)**		**2003**		**2008**	
	Arith. mean	Demo-graphic mean	Arith. mean	Demo-graphic mean	Arith. mean	Demo-graphic mean
Hook Moor	218	127	220	125	220	125
Ox Close Wood	299	147	300	150	300	150
Cow Cliff Pasture	215	49	200	50	200	50
Ripon Parks	74	16	75	16	75	16
Non-key Sites						
Combined*	245	167	300	180	300	180
Total for all sites	1051	506	1095	521	1095	521

* Combined sites: Carthick Wood, Cow Cliff Quarry, East Keswick Fitts, Hetchell Wood, Langwith Field, Linton Common, North Parks (north & south), Nunwick Flood Meadow, Quarry Moor

Ephemeral Populations - devise a conservation strategy for metapopulations

LINKS WITH OTHER ACTION PLANS

National Broomrape Action Plan (generic)

PROPOSED ACTION

Policy	Lead Agencies	Target Date
Ensure all key sites are protected and promote active management toward achieving population targets	EN; FWAG; LCC; EA	On-going
Continue 'Thistle Broomrape Recovery Project' with partner organisations.	LCC; EN; UoB; NHM	On-going
Promote greater recognition of the Orobanchaceae within national and appropriate local BAPs	LCC; EN; NHM	2001
Promote use of Countryside Stewardship for management of broomrape sites	EN; LCC; FWAG	2001
Campaign at national level for the repeal of the Weeds Act for the host plants of thistle broomrape.	LCC; EN	2005
Species and land management		
Produce, review and implement management prescriptions for achieving thistle broomrape population targets	EN; LCC; UoB; FWAG	On-going
Ensure that other owners of non-key sites are aware of thistle broomrape and its legally protected status and encourage sympathetic site management	EN; FWAG; EA; LCC	On-going
Formulate conservation strategy for ephemeral populations	EN; LCC; UoB; EA	2002
Establish viable ex situ populations at two or more localities	NHM; UoB; EN	2003
Advisory		
Advise landowners and managers on 'broomrape-friendly' control of thistles - e.g. rotational removal, not using chemicals.)	EN; EA	On-going
Future research and monitoring		
Investigate factors affecting the long-term survival of metapopulations and determine the number/size of populations needed to maintain existing heterogeneity within the species	NHM	2003
Investigate genetic variation of British populations and compare with continental populations.	NHM	2002

Investigate the optimum conditions and controlling factors for the propagation of broomrape seed.	UoB	2001
Continue to monitor populations at key sites, particularly in relation to site management work.	BSBI; EN; LCC	On-going
Continue to research other features of the species' autecology; such as pollinator species; abundance and distribution; and the ecological requirements of the host plants.	UoB	On-going
Communications and publicity		
Continue to produce annual newsletter on thistle broomrape and other broomrape species	LCC	On-going
Promote the work on thistle broomrape to wider audience of conservationists, land managers and others through publications, workshops, publicity etc.	EN; LCC	On-going
Establish ex situ population for publicity/promotional, educational and experimental purposes	NHM; EN	2003

Key to abbreviations

BSBI	Botanical Society of the British Isles
EA	Environment Agency
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
NHM	Natural History Museum
UoB	University of Bradford

Harvest mouse
Micromys minutus

CURRENT STATUS

Importance

The harvest mouse is Britain's smallest rodent with an adult weight of only 6g. Its tail is as long as its head and body and the tip of it is prehensile. It is the only British mouse that builds a nest of woven grass leaves well above ground, among plant stalks. They are often found in linear habitats such as hedgerows, ditches, field edges and road verges, but nowadays are rarely found in cereal crops. It is often the most abundant small mammal in wetlands and the preferred habitat appears to be river valleys where common reed, sedges and alder woodland dominate. As such, harvest mouse is a good flagship species for these and other habitats, such as hedgerows and field margins, that have declined. It is not certain whether the harvest mouse is indigenous or a post-glacial introduction; the earliest records in the region are from York with a specimen dating from between the first and the third century.

Trends

Earlier this century, the harvest mouse was believed to be rare and in decline probably due to the secretive nature of the species and its rarity in the pellets of predatory birds. Although a national survey in the 1970's showed it to be widely distributed and locally common, it also indicated the destruction of 12% of known sites each year. Additionally, litter size has reduced in the second half of the twentieth century, the reasons for which are unknown. However, historical records and population estimates are limited with regards to determining trends in population size.

Distribution and Population

The harvest mouse's distribution ranges from Britain, in the West, through Europe and Asia, to Japan, in the East. In Britain, current records are mainly from central Yorkshire southwards, with the distribution biased towards the south-east.

The westerly limit of their Yorkshire distribution extends to isolated, sometimes large colonies and there are past records for Temple Newsam, the Meanwood Valley and Adel Golf Course in Leeds. Major concentrations are associated with marshes, ings and subsidence flashes in lowland river flashes, such as by the River Aire, at Fairburn Ings and Allerton Bywater, and along the River Calder from Castleford to Methley.

An existing local population is known from Fairburn Ings from recent sightings of harvest mice and their nests.

Populations fluctuate greatly; densities of as much as 200/ha in one year may be followed by several years of low numbers. Peak numbers occur during November and fall steeply in February/March.

CURRENT FACTORS CAUSING LOSS OR DECLINE

As a species living in marginal habitats and wetland areas, populations are vulnerable to habitat changes. The harvest mouse is believed to have declined due to changes in agriculture and land use over the second half of the twentieth century, resulting in further loss and fragmentation of suitable habitat. The disappearance of cereal ricks; the sowing of winter cereals promoting a harvest before the peak of the breeding season; the growing of shorter-stemmed cereals which are less suitable for nest building; the use of combine harvesters; the practice of

Photo: J Robinson

stubble burning and hedge management and clearing; and the loss of reedbeds and other wetland vegetation have probably all contributed.

Despite feeding on insects and grass seeds, the harvest mouse is very susceptible to food shortages. In addition, the use of insecticides may also have been a contributing factor to the species' decline.

Persistent rain, sudden drops in temperature and hard frosts are important causes of mortality for adult harvest mice, which is particularly evident in February. Also, low temperatures in summer delay the commencement, reduce the duration and lower the success rate of breeding.

CURRENT ACTION

Protection

The species is afforded no special protection in Britain.

Management

Nationally, there are no programmes for the management of this species

OBJECTIVES AND TARGETS

National - there is no national action plan for this species

Local

Establish current population levels and set a target by which to expand population/distribution over five year period.

Increase public awareness of the species.

Conserve and increase local populations through sympathetic management.

LINKS WITH OTHER ACTION PLANS

Hedgerow and Field Margin HAP
Reedbed HAP

PROPOSED ACTION

Policy	**Lead Agencies**	**Target Date**
Promote the conservation and creation of habitats such as hedgerows and field margins, reedbed and wet woodland through Habitat Action Plans	FWAG; RSPB; EA; EN	On-going
Species and land management		
Identify keys existing or potential sites for harvest mouse and ensure that management regimes are sympathetic to the needs of this species.	FWAG; LCC; RSPB; EN; EA	2003
Review the scope for establishing populations in areas of suitable habitat but where harvest mouse is presently absent	FWAG; LCC; EN; EA	2002
Advisory		
Provide information and advice to landowners as to how to manage their land to encourage and increase harvest mouse populations.	FWAG; EA	On-going
Future research and monitoring		
Survey and monitor populations	LCC	2001/on-going
Communications and publicity		
Increase awareness of this species and its habitat requirements	FWAG; EA	On-going
Promote harvest mouse as a flagship species in relation to key habitats (c.f. action plans for Hedges and Field Margins and Reedbed)	EN; EA; FWAG; LCC	On-going

Key to abbreviations

EA	Environment Agency
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
RSPB	Royal Society for the Protection of Birds

Pipistrelle bat
Pipistrellus spp.

CURRENT STATUS

Importance

The pipistrelle is the most abundant and widespread bat species in the UK. It is the smallest and by far the most common bat encountered in the Leeds area. In 1996 it was discovered that what was thought of as one species of bat is in fact two. These have now been named as the pipistrelle (*Pipistrellus pipstrellus*) and the 'soprano' pipistrelle (*P. pygmaeus*). Pending further investigations into their specific differences, and as there is a single UK BAP action plan for pipistrelle, a similar approach of dealing with both species under a common, generic plan is adopted here.

All British species of bat are vulnerable to disturbance in maternity roosts (where females gather in spring and summer to bring up their single dependent young) and during the winter months when they are hibernating. Disturbance during these times very often leads to bat fatalities.

Trends

Pipistrelles bats in the twentieth century are thought to have undergone a significant decline. Estimates from the National Bat Colony Survey suggest a population decline of approximately 70% between 1978 and 1993.

Distribution and population

The distribution of the pipistrelle bat is widespread throughout Europe, south to Morocco and east to Afghanistan and Kashmir. The UK distribution is widespread and includes most off-shore islands as far north as Orkney.

The problems associated with estimating populations and trends of a small, nocturnal, crevice-dwelling mammal have been compounded by the discovery that there are two distinct species of pipistrelle bat in the UK. Our present state of knowledge does not give any insight into any differences in distribution between the two species across the area .

Both species of pipistrelle are recorded in Leeds. The known distribution is associated with built up areas reflecting the high level of use pipistrelles make of buildings for roosts.

In the Leeds district the majority of records are of maternity roosts in houses with a few in offices, schools etc. The largest known roost in the area is a mixed maternity roost of pipistrelles and noctules (over 500 bats counted out in June 1997).

CURRENT FACTORS AFFECTING SPECIES

Disturbance and destruction of roosts.

Pipistrelles have a high reliance on buildings and are therefore subject to often inadvertent disturbance during work such as building and roofing, cavity wall insulation and remedial timber treatment work. Such reliance on buildings also makes pipistrelles vulnerable to deliberate persecution often resulting from ignorance or misunderstanding of bats and their biology.

All British bats feed exclusively on insects. Reduction in insect prey abundance, due to increase in pesticide usage and declines in habitat quality and quantity, is affecting all British bat species. Pipistrelles will feed on midges, caddis flies, mosquitoes, mayflies, lacewings and occasionally small moths. Unlike many bat species, pipistrelles are able to take advantage of urban and suburban food sources as in gardens allotments and suitably managed public open spaces.

The loss of wetlands and the removal of hedgerows reduces further the insect prey abundance available to bats and also reduces the sheltered flyways essential for foraging and bat movement and dispersal within the landscape.

Destruction and loss of roosting sites affects all species of British bat .The loss of winter roosting sites in buildings, old trees and underground sites can be particularly damaging.

Our poor understanding of the winter requirements of most bat species means that our attempts to provide winter roosting sites could be better targeted.

CURRENT ACTION

Protection

The pipistrelle is listed on Appendix III of the Bern Convention, Annex IV of the EC Habitats Directive and Appendix II of the Bonn Convention (and is included under the Agreement on the Conservation of Bats in Europe). It is protected under Schedule 2 of the Conservation (Natural Habitats, etc.) Regulations, 1994 (Regulation 38) and Schedule 5 of the Wildlife and Countryside Act 1981.

Management

English Nature should be consulted to advise on the conservation and sympathetic management of known roosts through the application of the Wildlife and Countryside Act 1981.

Local Action

The West Yorkshire Bat Group operates across the district and the Leeds City Council initiative the Leeds Volunteer Bat Warden Scheme, has been running since 1996 to raise the profile of bats and issues affecting them across the district. The Scheme offers training and encouragement for people to get involved in bat conservation.

OBJECTIVES AND TARGETS

National

Maintain existing populations and range of pipistrelles

Restore populations to pre-1970 numbers.

The National SAP proposes actions with lead agencies to ‘encourage water quality levels which will help support populations of aquatic insects on which pipistrelles feed’

Ensure the needs of this species are considered in incentive schemes designed to encourage the management of habitat suitable for this species e.g. Countryside Stewardship.

Local

Support the national objectives and targets.

To identify key roost sites and ascertain their size, and maintain these as a minimum

To increase the extent and quality of foraging habitat, especially in the vicinity of key roosts.

To continue and extend monitoring counts at summer roosts in line with the National Bat Monitoring Programme

LINKS WITH OTHER ACTION PLANS

Hedges and Field Margins HAP

Photo: B Brown

Inspecting bat boxes

PROPOSED ACTION

Policy	**LeadAgencies**	**Target Date**
Identify key roosts in the District and ensure their effective conservation through the planning process and enforcement of relevant wildlife legislation.	LCC; EN	On-going
Ensure that due regard is given to the conservation of valuable foraging habitat in the vicinity of key bat roosts, through the planning process	LCC; EN	On-going
Species and land management		
Promote the creation and management of features such as hedges and ponds to provide good foraging areas.	FWAG; LCC; EN;	On-going
Communication - advisory and promotional		
Promote greater understanding and acceptance of bat roosts amongst householders and others responsible for the management and maintenance of buildings and other structures.	EN; LCC	On-going
Provide information and training through the Bat Warden Scheme to encourage more people to become involved in bat conservation work.	LCC	On-going
Draw-up information on the successful conservation of local roosts in a variety of situations and structures as examples of good practice	LCC	2002
Research and monitoring		
To survey a minimum of 50% of new roost records per year and to re-visit and monitor a minimum of 25% of existing recorded roosts per year.	LCC; EN	On-going
Establish and maintain a database for roost records and population information.	LCC	2001; on-going
Encourage volunteers and roost owners to monitor roosts and take part in the National Bat Monitoring Programme	LCC	On-going

Key to abbreviations

EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council

Atlantic stream or White-clawed crayfish

Austropotamobius pallipes

CURRENT STATUS

Importance

The Atlantic stream or white-clawed crayfish is by far the largest mobile freshwater invertebrate native to Britain. Living up to twelve years or more, the larger males generally grow to a body length of 10cm and weigh 45 grams (although measurements of 12 cm and 90 grams have been recorded). Being a generalist feeder and the prey of larger predators such as fish and otter, the crayfish fills an important ecological niche.

Trends

Formerly widespread across France, Spain and Italy, this species is now in decline with isolated local populations under threat. In Britain, the species is particularly under threat in the south-east.

Distribution and population

Although absent from much of the south-west England, west Wales and all of Scotland (with the exception of a single, introduced population), the Atlantic stream crayfish is, otherwise, widespread in England and Wales. However, many populations have been lost within its range since the 1970s.

Within the Leeds district, the species is known from watercourses within both the Wharfe and Aire catchments. Surveys of both the Meanwood Beck and Wykebeck have revealed local populations, with records from the former suggesting a healthy population extending throughout much of the valley.

The only isolated water-body with a known population is the former brickworks pond at Scholes.

CURRENT FACTORS AFFECTING SPECIES

The Atlantic stream crayfish is under threat from other crayfish species, disease and from habitat loss or degradation. Exotic crayfish species have become established in Britain by escaping from crayfish farms or being released as unwanted pets. The North American signal crayfish (*Pacifastacus leniusculus*) is a larger and more aggressive species and colonises rivers and streams at the expense of the Atlantic stream crayfish. Most importantly, it carries a fungus (*Aphanomyces astaci*) to which it is resistant, but which is lethal to the Atlantic stream crayfish. This 'crayfish plague' is the chief causal factor in the demise of the Atlantic stream crayfish.

Locally, signal crayfish are present in the upper reaches of the Wharfe and, unchecked, this species is likely to spread within the catchment at the expense of the Atlantic stream crayfish.

CURRENT ACTION

Protection

The species is listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive. It is also protected under Schedule 5 of the Wildlife and Countryside Act in respect to taking from the wild and sale. It is classed as globally threatened by the IUCN/WCMC and was included in English Nature's Species Recovery Programme.
The Leeds area is within the MAFF 'no-go' area where keeping crayfish is banned.

Management

LCC and EA, have undertaken surveys of crayfish in Leeds including Meanwood, Wyke and Pudsey Becks.
LCC, EA and EN have produced a leaflet on crayfish and their conservation in the Leeds district. The EA have also produced a booklet on crayfish in Britain and Ireland.
LCC and EA ensure that, where relevant, crayfish conservation is given due consideration through the planning process.

Management

LCC and EA, have undertaken surveys of crayfish in Leeds including Meanwood, Wyke and Pudsey Becks.
LCC, EA and EN have produced a leaflet on crayfish and their conservation in the Leeds district. The EA have also produced a booklet on crayfish in Britain and Ireland.
LCC and EA ensure that, where relevant, crayfish conservation is given due consideration through the planning process.

OBJECTIVES AND TARGETS

National

Maintain the present distribution of this species
Limit the spread of non-native species
Maintain and create appropriate habitat conditions
Limit the spread of 'crayfish plague'

Local

Maintain and extend the distribution of Atlantic stream crayfish in the Aire catchment, including within isolated water bodies.
Maintain the present distribution of Atlantic stream crayfish within the Wharfe catchment and seek to prevent the spread of signal crayfish

PROPOSED ACTION

Policy	**Lead Agencies**	**Target Date**
To identify and assess candidate sites for designation as SSSI for their crayfish populations	EA; EN	2001
Ensure potential impacts of development, engineering works and water abstraction on crayfish populations are fully considered and reflected in decision making	EA	On-going
Ensure water quality objectives support existing and potential future crayfish populations	EA	On-going
Ensure enforcement of the Prohibition of Keeping Live Fish (crayfish) Order 1996	MAFF	On-going
Species and land management		
Devise and implement programmes for habitat improvement within the Aire catchment and for isolated water bodies - Meanwood/Adel Becks; Wykebeck; Scholes Brickwork's Pond.	EA;	2005
Consider the re-establishment and restocking of key populations at key sites and implement schemes where appropriate - Waterloo Lake; Cock Beck	EA; FWAG; EN	2002
Evaluate potential control of signal crayfish in River Wharfe and its tributaries and implement if practicable.	EA	2002
Communication - advisory and promotional		
Highlight the plight of the Atlantic stream crayfish; publicise the legal protection that it is afforded; and encourage greater care of crayfish and their habitat	EA; LCC	On-going
Highlight the importance of disinfecting procedures to prevent 'plague' transmission	EA	On-going
Research and monitoring		
Identify the extent of local populations of both Atlantic stream and signal crayfish within the Aire and Wharfe catchments, including those within isolated water bodies	EA	2003
Evaluate habitat quality of watercourses and waterbodies where the species is presently or has been previously known.	EA	2003

PROPOSED ACTION (continued)

Policy	Lead Agencies	Target Date
Monitor Atlantic stream and signal crayfish distributions in the River Wharfe and its tributaries.	EA	On-going
Develop techniques for habitat improvement and investigate the feasibility of re-stocking	EA	2005

Key to abbreviations

EA	Environment Agency
EN	English Nature
FWAG	Farming and Wildlife Advisory Group
LCC	Leeds City Council
MAFF	Ministry of Agriculture, Fisheries and Food

Great crested newt
Triturus cristatus

CURRENT STATUS

Importance

The UK has a significant proportion of the population of this European amphibian which has suffered considerable decline.

Trends

The great crested newt has declined across its western European range.
It was discovered in 1975 that the crested newt was declining at a greater rate in Britain than any other native amphibian or reptile. Across the country as a whole, during a 5 year period in the 1980s, site loss was estimated to be at least 2%. More recently, studies in parts of the UK indicate that over the past 20 years, site losses have been as high as 75%.

Distribution and population

The great crested newt is widely distributed across northern and central Europe.
The UK holds a significant proportion of the species in Europe and, therefore, world wide. Although widespread over much of Britain, the species is found predominantly in the south-eastern lowlands. It is much rarer in Scotland, the south-west, and Wales and is absent from Ireland.

Local distribution

Records suggest that the great crested newt populations in the Leeds district are small, few and localised, with only 97 individuals being recorded from 6 separate sites in 1998. Although it is difficult to reliably estimate the size of individual populations, it is clear from the low numbers of newts recorded from breeding surveys that populations are small. In addition, these populations are isolated from each other, increasing their vulnerability.

From recent surveys of breeding ponds in the Leeds district, great crested newts have been recorded in ponds with surface areas of between 100 - 3000 square metres. They do not tend to colonise very large water bodies such as lakes and reservoirs, nor are they usually found in garden ponds. Their preferred breeding habitat is larger field ponds and the conservation of these is vital to halting and reversing the decline of this species.

Although the great crested newt spends a greater proportion of its life in ponds than the smooth (*T. vulgaris*) or the palmate newt (*T. helveticus*), terrestrial habitat, such as rough grassland, scrub and woodland, close to breeding ponds, is vital; terrestrial habitat is used all year round by immature newts and most great crested newts will spend the winter on land in frost and flood-free areas.

Current factors affecting species

A major factor in the decline of the great crested newt is the loss of suitable breeding ponds. This can be due to drainage of ponds or lowering of the water-table; alterations to the dimensions of ponds for fishing or other recreational or ornamental uses; the introduction of waterfowl or fish; or the natural spread of vegetation and subsequent drying-out.

Pollution and the use of toxic chemicals can also have a significant effect on local newt populations as can the loss or ‘tidying’ of terrestrial habitat.

Isolation of habitats can also cause long-term problems for the viability of populations and it is important that landscape features connecting habitat blocks are maintained and improved.

Small, isolated newt populations are also more vulnerable to predation, including people collecting newts, and disturbance during hibernation.

CURRENT ACTION

Protection

T. cristatus is protected in Great Britain by its inclusion on Schedule 5 of the Wildlife and Countryside Act 1981 which is the U.K. Government's statutory instrument for enforcing the Bern Convention on the Conservation of European Wildlife and Natural Habitats. Great crested newts are also protected under Regulation 38 of The Conservation (Natural Habitats, &c.) Regulations 1994.

Management

Since 1995, Leeds City Council has run an annual amphibian survey to ascertain the distribution and status of amphibians including, the great crested newt, in the Leeds Metropolitan District.

One of the most important local populations is on land owned by the City Council, where work is in-hand to improve and manage the site with the conservation of the newts and other amphibians as the primary objective.

The restoration of former ponds and the creation of new ponds, linked to rough grassland, scrub or woodland as part of land reclamation, woodland establishment or associated with new developments, is vital to replace the areas of habitat which have been lost.

OBJECTIVES AND TARGETS

National

The UK Steering Group Report's SAP for great crested newts seeks to maintain the range, distribution and viability of existing created newt populations, and proposed the restoration of populations to 100 unoccupied sites over five years from 1995.

Local

The primary local objective is to effectively conserve existing crested newt populations and enhance the quality and capacity of local habitat to support larger newts populations. In addition, opportunities for re-establishing viable populations at relict sites and newly establishing populations where there is suitable potential habitat, will be pursued. The target is to record a minimum of 200 newts during annual monitoring at 12 or more separate sites in 2010.

LINKS WITH OTHER ACTION PLANS

Hedgerow and Field Margin HAP

A great crested newt breeding pond

PROPOSED ACTION

Policy	**LeadAgency**	**TargetDate**
Ensure the recognition and protection of all crested newt sites within the planning process	LCC	2001; on-going
Ensure no net loss of crested newt habitat through development, drainage or abstraction	LCC; EN; EA	On-going
Species and Land Management		
Promote favourable management of both ponds and terrestrial habitat at all crested newt sites through advice and management agreements	LCC; EN; FWAG	On-going
(Re-)establish pond clusters with areas of appropriate terrestrial habitat at five relict crested newt sites or in areas with potential for supporting new populations. Consider introduction of newts as necessary	LCC; EN; FWAG	2005
Promote the creation of new ponds of value to wildlife, especially as part of sustainable drainage initiatives	LCC; EA	On-going
Research and monitoring		
Monitor known crested newt sites and survey potential sites as part of the Leeds Amphibian survey	LCC	Annually
Communication - promotion and advisory		
Promote a wider and more sympathetic understanding of herptiles in the Leeds district	EN; LCC; FWAG; EA	On-going

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